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Literature List
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C. Uhl, D. Khazaka, A. Pouladi, **Testing Trending Hair Care and Skinification Claims**, Cosmetics & Toiletries, June 2025

Hair styles, shapes, growth patterns and colors are diverse and prominent features we can use to express ourselves to the world around us, including on social media. The promotion of different hair styles and grooming techniques by influencers and celebrities has also led to a more competitive hair care market, with some niche brands reaching cult status.

L. Guihua, J. Wencai, D. Shan, J. Yanzhu, D. Baek, Y.H. Lee, T. Yimei, **A Study on the Difference in Aging Characteristics of Sensitive and Non-Sensitive Skin**, Skin Research and Technology, Volume 31, Issue 2-5, February-May 2025

Background: According to Euromonitor and T Mall data statistics from 2017 to 2022, the Chinese market for sensitive skin (SS) skincare is growing by 20% every year, and anti-aging concept cosmetics for sensitive skin are becoming popular. There are few studies on the difference in aging between sensitive and non-sensitive skin. Objectives: This study is to determine whether sensitive skin ages faster than non-sensitive skin. Method: Eighty subjects aged 25–50 years each from sensitive and non-sensitive skin participated in this clinical trial. trans-epidermal water loss (TEWL), CIE-L* a*b* values, gloss, hydration, sebum content, dermis density, elasticity, wrinkles, smoothness, artificial intelligence (AI)-estimated skin age, and pores were evaluated in subjects with sensitive and non-sensitive skin. Results: In the 25- to 29-year-old group, the pore score and nasolabial fold count of non-sensitive skin were significantly lower than those of sensitive skin ($p < 0.05$), but the transparency was significantly higher than that of sensitive skin ($p < 0.05$). There was a significant difference between groups in the MAE value between AI skin age and chronological age, and the AI-estimated skin age of sensitive skin is significantly older than that of non-sensitive skin ($p < 0.05$). There were no significant differences between sensitive and non-sensitive skin in other parameters ($p > 0.05$). In the 30- to 34-year-old group, the TEWL value and a* value of non-sensitive skin are significantly lower than those of sensitive skin, but the L* value and glossiness are significantly higher than those of sensitive skin ($p < 0.05$). There is no statistical difference in other parameters between sensitive and non-sensitive skin ($p > 0.05$). In the 35- to 50-year-old group, sensitive skin demonstrated better performance only in crow's feet compared to non-sensitive skin, with no significant differences observed in other parameters between the groups. ($p > 0.05$). Conclusion: The phenomenon of premature aging in sensitive skin is more obvious, but as age increases, the difference in aging is not obvious. Early anti-aging care for sensitive skin is necessary.

A. Makanjuola, A. Ogunbiyi, A. Fowotade, N. Aderinto, **Speciation of Malassezia and determination of sebum and hydration levels in secondary school students in Nigeria**, Arch Dermatol Res, 2024 Dec 2;317(1):63

Pityriasis versicolor (PV) is a common skin condition associated with Malassezia species. Factors influencing PV development, such as sebum and skin hydration levels, are not fully understood, especially among adolescents. This study aimed to determine Malassezia speciation and assess sebum and hydration levels in secondary school students with PV in Ibadan, Nigeria. A crosssectional study was conducted among secondary school students with PV and a control group. Sebum and hydration levels were measured using a sebumeter and corneometer, respectively. Malassezia speciation was determined through KOH microscopy and PCR-RFLP. Sebum levels were significantly higher in PV patients compared to controls. Skin hydration was lower in PV patients. Malassezia globosa was the predominant species, followed by Malassezia restricta and Malassezia sympodialis. No significant correlations were found between Malassezia species and clinical features. Increased sebum levels and decreased skin hydration are associated with PV in adolescents. Malassezia globosa is the primary species involved. Further research is needed to elucidate the complex relationship between these factors and PV pathogenesis.

Z. Draelos, K. Kyerematenq, N. Squittieri, **Spotlight on Sebum: Emerging Clinical Data on Acne Treatment**, Summary of poster presentation data at the 2024 Fall Clinical Dermatology Conference, Las Vegas, October 24th–27th, 2024

Clascoterone cream 1% is an androgen receptor inhibitor approved for the topical treatment of acne vulgaris (AV) in patients 12 years of age and older. This article summarizes data from a poster presentation on clascoterone cream 1% at the 2024 Fall Clinical Dermatology Conference, held in October 2024 in Las Vegas, USA. In this study, clascoterone cream 1% significantly reduced facial sebum production over 12 weeks of treatment in patients with mild-to-moderate acne. This marks the first clinical study to show an impact of clascoterone on sebum production and provides further evidence of its efficacy as a topical option for treating androgen-stimulated excess sebum production in male and female patients with AV.

Z. Zhang, J. Zhang, C. He, L. Yi, L. Liu, **Scalp Care Essence with Recombinant Humanized Collagen Type XVII and Plant Ingredients for Reducing White Hair and Improving Hair Quality**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Hair quality significantly impacts appearance. Key concerns involve hair loss, graying, excess oil, and quality decline. The hair growth cycle, regulated by the hair follicle, has three stages. Inhibition of 5α-reductase and growth factor control can help prevent hair loss and stimulate growth. This study used scalp essence with recombinant collagen XVII and natural plant ingredients. Collagen XVII maintains the stem cell environment, while plant ingredients regulate the hair cycle and oil. This combination improved hair density, reduced oiliness, and prevented graying. The in vivo test results revealed after 8 weeks, scalp oil reduced from 37.6 to 25.4 μg/cm², with the test group showing a 23.6% decrease compared to controls. Hair count per area rose from 38.4 to 45.8 roots/cm², marking a 19.3% increase, controls only saw 6.2% and 2.7% increases. White hair count dropped from 7.6 to 4.4 roots/cm², with the test group exhibiting a 42.1% reduction versus 17.1% and 8.2% in controls. Hair scale scores improved to 3.4 from 2.4 in the test group, outperforming controls by 0.5. Visual assessments confirmed enhanced hair density. These results highlight the potential of recombinant humanized collagen type XVII and plant ingredients in scalp care and hair improvement.

Z. Zhang, C. He, J. Zhang, L. Yi, L. Liu, **Evaluation of Herbal Anti-Acne Essence and Its Efficacy**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Acne is a high incidence of skin disease in adolescents and young adults. The causes of acne primarily include hyperactivity of sebaceous glands, blockage of sebaceous ducts, abnormal keratinization of hair follicles, bacterial infections, and other inflammations. In this study, herbal ingredients include 18 compounds are utilized as primary components in the acne essence, while partial herbal ingredients as controls 1 and control 2 without those. The inhibitory effect on P. acnes and S. aureu and the inhibitory rate of 5α-reductase were determined. In vivo test was carried out on volunteers with acne. Antibacterial score against P. acnes was 41% and 73% higher than control 1 or 2, and against S. aureus was 51% and 93% higher than controls. The inhibition of 5α-reductase was 34.5%, 15% and 109% higher than controls. Skin oil was reduced from 51.2 μg/cm2 to 25.3 μg/cm2. Facial porphyrin values, which characterize microbial activity, decreased from 80 to 60. Acne area decreased from 8.1mm2 to 3.7 mm2. The number of acne lesions decreased from 20.2 to 12.4 by 38.9%. Facial redness value decreased from 35.8 to 29.4 by 17.9%. The self-evaluation remission rate was 89.28%. The results have shown that the combination of plant ingredients has yielded positive outcomes in acne treatment.

M.D. Gianeti, I. Alexandrino, A. Mota, M.M. Soares, F.M. Soares, M. Lima, V.C. Seixas, **Evaluating cleansing efficacy: development and evaluation of renewing antioxidant cleansing gel**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

The aim of this study was to evaluate cleanser efficacy with an innovative protocol and the skin benefits of a renewing antioxidant cleansing gel. A cleansing formula was developed containing glycolic and succinic acid, ginseng, aloe vera, and rosemary extracts. An innovative protocol was developed to demonstrate cleanser efficacy. Also, a clinical study was conducted to evaluate the reduction of facial skin oiliness by sebumetry after 28 days of use. The studied cleansing significantly demonstrated cleanser efficacy when compared with water, as it was able to remove impurities from the skin. The investigational product provided a significant reduction in facial skin oil after 28 days of home use by 33.0%, in relation to the baseline condition. This study presents important information about cleanser application on the skin and could be used to improve knowledge of such an important stage in the skincare routine.

L. Ferreira, J. Yamamoto, Macedo, D. Lorenzetti, **Exploring Sebum Recovery Differences Between Skin of Color and Caucasian Skin: Implications for Cosmetic Efficacy**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

The structural and functional distinctions between skin of color and Caucasian skin, have been previously observed. Specifically, skin of color is characterized by larger sebaceous gland compared to Caucasian skin, impacting oil secretion. In this study we study the sebum recovery of fifty-three healthy females with oily skin, categorized into two groups based on skin phototypes: Caucasian (Fitzpatrick phototype I to III) and Skin of Color (Fitzpatrick phototype IV to VI). Sebum recovery was assessed through Sebumeter measurements (Courage Khazaka Eletronic device) at baseline, immediately post-cleansing, and at 2, 4, 6, 8, 10, and 12 hours in controlled conditions. Significance was set at $p<0.05$. Following facial cleansing no significant differences were observed between Skin of Color and Caucasian groups during the study period demonstrating that further research is needed to understand the complexities and characteristics that involving this physiological effect.

G. Ricci Leonardi, M. Massufero Vergilio, **Clinical evaluation of topical niacinamide formulation in reducing superficial sebum content**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Skin, as a vital organ, plays a crucial role in maintaining homeostasis and acts as a physical and chemical barrier. Factors such as transepidermal water loss, stratum corneum hydration, lipid content, and pH balance play pivotal roles in skin function. However, excessive sebum production can lead to dermatological issues, especially in tropical climates, impacting skin conditions and aesthetics. Niacinamide (NIA), the active form of vitamin B3, has been recognized for its potential benefits in managing dermatological conditions, particularly in regulating sebaceous lipogenesis. This study aimed to assess the efficacy of a topical formulation containing NIA in reducing superficial sebum content. Methods: Thirty-three healthy females aged 30 to 60 participated in an 8-week open, double-blinded, randomized, controlled clinical trial. Subjects were assigned to either a placebo formulation group or a group using a cosmetic formulation with NIA. The study assessed the impact of the formulations on superficial sebum content using the Sebumeter® SM815 (Courage & Khazaka, Germany). Statistical analyses included the 2-way repeated ANOVA test and Sidak's test for multiple comparisons. Results: Descriptive data demonstrated no significant differences in age and Fitzpatrick skin phototype among groups. Notably, the cosmetic formulation group exhibited a significant reduction in superficial sebum content, when compared with the placebo group ($p < 0.05$). This suggests a potential role of NIA in modulating sebum excretion rates. While previous studies have associated NIA with sebaceous lipogenesis through triglyceride reduction, further investigations are warranted to comprehensively understand NIA's impact on sebum production. Discussion and Conclusion: Our findings support the positive impact of a Niacinamide-containing formulation in reducing superficial sebum content over an 8-week period. This suggests potential benefits for individuals with mature skin experiencing excessive sebum production. Future research should delve deeper into the molecular mechanisms through which Niacinamide influences sebum production, further enhancing our understanding of its dermatological applications and efficacy in skincare formulations.

G. Wang, X. Yang, L. Zhi, S. Zang, B. You, **Exploring the Efficacy of Fermented Tea Extract in Regulating Facial Sebum Production and Enhancing Skin Health**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Introduction: This study investigates the novel applications of fermented tea extract in skincare, particularly in the context of facial oil control. Methods: The study employed a dual fermentation process to treat Jinggu white tea with specific fungal species. In vitro analysis of oil redO in SZ95 cells, 5α reductase activity and GATA 6 expression in keratinocytes were utilized to investigate the effects on oil control. Moreover, 30 subjects were recruited for clinical oil control test and untargeted metabolomics analysis of facial lipid composition changes. Results: Within a certain concentration range, fermented tea extract demonstrated significant reduction of facial lipid surplus induced by linoleic acid in SZ95 cells and inhibition of 5α reductase activity. Moreover, as the extract concentration increased, the expression of GATA 6 in keratinocytes notably increased. Untargeted lipid metabolomics analysis identified a total of 30 different metabolites. TG, PC, OAHFA and Cer exhibited varying degrees of increase or decrease whichcontributed to facial oil control. Discussion and Conclusion: The study showcases the multifaceted benefits of fermented Jinggu white tea extract in regulating sebum production. The fermentation process appears to enhance the inherent skin-friendly properties of tea, offering an innovative approach tomanaging common skin concerns like excessive oiliness.

A. Potter, H. Kaga, J. Puech, H. Domejean, N. Abeysekera, N. Billoni, D. Bernard, E. Bou Samra, S. Hassler, M. Soetard, J. Li, C. Sirichandra, **New biomimetic designed approach to erase blackheads**

by targeting microbiome, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Previously, correlative examination of nose casts from healthy skin with imaging, microbiome and biochemical methods gave new insights into their structure and origin of their dark color: the lipophilic bacteria Cutibacterium acnes (C. acnes) create a protective environment by modifying sebum composition, creating a compact lipid plug, an extracellular fibrillary matrix, similar to a biofilm. Besides porphyrins, they synthetize also melanin-like pigments. This contributed to designing a new sustainable formulation, based on the microbiome science. It contains a glycolipid biosurfactant targeting C. acnes, a surface peeling agent, reopening the keratinized plug and a green solvent dissolving the lipidic matrix. The performance was validated in a clinical study. Significant better efficacy on oil-control effect was observed for the toner ($p<0.05$) at instant time and up to 6-hours compared to untreated control, with the oil secretion ratio of 19.8% and 10.8%. Additionally, significant improvement was also achieved for oil-control, blackheads (both intensity and counting), skin pores and appearance of oiliness for the toner after 4-week repeated application (improvement rate of 20.9%, 38.6%, 48.0%, 17.6%, 18.7% and 46.8%, respectively). Finally, the formula was highly appreciated by consumers with 93% of overall liking among 120 Chinese consumers using the product during 4 weeks.

J. Wu, P. Zhang, Q. Wu, X. Yan, M. Liu, F. Ye, H. Zhang, X. Wei, X. Li, **Red quinoa husks processed by enzymatic co-fermentation: A novel ingredient can soothe skin and reduce sebum content**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Quinoa has received widespread attention due to its high content of active compounds, but it is rarely used as an ingredient in cosmetics. In order to increase the application and sustainability of quinoa, we developed a novel ingredient processed red quinoa husks (PRQH) and explore its effect. PRQH was hydrolyzed and fermented by α-amylase, neutral protease and maltose amylase combined with Lactobacillus rhamnosus, whose the content of total saponins, polyphenols, flavonoids and proteins in PRQH is 1.00 mg/mL, 0.43 mg/mL, 0.67 mg/mL and 8.08 mg/mL， respectively. PRQH significantly decreased the nitric oxide content (inhibition 57.32%) compared to unprocessed ingredient ($p<0.05$). In the SLS irritant patch test, PRQH increased the stratum corneum hydration effectively and declined the transepidermal water loss and erythema index sharply ($p<0.001$). What's more, the level of sebum with PRQH treatment (inhibition rate is 51%) in sebaceous gland cellswas much lower than that in untreated group ($p<0.001$). And the skin sebumdecrement with 2 consecutive weeks PRQH treatment (-17.2 μg/cm2) was obviously higher than that without PRQH (-5.1 μg/cm2). PRQH shows good anti-inflammatory and soothing effects as well as skin sebum inhibition in vitro and in vivo, which provides a new option for oily skin care.

H. Li, J. Xu, J. Zhang, X. Liu, H. Hu, Y. Wang, B. Zhang, Z. Yue, **Development of a new cosmetic ingredient using *Gentiana veitchiorum* flower originated from Pan-Himalayan**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Gentiana veitchiorum Hemsl. (GV) is an important original plant of traditional Tibetan medine, which can be used to treat diseases such as smallpox, tracheitis and cough. To develop GV into a new sustainable skin protection agent, the flowers of GV were extracted in hot water. Three active components---gentiopicroside, isoorientin and isovitexin, of GV flowers extract (GVFE) were identified and analyzed by HPLC, respctively containing 15.5%, 1.7% and 1.9%. In addition, the skin care efficacy of GVFE were studied both in vitro and in vivo. The results of in vitro cell assay showed GVFE could not only promote the expression of AQP3, CLDN1 and ZO-1 genes in HaCaT cells, but also inhibite the inflammatory factor IL-6 produced by THP-1. Futhermore, the results of in vivo efficacy assessment showed that GVFE had the effect of reducing the proportion of cheek red area and inhibiting facial oil production. And GVFE also had the effect of reducing fine lines on the face and eyes. These results revealed that the Gentiana veitchiorum flower extract have an excellent effect of barrier repair, soothing and antiwrinkle efficacy, which is expected to be potentially used as a new natural cosmetics ingredient.

D.S. Campachi, L. Kakuda, G.F. Cadioli, G.I. Licco, P.M.B.G Maia Campos, **Characterization of mature Brazilian male skin by instrumental measurements**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Male skin is exposed daily to extrinsic factors that contribute to premature aging, such as solar radiation and environmental pollution. For a long time, due to stigma in society, the use of cosmetic products by men was not common, but changes in lifestyle are leading men to increasingly look for products specific to their skin's needs. Therefore, the present study aimed to characterize mature Brazilian male skin and compare it with female skin, to understand its specificities. For this, quantitative analyzes of water content in the stratum corneum, transepidermal water loss, amount of sebum and pores, microrelief and thickness of the dermis were carried out. The results showed that male skin is more oily and dehydrated than female skin, but has fewer pores. Men also had a smaller dermal thickness, with less skin elasticity

than the female groups, in addition to a less smooth microrelief, with more roughness and wrinkles, parameters that can be improved with the use of cosmetics. Finally, this study contributed to establishing the physiological aspects of male skin as a platform for prospecting new cosmetic formulations that meet their needs.

A.P.P. Fonseca, C. Recine Amore, T. Pinheiro, G. Cadioli, C. Dal Pizzol, P.M.B.G. Maia Campos, **Efficacy of retinol in biocompatible oils on oily acne-prone skin: a clinical study using biophysical and imaging techniques**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

The study aimed to assess a formulation containing stable biocompatible oils (*Gossypium Herbaceum, Helianthus Annuus, Persea Gratissima, Macadamia Ternifolia*, and *Rosa Moschata*) with 0.3% retinol for treating oily-acne prone skin. Two formulations were compared: Formulation A without retinol and Formulation B with retinol. Over 28 days, 10 participants with oily-acne prone skin used these formulations daily. Biophysical measurements (Sebumeter® and Tewameter®) and high-resolution imaging (Dermascan® and Visioface®) evaluated skin improvements. Results showed no significant increase in skin oiliness with either formulation. Both formulations reduced transepidermal water loss slightly, though not significantly. Formulation A tended to enhance skin echogenicity more than Formulation B. Dermis thickness remained unchanged. Formulation B notably reduced pore size and dark spots more effectively than Formulation A. Additionally, 70% of participants found Formulation B did not increase skin oiliness and perceived increased skin hydration. This study highlights Formulation B's efficacy in reducing pore size and dark spots, possibly due to retinol's skin turnover benefits. The formulation was well-tolerated, suggesting promise for treating oily-acne prone skin, despite initial concerns over adding oils to such formulations.

D. Lin, J. Shen, Y. Li, M. Zhang, H. Zhang, Y. Mao, Y. Li, **A topical antioxidant serum: its antioxidant of squalene effect on human skin sebum filter**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Skin lipids, primarily secreted by sebaceous glands, play a crucial role in skin health but can lead to oily skin and inflammation when overproduced. Environmental and hormonal factors increase reactive oxygen species (ROS) levels, causing oxidative stress and damage to skin lipids. This study examined the effect of a formulation known as EBS, which contained antioxidants such as hydroxydecyl ubiquinone and ethyl bisiminomethylguaiacol manganese chloride, and lipid oxidation inhibitors such as silymarin and sodium ascorbyl phosphate, on skin health. Methods included the exposure of ex vivo skin tissues to UV irradiation to assess changes in ROS, collagen IV, and elastin with EBS treatment, and a clinical trial with 32 volunteers measuring sebum levels, skin firmness, and inflammation after 4 weeks of treatment with EBS. Treatment of ex vivo skin with showed a 26.37% reduction in ROS levels, a significant increase in collagen IV and elastin levels, and a 36.42% decrease in the squalene monohydroperoxide/squalene (SQOOH/SQ) ratio. The clinical results included reduced sebum levels, enhanced skin firmness, and decreased facial redness. Overall, the levels of oxidants and antioxidants following EBS treatment elicited significant improvements in oily skin conditions, reducingoxidative stress and inflammation. These findings support the use of as a comprehensive skincare solution for managing oily skin, with both immediate and long-term benefits.

B.J. Navarro, L. Kakuda, P.M.B.G Maia Campos, **Application of babassu oil in cosmetic formulations for hair and skin care: efficacy, sensory and physico-mechanical properties**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

The study aimed to develop and evaluate cosmetic formulations containing babassu oil for hair and skin, leveraging its emollient, moisturizing, and sensory-modifying properties. Babassu oil, obtained via supercritical CO2 extraction to prevent bioactive compound degradation, was incorporated into a hair mask and a gel cream at a 3% concentration. The stability of the formulation was evaluated in terms of rheological behavior and texture profile. Both formulations were stable and exhibited non-Newtonian pseudoplastic behavior with thixotropy. In hair masks, the oil significantly increased the consistency index and work of shear, improving hair softness and combability. Lauric acid in babassu oil is able to diffuse into the hair fiber, forming a protective film that enhances softness and reduces friction. In the gel cream, babassu oil decreased texture parameters and work of shear, improving spreadability and sensory properties. Clinical efficacy tests showed that the oil significantly reduced transepidermal water loss (TEWL) and improved skin hydration and microrelief. Finally, babassu oil showed potential for application in innovative cosmetic products, highlighting its value in enhancing hair and skin care formulations while promoting Brazilian biodiversity.

R.L.L. Graciolli, A.C. Fiore, J. Meguro, M.D. Gonçalves, I. Cabral, A.R.I. Firmino, **The influence of lip**

physiology and lip care routine on liquid lipsticks durability, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Consumers are always looking for products that stay on their skin all day long. The same lipstick formulation can have different durability depending on the person using it. Several factors canaffect the durability, including eating, drinking and exercising, but perhaps other factors based onlip characteristics could influence it. This work aims to investigate lip characteristics that may influence the durability of liquid lipsticks, such as lip pH, oiliness, hydration, roughness, barrier function, saliva pH and the functional lip movement.

Z. Zhou, Q. Meng, S. Xi, Q. Zhou, H. Meng, F. Yi, H. Ren, Y. Du, **New thinking on the Facial Skin aging stage in a Chinese female population aged 18-60,** Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Background: Facial skin is exposed to the environment, which is characterized by obvious signs of aging. Based on multi-dimensional non-invasive evaluation data, female facial skin can be characterized. However, there are few studies on the general aging rules of facial skin that changes with age. Moreover, most studies divide the aging age group according to 5/10 years old, which lacks dynamic matching with facial skin aging. Aim: Explore facial skin aging rules, discuss the main parameters of facial skin aging, propose an unequal-distance aging division method with age based on the main parameters, and study the skin characteristics of different aging stages. Methods: We comprehensively described the skin status from five dimensions (24 non-invasive skin parameters) including skin wrinkles, texture, stain, color and barrier, and performed polynomial fitting on 21 skin parameters that were significantly related to age, and got the rules of aging in different dimensions. Based on the wrinkle dimension, the facial skin aging process was divided into four stages, and the skin characteristics of different stages were analyzed. Results: Skin wrinkles increased, texture deteriorated, acne decreased, pigment spots increased, skin tone darkened, and sebum secretion decreased with age based on polynomial fitting. The aging stage was divided into incubation period (18-30 years old), aging occurrence period (31-42 years old), rapid aging period (43-47 years old), and stable aging period (48-60 years old) according to wrinkles. And different aging stages have different skin characteristics. Conclusions: The incubation period is the critical period for the appearance of stains; the skin texture gradually deteriorates during the aging occurrence period; the rapid aging period is a critical period for the aging of skin parameters; skin status during the stable aging period is the worst.

Y. Fan, C. Wei, N. Su, F. Lei, J. Li, P. Sun, **A novel evaluation method of facial skin aging in young Chinese women: An exploratory study**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Background: With the increasing awareness of facial anti-aging, there is a growing demand for anti-aging products, particularly among young females. Various noninvasive methods have been widely used in the assessment of skin aging, and various parameters show unique characteristics on skin aging in some aspects. However, these parameters are independent and scattered, failing to provide an overall assessment of facial skin aging, especially for young Chinese women with characteristics. Based on the research, it is urgent and feasible to screen and integrate the objective quantitative parameters and develop a reliable and accurate method to evaluate the facial skin aging of young populations. Therefore, we constructed, for the first time, a comprehensive evaluation method for facial skin aging in young Chinese women based on correlation analysis. Methods: A total of 100 young Chinese consumer aged 18-33 were enrolled as study subjects, and 39 parameters, such as facial skin wrinkles (around the eyes, under the eyes, cheeks, and nasolabial folds), elasticity, color, moisture, and sebum, were collected from different anatomical positions of the face. Multivariate factor analysis (MFA) and partial least squares regression analysis (PLS) was conducted to determinethe most effective parameters for evaluating facial skin aging and to understand the relationship between these parameters and age. Results: A novel young skin aging prediction model 'CYSPM' was built by using the evaluated facial parameters, which is correlated to women's chronological age. The R square and Q square of the CYSPM is 0.886 and 0.641, respectively, suggesting that the CYSPM was effective and reliable. According to the VIP value, nasolabial fold (Ra), elasticity (R7), face tone (ITA°)/melanin, and sebum are critical factors, suggesting these characteristics are important in skin aging of young Chinese women. Conclusion: Among the 39 parameters, nasolabial fold (Ra), elasticity (R7), face tone (ITA°)/melanin, and sebum as key parameters determining facial skin aging in young Chinese women. For the assessment of facial skin aging in young women, thedetermination of key parameters is meaningful, and the establishment of the model establishes a scientific correlation between objective data and subjective cognition, which is very meaningful for the assessment of aging and overall cognition. Continually, large-scale studies with more parameters will be further performed to refine and optimize this prediction model in future.

Y. Le, W. Lu, B. Wang, Y. Zou, **Clinical study of 5% mandelic acid gel on the acne skincare efficacy and safety**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

This study assessed the acne elimination, skin barrier improvement and oil control effects of continuous use of a multiple-acids gel containing 5% mandelic acid, as well as the safety of the formula. A total of 35 subjects were enrolled in this study. The evaluation indicators after 5% mandelic acid gel use were compared with the baseline values. 32 subjects completed thestudy. Compared with the baseline value, the number of pimples and the total number of acne lesions were significantly reduced after the use. The skin stratum corneum moisture content was higher than the baseline value; the skin trans-epidermal water loss was lower than the baseline value. The sebum content was lower than the baseline value; the erythema scoredecreased. A total of three cases experienced mild stimulus reactions. Under the conditions of this study, 5% madelic acid gel has the effect of reducing pimples, whiteheads and blackheads, and repairing the skin barrier with moisturizing and oil control effect. Meanwhile, 5% mandelic acid gel was well tolerated from acne skin.

T.M. Pinheiro, L. Kakuda, P.M.B.G Maia Campos, **Application of açaí extract for skin oily control: a clinical study**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

This study aimed to develop and evaluate the short-term clinical efficacy of cosmetic formulations containing açaí extract for skin oily control. A gel formulation was developed, added or not (vehicle) with 5% of açaí glycolic extract. A short-term clinical studyas carried out to evaluate the immediate effects of the formulations on stratum corneum water content, transepidermal water loss (TEWL), and sebum contente in the frontal region of the face of 15 study participants. In Region 1 (R1), the control group received no formulation, in Region 2 (R2), the vehicle formulation (V) was Applied, and in Region 3, the formulation containing açaí extract was applied (VA). After 3 hours of study a significant increase ($p<0.001$) in sebum content in the R1 and R2 regions was observed. However there was no significant change in the amount of sebum and an increase in the skin hydration was observed after 3 hours of application of formulation with açaí in the R3 region. Thus, the findings of this study highlight the potential benefits of açaí extract application in cosmetics to control oiliness and improve skin hydration, reinforcing the importance of rich brazilian biodiversity as a source of innovative natural active ingredients.

Y. Zheng, L. Wang, W. Ding, X. Li, B. Wang, J. Li, **Precision Skincare For Adolescent Acne Skin: A Systematic Approach Combining Lipidomics, Microbiome And Bioinformatic Data Mining To Identify Insightful Targets And Bioeconomic Ingredient Solutions**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Acne vulgaris is a prevalent chronic skin condition in adolescents, with nearly 80% affected, leading to potential long-term stigmatization and psychological distress. Despite its prevalence, the interplay between acne, the skin microbiome, and lipid metabolism is not well understood. This study aimed to elucidate these relationships and develop targeted cosmetic ingredients for adolescent acne. A cohort of 70 adolescents, with and without acne, was assessed using Visia for clinical skin features, high-throughput sequencing for microbiome analysis, and LC-MS/MS for lipidomics. Correlation and network pharmacology analyses identified 59 molecular targets, guiding the design of a novel composition consisting of Euglena gracilis extract, Saccharomyces/Laminaria saccharina ferment, and Ectoin. Cytological experiments validated the composition's effectiveness, showing increased cell survival in HaCaT cells and reduced NO content in RAW264.7 cells. In vivo assays demonstrated improved acne lesions, pimples, and skin erythema with the cosmetic product containing the composition. The study found a significant correlation between skin sebum content and acne severity, with high sebum levels disrupting the skin microbiome and being linked to increased levels of diacylglycerol, fatty acids, and triglycerides, particularly unsaturated fatty acids (FA26:2, FA16:2, FA24:2). The composition's design addresses two therapeutic targets: skin barrier repair by controlling sebum secretion and avoiding unsaturated fatty acids, and inflammation relief to address lesions and erythema. The successful application of the green-produced composition offers a promising approach for adolescent acne vulgaris treatment.

R. Kelkar, R. Rakshit, H. Pandya, M. Sajun, N. Sirkek, N. Matthews, B. Muller, F. Flament, **Characterizing the skin of Thai women and its glow by combining consumer assessments and instrumental methods**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

The main objective of this research work is to understand how skin glow is perceived by women in Thailand. Since the market is so rapidly evolving the consumers are clear about their expectations from skin care cosmetic products where they expect glowing skin as a key benefitwith whatever skin color they have. A hybrid consumer and instrumental evaluation study done on Thai women with

qualitative interviews of glow seeking women & then capturing the skin color, kinetics using instruments before and after using their skincare routine. The research helped us understand the attributes linked to ideal skin glow and key product deliverables required to meet the consumer expectation.

N. Matthews, F. Flament, P. Sewraj, A. Ncube, K. Molamodi, J. Gichuri, A. Bougnounou, D.A. Clemente, R. Kelkar, D. Garcia Mercurio, M. Sajun, B. Muller, **Defining and Decoding Skin Glow on African Skin: A Two-Part Hybrid Study**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Consumers have no strict definition of glowing skin, and there are no standardised instrumental measures or terminology to decode, assess, and quantify skin glow, especially among African populations. This two-part study investigated skin glow on the face and body of South African and Nigerian women aged 18-45 years, including the products they use to achieve this. Part 1 explored the vocabulary of skin glow among South African and Nigerian women using qualitativefocus groups (N=47) and quantitative interviews (N=131). Part 2 decoded and quantified skin glow using self-evaluation questionnaires and instrumental measures, focusing on bare skin and post-routine assessments of the face and body of South African participants (N=100). Findings from Part 1 showed that participants desired glow for face and body, however they used varying terminology to describe skin glow, utilised different products to achieve it, and experienced challenges that hindered their skin glow. Part 2 showed that most participants seeking glow desired a specific level of shine and hydration for their face and body. However, shifts existed between age and skin tone groups. There is a paucity of literature investigating consumer perceptions and clinical evaluation of African skin glow, and further study is required to bridge this gap.

I. Külkamp-Guerreiro, B. Matte, S. Berlitz, N. Silveira, F. Poletto, D. Mello, **Enhancing acne treatment efficacy and tolerability via nanodelivery of salicylic acid, bakuchiol and hyaluronic acid: an in vitro and in vivo study**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

This study aimed to develop a novel well-tolerated treatment with enhanced efficacy by delivering salicylic acid, bakuchiol and hyaluronic acid in nanocarriers. The in vitro activities were evaluated in a 3D equivalent skin model. The gene expression levels of TNF-α, IL-1, IL-6, IL-8, 5α-reductase, Ki67 aquaporin-3 were evaluated. A clinical safety study was conducted (n= 50) and a clinical efficacy study in 15 patients (30 days) with dermatological evaluation via lesion counting and instrumental sebum quantification. The nanosalicylic acid reduced the expression of IL-6, TNF-α, and 5α-reductase and increased the expression of Ki67. The reduction in the expression of IL-6 by thenanobakuchiol was 90% greater than the free active. The nanobakuchiol presentedsuperior inhibitory effects on the expression of IL-8, TNF-α and 5-α-reductase and increased collagen expression. The nano hyaluronic acid active ingredient increased the expression of aquaporin-3 by 75%. The nanoactives significantly outperformed the respective free active agents. The formulation inhibited IL-1 (87%), IL-6 (84%), TNF-α (78%) and 5-α-reductase (64%). No adverse events were observed after single or repeated applications. The number of lesions were reduced in 66% of patients with a significative oiliness reduction. The present strategy provides a smart cosmetic choice to acne management.

A. Pezzolo Pavanelli, A. Oliva de Palma, **Glycolipids for Skin Moisturizers**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

This study investigated the efficacy and safety of glycolipids, specifically acidic and lactonic sophorolipids, as sustainable biosurfactants in skin moisturizers. The research evaluated their use in body moisturizing creams and facial hydrating serums, focusing on stability, skin hydration, sebum control, and sensory attributes. Glycolipids demonstrated excellent compatibility with other formulation components, maintaining stability and providing significant skin hydration. Sebumetry results indicated a notable reduction in facial oiliness, particularly with lactonic sophorolipids. Human Repeat Insult Patch Test (HRIPT) confirmed the non-irritating nature of these biosurfactants. Moreover, they did not induce comedones or acne, confirming their non-comedogenic and nonacnegenic properties. Sensory evaluations highlighted superior sensory attributes for formulations with glycolipids. These findings support the potential of glycolipids as effective and environmentally friendly alternatives to conventional surfactants in skin care formulations.

M. Lambert, S. Wanatabe, H. Kaga, S. Okuda, E. Bou Samra, O. da Cruz, C. Rayee, R. Metha, V. Howe, A.-L. Bernard, M. Orita, A. Potter, **New biomimetic designed approach for sebum control in rinse-off mode, with high skin and environmental respect**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Inspired by a biomimetic approach, a new generation of high-performance cleanser has been created for long lasting sebum control. Two auto-foam cleanser formulae have been designed: one based on a glycolipid biosurfactant (di-rhamnolipid), the second based on rhamnolipid + poly-epsilon-lysine (rhamnolysine formula), for pro-deposition by coacervation in a rinse-off application. The 2 formulae were evaluated clinically on an oily skin panel (50% self-perceived sensitive skin). Significant short term and long-term sebum reduction up to 28 days were measured for both formulae, while the barrier function and hydration are maintained at a healthy level. Rhamnolysine formula retained the longest reduction in facial sebum overall. The selective anti-microbial property of the glycolipid (anti-bacterial versus C. acnes and anti-fungal versus Malassezia species, respectful for Staphylococcus species) was reproduced in the complete formula, which was also very respectful of the barrier function. This selective targeting of C. acnes and Malassezia associated with a high skin respect could be at the origin of this performing cleanser for oil control and long term sebum reduction of oily and reactive skins.

L. Dai, C. Huang, H. Yan, Y. Wang, Z. Lu, Y. Wu, **Study on the Anti-Lipogenesis Effect of Brown Rice Fermented by Saccharomyces Cerevisiae**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

In previous study, fermented brown rice filtrate (FBR) fermented by Saccharomyces Cerevisiae was compared with brown rice aqueous solution (BRS) and found that FBR exhibited bioactivity as an anti-aging agent. In this study, the anti-lipogenesis effects of FBR and BRS on SZ95 sebocytes were elucidated using Nile red staining and Triglyceride (TG) Content Kit. Immunofluorescence staining and real time RT-PCR were employed to evaluate hyaluronic acid (HA) levels as well as the expression of moisturizing proteins such as hyaluronic acid synthase2 (HAS2) and aquaporin 3 (AQP3). Biometric parameters were measured usingCorneometer CM825, Sebumeter, and VISIA-7 in vivo. FBR showed an anti-proliferation ability in SZ95 sebocytes and significantly inhibited the 5α-reductase activity and dihydrotestosterone (DHT)/arachidonic acid (AA)-induced lipogenesis. Furthermore, FBR significantly increased the level of HA and the expression of HAS2 and AQP3 in HaCaT cells. In clinical studies, volunteers with oily skin were instructed to use a lotion containing 80% (v/v) FBR for 4 weeks. The skin sebum content and pore numbers were significantly reduced compared to the control group, with no change in the stratum corneum water content and TEWL value. This indicates FBR fermented by Saccharomyces Cerevisiae could be a candidate for an anti-sebum active ingredient to serve in functional cosmetic applications.

D. Silva, A. Paiva, T. Mascena, M. Boro, T. Isojima, R. Mogaki, M. Leininger, A. Requier, A. Bogbnounou, L. Guerin, O. Isard, R. Hara, T. Ichinokawa, **How to improve the well-being of acne sufferers in hot and humid climates? - A matte visual, fresh texture, and non-oily feel approach**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Acne is one of the top skin concerns for young people, including Gen Z, affecting approximately 90% of teens. In the presence of organic acids, conventional thickeners require high concentrations to form a gel. This tends to result in a heavy texture and sticky skin finish and produces noodles after application. We have succeeded in formulating an anti-acnes gel with a semi-transparent sherbet-like appearance using a novel thickener, partially neutralized carboxyvinyl polymer sodium salt. A gel type anti-acne formula with a sherbet-like appearance, showed a noticeable texturechange during application, less sticky feel after application, and less noodling with a considerably low viscosity, compared to a formulation with a conventional thickener. In the clinical studies, the formulation showed not only good anti-acnes performances in clinical aspects but also gained excellent consumer perceptions. Such formulation is suitable for hot and humid climates, such as those of Southeast Asia and equatorial Latin America, including Brazil.

C.R.A. Malafaia, M.B. Berlim, S. Fanan, N.C.C.Silva, D.W. Barreto, **Non-Clinical and Clinical Evaluation of the Anti-Inflammatory and Sebum-Regulating Effects of Algae on Scalp Health**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Seaweeds are among the most sustainable vegetables globally, as they do not compete with food crops, do not consume water or fertilizers, require no pesticides, and have a high biomass production capacity. *Kappaphycus alvarezii* and *Fucus vesiculosus* are rich in sulfatedpolysaccharides with immunomodulatory activity. This study aims to prove the anti-inflammatory and sebum-regulating effects of these seaweeds on the scalp. In vitro assays were conducted using human cells such as macrophages, dermal papilla cells, fibroblasts, keratinocytes, and sebocytes atdifferent concentrations. A clinical trial with 40 volunteers was conducted over 90 days. The M1 macrophage profile showed increased gene expression for IL-6 and IL-1β and a reduction for IL-10 and TGF-β, while M2 exhibited decreased IL-6 and IL-1β and increased IL-10 and TGF-β. Dermal papilla cell assays stimulated the synthesis of β-catenin, IGF, EGF, and TGF-β. The mechanism of action for sebum regulation showed

a 58.41% decrease in total lipid production. Regarding 5-alpha-reductase gene expression, the sample showed a 517.61% reduction compared to the insulin-treated group. Fucoidan, a polysaccharide in Fucus vesiculosus, may compete with LPS to form a complex with TLR4 during sebocyte treatment. The results indicate that this aqueous extract effectively reduces sebum production and redness while increasing scalp hydration, demonstrating its potential in skincare applications.

C. Chen, Y. Ke, **Picosecond Alexandrite Laser With Diffractive Lens Array Combined With Long-Pulse Alexandrite Laser for the Treatment of Facial Photoaging in Chinese Women: A Retrospective Study**, Skin Research & Technology, Volume 30, Issue 10, October 2024

Background and objectives: Facial photoaging is a type of facial skin aging induced mainly by exogenous factors (ultraviolet radiation) and often manifests itself in the form of hyperpigmentation, telangiectasia, roughness, increase in fine lines/wrinkles, and enlarged pores. Recently, picosecond lasers have become an emerging option for the treatment of facial photoaging, and longpulse alexandrite lasers (LPAL) have demonstrated promising potential in the treatment of photoaging-related symptoms. This study aimed to evaluate the efficacy and safety of picosecond alexandrite laser (PSAL) with diffractive lens array (DLA) combined with LPAL for facial photoaging. Methods: This is a retrospective study of 20 Chinese female patients with facial photoaging who received PSAL with DLA combined with LPAL during a 1-year period. All patients were treated every 4 weeks for a total of three treatments. Objective indicators of facial photoaging and patient satisfaction were evaluated before each treatment, and pain scores and adverse effects were recorded after each treatment. Results: Compared with baseline, patients showed significant differences in all facial photoaging indices ($p < 0.01$). After receiving three treatments, there was a 20.1% decrease in the pigmentation index, a 23.9% decrease in the erythema index, a 34.5% decrease in the texture index, a 28.4% decrease in the fine lines index, a 56% decrease in the pore index, a 9.3% elevation and a 17.1% decrease in elasticity R2 and F4, respectively, and a 55% decrease in sebum content. The mean satisfaction score for the three treatments was 4.67 (3.33, 5.00), and the mean visual analogue scale (VAS) pain score was 7.00. No serious adverse effects such as postinflammatory hyperpigmentation (PIH), hypopigmentation, or blistering were observed at the treatment site during the treatment period. Conclusion: PSAL with DLA combined with LPAL for the treatment of facial photoaging with significant efficacy, high patient satisfaction, and minimal adverse effects.

S. Behnke, A. Schlick, **Ausgeglichene Haut: Microbiom-freundliche Lösung zur Talgreduzierung**, söwf journal, 10/24

Eine wichtige Strategie zur Bekämpfung von Akne und Hautunreinheiten ist die Regulierung der Talgproduktion, um Porenverstopfung, das Wachstum von *Cutibacterium acnes* und anschließende Entzündungen zu verhindern. In dieser Studie wird TRIcare™ CG, ein multifunktionaler Inhaltsstoff, anhand von In-vitro- und /In-vivo-Versuchen als Lösung fur Formulierer zur Regulierung der Talgproduktion und von Unreinheiten auf mikrobiomfreundliche Weise bewertet. *In vitro*-Studien belegen die Verringerung der Aktivitäat der 5α-Reduktase, die für die Kontrolle der Talgproduktion entscheidend ist. Klinische *In-vivo*-Studien zeigen eine signifikante Verringerung der Talgmenge, der Rötung und der Porengröße über einen Zeitraum von 14 Tagen, was die Eignung des Wirkstoffs zur Bekampfung von Akne und anderen Unreinheiten bestatigt. Daruber hinaus belegen Studien zur Mikrobiomfreundlichkeit und Tests zum Umgang mit Konservierungsstoffen die Vorteile fur die Hautflora und das Produktschutzsystem. TRIcare™ CG erweist sich als moderne multifunktionale Lösung für Formulierer, die die Auslöser von Akne und Unreinheiten bekämpft, indem sie die Talgproduktion reguliert und Rötungen und Porengrößee im Einklang mit dem Mikrobiom der Haut reduziert.

P. Moussou, F. Henry, A. Courtois, **Improved mushroom sourcing yields enhanced pore minimizer**, hpc today, Vol. 19(5) 2024

Enlarged pores are a widespread problem in skin care. A long-standing bioactive ingredient to address this issue is derived from the mushroom Fomes officinalis. Due to declining populations, and aligning with eco-conscious practices, sourcing has shifted from wild harvesting to solidstate fermentation, resulting in an advanced pore minimiser. This new generation of bioactive ingredient was shown to immediately reduce pore size and excess oil while maintaining skin hydration. Clinical studies demonstrated an immediate measurable and perceivable pore tightening effect.

M.N. Patel, N.K. Patel, A.M. Merja, S. Patnaik, **Clinical Evaluation of the Efficacy, Safety, and In-Use Tolerability of a Diacnemide™-Containing Acne Kit (Facial Serum and Cleanser) Regimen for the Synergistic Management of Facial Acne in Adults**, Cureus, 2024 Sep 23;16(9):e69968

Introduction: Acne is a common inflammatory condition characterized by comedones, papules, and pustules, often resulting from increased sebum production influenced by hormones such as insulin-

like growth factor-1 and androgens. Factors like Cutibacterium acnes, medications, sun exposure, cosmetics, and genetics exacerbate acne. This study aims to assess the safety and effectiveness of a novel acne treatment regimen, including a cleanser and serum containing Diacnemide™ (manufactured by Beaucience India Private Limited, Faridabad, India), in improving acne symptoms in adults. Methods: This prospective, interventional, open-label, single-center, single-arm clinical study was designed to evaluate the safety, efficacy, and in-use tolerability of the test treatment regimen (serum + cleanser) for facial acne. Ethical approval was obtained from the Independent Ethics Committee, and all participants provided written consent. The study assessed changes in the severity of acne by dermatological assessment using the Investigator's Global Assessment (IGA) scale, changes in inflammatory and noninflammatory lesions, skin hydration, sebum levels, and facial blemishes using various bioinstrumentations from Courage+Khazaka Electronic GmbH, Germany - Visiopor® PP34N, Corneometer® CM 825, Sebumeter® SM 815, and Mexameter® MX 18, respectively. Evaluations were conducted at baseline, T15 minutes, day 8, and day 15 post-usage. Statistical analyses were performed using SPSS (version 29.0.1.0) and Microsoft® Excel 2019 software, with results reported using p-values and confidence intervals at a 5% significance level. Results: Porphyrin measurements showed significant reductions over time, with a 27.18% decrease in quantity and a 39.86% reduction by day 15 ($p < 0.0001$). Porphyrin values dropped by 2.61% after 15 minutes and 7.82% by day 15 ($p < 0.05$). Skin hydration increased significantly, with a 97.54% increment after 15 minutes and a 102.74% increment byday 15 ($p < 0.0001$). Sebum levels were restored to normal levels with the dry skin observed at baseline, showing a 34.45% improvement on day 8 and 75.75% by day 15 ($p < 0.0001$). Facial dark spots were reduced by 10.66% by day 8 and 14.64% by day 15 ($p < 0.0001$), and erythema levels decreased significantly. Acne severity showed notable improvement, with 50% of the subjects having moderate acne at baseline, reduced to 20.69% with mild acne, and 79.31% with almost clear skin by day 15. Subject responses indicated high satisfaction, with 100% agreeing on the test treatment's effectiveness in reducing acne, oiliness, and inflammation and improving hydration and skin texture. Conclusion: The ThriveCo acne regimen (serum + cleanser) manufactured by Anveya Living Private Limited, India, is both effective and safe for treating facial acne in healthy adults with acne. It significantly reduces porphyrin size and quantity, indicating a strong inhibition of P. acnes, and visibly improves dark spots and skin hydration. The components - Diacnemide™ and zinc pyrrolidone carboxylic acid - in the cleanser regulate sebum production and provide anti-inflammatory benefits, while the serum, containing Diacnemide™ and niacinamide, enhances skin barrier function and balances lipids. The synergistic effects of the ThriveCo Goodbye Acne Cleanser and Serum in this regimen effectively target surface bacteria like C. acnes and deeper follicular issues, promoting healthier skin and reducing acne-related symptoms.

A. Charpentier, **K-Beauty- New challenges around claims & substantiation**, Cosmetic Business, September 2024

Korean beauty emerged as a major actor in product cosmetics, setting new standards for efficacy, ingredients and product diversity. Fueled by social media and a growing interest in skin care, K-beauty blends centuries-old tradition, culture and ancient practices with modem scientific advancements in research and formulations. Additionally, Korean brands, as well as OEM/ODMs, are the driving force behind new marketing concepts, quickly picking up on the weak signals of the expectations of well-informed beauty consumers.

J. Zhang, F. Wu, J. Wang, Y. Qin, Y. Pan, **Unveiling the Metabolomic Profile of Oily Sensitive Skin: A Non-Invasive Approach**, Int. J. Mol. Sci. 2024, 25, 11033

Skin barrier impairment is becoming increasingly common due to changes in lifestyle and modern living environments. Oily sensitive skin (OSS) is a condition that is characterized by an impaired skin barrier. Thus, examining the differences between OSS and healthy skin will enable a more objective evaluation of the characteristics of OSS and facilitate investigations of potential treatments. Initially, a self-assessment questionnaire was used to identify patients with OSS. Biophysical measurements and LAST scores were used to determine whether skin barrier function was impaired. Epidermal biophysical properties, including skin hydration, transepidermal water loss (TEWL), sebum content, erythema index (EI), and a* value, were measured with noninvasive instruments. We subsequently devised a noninvasive D-square sampling technique to identify changes inthe skin metabolome in conjunction with an untargeted metabolomics analysis with an Orbitrap Q ExactiveTM series mass spectrometer. In the stratum corneum of 47 subjects, 516 skin metaboliteswere identified. In subjects with OSS, there was an increase in the abundance of 15 metabolitesand a decrease in the abundance of 48 metabolites. The participants with OSS were found to have the greatest disruptions in sphingolipid and amino acid metabolism. The results revealed that an impaired skin barrier is present in patients with OSS and offers a molecular target for screening for skin barrier damage.

B.L. Lua, J. Robic, **Yellowness in skin complexion: Analysis of self-perception of women in China evaluated against clinical parameters of yellowness**, Skin Research and Technology: Volume 30, Issue 8, August 2024

Background: Skin “yellowness” is an abstract and subjective term, without a definitive measurement protocol. Objectives were to analyze Chinese women’s self-perception of skin yellowness and associated parameters and identify objective clinical measurements that correlate with these perceptions. Methods: Following focus group discussions, criteria for skin yellownesswere defined, and validated by volunteer rankings of facial images. A typology study of 185 women was performed. Participants were grouped into yellow (Color Uniformity, Brightness and Transparency (CUBT) yellow scale grade > 3, chromameter b* value > 16) and non-yellow (CUBT yellow scale grade < 2, b* value < 14) groups. Participants selfevaluated their skin on yellowness, transparency, skin uniformity, dullness, radiance, oiliness, and texture. Expert assessments were performed to grade sebaceous pores, ocular area pigmentation, pigmentary spots and CUBT scores. Instrumental analysis of the skin was employed using corneometer, sebumeter, mexameter chromameter, and AGE reader. Results: Women in the yellow group self-evaluated their skin as significantly duller, less uniform, and less radiant than women in the non-yellow group ($P \leq 0.05$). Higher levels of ocular area pigmentation and lower facial skin uniformity and brightness ($P < 0.001$) were observed in women with yellow skin. CUBT expert grading showed lower pink skin color, but significantly higher beige, yellow, and olive pigmentation ($P \leq 0.05$) in women in the yellow skin group. Melanin and b* values were significantly higher in women with yellow skin while L value was significantly lower. Conclusion: Self-perceived skin yellowness in Chinese women correlates to chromameter and mexameter measurements, as well as expert evaluation of ocular pigmentation and CUBT parameters.

B.L. Lua, L. Ruan, Y. Lyu, S. Liu, **Understanding the causes of skincare product pilling**, Skin Research and Technology: Volume 30, Issue 8, August 2024

Background: Skincare and makeup “pilling” is an unsightly and undesirable phenomenon whereby skincare such as moisturizers or foundation ball up to form flakes on the skin. To date, the causes of skincare product pilling have not been studied. This study aimed to examine the relationship between skin physiology and pilling potential of sunscreen and foundation (the two products most reported by consumers to cause pilling). This study also examined the effects of product applicationmethods on pilling. Materials and methods: 528 female volunteers fromGuangzhou, China, aged between 20 and 49 years, underwent various clinical skin assessments, followed by three steps of product layering. Pilling was assessed after each product application step. Results: 217 volunteers (41%) experienced pilling. The majority of pilling (n = 655 events) occurred following sunscreen application, while only a few pilling events (n = 35) occurred with foundation. Foundation improved pilling caused by sunscreen in 98.9% of cases. Volunteers experiencing pilling with both sunscreen and foundation had significantly lower facial skin hydration and oiliness, higher pH, and smoother skin texture ($P < 0.05$). Two application methods, rubbing of products in circular and linear motions, yielded the highest numbers of pilling events. Conclusion: This study has provided the first insights into the causes of pilling. Sunscreen is a promoter of pilling, while foundation may resolve sunscreen-induced pilling in many cases. Skin physiology, particularly drier, smoother skin with higher pH, and product application methods are likely contributing factors to this undesirable phenomenon.

E. Rahman, P. Rao, W. Philipp-Dormston, W. R. Webb, P.E. Garcia, S. Ioannidis, N. Kefalas, A. Kajaia, L. Friederich, N. Yu, K. Wang, A. Parikh, A.R.T. Almeida, J.D.A. Carruthers, A. Carruthers, A. Mosahebi, W. Wu, G. Goodman, **Intradermal Botulinum Toxin A on Skin Quality and Facial Rejuvenation: A Systematic Review and Meta-analysis**, Plast Reconstr Surg Glob Open 2024, August

Background: Botulinum toxin A (BTxA) has gained popularity as a nonsurgical aesthetic treatment for skin rejuvenation. However, previous studies on intradermal BTxA have shown inconsistent results. This systematic review and meta-analysis with trial sequential analysis aimed to assess the efficacy and safety of intradermal BTxA for facial rejuvenation. Methods: Following PRISMA guidelines, a comprehensive search was conducted in various databases from January 2008 to March 2023. Outcome measures included sebum production, pore size, skin hydration, skin texture, erythema index, facial wrinkles, and facelift. Eligible studies included human-based clinical trials and prospective cohort studies published in English, focusing on healthy populations requiring facial rejuvenation. Two authors independently screened the titles and abstracts, followed by a full-text review to determine study eligibility. Data extraction and quality assessment were performed by two authors using predefined criteria. Results: Ten studies met the inclusion criteria, including five randomized controlled trials and five prospective cohort studies with 153 participants. Studies revealed positive effects of intradermal BTxA on various outcome measures related to facial rejuvenation. These effects included improvements

in sebum production, pore size, erythema index, facial wrinkles, skin texture and elasticity, and overall facelift but not skin hydration. All failed to reach the required information size in the trial sequential analysis. Conclusions: Findings suggest positive outcomes in multiple attributes of skin quality and facial rejuvenation. However, more high-quality research is needed to establish definitive conclusions. These findings contribute to the evidence base for nonsurgical aesthetic treatments, emphasizing the importance of ongoing research in this field.

D. Jaalouk, A. Pulumati, Y.A. Algarin, J. Humeda, D.J. Goldberg, **The impact of energy-based devices on sebum in acne vulgaris: A systematic review**, J Cosmet Dermatol. August 2024

Background: Acne vulgaris (AV) is a widespread inflammatory skin condition associated with increased sebum production, abnormal keratinization, bacterial overgrowth, and inflammation. Overactive sebaceous glands (SGs) produce excess sebum, promote Cutibacterium acnes growth, and affect acne development. Energy-based treatments (EBDs), including light therapy, photodynamic therapy (PDT), lasers, and radiofrequency (RF) devices, have emerged as effective treatment options. As the use of EBDs becomes more widespread, it is imperative to understand their effects on skin parameters, such as sebum, in AV. Methods: Searches were conducted in Embase, PubMed, Web of Science, and the Cochrane Library. The studies included were randomized and nonrandomized trials on facial AV that used EBDs and featured objective casual sebum level (CSL) measurements via Sebumeter. Data synthesis involved percentage reductions in CSL at follow-ups compared to baseline. Results: Twenty-three studies were analyzed. PDT and RF consistently reduced CSLby 30%–40% and 30%–35%, respectively. Laser therapy showed lesser reductions, whereas light therapy varied significantly and studies had a high risk of bias. All EBD therapies were more effective than no treatment and PDT was superior to light monotherapy. Laser therapy combined with fractional microneedling radiofrequency (FMR) or as a standalone was more effective than laser alone. Conclusion: Noninvasive sebum measurement provides valuable insights into AV treatment efficacy. PDT, lasers, especially the 1450-nm diode laser, and FMR are promising for reducing sebum. Standardization of measurement techniques and further research are vital for enhancing treatment personalization, reducing side effects, and improving AV management.

C.S. Barros-Oliveira, M.J. Melo de Jesus, V.C Campos, R. Salvatori, A. Antunes de Souza Araújo, R. Fernandes Soares Neto, A. Bartke, V.O. Batista, A. Schneider, K.R. Villar-Gouy, M.M. Masternak, Â.C. Leal, L.B. Santos, C.R.P. Oliveira, E.G. Santos, D.A. Oliveira Simões, B. de Santana Silva, M.H. Aguiar-Oliveira, **Skin assessment in congenital untreated isolated GH deficiency**, Endocrine, 2024 Jun;84(3): p. 1116-1124

Purpose: The separation between the inside and outside through the skin was fundamental for the evolution of prevertebrates, which grow through extrapituitary circuits, to vertebrates, which grow through the somatotrophic axis, namely pituitary growth hormone (GH). and circulating IGF1.Individuals with untreated isolated growth hormone (GH) deficiency (IGHD) due to a mutation in the GH-releasing hormone receptor (GHRH) gene, residing in Itabaianinha, Brazil, are vulnerable to skin cancer and have reduced sweating. However other aspects of their skin physiology are still unknown. Our objectives were to evaluate the number of skin cancers, skin aging, and functional aspects of the skin in this IGHD cohort. Methods: Twenty-six IGHD individuals and 26 controls matched by age, sex, ethnicity, and occupation were submitted to a biochemical, dermatological and a functional skin assessment by the Multi Probe Adapter Cutometer® MPA 580. Results: There was no difference in the number of skin cancers and in the degrees of photodamage between the groups. The melanin content in the forearm was similar between the groups but was lower in the buttocks ($p = 0.005$), as well as skin resistance ($p < 0.0001$) and elasticity ($p = 0.003$), lower in the IGHD. There was no difference in hydration and sebum content between the two groups. Conclusion: IGHD is apparently associated with a neutral profile in terms of skin cancer and photodamage, with similar melanin on the forearm and lower buttocks, lower skin resistance and elasticity, with hydration and sebum similar to controls.

S. Fallah Pakdaman, A. Samadi, M. Fattahi, A. Naeimifar, F. Amiri Ardehali, Y. Ketabi, S.A. Nasrollahi, A. Firooz, **Fabrication and efficacy assessment of combination of brimonidine and ivermectin for treatment of papulopustular rosacea**, J Cosmet Dermatol. May 2024

Background & Aim: Rosacea is a chronic inflammatory, multifactorial disease for which combination therapy could be an effective treatment.In this study, we evaluate the effect of the combination therapy of brimonidine 0.33% and ivermectin 1% as a single cream for the treatment of papulopustular rosacea. Method: A stable and appropriate formulation was prepared by adding the aqueous phase to the lipid phase while being stirred. The stability and physicochemical properties of the formulation were evaluated under accelerated conditions. Twelve patients (36–60 years) with mild to moderate papulopustular rosacea and a Demodex count of five or more were treated with the

combination of brimonidine 0.33% and ivermectin 1% cream. Clinician's Erythema Assessment (CEA), Patients Self-Assessment (PSA), skin erythema (ΔE) and lightness (ΔL), and skin biophysical parameters including transepidermal water loss (TEWL), skin hydration, pH, and sebum content, as well as erythema and melanin index and ultrasound parameters, were measured before treatment and 4 and 8 weeks after. Adverse drug reactions were also recorded Results: CEA and PSA decreased significantly from 3 to 2 after 8 weeks, respectively (p-value = 0.014 for CEA and 0.010 for PSA). ΔE and ΔL, as well as skin erythema index and TEWL improved after 8 weeks of treatment ($p < 0.05$). Two patients withdrew from the study in the first week because of local adverse effects; one developed flushing following treatment and left the investigation after 4 weeks and another patient withdrew from the study after 4 weeks due to deciding to become pregnant. Conclusion: Eight-week treatment with the combination of brimonidine 0.33% and ivermectin 1% was shown to be effective for improvement of erythema and inflammatory lesions in mild to moderate papulopustular rosacea.

L. Schoeffel E. Besic Gyenge, C. Degl'Innocenti, S. Hettwer, B. Suter, B. Obermayer, **Holistically Derailing the Sensitive Scalp 'Rollercoaster',** Cosmetics & Toiletries, May 2024

On many levels, the scalp is different from other parts of the body. It is unique in its high density of terminal hair growth and for its numerous sebaceous glands responsible for sebum production. These secretory glands, typically attached to hair follicles, release sebum into the infundibula via sebaceous ducts. The sebum further progresses to the skin surface and coats it to form a hydrophobic protective layer.

B. Aral, **Testing Tactics: Approaches to Measure Scalp Comfort and Care**, Cosmetics & Toiletries, May 2024

The global hair and scalp care market is expected to generate a revenue of about $94 billion in 2024, with an anticipated CAGR of 2.8% in the next four years. Anti-dandruff, hair loss, dry and itchy scalp, dry and dull hair, and white/gray hair product categories dominate, while products targeting scalp comfort and care have emerged as their own sub-category thanks to a few combined factors.

C. Chiaratti, V. Abbondandolo, **Hair Skinification - The cosmetic revolution for a new era of hair care**, HPC Today, Vol. 19(2), 2024

The concept of scalp care as hair treatment decodes into the idea that we should devote the same care to the skin of our head as we do to the skin of our face. From exfoliation to hydration to the use of anti-ageing ingredients, the scalp is now reaping all the benefits of a customised facial treatment, thus improving hair growth and appearance. Developing an integrated, multiinstrumental approach to benefit from the synergies of different expertise is essential to support the claims of increasingly sought-after hair care products.

A. Perwez, I. Mohd, A. Asad, M. Haya, ***Cananga odorata*** **(Ylang-Ylang) Essential Oil Containing Nanoemulgel for the Topical Treatment of Scalp Psoriasis and Dandruff**, Gels, 2024, *10*, 303.

This research aimed to evaluate the effcacy of a nanoemulgel (NE) containing *Cananga odorata* (Ylang-Ylang) oil for managing scalp psoriasis and dandruff through various assessments. The study involved phytochemical screening, characterization, stability testing, in vivo performance evaluation, dermatokinetic analysis, central composite rotatable design (CCRD) optimization, in vitro release profling, and antioxidant and antimicrobial activity assessment of the NE. The NE exhibited excellent stability and maintained physical parameters over a three-month period. In vivo studies showed no skin irritation, maintenance of skin pH (4.55 to 5.08), and improvement in skin hydration (18.09 to 41.28 AU) and sebum content (26.75 to 5.67 mg/cm2). Dermatokinetic analysis revealed higher skin retention of *C. odorata* in the NE (epidermis: 71.266 µg/cm2, dermis: 60.179 µg/cm2) compared to conventional formulations. CCRD optimization yielded NE formulations with the desired particle size (195.64 nm), entrapment effciency (85.51%), and zeta potential (-20.59 mV). In vitro release studies indicated sustained release behavior, and antioxidant and antimicrobial properties were observed. This study demonstrates the stability, skin-friendliness, therapeutic benefts, and controlled release properties of the NE. The NE presents a promising option for various topical applications in treating bacterial and fungal diseases, potentially enhancing drug delivery and treatment outcomes in pharmaceuticals and cosmetics.

L. Kakuda, P.M.B.G. Maia Campos, W.P. Oliveira, **Development and Effcacy Evaluation of Innovative Cosmetic Formulations with *Caryocar brasiliense* Fruit Pulp Oil Encapsulated in Freeze-Dried Liposomes**, Pharmaceutics 2024, 16, 595

Encapsulation and drying technologies allow the engineering of innovative raw materials from plant biodiversity, with potential applications in pharmaceutical and cosmetic felds. Lipid-based

nanoencapsulation stands out for its effciency, ease of production, and versatility in encapsulating substances, whether hydrophilic or lipophilic. This work aimed at encapsulating pequi oil in liposomes and freeze-dried liposomes to enhance its stability and functional benefts, such as skin hydration and anti-aging effects, for use in innovative cosmetic formulations. Pequi oil—extracted from the *Caryocar brasiliense* fruit pulp, a plant species from Brazilian plant biodiversity—is rich in secondary metabolites and fatty acids. Liposomes and dried liposomes offer controlled production processes and seamless integration into cosmetic formulations. The physicochemical analysis of the developed liposomes confrmed that the formulations are homogeneous and electrokinetically stable, as evidenced by consistent particle size distribution and zeta potential values, respectively. The geltype formulations loaded with the dried liposomes exhibit enhanced skin hydration, improved barrier function, and refned microrelief, indicating improvements in skin conditions. These results highlight the potential of dried liposomes containing pequi oil for the development of innovative cosmeceutical products. This research contributes to the valorization of Brazilian biodiversity by presenting an innovative approach to leveraging the dermatological benefts of pequi oil in cosmetic applications.

S. Srivastava, S.F. Huang, M.S. Jagtap, **Assessment of the Effect of Rehmannia glutinosa Leaf Extract in Maintaining Skin Health: A Proof-of-Concept, Double-Blind, Randomized, Placebo-Controlled Clinical Trial**, Clinical, Cosmetic and Investigational Dermatology 2024:17, p. 863-875

Purpose: A double-blind, placebo-controlled, randomized, proof-of-concept trial aimed to evaluate the effcacy and safety of Verbasnol™ [*Rehmannia glutinosa* Libosch leaf-based extract (RGLE)] in females, with moderate to severe acne vulgaris. Participants and Methods: Twenty-two females aged 18 to 35 years having moderate to severe acne with Global Acne Grading System (GAGS) scores of 19 to 38 were included in the study and were randomized in a 1:1 ratio to receive either one capsule (100 mg/day) of RGLE or placebo orally after breakfast for 56 days. The primary outcome was a change in acne severity measured by the GAGS compared to the placebo on day 56. The secondary outcomes were changes in the number of inflammatory acne lesions, facial sebum secretion, quality of life, local pain and itching, skin wrinkle severity, and other skin characteristics, including radiance, luminosity, smoothness, texture, frmness, and hydration. Additionally, the percentage of responders and global tolerability and effcacy were evaluated. Results: The mean GAGS score was reduced by 21.72% and 14.20% on day 28 in RGLE (n=10) and placebo groups (n=12), respectively, which further reduced in both groups on day 56. The RGLE group reported better improvement in other skin characteristics on day 56. No safety or tolerability concerns were reported for the extract. RGLE reduced acne and improved the skin quality in females compared to placebo as early as 28 days of supplementation. Conclusion: RGLE supplementation at a dose of 100 mg/day has provided a clinically relevant decrease in acne severity and improved the skin hydration and quality of life of the participants with acne after 56 days of dose administration.

M. Giakoumaki, G.I. Lambrou, D. Vlachodimitropoulos, A. Tagka, A. Vitsos, M. Kyriazi, A. Dimakopoulou, V. Anagnostou, M. Karasmani, H. Deli, A. Grigoropoulos, E. Karalis, M. Christou Rallis, H.S. Black, **Type I Diabetes Mellitus Suppresses Experimental Skin Carcinogenesis**, Cancers 2024, 16, 1507

This study explores the previously uncharted territory of the effects of ultraviolet (UV) radiation on diabetic skin, compared to its well-documented impact on normal skin, particularly focusing on carcinogenesis and aging. Employing hairless SKH-hr2, Type 1 and 2 diabetic, and nondiabetic male mice, the research subjected these to UV radiation thrice weekly for eight months. The investigation included comprehensive assessments of photoaging and photocarcinogenesis in diabetic versus normal skin, measuring factors such as hydration, trans-epidermal water loss, elasticity, skin thickness, melanin, sebum content, stratum corneum exfoliation and body weight, alongside photo documentation. Additionally, oxidative stress and the presence of hydrophilic antioxidants (uric acid and glutathione) in the stratum corneum were evaluated. Histopathological examination post-sacrifce provided insights into the morphological changes. Findings reveal that under UV exposure, Type 1 diabetic skin showed heightened dehydration, thinning, and signs of accelerated aging. Remarkably, Type 1 diabetic mice did not develop squamous cell carcinoma or pigmented nevi, contrary to normal and Type 2 diabetic skin. This unexpected resistance to UVinduced skin cancers in Type 1 diabetic skin prompts a crucial need for further research to uncover the underlying mechanisms providing this resistance.

B. Walzel, A. Herrmann, B. Senti, T. Shahzad, U. Batz, S. Bänziger, **A perfect duo: bakuchiol and phospholipids**, PERSONAL CARE MAGAZINE, Volume 25, Issue 4, April 2024, p. 83-86

Bakuchiol has recently gained attention as a functional analog and natural alternative to topical retinoids. It was found to have retinol-like functionality sharing someof retinol's anti-ageing, anti-acne, and hyperpigmentation properties, while having fewer adverse cutaneous side effects than retinol.

Unsaturated phospholipids are ideal partners for bakuchiol. They are versatile ingredients offering both technical and physiological benefits to high-end skincare products. As essential constituents of human cell membranes they are highly biocompatible ingredients with proven skin care benefits. In addition, they serve as penetration enhancers for active substances.Here we show that a combination of bakuchiol and unsaturated phospholipids (tradename BakuLipid®) offers retinollike activity with superior performance over bakuchiol formulations without phospholipids, perfectly matching consumer expectations that seek more natural, more effective, and better tolerated products. BakuLipid is a combination of two active componentsbakuchiol and unsaturated phospholipids for a twofold activity. Plant-based bakuchiol is a skin-friendly retinol alternative. Unsaturated phospholipids are natural penetration enhancers with rejuvenating effects. Combined, they form the perfect active for blemish-free and youthful skin.

J. Robic, W. Lata, A. Nkengne, A. Bigouret, K. Vie, **The impact of air pollution on the facial skin of Caucasian women using real-life pollutant exposure measurements**, Skin Research & Technology, March 2024

Background: To date, studies examining the effect of air pollution on skin characteristics have relied on regional pollution estimates obtained from fixed monitoring sites. Hence, there remains a need to characterize the impact of air pollution in vivo in realtime conditions. We conducted an initial investigation under real-life conditions, with the purpose of characterizing the in vivo impact of various pollutants on the facial skin condition of women living in Paris over a 6-month period. Materials and methods: A smartphone application linked to the Breezometer platform was used to collect participants' individual exposures to pollutants through the recovery of global positioning system (GPS) data over a 6-month period. Daily exposure to fine particulate matter (PM 2.5 µm and PM 10 µm), pollen, and air quality was measured. Facial skin color, roughness, pore, hydration, elasticity, and wrinkle measurements were taken at the end of the 6-month period. Participants' cumulated pollutant exposure over 6 months was calculated. Data were stratified into two groups (lower vs. higher pollutant exposure) for each pollutant.Results: 156 women (20–60 years-old) were recruited, with 124 women completingthe study. Higher PM 2.5 µm exposure was associated with altered skin color andincreased roughness under the eye. Higher PM 10 µm exposure with increased wrinkles and roughness under the eye, increased pore appearance, and decreased skin hydration. Exposure to poorer air quality was linked with increased forehead wrinkles and decreased skin elasticity, while higher pollen exposure increased skin roughness and crow's feet. Conclusion: This study suggests a potential correlation between air pollution and facial skin in real-life conditions. Prolonged exposure to PM, gases, and pollen may be linked to clinical signs of skin ageing. This study highlights the importance of longermonitoring over time in real conditions to characterize the effect of pollution on the skin.

L. Ma, H. Zhang, Q. Jia, T. Bai, S. Yang, M. Wang, Y. Li, L. Shao, **Facial Physiological Characteristics and Skin Microbiomes Changes are Associated with Body Mass Index (BMI)**, Clinical, Cosmetic and Investigational Dermatology 2024:17, p. 513–528

Background: Overweight and obesity have become public health problems worldwide. An increasing number of research works are focusing on skin physiology and the manifestations of obesity-associated skin diseases, but little is known about the correlations between body mass index (BMI), facial skin physiological parameters, and the facial skin microbiome in healthy women. Objective: To investigate the correlations between BMI, facial skin phyiological parameters and facial bacteria and fungi in 198 women aged 18 to 35 years in Shanghai. Methods: According to the international BMI standard and Chinese reference standard, subjects were divided into three groups, "lean" B1, "normal" B2 and "overweight" B3, and the physiological parameters of facial skin were measured by non-invasive instrumental methods, and the skin microbiota was analyzed by 16S rRNA and ITS high-throughput sequencing. Results: Compared with the skin physiological parameters of the normal group, those of the overweight group exhibited a significant increase in trans-epidermal water loss (TEWL), which indicated that the skin barrier was impaired. The skin haemoglobin content was signifcantly increased, and skin surface pH was signifcant decreased in those with a high BMI. Furthermore, α-diversity, analysed using the Shannon, Chao, Sobs, and Ace indexes, was increased in the overweight group, suggesting that the diversity and species abundance of facial bacterial and fungal microbiota were also increased. Moreover, the overweight group had higher abundances of *Streptococcus*, *Corynebacterium*, *Malassezia*, and *Candida*. Notably, skin surface pH was signifcantly and negatively correlated with the relative abundances of *Malassezia*, *Candida*, and *Cladosporium*. Besides, the abundance of Malassezia was positively associated with the abundances of *Staphylococcus* and *Corynebacterium*. Conclusion: These results indicate that BMI is associated with differences in the biophysical properties and microbiome of the facial skin. A high BMI affects the integrity of skin barrier and changes the skin flora diversity and species composition.

L. Cheng, J. Guo, Y. Lu, ***Lotus corniculatus*** **extract to inhibit lipogenesis**, PERSONAL CARE MAGAZINE, March 2024, p. 78-82

In recent years, excess oil secretion on the skin surface has become a more and more common skin problem with the acceleration of the pace of life. Oily skin is frequently accompanied by large pores, and contributes to the development of acne. The sebaceous glands are an important organ for synthesizing lipids and an important source of sebum for oily skin. Sebum can maintain the integrity of the cutaneous lipid barrier, transport antioxidants to the skin surface, and have antimicrobial, antiinflammatory activity. Although their function is important, excess oil secretion on the skin surface cause great discomfort and should be treated.

C. Lambert, C. Zanchetta, P. Robe, C. Jarrin, E. Chapuis, M. de Tollenaere, D. Auriol, A. Scandolera, R. Reynard, **Porphyrin production by *Cutibacterium acnes*: developing a screening method to identify novel inhibitors**, Podium presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023 and IFSCC Magazine, Volume 27, Number 1, March 2024

Cutibacterium acnes is a commensal skin bacterium, imbalances of which are associated with skin disorders including acne. Study of the microbiota of healthy and acneic skin revealed significant variations in *Cutibacterium acnes* populations and their ability to produce proinflammatory porphyrin. Cosmetic products that alter porphyrin production could help with acne. Here, *C. acnes* strains representative of human skin were cultured. Intracellular and extracellular coproporphyrin III (CPIII) were quantified by HPLC-DAD-MS. Phylotypes IA1 RT5 and RT8, associated with acneic skin, produced high porphyrin levels. Exposure of *C. acnes* IA1 RT5 and RT8 to candidate porphyrin regulators identified a botanical extract that led to a significant decrease in CPIII production. A clinical study was designed to assess this potential inhibitor in terms of skin porphyrins and sebum production, and the *C. acnes* populations present. The microbiota of healthy greasy skin – 32.9% IA1, 20.2% IB, and 15.7% II – remained unchanged upon treatment with the inhibitory botanical extract, whereas porphyrin production was decreased. The method presented can be used to screen for CPIII inhibitors. The inhibitor identified here was confirmed at the *in vivo* level. The results presented open new possibilities to precisely target *C. acnes* metabolism.

X. Zhang, H. Tao, Y. Deng, X. He, Z. Zhang, L. Zhong, Y. Wen, **Efficacy and safety of a panthenol-enriched mask for individuals with distinct impaired skin barrier subtypes**, J Cosmet Dermatol. 2024

Background: The protection for different skin types with impaired skin barrier in the market is insufficient. Aim: To evaluate the efficacy and safety of a panthenol-enriched mask (La RochePosay Mask Pro) in addressing various skin barrier impairment subgroups, including dry sensitive, oily sensitive, and oily acne skin. Methods: A total of 177 participants were enrolled in the study and divided into three subgroups based on their skin type. Participants used the mask following the specified protocol, with measurements taken for skin hydration, transepidermal water loss (TEWL), sebum content, and skin redness—factors that are directly influenced by skin barrier function. Assessments were conducted at baseline and after 1 day (tested 15 min post-application), 7 days, and 14 days of application using Sebumeter, Tewameter, Corneometer, Mexameter, and VISIA. Results: Results showed significant improvements in skin parameters across all subgroups. In the dry sensitive skin subgroup, the mask increased skin hydration, sebum content, and reduced redness. For the oily sensitive skin subgroup, the mask regulated sebum production and improved skin hydration. In the oily acne skin subgroup, the mask reduced sebum content, redness, TEWL, and post-inflammatory erythema and hyperpigmentation. Tolerance was excellent for all skin types, with no adverse reactions observed. Conclusions: This study highlights the efficacy and safety of the panthenol-enriched LRP Mask Pro for individuals with distinct skin barrier impairment subgroups. The mask's versatile formulation and proven efficacy make it a valuable skincare product for addressing various skin concerns and achieving healthier, more balanced skin.

Z.D. Draelos, P.E. Grimes, J. Watchmaker, D.B. Nelson, **A Multi-center Trial Evaluating a Serum Comprised of Plant-based Adaptogens Targeting Skin Quality,** JCAD Journal of Clinical and Aesthetic Dermatology, February 2024, Volume 17, Number 2, p. 15-19

Objective: The ability of the skin to maintain homeostasis declines with age. Adaptogens support the capacity of the skin to respond to stress. We sought to evaluate the efficacy of a novel serum comprised of plant-based adaptogens for improving photoaged skin following twice-daily application. Methods: A multi-center, 12-week trial was conducted in participants aged 45 to 65 years, Fitzpatrick Skin Type (FST) I to VI, with mild-to-severe photoaging based on a 10-point grading scale (3 [Minimum] to 7 [Maximum]). Visible improvements were assessed in erythema, pore size, skin dullness, skin

texture, and uneven pigmentation utilizing a six-point grading scale (0=None to 5=Severe). Global skin quality was measured utilizing our Global Skin Quality Index (GSQI). Sebum measurements were obtained in a subset of participants. Patient satisfaction and tolerability were recorded throughout the study. Results: Fifty-three participants were enrolled and completed the study. Mean age was 56 years and 66 percent were White, 17 percent were Black, 8 percent were Hispanic, 6 percent were Asian/Pacific Islander, and 81 percent had moderate photodamage. At Week 12, significant mean percent improvements from baseline were demonstrated in erythema (50%), dullness (44%), texture (52%), pore size (23%), and uneven pigmentation (21%; all p<.0001). Significant GSQI improvements from baseline were observed at Week 12 (39%; p<0.0001). Significant mean reductions from baseline in skin surface sebum were demonstrated at Week 12 (-38%; p<0.0001). All adverse events (AEs) were mild and transient. Conclusion: A novel serum comprised of plant-based adaptogens, demonstrated improvements from baseline in the appearance of erythema, dullness, texture, pore size, uneven pigmentation, and global skin quality over 12 weeks. Participants reported high levels of satisfaction, with mild, transient AEs reported.

X. Zhang, H. Tao, Z. Zhang, W. Wang, A. Steel, X. Fang, X. He, **Evaluation of the efficacy of a sunscreen containing ultra-long UVA1 and other UVR broad-spectrum filters on skin barrier protection and melanin content reduction in Chinese adults: A single-center study**, Health Sci. Rep. 2024;7:e1923

Background and Aims: The protection for ultra-long UVA1 is lacked in the market, posing potential damage from ultra-long UVA1 irradiation. The study aims to evaluate the efficacy of a sunscreen containing multiple components, especially Mexoryl® 400 for improving skin barrier function and reducing melanin content. Methods: This single-center study included adults with sensitive and normal skin in China in November 2022. Participants received the test sunscreen for 4 weeks. Melanin and hemoglobin content, sebum secretion skin hydration, and transepidermal water loss were evaluated at T0d, T7d, and T28d. The self-assessment was done at T15min, T7d, and T28d. Results: Sixty participants were included, including 30 self-claimed sensitive skin in the sunscreen group. The sunscreen demonstrated significant improvements in skin parameters. Skin redness reduced by 9.84% at T28d, sebum content in the forehead area decreased by 22.70% at T28d, and skin stratum corneum hydration increased by 38.44% at T28d, $p < 0.001$ respectively. Most notably, skin melanin content significantly reduced by 13.49% after 4 weeks' usage ($p < 0.001$). No adverse reactions were reported in either group. Conclusions: The study sunscreen improved the skin condition by decreasing the melanin content, regulating skin barrier function, and achieving a balance of skin hydration and sebum secretion.

L.-F. Nothias, R. Schmid, A. Garlet, H. Cameron, S. Leoty-Okombi, V. André-Frei, R. Fuchs, P.C. Dorrestein, P. Ternes, **Functional metabolomics of the human scalp: a metabolic niche for *Staphylococcus epidermidis***, mSystems, February 2024 Volume 9 Issue 2

Although metabolomics data acquisition and analysis technologies have become increasingly sophisticated over the past 5–10 years, deciphering a metabolite's function from a description of its structure and its abundance in a given experimental setting is still a major scientifc and intellectual challenge. To point out ways to address this "data to knowledge" challenge, we developed a functional metabolomics strategy that combines state-of-the-art data analysis tools and applied it to a human scalp metabolomics data set: skin swabs from healthy volunteers with normal or oily scalp (Sebumeter score 60–120, $n = 33$; Sebumeter score > 120, $n = 41$) were analyzed by liquid chromatography-tandem mass spectrometry (LC-MS/MS), yielding four metabolomics data sets for reversed phase chromatography (C18) or hydrophilic interaction chromatography (HILIC) separation in electrospray ionization (ESI) + or - ionization mode. Following our data analysis strategy, we were able to obtain increasingly comprehensive structural and functional annotations, by applying the Global Natural Product Social Networking (M. Wang, J. J. Carver, V. V. Phelan, L. M. Sanchez, et al., Nat Biotechnol 34:828–837, 2016, https://doi.org/10.1038/nbt.3597), SIRIUS (K. Dührkop, M. Fleischauer, M. Ludwig, A. A. Aksenov, et al., Nat Methods 16:299–302, 2019, https://doi.org/10.1038/ s41592-019-0344-8), and MicrobeMASST (S. ZuffaS, R. Schmid, A. Bauermeister, P. W, P. Gomes, et al., bioRxiv:rs.3.rs-3189768, 2023, https://doi.org/10.21203/rs.3.rs-3189768/v1) tools. We fnally combined the metabolomics data with a corresponding metagenomics sequencing data set using MMvec (J. T. Morton, A. A. Aksenov, L. F. Nothias, J. R. Foulds, et. al., Nat Methods 16:1306–1314, 2019, https://doi.org/10.1038/s41592-019-0616-3), gaining insights into the metabolic niche of one of the most prominent microbes on the human skin, *Staphylococcus epidermidis*.

T. Tempark, A. Shem, S. Lueangarun, **Efficacy of ceramides and niacinamide-containing moisturizer versus hydrophilic cream in combination with topical anti-acne treatment in mild to**

moderate acne vulgaris: A split face, double-blinded, randomized controlled trial, J Cosmet Dermatol. January 2024

Introduction: Topical therapy is the mainstay treatment of acne, and topical retinoids such as tretinoin, tazarotene, and adapalene are recommended as the firstline therapy for mild to moderate acne. However, the cutaneous irritations may occur, and the dermocosmetics are recommended to prevent side effects of antiacne drugs and adhere to treatment. Thus, this study aims to compare the efficacy and tolerability of ceramides and niacinamide-containing moisturizer (CCM) versus hydrophilic cream in combination with topical anti-acne treatment in mild to moderate acne vulgaris. Methods: This was an 8-week, randomized, double-blinded, split face study in 40 patients assigned for topical anti-acne medications (5% benzoyl peroxide and 0.1% adapalene gel), then randomly applied CCM or hydrophilic cream. All patients were followed at week 0, 2, 4, and 8 for acne improvement, adverse reactions, biometric, and biophysical evaluation. Results: CCM could significantly improve the non-inflammatory, inflammatory, and total acne lesions compared with hydrophilic cream after week 8 of treatment. Interestingly, there was an improvement of global worst score, hemoglobin index, melanin index, TEWL, skin hydration, sebum production, and skin surface pH, with no statistically significant differences between the two treatments. No serious side effects from clinical application of CCM and hydrophilic cream in mild to moderate acne vulgaris patients. Conclusion: Ceramide and niacinamide-containing moisturizer in combination with anti-acne medication can significantly improve acne lesions and decrease cutaneous irritations toward a satisfactory treatment outcome of mild to moderate acne vulgaris.

Y. Su, S.Y. Chen, Y. Zhang, X. Qi, D.C. Guo, B. Feng, R.Q. Qi, Y. Wu, X.H. Ga, **Filament coating system assists recovery of ablative fCO_2 laser treatment: A split-face clinical observation**, Journal of Cosmetic Dermatology, January 2024

Background: The current nursing procedure after fractional carbon dioxide (fCO_2) is complex and needs to be optimized. The present study was conducted to evaluate the assisting effect of filament coating system after fCO_2 laser treatment.: Methods: Chinese individuals aged from 18 to 65 years diagnosed as photoaging or atrophic acne scar were recruited and each participant was treated with one single pass of fCO_2 laser. A split face was randomly assigned as treatment side or control side. For control side, conventional procedure was topically applied respectively, including desonide cream two times for 3 days, fusidic acid cream two times for 7 days, and recombinant human epidermal growth factor (RhEGF) gel four times for 7 days; for treating side, a filament coating system was applied immediately after one application of fusidic acid cream, desonide cream and RhEGF, and removed 3 h later, for 3 days. Erythema, edema, crust, and pain on both sides were scored from 0 to 10 before and 1, 2, 4, and 7 days after fCO_2 laser treatment. Stratum corneum hydration (SCH) and sebum of forehead and cheek on both sides were also measured by using Corneometer-Sebumeter. Results: Twenty photoaging and 11 atrophic acne scar participants finished the observation. All of them complained of erythema, edema, crust, and pain after fCO_2 laser treatment, and the scores decreased as time passed by. There were no statistical significances of erythema, edema, crust, pain, SCH, and sebum between treating side and control side at each observation time. Conclusion: Filament coating system was effective, safe, convenient, and economic in assisting recovery of ablative fCO_2 laser, which might be a new option for additional nursing procedure.

W. Manuskiatti, S. Wongdama, N. Viriyaskultorn, J.B. Li, K. Kulthanan, T. Techapichetvanich, **Long-term efficacy and safety of nonablative monopolar radiofrequency in the treatment of moderate to severe acne vulgaris**, Lasers Surg Med. 2024;56:133–141

Background: Acne vulgaris (AV) is a prevalent skin condition known for its potential to cause scarring and psychological distress, often leading to diminished self-esteem. While topical and oral treatments are commonly prescribed, some patients experience treatment failure, adverse effects, or contraindications to conventional therapies. In response to these challenges, laser and energy-based device therapies have emerged as promising alternatives for individuals who fallinto these categories, showing considerable potential in the treatment of AV.Objective: This study aimed to evaluate the long-term efficacy and safety of a nonablative monopolar radiofrequency (NMRF) in treatment of moderate to severe AV. Methods: Twenty-four patients with moderate to severe AV underwent a series of two NMRF treatment sessions, spaced 4 weeks apart. To evaluate treatment outcomes, live in-person lesion counts and measurements of pore size and volume, and sebum production were quantified using Antera® 3D imaging system, and Sebumeter®, respectively. Patients' self-assessment data regarding degree of improvement and facial oiliness were gathered. Dermatology life quality index (DLQI) questionnaire was utilized to assess the impact of AV on their quality of life. All objective and subjective evaluations were conducted at the baseline, 1 month after the first treatment, and during follow-up visits 1, 3, and 6 months after the last treatment sessions. Adverse effects were also recorded during each

visit. Results: Twenty out of the 24 subjects completed the study protocol. The mean inflammatory lesion counts significantly reduced by 42.86% and 45.71% from the baseline at 3 ($p = 0.027$) and 6 months ($p = 0.032$) after the second treatment. Sebum excretion likewise significantly decreased from baseline by 11.62% ($p = 0.012$), 13.37% ($p < 0.001$), and 21.51% ($p = 0.004$), 1 month after the first treatment, 1 and 6 months after the second treatment, respectively. The pore volume continued to decrease by 35% ($p = 0.003$) and 41.5% ($p < 0.001$) at 1 and 6 months following the final treatment, respectively. The DLQI significantly decreased from 10.00 (interquartile range [IQR]: 6.50-15.00) to 2.00 (IQR: 1.00-4.75), corresponding to 80% improvement of the index, 1 month after the last treatment and was sustained up to the last follow-up visit. Patients' self- assessments on degree of improvement and facial oiliness also significantly improved following NMRF treatments. The treatments were well-tolerated without significant adverse effects. Conclusion: NMRF appears to be an effective and safe treatment for inflammatory AV, with therapeutic outcomes persisting up to 6 months after two treatment sessions.

J.M. Carbajo, A. Michan-Doña, M. I. Carretero, M.L. Vela, J.A. de Gracia, F. Maraver, **Biophysical effects of a natural peloid on normal skin**, Int J Biometeorol., 2024 Jan;68(1): p. 143-152

A protocol study was designed to examine cutaneous behavior after continuous application of a peloid in the dry mineral residue of Lanjarón-Capuchina natural mineral water. This study aims toanalyze the biomechanical behavior of normal skin using various non-invasive bioengineering techniques after the application of this peloid. We determine the effects of its application for 3months on 38 healthy volunteers (41.4 ± 5.9 years, range 32-58) without a previous history of skin diseases by courtmetry, sebumetry, pH-metry, reviscometry, and tewametry. It was shown that the production of cutaneous sebum is significantly reduced by 6%, trans epidermal skin loss (TEWL) by21%, skin fatigue by 30%, elasticity increased by 19%, firmness by 5%, and a skin redensification by 6% was obtained under these experimental conditions. Disparate and non-significant results wereobtained concerning pH and viscoelasticity. Continuous skin care with the Lanjarón-Capuchina natural peloid modifies skin behavior, normalizing sebaceous secretion, favoring the biomechanical properties of the skin and the skin barrier function without modifying skin homeostasis.

P. Charipoor, M.A. Nilforoushzadeh, M. Khani, M. Nour, E. Ghasemi, M.A. Amirkhani, M. Eftekhari, B. Shokri, **The FEDBD plasma's quantitative investigation of skin parameters: Skin elasticity, thickness, density, tissue oxygenation, perfusion, and edema**, Heliyon 10 (2024)

This study used the FEDBD plasma device for skin rejuvenation in animal samples. There were two groups of six male Wistar rats. Before starting the treatment, immediately after the treatment, the fourth week, and the tenth week of follow-up, biometric tests were performed, including moisture level, evaporation from the skin surface, erythema and melanin, skin elasticity and firmness with an MPA9 device and cutometer. The thickness and density of the epidermis and dermis, an essential indicator in rejuvenation, were evaluated with a skin ultrasound device. Also, the level of oxygen, perfusion, and interstitial water (edema) was checked using a Tivita tissue hyperspectral camera at a depth of 6 mm of the skin.

N. Akhtar, F. Menaa, N. Akhtar, N. Javed, A. Seth, M. Shahzad Khan, **3887**, J Cosmet Dermatol. 2024;23: p. 1015–1028

Background: Tocopherols are well-known antioxidant and moisturizing agent. Tocopherol succinate (TS) are widely used in many skin products especially used in anti-aging and skin whitening product formulation. Aim: We previously reported the successful synthesis and preliminary characterizations of stable TS ethosomal gels (TSEG) (DOI: 10.1111/jocd.14907). Herein, we develop and further characterize TSEG to enhance the stability of the developed formulation with increased permeation through skin. Methods: Cold method technique was used to prepare TS ethosomes. The developed ethosomal vesicle size was 250 nm, which allowed TS to penetrate through the stratum corneum layer and act on melanocytes. For stability study was assessed bythermogravimetric analysis (TGA) by placing TSEG and unloaded/control ethosomal gel (CEG) at various temperature conditions, that is, 8°C, 25°C, 40°C, and 40°C ± 75% RH for 3 months. Organoleptic evaluation was done in terms of color, odor, and phaseseparation. Transmission electron microscopy (TEM), Fourier Transform infrared spectroscopy (FTIR), x-ray diffraction spectroscopy (XRD), zeta potential (ZP) and particle size (PS) was used for TSEG physical characterizations. In vitro dissolution and ex-vivo permeation studies (using Franz diffusion cell) were performed for both TSEG and CEG formulations. Human women (N = 34) were used to evaluate in vivo biophysical parameters including erythema, melanin, moisture content, sebum level, and skin elasticity. Results: Developed formulation was highly thermostable during the 3 months. Erythema, melanin, and sebum level decreased while marked improvement ($p < 0.05$) in moisture content and elasticity have been observed for the developed TSEG. Conclusion: The developed TSEG formulation was found to be efficient, safe (no adverse effects observed), stable (at

least for 3 months), and easy to use for topical application with improved skin complexation and skin integrity.

A. Graça, A.M. Martins, P. Pinto, H.M. Ribeiro, J. Marto, **Combining protection with skin health: *In vivo* studies of an innovative gelatin/tannic acid-based hydrogel patch to prevent PPE-related skin lesions**, International Journal of Pharmaceutics 650 (2024)

The prolonged use of Personal Protective Equipment (PPE) can lead to skin problems due to persistent pressure, friction, and tension. This issue has prompted the exploration of solutions to protect the skin while maintaining the effectiveness of the PPE. This study aimed to evaluate the *in vivo* effectiveness of a gelatin/tannic acid-based hydrogel patch positioned beneath a mask to alleviate skin damage resulting from mask-wearing. To understand the pressure exerted by PPE, *in vitro* tests were conducted to measure the tensile strength of three types of facial masks. The FFP2 masks exhibited the highest tensile strength and were selected for subsequent *in vivo* biometric investigations. Biometric parameters were evaluated using the Flir E50bx® thermographic camera, Corneometer®, MoistureMap®, Sebumeter®, Tewameter®, and VISIA® systems. The results showed that when the hydrogel patch was used under the mask, there were no significant differences in facial skin temperature, sebum levels, or TEWL values ($p > 0.05$). However, a statistically significant increase in skin hydration and a decrease in frontal redness ($p < 0.05$) were observed. Consumer acceptance was assessed through sensory analysis questionnaires. In summary, the observed attenuation of physiological changes in the facial area and the positive consumer feedback suggest that this polymeric film-forming system is a simple yet effective solution to prevent PPE use-related skin issues.

C. Folle, E. Sánchez –López, M. Mallandrich, N. Díaz-Garrido, J. Suner-Carbó, L. Halbaut, P. Carvajal-Vidal, A.M. Marqués, M. Espina, J. Badia, L. Baldoma, M.L. García, A.C. Calpena, **Semi-solid functionalized nanostructured lipid carriers loading thymol for skin disorders**, International Journal of Pharmaceutics 651 (2024)

Acne constitutes one of the most prevalent skin disorder affecting both skin and mental health of patients. However, no cure has been developed so far. In this area, Thymol constitutes a potential candidate since it is ableto restore the healthy microbiota of the skin. However, its permeation properties cause its fast elimination and, toavoid this problem, thymol has been loaded into nanostructured lipid carriers (TH-NLCs). Moreover, to increasethe suitability of these systems for skin applications, several surface functionalization strategies of TH-NLCs had been assessed. Among the different molecules, phosphatidylcholine-TH-NLCs demonstrated to be safe as well as to provide high antioxidant activity in cellular studies. Therefore, to administer these systems to the skin, functionalized TH-NLCs were dispersed into a carbomer gel developing semi-solid formulations. Rheological properties, porosity and extensibility of TH dispersed in carbomer as well as phosphatidylcholine-TH-NLCs wereassessed demonstrating suitable properties for dermal applications. Moreover, both formulations were applied in healthy volunteers demonstrating that gel-phosphatidylcholine-TH-NLCs were able to increase in skin hydration,decrease water loss and reduce skin sebum. Therefore, gel-phosphatidylcholine-TH-NLCs proved to be a suitable system for skin pathologies linked with high sebum generation, loss of hydration and high oxidation, such as acne vulgaris.

F. Huang, X. Wang, M. Zhang, L. Wang, Y. Wang, Y. Hu, T. Dong, P. Wie, **Correlating facial skin parameters with age and gender in population of Shaanxi Province**, **China**, J Cosmet Dermatol. 2024;23: p. 1386–1395

Objective: This study was designed to comprehensively evaluate the changes in facial skin biophysical parameters with age, as well the influence of gender differences in populations of Shaanxi Province, China. Methods: Fourteen skin parameters, including stratum corneum hydration (SCH), transdermal water loss (TEWL), erythema, melanin, R0, R2, R5, R7, F4, gloss, skin surface pH, skin erythema index (a*), wrinkle length, and sebum, were measured by noninvasive instruments in 481 volunteers from Shaanxi Province. Spearman correlation analysis was performed to analyze the relationship between skin parameters and age. Additionally, skin parameters were analyzed for different age groups and different genders. Results: The results of the study showed a linear decrease in skin surface pH and sebum content with age, and the skin elasticity parameters R0, R2, R5, and R7 decreased significantly at the age of 54–65 years. Wrinkle length showed a linear andincrease with age. R5 showed a weak negative correlation with age, R2, R7, and sebumcontent showed a moderate negative correlation, while wrinkle length showed a strong positive correlation. Considering the effect of gender on skin parameters, the results showed that SCH and gloss were lower in men than in women, while TEWL, erythema, melanin, wrinkle length, and sebum were higher than in women. However, there was no difference in skin elasticity between them. Conclusion: The facial skin parameters, especially for the wrinkle length, exhibited the strong correlation relationship with ages in Shaanxi Province.

Meanwhile, most skin parameters show significant differences with gender, which can provide a reference for future research and development in the field of cosmetics.

P. Minoretti, A.S. Santiago Sáez, Á.F. García Martín, M. Liaño Riera, M. Gómez Serrano, E. Emanuele, **Skin biophysical parameters and serum dermokine levels in airline pilots: a comparative study with office workers**, Adv Dermatol Allergol 2023; XL (6): p. 757–761

Introduction: Concerns are growing in the aviation industry about occupational skin diseases like malignant melanoma (MM) among airline pilots (APs), due to the unique working environment that exposes them to various skin stressors. Aim: To compare fve skin biophysical parameters in a group of 40 male APs, each matched in terms of age and service tenure (minimum of 5 years) with a control group of 40 male ofce workers (OWs). Considering the potential role of dermokine (DMKN) in skin barrier dysfunction and the pathogenesis of MM, we further analyzed the serum levels of this molecule and correlated them with the measured skin parameters. Material and methods: Stratum corneum skin hydration, transepidermal water loss (TEWL), sebum content, erythema index (EI), and melanin index (MI) were quantifed by non-invasive instruments in the cheek region. Serum DMKN levels were measured using a commercially available enzyme-linked immunosorbent assay kit. Results: Compared with OWs, the skin of APs exhibited a decrease in hydration levels in the stratum corneum,coinciding with a higher TEWL. However, there was no signifcant variance in sebum content between the groups. MI was notably higher in APs than in OWs, as was EI. In APs, serum DMKN levels were independently associated with MI ($\beta = 0.56$, $p < 0.05$). Conclusions: We found a signifcant link between the profession of an airline pilot and changes in skin biophysical parameters. Further research into the interplay between serum DMKN levels and the risk of MM in APs is warranted.

N. Stanek-Wandzel, M. Zarębska, T. Wasilewski, Z. Hordyjewicz-Baran, E. Zajszły-Turko, M. Tomaka, T. Bujak, A. Ziemlewska, Z. Nizioł-Łukaszewska, **Kombucha fermentation as a modern way of processing vineyard by-products into cosmetic raw materials**, Int J Cosmet Sci, 2023 Dec;45(6): p. 834-850

Objective: The wine industry generates large quantities of by-products presenting a remarkably valuable composition in phytochemicals. The process that can significantly increase the content of bioactive compounds is fermentation by yeast and other microorganisms. The current study presents, for the first time, an evaluation of the potential of grape stems extract and its ferments using the Scoby consortium, as a cosmetic raw material for improving the skin care properties of facial cosmetics. Methods: Fermentation of grape stems using Scoby consortium was carried out for 10 and 20 days. Unfermented and fermented extracts were analysed for their antioxidant activity and chemical composition, with a particular emphasis on biologically active substances. Additionally, the influence of the addition of the obtained ferments to the model cosmetic creams on hydration, transepidermal water loss and skin pH were assessed. Results: The obtained results revealed that grape stems extract and its ferments are a rich source of phenolic compounds and show antioxidant activity, with the highest values observed for extracts on the 20th day of fermentation. Furthermore, the addition of the extract, as well as ferment, to the cream has a positive effect on skin hydration and reduces transepidermal water loss. Conclusion: These results suggest that grape stem extracts are a prospective source of active compounds that may be valuable ingredients for the cosmetic industry. Unfermented and fermented extracts can be used in moisturizing cosmetic formulations and also to complement the treatment of dry and sensitive skin.

S. Jarząbek-Perz, M. Dziedzic, H. Rotsztejn, A. Kołodziejczak, **Evaluation of the effects of 10% and 30% gluconolactone chemical peel on sebum, pH, and TEWL**, J Cosmet Dermatol. 2023 Dec;22(12): p. 3305-3312

Background: Gluconolactone (GLA) exhibits antioxidant and moisturizing effects. It also presents soothing effects, protects elastin fibers from UV-induced degradation, and improves the function of the skin barrier. Aims: Evaluation of skin parameters such as pH, transepidermal water loss (TEWL), sebum levels before, during, and after a series of applications of 10% and 30% GLA chemical peel in a split-face model. Materials and methods: The study involved 16 female subjects. Three split-face procedures were performed using two concentrations of GLA solution applied on two sides of the face. The skin parameters were measured before treatments and 7 days after the last procedure at four measurement sites on either side of the face, that is, on the forehead, around the eye, on the cheek, and on the nose wing. Results: Measurement of sebum demonstrated some statistically significant changes between sebum levels in the cheeks after a series of treatments. The pH measurement showed that the pH value was reduced after each treatment at all measurement points. The level of TEWL after treatments was significantly lower around the eyes, on the left forehead, and on the right cheek. There were no significant differences between the use of different concentrations of the GLA solution.

Conclusions: The results of the study show that GLA has a significant influence on lowering skin pH and TEWL. GLA also has seboregulatory properties.

F. Huang, Y. Zhang, J. Guo, H. Pan, Z. Liao, B. Yang, P. Lu, **Characterization of Epidermal Function in Individuals with Primary Cutaneous Amyloidosis**, Clinical, Cosmetic and Investigational Dermatology 2023:16, p. 3193–3200

Purpose: To compare epidermal biophysical properties, indicators of epidermal function, in individuals with and without primary cutaneous amyloidosis (PCA). Patients and Methods: This study incorporated 189 patients with PCA and 166 healthy individuals. The GPSkin Barrier was employed to measure transepidermal water loss (TEWL) rates and hydration levels of the stratum corneum. The Sebumeter and the Skin pH Meter were utilized to determine the skin surface's sebum content and pH, respectively. The severity of pruritus inparticipants was evaluated using the visual analog scale (VAS). Results: Compared to the control group without PCA, individuals with PCA displayed a notable increase in skin surface pH and TEWL and a decrease in the hydration levels of the stratum corneum (p<0.0001 for all parameters). Additionally, the sebum content was markedly lower in those with PCA than in the controls (p<0.0001). Of particular note, both TEWL and skin surface pH at the lesion sites on the back and the shin were more elevated in lichenoid amyloidosis (LA) and in macular amyloidosis (MA), whereas hydration levels of the stratum corneum and sebum levels were diminished in LA compared to MA (p<0.05). In conclusion, both hydration levels of the stratum corneum and sebum content exhibited an inverse relationship with pruritus severity, whereas TEWL and skin surface pH demonstrated a positive correlation with pruritus intensity. Conclusion: The function of the epidermis is compromised in individuals diagnosed with PCA. However, the mechanisms underlying these changes await further investigation.

F. Huang, Y. Zhang, J. Guo, H. Pan, Z. Liao, B. Yang, P. Lu, **Characterization of Epidermal Function in Individuals with Primary Cutaneous Amyloidosis**, Clinical, Cosmetic and Investigational Dermatology 2023:16, p. 3193–3200

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P. Minoretti, A. Santiago Sáez, M. Liaño Riera, M. Gómez Serrano, Á. García Martín, **Topically Applied Magnetized Saline Water Improves Skin Biophysical Parameters Through Autophagy Activation: A Pilot Study**, Cureus 15(11), 2023

Background:Water exposed to a magnetic field exhibits several changes in its properties, such as increased electrical conductivity, reduced density, and low surface tension. Additionally, it has reduced dissolved oxygen levelsand becomes more alkaline. Previous experimental studies have demonstrated that exposure to salinealkaline water leads to a dose-dependent increase in the expression of autophagy-related genes. Here, we hypothesize that the topical application of magnetized alkaline water to the skin can activate autophagy and improve cutaneous biophysical parameters, making it a promising strategy for enhancing skin aesthetics. Methods: Two distinct substudies were undertaken. Firstly, a 12-week, uncontrolled, open-label investigation was conducted with 20 females who desired to enhance the appearance of their facial and neck skin. Secondly, a molecular study was carried out on a subset of 10 females to investigate the serum's impact on two autophagy markers (Beclin-1 and mammalian/mechanistic target of rapamycin {mTOR}) in skin biopsies taken from the posterior neck area below the hair attachment line. Results: After a period of 12 weeks, the application of the serum resulted in significant improvements in skin hydration within the stratum corneum (56 ± 14

arbitrary units {a.u.}) compared to the baseline measurement (47 ± 12 a.u.; p < 0.001). Moreover, the transepidermal water loss (TEWL) decreased from 14 ± 2 g/m2/hour to 11 ± 3 g/m2/hour (p < 0.001). The results also revealed a notable reduction in sebum content from 38 ± 7 µg/cm2 to 30 ± 4 µg/cm2 after the 12-week period of serum application (<0.001). Additionally, the melanin index (p < 0.01) and erythema index (p < 0.001) were both significantly lower at 12 weeks compared to baseline. The molecular study showed a 38% increase in Beclin-1 levels after 12 weeks of serum application on the posterior neck area, as measured from skin biopsies. In contrast, mTOR levels decreased by 24% from baseline to 12 weeks. Conclusion: The application of magnetized saline water topically, within a serum formulation, shows potential in improving skin biophysical parameters for females seeking to enhance the appearance of their facial and neck skin. These beneficial effects are achieved through the activation of cutaneous autophagy, as evidenced by an increase in Beclin-1 expression and a decrease in mTOR content in the skin.

T. Khiljee, N. Akhtar, S. Khiljee, B. Khiljee, H.M. Rasheed, S.A. Ansari, H.M. Alkahtani, I.A. Ansari, **Gauging Quince Phytonutrients and Its 4% Emulgel Effect on Amplifying Facial Skin Moisturizing Potential**, Gels 2023, 9, 934

Background: The aim of this study was to evaluate the moisturizing efficacy of quince fruit, used in folk medicine. For this purpose, the phytoconstituents of Cydonia oblonga fruit extract, like phenolics and flavonoids, were determined. A stable cosmetic emulgel containing 4% Cydonia oblonga fresh fruit extract was formulated and subjected to in vivo evaluation compared with a control. Materials and Methods: Cydonia oblonga fresh fruit extract was evaluated for tyrosinase activity and phenolic and flavonoid content. A stable emulgel containing 4% Cydonia oblonga fresh fruit extract was formulated and tested in a skin irritation test. After this, in vivo tests of erythema, moisture, sebum, and skin elasticity were conducted. The in vivo evaluation was a randomized and single-blind study. Thirteen healthy female volunteers were selected for a three-month study period. Results: Cydonia oblonga fruit extract showed good phenolic and flavonoid content, which was associated with its good antioxidant and tyrosinase-inhibiting activity. Cydonia oblonga containing the emulgel showed a reduction in sebum and erythema, while the elasticity and moisture content showed increments in their levels after the three-month application of the formulation. The fruit contains chlorogenic acid and many sugars, which might account for its anti-inflammatory and sebum reduction effects; it is also capable of enhancing the skin's hydration level and decreasing skin sagging by enhancing its elasticity. Conclusion: The emulgel loaded with Cydonia oblonga fresh fruit extract is verified regarding its folklore status as a moisturizing agent that enhances the facial skin cells' resilience potential.

E. Tarshish, K. Hermoni, N. Muizzuddin, **Comprehensive assessment of the efficacy and safety of a clay mask in oily and acne skin**, Skin Research & Technology, Volume 29, Issue 11, November 2023

Background: Oily skin, characterized by excessive sebum production, can lead to acne and have psychosocial impacts due to changes in appearance. Recent research has shown interest in treatments for oil control, with kaolin and bentonite emerging as promising options. Despite their potential, comprehensive studies on these ingredients are still in the nascent stages. Aim: This study aimed to assess the efficacy of a clay mask (La Roche-Posay Effaclar Sebo-Controlling Mask) in reducing skin oiliness and acne, and its safety for use. Methods: In this study, 75 adults with oily or combination skin were enrolled and provided with a clay mask for twice-weekly use over 4 weeks. Clinical assessments, using instruments like Sebumeter, Vapometer, and Corneometer, were conducted at baseline, and after 1, 2, and 4 weeks, evaluating acne lesions, skin irritation, sebum content, and skin hydration. Participant self-assessment questionnaires were also utilized for subjective evaluation. Statistical analyses were performed accordingly. Results: The study revealed significant improvements in acne-related outcomes, sebum content, skin evenness, stratum corneum water content, and transepidermal water loss following the application of the clay mask. Pore area and porphyrin area showed no significant changes. Tolerance assessment showed reduced dryness and irritation, with self-assessment indicating high product acceptability and perceived oil control effectiveness. Conclusion: This study demonstrated the clay mask's efficacy in managing acne and oily skin, improving hydration and texture. Significant improvements in skin parameters and high product safety were observed, supporting its suitability.

T. Techapichetvanich, W. Manuskiatti, S. Wongdama, N. Viriyaskultorn, J.B. Li, N. Jantanapornchai, **Nonablative monopolar radiofrequency for the reduction of facial pores and sebum excretion in Thai patients: A novel approach**, Lasers Surg Med. 2023;55: p. 528–535

Background: Enlarged facial pores are visible topographic features of the skin that have been associated with cutaneous photoaging and increased sebum production. It has remained a common

dermatologic concern, gaining a significant number of in-clinic consults. Available treatment modalities often operate on a single mode of action, consequently offering limited and short-term outcomes. Objective: This study aimed to evaluate the long-term efficacy and safety of a nonablative monopolar radiofrequency (NMRF) for pore tightening and sebum output reduction in Thai patients. Methods: Nineteen patients with enlarged pores underwent two sessions of NMRF treatments at 4-week intervals. The measurements of pore volume, skin texture, average pore size, sebum production, and skin elasticity were quantified using Antera® 3D imaging system, dermoscopic image analysis with ImageJ software, Sebumeter® and Cutometer®. Clinical evaluation by two dermatologists was done using blinded clinical photographs. All objective and subjective assessments were done at the baseline, a month after the first treatment, and during follow-up visits 1, 3, and 6 months after the last treatment. Adverse effects were also recorded during each visit. Results: Seventeen out of the 19 subjects completed the study protocol. The mean pore volume significantly reduced by 24% from the baseline at 1 month after the first treatment ($p < 0.016$). The pore volume continued to decrease by 34% and 38% a month ($p < 0.001$) and 6 months ($p < 0.001$) following the final treatment, respectively. Sebum excretion likewise significantly decreased from baseline by 39% ($p = 0.002$) and 36% ($p < 0.001$), 3 and 6 months after the second treatment, respectively. Skin texture and elasticity also significantly improved following two NMRF sessions. The objective assessments of the pore appearance corresponded to subjective clinical evaluations. The treatment was well-tolerated without significant side effects, such as dyspigmentation, textural alteration, and scarring. Conclusion: NMRF appears to be effective and safe for the reduction of pore size and sebum production, with therapeutic outcomes persisting up to 6 months after two treatment sessions.

N.G. Ha, S. L. Kim, S.H Lee, W.J. Lee, **A novel hydrogel-based moisturizing cream composed of hyaluronic acid for patients with xerosis: An intraindividual comparative analysis**, Poster Presentation at the 1st Congress of Investigative Dermatology, Tokyo, May 2023 & Skin Research & Technology, Volume 29, Issue 11, November 2023

Background: Hyaluronic acid (HA) is mainly used to treat xerosis. It also exerts woundhealing, moisturizing, and antiaging effects. Although HA is considered an effective and safe ingredient in cosmetics, there is a constant demand for a more money-saving and effective formulation. This study aimed to evaluate the safety and efficacy of a novel hydrogel-based moisturizer containing HA cross-linked with silicone polymers, produced solely through irradiation without the use of cross-linking agents. Materials and Methods: A safety study enrolled 30 participants with healthy skin to perform patch and photopatch tests while recording adverse events. For the efficacy study, 30 participants with xerosis were compared before and after using the novel hydrogel, evaluating the cutaneous barrier function, xerosis severity scale (XSS) score, participant's satisfaction, and Investigator's Global Assessment (IGA). Furthermore, the efficacy of the novel hydrogel-based moisturizer was evaluated by comparing it with a conventional moisturizer, Physiogel, in another 30 participants with xerosis. Results: In the safety study, no serious adverse events were observed. In the efficacy study before and after use, skin hydration and skin surface lipid increased ($p < 0.05$) whereas the XSS scores decreased ($p < 0.05$) with time. In the comparative efficacy study with Physiogel, skin hydration increased whereas the XSS scores decreased ($p < 0.05$) over time in both groups. Furthermore, IGA improved in 100% of participants in both groups. Also, 100% and 93% of participants were satisfied with the novel hydrogel-based moisturizer and Physiogel, respectively.

H. Yuceler Kacmaz, H. Kahraman, S. Levent Cinar, F. Ozkan, **Skin properties associated with skin tears in older adults: A case-control study**, Journal of Tissue Viability, Volume 32, Issue 4, November 2023, p. 585-589

Background: The world population is growing rapidly and skin problems such as skin tears (STs) are more common in aging skin dueto changes in the epidermis and dermis. Identification of ageing related skin properties, which are risk factors for STs, isessential for the development of ST prevention protocols. Objective: The aim of this study was to reveal the skin properties related to epidermal function and dermal associated with STs. Material and methods: A prospective case-control study was conducted with a sample of 36 older adults, 18 participants with ST and 18participants without ST, in two elderly care centers. Tewameter TM 210 was used to measure transepidermal waterloss, the Sebumeter SM810 was used to measure sebum, and Cutometer Dual MPA 580 was used to measure skinviscoelasticity (R0-R9). The differences of skin properties between groups were analyzed using the independent t-testand Mann-Whitney U test. Results: The case group had a mean age of 77,17 ± 9,7 and the control group had a mean age of 75,33 ± 6,8. It was determined thatthere were more ecchymosis ($p < 0.000$), hematoma ($p = 0.008$), and ST history ($p = 0.001$) in the case group. Older adultsin the case group were more frail than the control group ($p = 0.044$). Regarding the score of the skin properties, the casegroup showed that the TEWL levels of the older adults in the case group were lower ($p = 0.031$)

compared to the controlgroups. There was a significant difference between the groups and R0, R2, R5, and R7. While R0 was higher in the casegroup, R2, R5, and R7 were lower than the control group. Conclusion: Older adults with ST showed differences in skin properties compared to those without ST, especially transepidermalwater loss, and viscoelasticity (R0, R2, R5, R7). The results of this study suggest that some changes in skin propertiesmay be a risk factor for STs.

L. Meunier, L. Schmidt, M. Herrmann, **Von Gesichtshygiene und Hautpflege: Zwei Lösungsansätze fur zu Akne-neigender Haut**, sofw journal, 149 Jahrgang, 9/23

Zu Akne-neigende Haut ist ein haufiges Phenomen, das jede Altersklasse betreffen kann. Es geht oft einher mit Pickeln, Mitessern oder Hautgrießen, sowie uberempfindlicher Haut, und tritt vermehrt im Gesicht, auf dem Rücken und auf der Brust auf. In diesem Artikel beschreiben wir zwei unterschiedliche Lösungsansätze für zu Akne-neigender Haut: SymClariol® [INCI: Decylene Glycol] wirkt aus einem kosmetischen Reinigungsgel Sebum-regulierend und reduziert Pickel; SymControl Care® [INCI: Water (and) Glycerin (and) Tetrasemis Glycol] Tetraselmis Suecica] fördert die Normalisierung von Sebum und reduziert die Hautempfindlichkeit auf fettiger Haut, was durch Stärkung der Hautbarriere zu einem verbesserten Hautschutz und Hautempfinden führt.

Y. Liu, W. Jiang, Y. Tang, Z. Qing, Y. Zhen, X. Wang, W. Liu, J. Wang, Y. Ma, Y. Tan, **An optimal method for quantifying the facial sebum level and characterizing facial sebum features**, Skin Research & Technology, Volume 29, Issue 9, September 2023

Background: Evidence suggests that sebum content is important in skin disorders such as acne. However, sebum levels change depending on the external environment, and quantifying skin sebum levels is challenging. Here, we propose an optimal method for quantifying the facial sebum level. Materials and methods: Four hundred and sixty participants (160 males and 300 females) aged 20–40 were enrolled in this study. A Sebumeter SM 810 was used to measure the sebum level at five facial locations: the forehead, the chin, the left cheek, the right cheek, and the nose. The participants were divided into two groups; one group underwent a one-time measurement (n = 390, male: female = 120: 270), and the other underwent three consecutive measurements (n = 70, male: female = 40: 30). The casual sebum level (CSL) was measured in all patients after a 30-min acclimatization; subsequently, the sebum removal process was conducted, followed by a resting period of 1 h to determine the sebum excretion rate (SER). Spearman's correlation analysis and the Wilcoxon signed-rank test were used to compare the sebum level consistency and differences between the groups.

A.P. Fonseca, C. dal Pizzol, A.C Vanzo, P.M.C Maia Campos, **Clinical efficacy and tolerance of a cosmetic formulation containing vegetable oils and salicylic acid for acneic skin hydrolipidic balance**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Currently, there are many products in the market with the purpose of reduce drastically oiliness on skin while treating/preventing acne lesions, presented in the form of cleansing gels, tonics, dryers, among others, which can compromise the skin barrier function, since a balanced sebum plays an important role on skin global protection. In this context, it was developed an innovative biocompatible formulation for oily skin in order to promote hydrolipidic balance to skin, besides reduce acne lesions, preserving the skin hydration and healthy lipid balance while participating in acne treatment. For this, 32 subjects aged 28 ± 8 years, presenting acne grade II (94%) and oily (53%) and mixed (47%) skin were enrolled. There was a significant reduction ($p<0.05$) in the values of skin surface oiliness after 28 days of formulation application (-24,1%) and 100% of the subjects presented a reduction in skin oiliness. Since a healthy cutaneous barrier play an important role on acne, maintaining a healthy balance of oiliness and hydration on skin surface contribute to improve skin barrier function, besides providing a good sensorial experience to the user, contributing to perseverance with the product use in their routine.

C. Fogelgesang, S. Mac-Mary, X. Wang, J.-M. Sainthillier, C. Monastier, Y. Souccar, M. Verbraeken, L. Li, **Assessment of the efficacy and the remanence of a cosmetic serum on skin imperfections**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

The aim of this study was to evaluate the efficacy of a cosmetic serum containing "*Crithmum maritimum* native cells", *Bixa orellana* seed extract and ectoin on skin imperfections linked to various external factors (exposome) and skin quality, as well as its remanence effect. The study was conducted on the facial skin of 91 healthy Asian women, aged 20-35, with mild acne, uneven skin tone but also "stressed". They applied the tested serum twice a day for 2 months, then for the next 2 months half of them continue to apply it whereas the other half applied a neutral moisturizing cream. Assessments (performed on D0, D28, D56, D84 and D112) consisted on skin lesions counting, clinical scoring, self-assessment, sebumetry and Visiopore®. Significant results were measured as early as 7 days of treatment on the total number of lesions and the skin greasiness and an improvement of the skin quality

was observed on most of the studied items over the first 2 months of applications. A remanence of the efficacy was observed for 2 months on retentional lesions, highlighting the regulation of the biological mechanisms involved in this skin disorder while continuing the treatment was essential to treat inflammatory lesions.

J. Kim, H.W. Lee, J.-O. Park, H.-K. Lee, J.H. Shin, **A comparative study of skin biophysical characteristics as cosmetic formulations within environmental changes**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Background: Skin conditions according to environmental changes are influenced by temperature and humidity. It is widely accepted that climate conditions especially affect skin surface properties and long-termly induce internal change of the skin. Several studies have reported about skin physiological parameters and their changes according to different environmental conditions. Moreover, there have been many skin cares and cosmetics to prevent or block skin surface from environmental changes. In the current study, we have investigated the skin properties on individually different formulations due to temperature changes to find useful formulation targeting on seasonal product. Methods: In order to check the skin condition according to the change in the external environment, the skin properties were measured through mechanical evaluation after applying the 5 different types of cosmetics which are silky, greasy, watery, hot, and cool. Experiments were carried out in a climatic chamber with independently controlled Ta and RH. The skin of volunteers was exposed for some minutes in variable atmosphere manner as follows general- (20- 24℃, 40-60%), cool- (14-16℃, 45-55%), and hot- (28 - 32℃, 40-60%) conditions. Results: Although skin hydration, trans-epidermal water loss (TEWL), sebum content, and skin pH measurement did not show any difference according to environmental change conditions, skin temperature revealed atmosphere temperature-dependent results in all formulations and erythema (skin redness) measurements showed differences depending on environmental change conditions. Hot product was most sensitive formulation with respect to sebum content, TEWL, skin pH, skin redness, and skin hydration. Greasy product was the stickiest in all environmental conditions, showing the level of high sebum contents and low skin hydration. Conclusion: Taken together, these results demonstrated that skin biological properties are influenced by formulation type according to external changes. Therefore, we suggest that biophysical properties in accordance to environmental changes can be major seasonal consideration in the development of cosmetics.

L. Kakuda; L.N. Favaro, P.M.B.G. Maia Campos, **Benefits of formulation with Pequi Oil for the skin: a clinical study by instrumental measurements and sensorial perception**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

This study aimed to develop a minimalist serum formulation containing pequi oil and assess its immediate and short-term clinical efficacy and sensorial perception. A serum was developed with 3% pequi oil (F2) or not (F1). Twelve healthy female participants aged 22 to 30 were recruited for the clinical trial. Measurements of stratum corneum water content, transepidermal water loss (TEWL), sebum content, and skin microrelief were conducted on the frontal and malar before and after 2 hours and seven days (t7) of using the formulations. Porphyrin count and sebaceous gland activity were evaluated at t7. Results showed that F2 immediately reduced skin desquamation and TEWL and increased skin hydration. At t7, F2 maintained TEWL, improved skin hydration, reduced porphyrin and sebum content, and decreased sebaceous gland activity. This corroborates with the participant's perception, where they considered F2 easy to spread and reported reduced oiliness. These results suggest that the carotenoids in pequi oil and its oleic and palmitic fatty acids contribute to reduced sebum content and sebaceous gland activity. In conclusion, pequi oil improves skin barrier function and hydration and establishes a hydrolipidic balance.

F. Yi, X.-J. Kuang, G.-X. Lin, Y.-H. Liu, L. Geng, S.-Y Zhu, H. Liang, **The Chinese female facial skin database construction and utilization: Deciphering the Ageing status of Chinese sensitive females**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Objective: This study aimed to compare the Bowman questionnaire and the lactic acid tingling test for studying facial aging characteristics of sensitive skin in Chinese women. Additionally, it analyzed differences in facial skin characteristics and aging patterns between sensitive and tolerant populations using a database of 4 million non-invasive facial indicators. Methods: 1000 women aged 20-45 years participated in the study across 7 Chinese cities. The Bowman questionnaire and lactic acid tingling test were administered, and non-invasive instruments quantified all biophysical parameters. Detailed characterization of female facial skincwas achieved through multidimensional non-invasive assessment data. Results: The Bowman questionnaire effectively determined sensitive skin and yielded more statistically significant skin indicators compared to the lactic acid tingling test. The sensitive population exhibited lighter skin tone, higher total acne prevalence, and fewer pores and total pigmentation than

the tolerant population. Aging trends classified the sensitive population into latent aging (20-28 years old), abrupt aging (29-33 years old), and accelerated aging (34-45 years old), each displaying distinct skin characteristics. Conclusions: These findings on sensitive skin aging will inform the development of personalized and precise skincare product customization.

I.M. Yanuarti, J.A. Cita, A. Alvina, R. Pribadi, N.S. Safitri, N. Sami, M.A. Christianti, **Influence of Surface Treatment to Product Performance on Different Skin Type**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Introduction: Good product performance can help consumers to decide on their cosmetic purchase. Surface treatment of the filler in formulation affects powder product performance. The aim of this study was to design best performance of powder foundation formulation based on selection of suitable surface treatment of the filler for different skin type referring to consumer key parameters. Methods: In this study, 175 females were surveyed regarding their preference about important parameters of powder cosmetics. Filler and binder materials were evaluated with oil absorption capacity. The selected materials was evaluated based on the important product perfomances, were formulated and validated in 30 females using instrument analysis and self-assessment questionnaire. Results: Oil control, spreadability, blendability, skin attachment, and coverage are product performances mentioned based on questionnaire. Four surface treated materials with selected two different surface treatment were formulated and continued to the in vivo testing stage. Conclusion: Combination of Mica, Dimethiconol Stearate; Mica, Perfluorooctyl Triethoxysilane; Sericite, Perfluorooctyl Triethoxysilane; and Talc, Dimethiconol Stearate can improve product performance of powder foundation on different skin types. It was able to give good skin attachment, coverage, oil control, and moisture level control.

J*. Maeng, J. So, J. Lee, Y. Jeong, A. Jo, G. Nam*, **A comparative study on skin characteristic factors and skin biomakers that can be applied under harmful environmental conditions in targeting Korean women**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

In the environment of temperature and humidity change outside of body homeostasis, the skin not only affects the skin barrier function, but also increases the sensitivity to external stimuli increasing the possibility of skin damage and disease. In this study, Setting the apply condition to the subjects by a high-temperature drying environment was set using an infrared irradiator. In before and after setting condition, 44 Korean women in their 20's to 50's were selected and measured of skin characteristics and carbonylated proteins which stratum corneum tape stripping. Statistical analyzes were performed by SPSS. As a result of the study, most skin characteristics and skin biomarkers showed differences before and after harmful environmental preparation. There were differences in the factors that change the most by age group, and the factors were affected by harmful environmental conditions were selected by analyzing the correlation before and after applying the conditions. In the future, other skin biomakers analysis such as lipid analysis will be added to the results of this study to verify the correlation and then developed to be directly used in the development of skin index or skin clinical study.

M.L. Mourelle, C.P. Gómez, M.E. Ordoñez, J.L. Legido, **Efficacy assessment of honeybee-based natural cosmetic products**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

The aim of this work is to assess the efficacy of five natural cosmetic products composed by ingredients derived from bees, mainly honey, but also include pollen and beeswax. The study was carried out with 60 individuals separated into two groups in which different cosmetics were evaluated. It was necessary to apply some inclusion and exclusion criteria to be able to participate in the study. Two types of evaluations were done, a sensory test and a biometric evaluation. For this evaluation, the equipment used was the Cutometer MPA580 and corneometer CM825 and sebumeter SM815 probes the Courage-Khazaka, analysing hydration, sebum content, and elasticity before and after the use of the cosmetic. Improvements were obtained both in hydration and sebaceous regulation of the studied products. Likewise, there was a great acceptance of the products in the sensory test.

I.M. Yanuarti, A. Alvina, J.A. Cita, M.A. Christianti, N.S. Safitri, R. Pribadi, **In Vivo Evaluation (Clinical and Instrumental) Study of Efficacy of The Selective 'Triple Action Sebum Control' Agents in Pressed Powder Formulation on Indonesian Oily Skin**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Introduction: Porous silica, niacinamide, and zinc gluconate are well known as sebum control agents with different mechanisms. Porous silica absorbs non selectively to facial liquid including sebum and moisture, while niacinamide and zinc gluconate acts selectively to control sebum. The aim of this study was to attain superior efficacy of their combination as 'Triple Action Sebum Control' in powder formulation for oily skin without causing skin dryness.Methods: Pressed powder formulations containing

‘Triple Action Sebum Control’ which consisted of porous silica (1%), Niacinamide (3%), and Zinc Gluconate (0.5%) was studied in 30 healthy oily skin volunteers. In vivo test was conducted using Sebumeter and corneometer to measure the sebum and moisture level of subjects compared to untreated. Results: Based on in vivo test results, the ‘Triple Action Sebum Control’ formulation is proven more effective in maintaining sebum level by -12.14% compared to untreated and increases skin moisture by 33.48% compared to baseline after 6 hours. Conclusion: The superior efficacy of the ‘Triple Action Sebum Control’ through three different sebum control pathways was achieved. Also skin's moisture level value isimproved during product use.

S. Ding, X. Sun, Y. Yu, C. Liu, **Combinatorial application of liquid crystal emulsion and glycosyl glycerol for improvement of skin elasticity, roughness, trans epidermal water loss and hydration**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Liquid crystal skin care products are widely used in cosmetics field because of their good skin affinity, unique optical characteristics, excellent water locking and moisturizing, control ability in active substances slow-releasd and other advantages. glycosyl glycerol is a glycoside compound formed by the connection of glycerol molecules and glucose molecules through glycosidic bonds. It can balance cell osmotic pressure and maintain cell survival under adverse environmental conditions. In this study, we developed a cream with liquid crystal structure using glycosyl glycerol as main active ingredient and evaluated its effects in skin care on 33 males or females between 30-65 years old with rough and dry skins and wrinkles around their eyes. The combinatorial creams showed statistically significant efficacy for the improvement of skin elasticity, roughness, trans epidermal water loss and hydration. Through self-evaluation from the subjects, facial dry lines, fine lines, moisture, elasticity and other aspects had obvious improvements. cThe efficacy results showed that this combinatorial application was a outstanding method for skin care, especially in anti-aging area to improve skin elasticity, roughness, trans epidermal water loss and hydration.

J. Park, Y, Jang, E. Lee, J. Ha, **Who ages faster? Men or Women: A study on the skin characteristics of male versus female with age-specific of comparison**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

The global male cosmetic market has growing rapidly. However, research on male skin is relatively limited compared to female, despite the increasing need for personalized cosmetics and anti-aging products for men. Previous studies have mainly focused on comparing male and female skin without considering age-related changes. The objective of this study is to investigate the specific clinical characteristics of skin aging in Asian males and females in their 30s to 40s. This study conducted on 63 Korean male and 79 Korean female between the ages of 30 and 49. The subjectswere classified by their age and gender: 30-39 years old male, 30-39 years old female, 40-49 years old male, and 40-49 years old female. In male skin, wrinkle, skin color, spot, glossiness which known as major sign of photoaging, were significantly changed by aging but those parameters were not in female skin. While, TEWL and hydration level of the female skin significantly changed by aging but not in male skin. Male experiences a significant deterioration of skin aging parameters even in middle age, because their less cosmetic use habit and negligence in using sunscreen.

J. Rizzo, M. Min, S. Adnan, N. Afzal, J. Maloh, C.J. Chambers, V. Fam, R.K. Sivamani, **Soy Protein Containing Isoflavones Improves Facial Signs of Photoaging and Skin Hydration in Postmenopausal Women: Results of a Prospective Randomized Double-Blind Controlled Trial**, Nutrients 2023, 15

Preliminary findings from multiple studies indicate that dietary intake of soy-derivedisoflavones exert beneficial effects on the skin including defense against oxidant damage, stimulation of collagen synthesis, and increased hydration. This study aims to investigate how oral supplementation of a soy protein isolate with added isoflavones (SPII) affects components of photoaging such as facial wrinkles and dyspigmentation, and skin biophysical measures such as skin hydration and sebum excretion in postmenopausal women. This 6-month prospective, randomized double-blind controlled study was conducted on 44 postmenopausal women with Fitzpatrick skin types I, II, and IIIwho were randomized to receive either casein protein or SPII. A high-resolution facial photography system was used to measure wrinkle severity and pigmentation at 0, 8, 16, and 24 weeks. Skin biophysical measurements included skin hydration and sebum production. The average wrinkle severity was decreased in the SPII intervention group at week 16 and week 24 by 5.9% and 7.1%, respectively, compared to the baseline. Compared to the casein group, average wrinkle severity was significantly decreased at week 16 ($p < 0.05$) and week 24 ($p < 0.0001$). Facial pigment intensity was decreased by -2.5% ($p < 0.05$) at week 24, whereas there was no significant change in the casein group. Compared to baseline, skin hydration in the SPII group was significantly increased by 39% and 68% on the left and right cheeks ($p < 0.05$),

respectively, at 24 weeks. There were no significant differences in sebum production. Dietary soy protein supplementation with isoflavones may improve skin photoaging,including wrinkles and dyspigmentation, and increase skin hydration in postmenopausal women with Fitzpatrick skin types I, II, and III.

Y. Li, X. Chen, X. Luo, L. Li, Y. Lin, **Intradermal Botulinum Toxin A Injection for Scalp Sebum Secretion Regulation: A Multicenter, Randomized, Double-Blinded, Placebo-Controlled, Prospective Study in Chinese Subjects**, Aesthetic Surgery Journal 2023, Vol 43(1) p. 38–48

Background: Although botulinum toxin type A (BTX-A) injection has been proved to reduce topical sebum secretion, the impact of intradermal BTX-A injection on scalp sebum production has never been reported. Objectives: The purpose of this study was to investigate the effcacy and safety of intradermal BTX-A treatment vs intradermal normal saline (NS) injection for scalp sebum secretion regulation. Methods: This multicenter, randomized, double-blinded, prospective study recruited patients complaining of oily scalp and/or hair. The patients were randomly allocated to receive either 1 session of intradermal BTX-A or NS injection. The baseline and posttreatment scalp sebum secretion at 24, 48, 72, and 96 hours postshampooing was measured with a Sebumeter SM815 (Cutometer Dual MPA 580, Courage & Khazaka, Cologne, Germany) at 1, 3, 4, and 6 months after treatment. The patients' comments, satisfaction, and adverse events were evaluated and compared. Results: In total, 25 patients in the BTX-A group and 24 patients in the NS group completed the follow-up. For the treated region, compared with NS, intradermal BTX-A treatment (50-65 U) signifcantly reduced scalp sebum secretion at 24, 48, and 72 hours postshampooing at the 1- and 3-month follow-up visits ($P < 0.05$). No signifcant difference between the 2 groups was observed at 4 and 6 months after the treatment. The patients' satisfaction ratings were signifcantly higherfor the BTX-A treatment ($P = 0.000$). No serious adverse events occurred.Conclusions: Compared with NS, 1 session of intradermal BTX-A injection (50-65 U) effectively and safely reduced scalpsebum secretion and greasiness perception in the treated region at 24 and 48 hours postshampooing for 3 months.

A.P. Fonseca, C. Dal Pizzol, A.C. Vanzo, G.H. da Silva, G. Facchini, A.L. Tabarini Alves Pinheiro, S. Eberlin, P.M.B.G. Maia Campos, **Antiaging effects of a skin care formulation containing nanoencapsulated antioxidants: A clinical, in vitro, and ex vivo study**, J Cosmet Dermatol. 2023

The development of effective cosmetic products for the reduction of the signs of skin aging is a complex process which requires an optimized combination of ingredients and specialized systems to deliver the actives to the skin layers. Aim: To evaluate the tolerance and antiaging clinical efficacy of a cosmetic formulation containing a blend of nanoencapsulated antioxidants: ascorbyl palmitate, resveratrol, tocopherol, caffeine, carnosine, and niacinamide. Methods: Clinical efficacy was determined by subjective and instrumental analyses of collagen synthesis by fluorescence spectroscopy, by three-dimensional imaging analysis of suborbital edema, and by analysis of skin hydration and sebum content by biophysical techniques — Corneometer® and Sebumeter®. Results: The studied formulation was safe and effective for the improvement of skin appearance by increasing collagen synthesis and skin moisturizing and by reducing facial blemishes, swelling, and oiliness. A preclinical exploratory approach using an experimental model of human cell and skin cultures agreed with the observed antiaging effects, identifying mechanisms related to the containment of oxidative stress, reduction of melanin production, increased synthesis of type I procollagen, and regulation of the epidermal cohesion protein filaggrin. Conclusions: The skin benefits obtained resulted from the combination of the ingredients in the formulation and the nanoencapsulation-based delivery system, which favors the solubility, safety, efficacy, and bioavailability of the preparation to the skin.

R.K. Sivamani, J. Maloh, Y. Nong, **Correlating the Gut Microbiota and Circulating Hormones with Acne Lesion Counts and Skin Biophysical Features**, Microorganisms 2023, 11

Acne vulgaris is a common inflammatory condition that is multi-factorial and impacted by both intrinsic and extrinsic features. Several previous studies have assessed for correlations between factors such as circulating hormones, stress, or the microbiome. However, there have not been any correlations specifically against lesion counts or differentiating correlations between inflammatory and non-inflammatory lesion counts. Here, we correlate several factors against acne lesions. Twenty men and women with mild to moderate acne were recruited, and their hormonal levels and their gut microbiome were collected and correlated against their inflammatory and non-inflammatory lesions of acne. Facial non-inflammatory lesions were weakly correlated to sebum excretion rate and weakly inversely correlated to forehead and cheek hydration. We examined stress through the use of a normalized peak-to-trough ratio (higher numbers indicated less stress), which correlated withskin hydration and inversely correlated with sebum excretion rate. Sebum excretion rate was weakly correlated to testosterone levels, and facial hydration correlated with estradiol levels. Correlations with the gut microbiome showed

differential correlations with inflammatory and non-inflammatory lesions, with *Clostridium sp AF 23-8* correlating to inflammatory lesion counts, while *Actinomyces naeslundii str Howell 279* correlated to non-inflammatory lesions. Overall, measures of stress and circulating hormones correlate to skin biophysical properties and acne lesion counts. Also, different gut bacteria correlate with either inflammatory or non-inflammatory lesion counts. We hope that our findings stimulate further work on the gut–mind–stress–skin axis within acne.

J.H. Kim, H.S. Son, D.-A. Yu, Y.B. Choe, Y.W. Lee, **Assessment of Effects of Low-Level Light Therapy on Scalp Condition and Hair Growth**, Indian J Dermatol. 2023 Jul-Aug; 68(4): 487

Background: The appearance of the scalp and hair is very important aesthetically regardless of age or sex. Although there are many drugs and treatment methods for scalp problems and hair loss, the treatment response is still insufficient. Aims and Objectives: To evaluate the efßicacy of low-level light therapy in a helmet-like device. Materials and Methods: This study was designed as a 24-week trial with 50 participants. All participants used a helmetshaped device emitting 630–690, 820–880, and 910–970 nm light wavelengths, for 20 minutes, daily for 24 weeks. A phototrichogram for hair density and thickness, Global Aesthetic Improvement Scale score, erythema index, and sebum secretions of the scalp were evaluated at baseline and at 12 and 24 weeks. Results: After 24 weeks of treatment, hair density and hair thickness were found to have significantly increased (P <.01 and P =0.013, respectively) and sebum secretion of vertex area had decreased signißicantly (P <.01). Of 49 participants, 73.47% of the participants showed improvement in the overall appearance of the scalp (n = 36). Conclusion: A helmet-like low-level light therapy device can improve the appearance of the hair, with thickening and increase in the density of the hair, and can improve scalp condition by decreasing sebum secretion.

V. Couturaud, M. Le Fur, M. Pelletier, F. Granotier, **Reverse skin aging signs by red light photobiomodulation,** Skin Research & Technology, Volume 29, Issue 7, July 2023

Background: Photobiomodulation is a process by which the absorption of red light energy produces a series of physiological effects at the cellular level such as the enhancement of mitochondrial Adenosine Triphosphate (ATP) production, cell signaling and growth factor synthesis, and the reduction of oxidative stress. Light emitting diodes (LEDs) photobiomodulation is an increasingly popular therapy for treating skin problems, especially for reversing the signs of skin aging. Objective: The objective of this study is to demonstrate the effectiveness of a photobiomodulation treatment using red LEDs on the facial skin at a rate of two sessions per week for 3 months. The LED mask used is the Skin Light Dior x Lucibel mask diffusing a cold red light with a wavelength of 630 ± 10 nm and a power of 15.6 J/cm2 for a duration of 12 min. Method: In order to demonstrate the effectiveness of the mask in reversing the signs of skin aging, a clinical study was conducted on 20 healthy Caucasian women: the antiwrinkle effect by measuring the depth of the crow's feet wrinkle, the relaxation of the oval of the face by clinical scoring, the firmness and elasticity of the skin by cutometric measurement, the density of the dermis by ultrasound analysis, the smoothness of the skin by measuring the roughness at the cheek, the homogeneity of the complexion by chromametric measurement, the diameter of the pores by macrophotographs and finally the sebo-regulating effect by measurement of the rate of sebum and quantification of the number of pores containing porphyrin in the subjects presenting a mixed to oily skin. The satisfaction of the volunteers was also evaluated at the end of the study via a self-questionnaire. Results: The efficacy results measured after 1, 2, and 3 months of use are progressive and confirm the interest of LED photobiomodulation to reverse the visible signs of skin aging. All the volunteers observed an overall improvement in skin quality. Conclusion: All the results observed confirm the interest of using photobiomodulation to reverse the visible signs of aging. These results last for up to 1 month after stopping the use of the mask, which is a sign of lasting structural and functional rejuvenation of the skin.

D. Hexsel, I. Valente-Bezerra, G. Mosena, M.A. Oakim Mourao, V. Costa Fabris, **Subjective and Objective Measurements of the Facial Effects of Microdoses of Botulinum Toxin**, Dermatol Pract Concept. 2023;13(3)

Introduction: Studies have suggested that botulinum toxin A may improve skin quality, and application protocols using hyper-diluted doses of botulinum toxin (microdosing) have been studied as a way to achieve therapeutic goals without fully paralyzing the targeted muscles. Objectives: To evaluate the effects of a combined protocol utilizing both the standard dosing and the microdosing of AbobotulinumtoxinA for the improvement of skin quality, measured by objective and subjective measurements. Methods: Thirty patients were treated with botulinum toxin using both the standard technique and the microdosing technique. Objective (Sebumeter®, Mexameter® and digital dermoscopy pictures) and subjective (Global Aesthetic Improvement Scale and a clinical scale for evaluating the quality of facial skin) measurements of the effects in the treated areas were taken to assess the efficacy of the treatment. Results: Digital dermoscopy showed a marked reduction of erythema and

telangiectasias. Erythema and telangiectasias improved both on objective and subjective measurements. Skin oleosity, static rhytids, papules and pustules and enlarged pores improved on subjective measurements. Patient satisfaction was high (93%) despite the high rate of adverse events (56%).

Y. Kurniawati, M. Soleh Rodian, G.D. Prasasty, D. Dalilah, A. Nathania, **Association Between Sebum, Total Cholesterol, and Low-Density Lipoprotein (LDL) Cholesterol Levels With Post-acne Keloids**, Cureus 15(8), 2023

Background: Prolonged acne inflammation causes scar formation, one of which is post-acne keloids. Sebum, total cholesterol, and low-density lipoprotein (LDL) level can influence post-acne keloids. This study aims to determine the association between sebum, total cholesterol, and LDL levels with post-acne keloids to better define the predisposing factors for this condition. Methods: This study used primary data involving sociodemographics, clinical features, keloid classification, sebum levels, total cholesterol levels, and LDL levels in post-acne keloid patients at the Dermatology, Venereology, and Aesthetics Outpatient Clinics of Dr. Mohammad Hoesin General Hospital Palembang, Indonesia. Study samples were patients who fulfilled the inclusion and exclusion criteria by consecutive sampling. The data then underwent univariate and bivariate analyses to show the association between variables. Result: A total of 22 patients with post-acne keloids participated. The subjects presented mostly with major keloids based on the classification (59.1%). The patients were predominantly 21-30 years old (50%) and male (90.9%). The keloids had onsets >six months to one year (45.5%), durations of one to five years (77.3%), and multiple presentations (68.2%). Vancouver Scar Scale (VSS) assessment showed mainly red vascularity (40.9%), mixed pigmentation (68.2%), >5 mm keloid height (59.1%), and firm pliability (40.9%). Most patients presented with pruritus (86.4%) but without pain (54.5%). Most had low levels of sebum (50%), normal total cholesterol (90.9%), and near-optimal LDL level (40.9%). There were no significant association between sebum ($p = 1.000$), total cholesterol ($p = 1.000$), and LDL ($p = 0.376$) levels with post-acne keloids. However, LDL levels above normal were most found in this study (68.2%). Conclusions: There is no association between sebum, total cholesterol, and LDL levels with post-acne keloids. Despite the fact that LDL level was not statistically significant, there has been a rise in LDL level in the research subjects. Further research with a larger number of subjects and consideration of multicenter study through retrospective/prospective methods and complete lipid profile examinations is still required to provide a more representative study.

I. Dolečková, P. Orzol, K. Vašičková, S. Karel, L. Petrovičová, G. Huerta-Angeles, M. Stěpánová, V. Velebný, **Retinol-like zinc hexapeptide complex**, Personal Care Magazine online, July 2023

Acne vulgaris is a common chronic skin disease affecting individuals of all ages. The pathogenesis of acne is characterized by four core events: hyperseborrhoea. Epithelial hyperkeratinization, *Cutibacterium acnes* colonization and inflammation. Due to the multifactorial nature of the disease a combination therapy or use of multifunctional compounds are the preferred approaches. Retinoids are among the most effective compounds targeting multiple acne associated pathways. However, they often cause negative adverse effects including skin dryness and irritation.

S. Laura, S. Veronese, G. Alberti, P.A. Bacci, A. Beatini, E. Fulgione, C. Urbani, A. Sbarbati, **Vacuum and electromagnetic field in synergy for skin rejuvenation: A retrospective study on 217 patients**, J Cosmet Dermatol. 2023;22: p. 2989–2995

Background: There are many aesthetic treatments aimed at combating aging. In the most common and frequently used ones there are often side effects, albeit minor ones. However, sometimes it is necessary to use medications before or after treatments. Objectives: To evaluate the anti-aging efficacy and application safety of a therapybased on the combination of vacuum and electromagnetic fields (EMFs). Methods: A retrospective study was conducted to evaluate the aesthetic effects of the treatment on 217 subjects. Before treatment (T0) and after the last session (T1), skin hydration levels, the amount of sebum present and the pH were measured. The presence of discomfort during the sessions and side effects at T1 was verified. At T1, the levels of satisfaction of the patients and of the doctors who performed the treatment were assessed. At 3 and 6 months of follow-up the aesthetic results were re-evaluated. Results: For all treated subjects, an evident qualitative improvement was observed in the quality of the skin of the neck and face, with an increase in tone and a reduction in wrinkles. The instrumental tests highlighted a normalization of skin hydration, pH, and sebum values. High levels of satisfaction at T0 and good stability of results up to 6 months of follow-up were reported. No discomfort was referred during the treatment sessions, nor any side effects after the entire treatment. Conclusions: The treatment that exploits the synergy between vacuum and EMFs is very promising given the effectiveness and safety of the technique.

L. Imbert-Roux, L.Taulemesse, R. Francolon, J.-Y. Berthon, **Next-gen moisturizer targeting the holobiont**, PERSONAL CARE MAGAZINE, June 2023

For more than ten years, interest for the microbiota has increased and been studied independently from the organismit lives with. Today, the study of the interactions between this host and its microbiota is leading to a new approach: the Holobiont. From the Greek *holos* (all) and *bios* (life), the term holobiont refers to a natural living entity consisting of a higher organism, i.e. a multicellular organism, called a host, such as you, me, an animal or a plant; and its microbiota, i.e. the cohort of microorganisms that is closely associated with.

L. Feng, Q. Zhang, N. Ruth, Y. Wu, C. Saliou, M. Yu, **Compromised skin barrier induced by prolonged face mask usage during the COVID-19 pandemic and its remedy with proper moisturization**, Skin Research & Technology, 2023

Background: Prolonged face mask usage, a daily practice for the public due to the COVID-19 pandemic, creates high levels of humidity underneath the mask, which may cause unexpected skin concerns. Objective: To investigate the impact of repeated mask usage on the face by comparing skin properties inside and outside of the mask-covered areas. Methods: A double-blinded, randomized, split-face clinical study was conducted with 21 healthy female participants who wore face masks at least 6 h every day for 1 week, with one side of their face treated with a moisturizer three times daily. On day 8, after 5 h of wearing the mask, skin properties (sebum, hydration, and trans-epidermal water loss [TEWL]) were evaluated at 15, 60, and 120 min post-mask removal, followed by barrier disruption and recovery assessment. Results: Mask usage weakened stratum corneum (SC) on facial skin compared to uncovered areas, including reduced SC hydration ($p < 0.02$ at 15 min) and increased TEWL in response to tape stripping challenge ($p < 0.03$ after stripping). In addition, sebum production also increased after mask removal ($p < 0.01$ at 15 min). Notably, a daily moisturizer mitigated these effects by increasing SC hydration ($p < 0.001$) and improving SC resilience against barrier disruption. Conclusion: Daily prolonged usage of a facial mask, essential due to the COVID-19 situation, generated a high-humidity microenvironment and led to compromised SC, which was revealed by a barrier challenge technique. Moreover, proper facial moisturization may help to maintain skin homeostasis and prevent the barrier impairment caused by repeated mask usage.

E.H. Park, D. Jung, J.H. Won, J. Seong, J. Na, **Effects of winter indoor environment on the skin: Unveiling skin condition changes in Korea**, Skin Research & Technology, 2023;29:e13397

Background: InKorea, winter can cause skin dryness due to low relative humidity (RH); moreover, indoor heating devices promote moisture loss and air pollution. If dryness persists, dead skin cells accumulate, leading to skin problems; therefore, careful skin care is required. This study aimed to compare changes in skin conditions when exposed to an indoor environment for a short period of 6 h in winter, and to suggest proper winter skin care practices. Methods: A randomized, split-face clinical study was conducted in which healthy female participants with normal skin were exposed to an indoor environment with a heater turned on for a short period at least 6 h per day in thewinter season, and cream was applied to one side of the face. Skin temperature, hydration, sebum, transepidermal water loss (TEWL), elasticity, texture, pores, redness, and wrinkles were measured at the treated and nontreated sites. Results: After 6 h of exposure, skin temperature, pores, roughness, redness, and wrinkles significantly increased ($p < 0.05$) on the face, whereas TEWL significantly increased on the forearm ($p < 0.05$). However, sebum secretion appeared to function as a barrier to maintain homeostasis in the facial skin. Elasticity, pores, texture, and wrinkles in the cream-treated ceramide site improved compared to those in the nontreated site ($p < 0.05$). The moisture content was also significantly higher in the forearm ($p < 0.05$). Conclusion: Changes in skin parameters of participants with healthy skin were observed even after short-term exposure to an indoor environment in winter. Creams containing ceramide maintain skin homeostasis and protect the skin barrier; therefore, it is recommended to use such creams to prevent skin damage and maintain healthy skin, particularly during prolonged exposure to indoor environments during winter.

S. Jarząbek-Perz, M. Dziedzic, A. Kołodziejczak, H. Rotsztejn, **Split-face evaluation: Gluconolactone plus oxybrasion versus gluconolactone plus microneedling. The effects on skin parameters**, Skin Research & Technology, Volume 29, Issue 6, June 2023

Background: The application of polyhydroxy acids and alpha-hydroxy acids to the skin is often used in cosmetology. To enhance the effect of gluconolactone chemical peeling, a combined method including water-oxygen oxybrasion or microneedle mesotherapy can be used. Objectives: To evaluate skin parameters such as hydration, sebum, pH and TEWL after application of a 10% gluconolactone chemical peel in combination with oxybrasion and microneedling. Materials and methods: Twenty-one Caucasian women participated in the study. A series of three split face treatments was carried out at 1-

week intervals. Oxybrasion was performed on the right side of the face and micro-needle mesotherapy on the left side. A 10% gluconolactone solution was applied to the entire face. Before the first and third treatments and 2 weeks after the last treatment, skin parameters were evaluated. Photographic documentation was also made before and after the treatment series. Results and conclusion: Evaluation of skin parameters using Courage & Khazaka 580 Multi Probe Adapter probes (Courage + Khazaka electronic GmbH, Cologne, Germany) showed an increase in hydration and a decrease in sebum, pH and TEWL for both treatments. There were no statistically significant differences between the treatments. Combining chemical peeling of gluconolactone with oxybrasion and microneedle mesotherapy is a good method to seal the hydrolipid barrier and increase skin hydration.

K. Chilicka, M. Rusztowicz, A.M. Rogowska, R. Szyguła, D. Nowicka, **Efficacy of Oxybrasion and Cosmetic Acids on Selected Skin Parameters in the Treatment with Acne Vulgaris**, Clinical, Cosmetic and Investigational Dermatology 2023:16 p .1309–1317

Purpose: The present study aimed to evaluate the efficacy of an oxybrasion treatment applied alone and an oxybrasion treatment combined with cosmetic acids in improving acne-prone skin and selected skin parameters. Patients and Methods: A single-blind placebo study in a sample of 44 women diagnosed with acne vulgaris was conducted. Group A (n = 22) had a series of five oxybrasion treatments, while group B (n = 22) received a synergy of five oxybrasion treatments and a mixture of phytic, pyruvic, and lactic and lactic ferulic acids at 40% pH 1.4. Cosmetic treatments were performed every 14 days, and The Derma Unit SCC3 apparatus (Courage & Khazaka, Cologne, Germany) Sebumeter SM 815 and Corneometer CM825 and GAGS scale were used to check their effectiveness. Results: A Bonferroni post hoc test showed that group A and B did not differ from each other in acne severity before treatment ($p = 1.00$). However, these samples differed significantly after treatment ($p < 0.001$), suggesting that combined treatment of oxybrasion and cosmetic acids has a better effect than oxybrasion alone. Also, two treatment conditions (before and after) were statistically different for groups A and B separately ($p < 0.001$), indicating a similar efficacy of both treatments on acne severity. Conclusion: Cosmetic treatments improved acne-prone skin and selected skin parameters. Better results were obtained by combining an oxybrasion treatment with cosmetic acids.

J. Pavlačková, H. Pecháčková, P. Egner, P. Mokrejš, R. Gál, M. Janalíková, **The Effect of Cosmetic Treatment and Gel Laser Therapy on the Improvement of Comedogenic Skin Type**, Gels 2023, 9, 370

Comedogenic skin care receives little attention compared to the care or treatment of more serious acne manifestations. Traditional therapies may have limited success with potential side effects. Cosmetic care supported by the effect of a biostimulating laser may offer a desirable alternative. The aim of the study was to evaluate the biological effectiveness of combined cosmetic treatment with lasotherapy on comedogenic skin type using noninvasive bioengineering methods. Twelve volunteers with comedogenic skin type underwent a 28-week application of Lasocare Basic 645® cosmetic gel containing *Lactoperoxidase* and *Lactoferrin* in combination with laser therapy (Lasocare® method). The effect of treatment on skin condition was monitored using noninvasive diagnostic methods. The parameters were the amount of sebum, the pore count, the ultraviolet-induced red fluorescence assessment of comedonic lesions (percentage of the area and quantification of orange-red spots), hydration, transepidermal water loss, and pH. A statistically significant decrease in sebum production was observed on the skin of the treated volunteers, as well as a decrease in porphyrins, indicating the presence of *Cutibacterium acnes* populating comedones and causing enlarged pores. The balance of epidermal water in the skin was regulated adjusting the acidity of the skin coat in individual zones, which decreased the presence of *Cutibacterium acnes*. Cosmetic treatment in combination with the Lasocare® method successfully improved the condition of comedogenic skin. In addition to transient erythema, there were no other adverse effects. The chosen procedure appears to be a suitable and safe alternative to traditional treatment procedures known from dermatological practice.

M. Shahzad Khan, Q. Adnan, N. Akhtar, **Profiling of phytochemicals using LC-ESI-MS^2, in vitro, in vivo characterization and cosmeceutical effects of Alpinia galanga (wild) extract loaded emulgel**, J Cosmet Dermatol, 2023 May;22(5): p. 1628-1641

Background: The potential as a depigmenting agent, sun protection, and healthy benefits is indicated by the sun protection factor, radical scavenging, and tyrosinase inhibitory activities of Alpinia galanga (wild). Aims: A stable emulgel containing A galanga (wild) extract is prepared. This emulgel is then characterized by in vitro evaluation and identification of contents by LC-ESI-MS^2. In vivo performance is counted in terms of moisturizing, melanin level, erythema, sebum, skin fine pores and large pores analysis, and other related physiological skin parameters. Methods: DPPH radical scavenging activity, total phenolic and flavonoid counts were used to measure the free radical

scavenging and tyrosinase inhibitory capability of A galanga (wild) extract, respectively. LC-ESI-MS^2 used for phytochemical analysis. Emulgels synthesize, and their globule size, Ultracentrifugation, pH, and conductivity were all evaluated. Among the developed formulations, the optimal emulgels formulation underwent 90-day stability tests for organoleptic characteristics and rheology at 8°C, 25°C, 40°C, and 40°C + 75% RH (relative humidity). Using sebumeter®, mexameter®, and corneometer®, changes in skin physiological parameters were assessed over the course of 12 weeks in 13 healthy male, Asian volunteers. VisioFace® is used for computational analysis of high-resolution pictures to determine the % area, fine pore counts, and large pore counts of the skin. Results: The antioxidant, tyrosinase inhibitory potential and counts of total phenolic and flavonoids of A galanga (wild) extract were impressive (85%, 75%, and 48.0 mg GAE/g and 14.37 mg quercetin/g, respectively). In terms of stability evaluation, globule size (0.7528 ± 0.192 μm). Optimized A galanga (wild) ethanol aqueous (AGEA) extract loaded emulgel was stable in terms of organoleptic and in vitro evaluation. The AGEA formulation significantly reduced the amount of sebum, erythema, fine pore counts, large pore counts, fine pore % area and large pores area percentage while significantly improved the moisture and elasticity of the skin. Conclusion: A stable A galanga (wild) extract loaded emulgel was successfully produced that improved the skin physiological parameters in terms of skin's sebum, erythema, moisturizing, melanin, and pores.

P. Detudom, N. Kamanamool, A. Paichitrojjana, P. Udompataikul, M. Udompataikul, **Efficacy of anti-sebum moisturizing cream containing 2% L-carnitine and 5% epigallocatechin gallate in seborrhea: A randomized clinical trial**, J Cosmet Dermatol. 2023;22:3058–3064

Background: Seborrhea leads to facial greasiness and unpleasant feeling. People with seborrhea also have trouble with selecting moisturizers. l-Carnitine and epigallocatechin gallate (EGCG) are reported anti-sebum properties. However, neither efficacy comparison nor the combination effect of the two topical anti-sebum agents was studied. Moisturizing cream with these agents is supposed to provide skin with an optimal water–oil balance. Aims: To compare the efficacy of moisturizer containing 2% l-carnitine or 5% EGCG alone on sebum controlling, and the synergistic effect of these two agents. Methods: Three study creams were formulated by adding three kinds of anti-sebum agents which were 2% l-carnitine, 5% EGCG, and 2% l-carnitine plus 5% EGCG in moisturizing cream base of dimethicone and glycerin. A randomized clinical trial was conducted. Ninety subjects, divided into three groups, applied the cream for 4 weeks. Sebum level, skin capacitance, and transepidermal water loss (TEWL) were evaluated at Weeks 0, 1, 2, and 4. Life qualities and subjective outcomes were assessed before and after treatment. Results: The mean sebum reduction from baseline was statistically significant in all treatment groups ($p < 0.01$). The median time to oil control was longer in l-carnitine group. The combine group had significantly greater anti-sebum efficacy than lcarnitine group ($p = 0.009$). All three groups had significant improvement of other objective parameters and subjective outcomes. Conclusions: The anti-sebum moisturizing cream exhibited beneficial effect on the sebum reduction with improve skin hydration in people with seborrhea and made users satisfied. The EGCG group and the combine group show the greater anti-sebum effect than the l-carnitine group.

C. Uhl, D. Khazaka, A. Pouladi, **Is hair care the new skin care? Use of "classic" biophysical methods for hair & scalp measurement. A review,** EURO COSMETICS, 4-2023

Hair diversity (style, shape, growth pattern or color) is one of the most important features to define us physically. Therefore, it is no surprise that the market of hair care products with a value of 93-5 billion US $ 1 (Statistica, September 2020) is one of the most important sectors in the complete area of cosmetic products. Hair care products for women are the most frequently bought and used cosmetic products of all. Shampoos and conditioners are leading the field. For men, hair care is the most important and favored sector of all cosmetics.

W.-Y. Bae, W.-H. Jung, Y.J. Lee, S.L. Shin, Y.-K. An, T.-R. Kim, M. Sohn, **Heat-treated *Pediococcus acidilactici* LM1013-mediated inhibition of biofilm formation by *Cutibacterium acnes* and its application in acne vulgaris: A single-arm clinical trial**, J Cosmet Dermatol. 2023;22: p. 3125–3134

Purpose: Acne vulgaris is a common skin disease accompanied by chronic inflammation in the pilosebaceous follicles, resulting from excessive *Cutibacterium acnes*. This study aimed to investigate the inhibition of biofilm formation by C. acnes ATCC 6919 using heat-treated *Pediococcus acidilactici* LM1013 (HT-LM1013), previously isolated from the Korean traditional fermented alcoholic beverage—makgeolli, and its application as a leave-on-type product for patients with acne vulgaris. Methods: HT-LM1013 was prepared by Lactomason and homogenized using a high-pressure homogenizer. The minimum inhibitory concentration (MIC), tricarboxylic acid (TCA) cycle, and lipase activity were evaluated for *C. acnes* inhibition. Inhibition of biofilm formation was demonstrated using a crystal violet solution. Damaged C. acnes was observed using field-emission scanning electron microscopy (FE-

SEM). Clinical trials were performed using a leave-on-type product containing HT-LM1013. Results: HT-LM1013 inhibited the TCA cycle (36.80%) and lipase activity using palmitate (31.89%), stearate (36.91%), and oleate (30.86%) as substrates at 1 × MIC ($p < 0.01$). After treatment with HT-LM1013, concave and elongated shapes of C. acnes were observed by FE-SEM. In addition, HT-LM1013 inhibited biofilm formation by 71.75% at 1 × MIC ($p < 0.001$) and removed 73.35% of mature biofilms ($p < 0.01$). In the clinical trial, the leave-on-type product decreased the number of closed comedones from 14.04 to 10.22, open comedones from 7.22 to 4.39%, and sebum content to 76.23% at week 4 ($p < 0.01$). The satisfaction score of the participants was recorded 3.83 on a five-point scale. Conclusion: HT-LM1013 is potent for the treatment of acne vulgaris.

C. Uhl, L. van't Hoff, **Skin pH assessment for sensitive skin claims**, PERSONAL CARE MAGAZINE, April 2023

Specific amounts of water and lipids on the skin surface determine the composition of the hydrolipidic film of the skin. The various functions of sebum and moisture on the skin surface to keep it supple, flexible and healthy have been investigated from the beginning in the cosmetic industry. The slightly acidic pH-value of the hydrolipidic film is a major protective factor for the skin, buffering acids and alkaline products that get in contact, as well as providing an environment favourable to our naturalvmicrobiome, at the same time restricting the growth of pathogenic microbes.

P. Perugini, C. Grignani, G. Condrò, H. van der Hoeven, A. Ratti, A. Mondelli, A Colpani, M. Bleve, **Skin Microbiota: Setting up a Protocol to Evaluate a Correlation between the Microbial Flora and Skin Parameters**, Biomedicines 2023, 11, 966

The concept of skin microbiota is not really clear and more accurate approaches are necessary to explain how microbial flora can influence skin biophysical parameters in healthy individuals and in pathology patients with non-infectious skin disease. The aim of this work is to provide a suitable, fast and reproducible protocol to correlate skin parameters with the composition of skin microbiota. For this purpose, the work was split into two main phases. The first phase was focused on the selection of volunteers by the administration of a specific questionnaire. The skin microbiota was then collected from the forehead of selected volunteers as a test area and from the shoulder as control area. On the same skin area, the biophysical parameters, such as transepidermal water loss (TEWL), sebum level (SL), porphyrin intensity, keratin content and stratum corneum water content were taken. All parameters were taken at t0 and after 15 days without changes in the volunteers' lifestyle. A strong correlation was found between forehead and shoulder area for porphyrin intensity, pH and TEWL parameters, and between *Cutibacterium acnes* and some biophysical parameters both in the forehead and the shoulder area. The procedural setup in this work represents the starting point for evaluating problematic skins and the efficacy of cosmetic products or treatment against skin dysbiosis.

A. Charpentier, **Achieving Instant Gratification – Investing in the Millenial's Dream,** EURO Cosmetics, 4-2023

Hair is an integral part of one's identity, and people around the world place a great deal of importance on its look and style. Consumers are now looking for more inclusive, natural, ethical, and sustainable products that can help them improve their hair grooming rituals while still providing the necessary cleansing and caring benefits.

S. Li, X. He, Z. Zhang, X. Zhang, Y. Niu, A. Steel, H. Wang, **Efficacy and safety of a facial serum and a mask containing salicylic acid and lipohydroxy acid in acne management: A randomized controlled trial**, J Cosmet Dermatol. 2023;22: p. 2502–2511

Background: Inflammatory and non-inflammatory acne lesions constitute a significant clinical challenge in acne subjects. Aim: To evaluate the efficacy and safety of a facial serum and a mask containing salicylic acid and lipohydroxy acid for improving skin conditions.Methods: This randomized controlled trial included adults with comedones, postinflammatory erythema (PIE) and/or hyperpigmentation (PIH) in Shanghai, China in July 2021. Participants were randomly assigned 1:1 to receive the study Serum + Mask or serum alone for 8 weeks. Acne severity, comedones, papules, pustules, PIE, PIH, skin pores, skin tone evenness, sebum secretion, skin hydration, and trans-epidermal water loss were evaluated at T0d, T1d, T7d, T14d, T28d, and T56d. Results: Eighty-three participants were included, including 41 and 42 in the Serum + Mask and Serum groups, respectively. Acne severity, density of skin pores, skin tone evenness, PIH foci on face, PIE foci on nose, intensity of PIE and PIH, closed comedones on face, open comedones on nose, sebum secretion, and skin hydration were significantly improved from baseline after 8 weeks of treatment in both groups (all $p < 0.05$). Addition of the mask improved the number of closed comedones (-6.56 ± 0.39 vs. -5.19 ± 0.44, $p = 0.022$) and acne severity (-0.39 ± 0.08 vs. -0.12 ± 0.09, $p = 0.026$) substantially more than using the

serum alone. No adverse reaction was reported in either group. Conclusions: The study serum improved skin conditions by regulating skin barrier function and achieving a balance of skin hydration and sebum secretion, removing comedones and improving PIE and PIH. Addition of the mask accelerated the effects without compromising safety.

Y. Nong, N. Gahoonia, J. Rizzo, W. Burney, R.K. Sivamani, J. Maloh, **Prospective Evaluation of a Topical Botanical Skin Care Regimen on Mild to Moderate Facial and Truncal Acne and Mood**, J. Clin. Med. 2023, 12

Acne vulgaris is a common inflammatory condition that can be associated with profoundpsychosocial impacts. Conventional treatment includes topical retinoids, benzoyl peroxide, and antimicrobials, and some may cause irritation and skin dryness. In this 8-week open-label study, weexamined the effects of a botanical skin care regimen (Codex Labs Shaant Balancing regimen) on mild to moderate facial and truncal acne. Twenty-four male and female subjects between the ages of 12 and 45 years were assessed for eligibility, 20 were enrolled, and 15 completed all study visits. Facial and truncal acne lesion counts, skin hydration, sebum excretion rate, and mood were assessed at baseline, week 4, and week 8. Total facial lesion counts (inflammatory and non-inflammatory lesions) decreased by 20.5% at week 4 ($p = 0.06$) and by 25.2% at week 8 ($p < 0.05$). Inflammatory lesion counts on the trunk were found to decrease at week 8 relative to baseline by 48% ($p < 0.05$). Forehead sebum excretion rate decreased by 40% at week 4 ($p = 0.07$) and 22% at week 8 ($p = 0.08$), and cheek skin hydration increased by 27.6% at week 4 ($p = 0.14$) and 65% at week 8 ($p = 0.10$). Participants also experienced significant improvement in components of a positive effect, such as feeling “strong” and “inspired”, and a decrease in negative effects, such as feeling “irritable.” Overall, the botanical skin care regimen was found to be well-tolerated. Our study suggests that a botanical skin care regimen may reduce facial and truncal acne lesion counts, increase skin hydration, reduce sebum production, and augment positive effects and moods in those with mild to moderate facial and truncal acne.

P. Montero, M. Pérez-Leal, J.A. Pérez-Fidalgo, C. Sanz, C. Estornut, I. Roger, J. Milara, A. Cervantes, J. Cortijo, **Paclitaxel Induces Epidermal Molecular Changes and Produces Subclinical Alterations in the Skin of Gynecological Cancer Patients**, Cancers 2022, 14, 1146

Background: Paclitaxel is a microtubule-stabilizing chemotherapeutic agent. Despite its widespread use, it damages healthy tissues such as skin. The goal of this study was to prove that the real impact of paclitaxel-induced skin toxicity could be underestimated because the adverse events might appear asymptomatic. Methods: Gynecological cancer patients were recruited. Skin parameters measurements were taken after three and six paclitaxel cycles. Measurements were conducted using specific probes which measure hydration, transepidermal water loss (TEWL), sebum, elasticity and firmness, erythema, roughness, smoothness, skin thickness, and desquamation levels. Further, a 3D epidermis model was incubated with paclitaxel to analyze gene and protein expression of aquaporin 3, collagen type 1, elastin, and fibronectin. Results: Paclitaxel induced alterations in the skin parameters with no visible clinical manifestations. Gynecological cancer patients under paclitaxel treatment had a decrease in hydration, TEWL, sebum, elasticity, and thickness of the skin, while erythema, roughness, and desquamation were increased. The molecular markers, related to hydration and the support of the skin layers, and analyzed in the 3D epidermis model, were decreased. Conclusions: Results suggest that paclitaxel modifies gene and protein expression of skin-related molecular markers, and impairs different physical, physiological, and biomechanical properties of the skin of cancer patients at a subclinical level.

A. Banyś, M. Hartman-Petrycka, K. Kras, M. Kamińska, B. Krusiec-Swidergo, Paweł Popielski, A. *Lebiedowska, S. Wilczyński*, **The Influence of Sebum on Directional Reflectance of the Skin**, Appl. Sci. 2023, 13, 2838

The sebaceous glands are responsible for the secretion of sebum. Its function is to maintain a proper epidermal barrier and participate in metabolic processes within the epidermis. Excessive sebum secretion leads to the development of various seborrheic diseases. The aim of this study was to determine the in vivo correlation between the amount of sebum and the directional reflectance of the skin. Measurements were performed using a Sebumeter (Courage + Khazaka, Germany) and a directional hemispherical reflectometer (Solar 410, SOC, USA). It has been shown that the amount of sebum does not affect the directional reflectance of the skin at a wavelength of 335–380 nm. With an increase in the amount of sebum, the directional reflectance of the skin decreases at wavelengths of 400–540 nm and 480–600 nm. However, with an increase in the amount of sebum, the directional reflectance of the skin increases at wavelengths of 590–720 nm, 700–1100 nm, 1000–1700 nm, and 1700–2500 nm. The closest relationship between amount of sebum and directional reflectance of the skin was observed at a wavelength of 700–1100 nm. Reflecting/scattering radiation from the skin

surface, depending on the sebum content, may be clinically significant not only in the context of exposure to solar radiation but also in the context of numerous therapeutic methods based on artificial sources of radiation. In this area, it is desirable for the radiation to penetrate the skin as effectively as possible. The obtained preliminary results confirm that the used method is an interesting alternative to spectroscopic methods.

L. Cheng, J. Guo, Y. Lu, **Inhibition of lipogenesis and sebum secretion for Lotus corniculatus seed extract in vitro and in vivo**, Int J Cosmet Sci 2023 Feb;45(1): p. 62-72

Background: Botanical ingredients are widely used in hair- and skin-care products. However, few studies have investigated the effectiveness of botanical products on counteracting sebum synthesis and secretion. Objective: To investigate the composition of Lotus corniculatus seed extract (LC) and its potential inhibition of lipogenesis in SZ95 sebocytes and oily human skin. Methods: The active components of LC solutions were identified by high-performance liquid chromatography (HPLC) and nuclear magnetic resonance (NMR). The in vitro effects of LC were evaluated using SZ95 cells treated with linoleic acid (LA) and dihydrotestosterone (DHT) and incubated with LCs for 24 h and 72 h. Lipogenesis was assessed by Oil Red O and Nile Red staining of the cells. In vivo effects were assessed on 30 subjects with oily skin who were enrolled in a randomized, blank-controlled trial and were treated with LC solution for 6 h and 4 weeks. The skin sebum contents and area on the forehead and cheeks were evaluated using a Sebumeter SM815 and Sebfix sebutape with Visioscan VC98. In addition, VISIA was used to collect half-face photos for analysis. Results: A novel active molecule, 5'-o-rhamnosyl uridine, was identified in LC. LC exhibited a dose-dependent inhibitory effect on LA and DHT-induced lipid synthesis. When 5% LC was applied for 3 h, the skin sebum contents and area were significantly reduced compared with the vehicle control, with an obvious reductionb after 6 h. Continued use of the serum containing 5% LC for 4 weeks resulted in a significant reduction in the skin sebum contents and area. No adverse reactions were reported during the study. Conclusions: Topical application of LC resulted in an immediate and long-lasting reduction of the sebum contents and area of oily human skin by reducing sebaceous lipogenesis through the LA and DHT pathways. This indicates the potential of LC as a new biological treatment for oily skin.

L. Ma, Y. Niu, C. Yuan, T. Bai, S. Yang, M. Wang, Y. Li, L. Shao, **The Characteristics of the Skin Physiological Parameters and Facial Microbiome of "Ideal Skin" in Shanghai Women**, Clinical, Cosmetic and Investigational Dermatology 2023: 16, p. 325–337

Purpose: Everyone pursues perfect skin, but there exist significant differences between cultures, and no commonly accepted standards have been established. Therefore, our study attempted to define the "ideal skin" of oriental women and analyze the relationship between different skin physiological parameters and microbiomes. Patients and Methods: Based on our customized grading standard, the VISIA CR photos of 111 young women aged from 18 to 25 in Shanghai were collected and scored by the severity of pores, acne, spots, and wrinkles. The volunteers were then divided into "ideal skin" (W1), "normal skin" (W2), and "undesirable skin" (W3) groups. The physiological parameters of facial skin were measured by non-invasive instrumental methods, and the skin microbiome was analyzed by 16S rRNA and ITS high-throughput sequencing. Results: From "ideal skin" to "undesirable skin", the skin physiological parameters, α-diversity, and composition of the facial microbiome showed noticeable regular changes. Compared with the "normal skin" (W2) and "undesirable skin" (W3), the "ideal skin" (W1) group had lower sebum content, TEWL, melanin, hemoglobin, and roughness but higher hydration content and skin pH value. Furthermore, the Shannon index of skin bacteria was significantly increased in W1 (P = 0.004), suggesting that the ideal skin had higher species diversity. From W1 to W3, the species composition was changed significantly. The abundance of *Actinobacteria* was increased, while *Proteobacteria* and *Bacteroidetes* were decreased. Correspondingly, the abundances of lipophilic *Propionibacterium* and *Malassezia* were increased, while the abundances of *Stenotrophomonas, Pseudomonas, Ralstonia*, and *Streptococcus*, were significantly decreased. Additionally, Spearman correlation analysis revealed strong correlations between the physiological parameters and the microbiota. Notably, the Shannon index of skin bacteria was significantly positively correlated with skin hydration (P = 0.03) but negatively correlated with the abundance of *Cutibacterium* (P = 0.000), hemoglobin content (P = 0.025), and sebum content (P = 0.5). Therefore, the skin hydration content and the abundance of *Cutibacterium* played an important role in maintaining the α-diversity and skin homeostasis. Conclusion: Ideal skin had better water-oil balance and barrier function, higher microbial diversity, and more reasonable species distribution. Therefore, daily skincare needs to control skin oil and maintain skin microecological balance to achieve ideal skin conditions for young women aged 18–25 years old.

C. Uhl, **How to Prove the Concept of Microbiotic Skin Care,** EURO COSMETICS 1-2 2023, p. 18-22

When the Human Genome Project 1 was launched in autumn 1990 with the aim of identifying and mapping all of the genes of the human genome, no-one would have thought that we would discover a new microcosmos revolving around and mingling with our human cells. Of course, already long before this project, it was well-known that our body is not sterile and there are many bacteria living within and on it. These bacteria were however mainly classified as being malicious, threatening our health and causing problems. Until the 70s of the last century, a germ-free personal environment was considered as most desirable, and strong cleaning products became quite popular. Only starting in the early 1980s, these ideas and information were carefully reevaluated.

J. Kim, Y.N. Lee, J. Lee, S.G. Lee, H. Kim, Y.S. Choi, Z.D. Draelos, J. Kim, **Efficacy and safety of silymarin containing antioxidant serum as an adjuvant treatment of mild-to-moderate acne vulgaris: A prospective, open-label pilot study**, J Cosmet Dermatol. 2023;22: p. 561–568.

Background: Silymarin is the active component of milk thistle, which has antioxidant properties by scavenging free radicals and potential comedolytic properties. Aims: This study aimed to assess the efficacy and safety of 0.5% silymarin-loaded antioxidant serum (SAS) used to treat mild-to-moderate acne. Patients and Methods: A prospective, open-label pilot study was conducted. We enrolled 22 Korean acne patients who applied the 0.5% SAS on the whole face twice daily while continuing the current anti-acne medications. Grade of acne severity, individual lesion counts, sebum output levels, skin erythema, and melanin pigmentation were assessed. Results: After a 4-week application, the modified Global Acne Grading Score (mGAGS), Global Evaluation Acne (GEA) scale, and the acne lesion counts were significantly decreased. Sebum secretion, skin pigmentation, and erythema were also reduced during the study period, yet only the melanin pigmentation index reached statistical significance. Subgroup analysis revealed that the patients who took the low-dose oral isotretinoin during the study period showed more noticeable improvements in skin sebum output and melanin pigmentation. Additionally, no adverse event was associated with using the 0.5% SAS. Conclusion: The 0.5% silymarin-containing antioxidant formulation improved acne's clinical severity and related skin biophysical parameters.

I. Rybak, K.N. Haas, S.K. Dhaliwal, W.A. Burney, A. Pourang, S.S. Sandhu, J. Maloh, J.W. Newman, R. Crawford, R.K. Sivamani, **Prospective Placebo-Controlled Assessment of Spore-Based Probiotic Supplementation on Sebum Production, Skin Barrier Function, and Acne**, J. Clin. Med. 2023, 12,

Probiotic supplementation has been shown to modulate the gut–skin axis. The goal of this study was to investigate whether oral spore-based probiotic ingestion modulates the gut microbiome,plasma short-chain fatty acids (SCFAs), and skin biophysical properties. This was a single-blinded, 8-week study (NCT03605108) in which 25 participants, 7 with noncystic acne, were assigned to take placebo capsules for the first 4 weeks, followed by 4 weeks of probiotic supplementation. Blood and stool collection, facial photography, sebum production, transepidermal water loss (TEWL), skin hydration measurements, and acne assessments were performed at baseline, 4, and 8 weeks. Probiotic supplementation resulted in a decreasing trend for the facial sebum excretion rate and increased TEWL overall. Subanalysis of the participants with acne showed improvement in total, noninflammatory,and inflammatory lesion counts, along with improvements in markers of gut permeability. The gut microbiome of the nonacne population had an increase in the relative abundance of *Akkermansia*, whilethe subpopulation of those with acne had an increase in the relative abundance of *Lachnospiraceae* and *Ruminococcus gnavus*. Probiotic supplementation augmented the circulating acetate/propionate ratio. There is preliminary evidence for the use of spore-based probiotic supplementation to shift the gut microbiome and augment short-chain fatty acids in those with and without acne. Further spore-based supplementation studies in those with noncystic acne are warranted.

F. Yi, X.-X. Yang, R.-Y. Yang, M.-M. Zhao, Y.-M. Dong, L. Li, Y.-F. He, M.-M. Guo, J. Li, X.-H. Zhang, Z. Lu, J. Gu, J.-L. Bao, H. Meng, **A cross-sectional study of Chinese women facial skin status with environmental factors and individual lifestyles,** Scientifc Reports, (2022) 12:18110

Geographical, environmental and pollution conditions afect facial skin health, but their efects on skin appearance have not been elucidated. This study aimed to describe the skin barrier and skin tone characteristics of Chinese subjects according to lifestyle and environmental conditions using in vitro measurements. In total, 1092 women aged 22–42 years were recruited from 7 representative Chinese cities. Eight skin parameters (hydration, sebum, pH, transdermal water loss, individual type angle, melanin index, erythema index, yellowness) were measured using noninvasive instruments; individual lifestyle data were also collected. Data on four meteorological factors (air temperature, relative humidity, sunshine duration, wind speed) and seven air pollution indicators (air quality index, fne particulate matter, breathable particulate matter, sulfur dioxide, nitrogen dioxide, carbonmonoxide and ozone) were

collected in each city from the China Meteorological Administration. Facialskin characteristics difered signifcantly between cities. Facial skin barrier characteristics and skin tones showed regional diferences, with a better skin barrier associated with the western region, as indicated by high skin hydration and sebum secretion and a low pH value. According to the value of transdermal water loss, lighter and darker skin tones were found in the western and southern regions, respectively. Environmental conditions afected facial skin status. Air pollution induced facial skin issues, with fne particulate matter and nitrogen dioxide contributing the most. Individual lifestyles afected the facial skin barrier and skin tone.

M. Chakkalakal, D. Nadora, N. Gahoonia, A. Dumont, W. Burney, A. Pan, C.J. Chambers, R.K. Sivamani, **Prospective Randomized Double-Blind Placebo-Controlled Study of Oral Pomegranate Extract on Skin Wrinkles, Biophysical Features, and the Gut-Skin Axis**, J. Clin. Med. 2022, 11, 6724

(1) Background: The pomegranate fruit (Punica granatum L.) has been widely used in traditional medicine and has increasingly gained popularity among consumers in order to manage different facets of health. The objective of this study was to evaluate the effects of the fruit extract of P. granatum L. on different parameters of skin health. (2) Methods: A prospective, double-blind placebo-controlled study was conducted on both healthy males and females aged 25–55 years. Subjects were supplemented with a standardized punicalagin enriched oral pomegranate extract [Pomella® (Verdure Science, Noblesville, IN, USA), PE group] or a placebo (control group) daily for four weeks. Changes in wrinkle severity, facial biophysical properties, skin microbiome, and the gut microbiome were assessed. (3) Results: The PE group had significant reductions in wrinkle severity ($p < 0.01$) and a decreasing trend in the forehead sebum excretion rate ($p = 0.14$). The participants in the PE group with a higher relative abundance of Eggerthellaceae in the gut had a decrease in their facial TEWL ($p < 0.05$) and wrinkle severity ($p = 0.058$). PE supplementation led to an increase in the Staphylococcus epidermidis species and the Bacillus genus on the skin. (4) Conclusions: Overall, the study demonstrated improvements in several biophysical properties, wrinkles, and shifts in the skin microbiome with oral PE supplementation in healthy subjects.

D.J. Jo, J.Y. Shin, S.J. Na, **Evaluation of changes for sebum, skin pore, texture, and redness before and after sleep in oily and nonoily skin**, Skin Research & Technology, Volume 28, Issue 6, November 2022, p. 851-855

Background: People whose skin type is oily have experienced an esthetic and hygienic discomfort due to the excessive secretion of the sebum during the day and night time, and therefore sebum control is required. In this study, we aimed to find out whether the skin status between the oily and nonoily skin indicates a significant difference before and after sleep. Materials and methods: Forty Korean males and females whose skin type was oily or nonoily participated in this study. To investigate the difference of the skin between oily and nonoily skin before and after sleep, we measured the sebum, skin pore, texture, and redness on their cheek at baseline and after 4-h sleep. Moreover, the significant level was determined at $p < 0.05$. Results: Parameters of sebum and skin pore significantly increased after 4-h sleep compared with baseline in the oily and nonoily skin ($p < 0.05$). Moreover, the increment of sebum and pore parameters in the oily skin was significantly higher than those in the nonoily skin ($p < 0.05$). In the case of skin texture and redness, parameters of them were significantly changed after 4-h sleep compared with baseline only in the oily skin ($p < 0.05$), and there was no significant difference among groups. Conclusions: We found that the change rates of the sebum secretion and skin pore in oily skin were significantly higher than those in nonoily skin after 4-h sleep. These results suggest the necessity of the skin care depending on the skin type before sleeping.

C. Ye, Y. Zhang, Z. Su, S. Wu, Y. Li, J. Yi, W. Lai, J. Chen, Y. Zheng, **hMSC exosomes as a novel treatment for female sensitive skin: An in vivo study**, Frontiers in Bioengineering and Biotechnology, 10, 2022

Background: Recent studies have reported that the incidence of sensitive skin is increasing. Skin sensitivity and skin barrier functions were related to many skin diseases including atopic dermatitis, psoriasis, rosacea, and so on. Mesenchymal stem cell (MSC)-derived exosomes (hMSC) might be considered as a new effective therapeutic scheme. Aims: This study aims to investigate the safety and efficacy of hMSC exosomes as a novel topical treatment for sensitive skin. Patients/Methods: Exosomes were extracted from primary hMSC via ultracentrifugation method. The morphology of hMSC exosomes was studied via transmission electron microscope. Expression of exosome specific surface marker was detected via Western blot. 22 subjects (female, aged 18–55) diagnosed with sensitive skin were enrolled. Follow-up was conducted before, 7-day, 14-day, and 28-day after hMSC exosomes use. Transepidermal water loss (TEWL), surface hydration, sebum secretion, and L*a*b* value were simultaneously tested at the same time point in an environment-controlled room. Results: Under

transmission electron microscopy, the extracted hMSC exosomes were circular or elliptical with intact membrane structure, and their diameters ranged mainly from 40 to 80 nm. Western blot showed that the expression of markers CD63, CD9, and Tsg101 was positive. Brownian motion based nanoparticle trajectory analysis (NTA) showed that the main peak of particle size distribution occurred around 96 nm, the average particle size was 122 nm, and the main peak accounted for 96.7%. All this conformed to the biological characteristics of exosomes standardized by the International Society for Extracellular Vesicles. In the clinical trial, scores of objective symptoms including roughness, scales, erythema, and subjective symptoms including tension, burning, or itching, were improved after 7-, 14-, and 28- day using hMSC-exosomes. TEWL, hydration, sebum, pH, and a* values were tended to return to the level of healthy skin.

T. Puaratanaarunkon, C. Washrawirul, N. Chuenboonngarm, N. Noppakun, P. Asawanonda, C Kumtornrut, **Efficacy and safety of a facial serum containing snail secretion filtrate, *Calendula officinalis*, and *Glycyrrhiza glaba* root extract in the treatment of maskne: A randomized placebo-controlled study**, Journal of Cosmetic Dermatology, Volume 21, Issue 10, October 2022, p. 4470-4478

Introduction: During the ongoing COVID-19 outbreak, face mask use has increased and became a part of our daily lives. While wearing, prolonged contact time and microenvironmental change profoundly lead to an acne flare-up, defined as “maskne.” Aims: We aimed to assess the efficacy and safety of snail secretion filtrate, *Calendula officinalis*, and *Glycyrrhiza glaba* root extract combination serum (SCGS) in treating the maskne. Methods: This was a randomized, double-blind, placebo-controlled trial study. This study enrolled 66 participants with mild-to-moderate maskne. The SCGS and placebo were randomly assigned for participants to use twice daily for 12 weeks. Percentage change of acne lesion count, acne severity by Investigator Global Evaluation Acne (IGEA), sebum levels, corneometry levels, transepidermal water loss (TEWL), erythema score by Visia®, and adverse events were evaluated 4-weekly at baseline to Week 12. At Week 12, all participants evaluated their satisfaction scores using a 10-point visual analog scale (VAS). Results: In the mask-covered area, the percent reduction in inflammatory acne lesions from the treatment group was significantly greater than the placebo group at all time points (coefficient of percentage change of inflammatory lesions = −33.89 [95% CI −65.24, −2.53]; $p = 0.03$). Also, a subgroup analysis with participants using concurrent acne treatments revealed similar results (12 participants, coefficient = −50.30 [95% −88.65, −11.95]; $p = 0.01$). However, there were no significant differences in non-inflammatory lesions, all skin biophysics, and VAS between groups. Adverse events were mild and occurred in a few cases in both groups. Conclusions: The SCGS could significantly improve inflammatory acne lesions and had a favorable tolerability profile, suggesting its role as an adjunctive treatment in maskne.

W.-C. Lu, C.-S. Chiu, Y.-J. Chan, T.-P. Guo, C.-C. Lin, P.-C. Wang, P.-Y. Lin, A. Tresiliana Mulio, P.-H. Li, **An In Vivo Study to Evaluate the Efficacy of Blue Shark (*Prionace glauca*) Cartilage Collagen as a Cosmetic**, Mar. Drugs 2022, 20, 633

The “blue shark”, *Prionace glauca* (class: Chondrichthyes), is a pelagic shark species commonly found in tropical and temperate oceans. This shark is mainly sold in Asian countries as food and as traditional Chinese medicine. According to the Red List of the International Union for the Conservation of Nature, *P. glauca* is classified as low-risk to near endangered. *P. glauca* cartilage contains collagen type II, which makes it suitable as a bioactive ingredient in cosmeceutical products. This study evaluated the effects of a gel containing various concentrations (0.125–5%) of lyophilized hydrolyzed *P. glauca* cartilage on the human inner wrist skin compared to a placebo (base). A skin properties evaluation test was conducted before and after applying various concentrations (0.125–5%) of the *P. glauca* cartilage gel for 10 and 20 min on the inner wrists of participants using a skin analyzer that determined the moisture level, oil level, texture level, complexion level, and the 3D level. Adding lyophilized hydrolyzed shark cartilage (LHSC) significantly improved the moisture, texture, and complexion of the skin while controlling oil and providing a wrinkle-smoothing effect. The result indicated that LHSC formulations were prepared at different concentrations, and they had significantlyenhanced effects on skin hydration and elasticity (texture) and the smoothing of wrinkles (3D level). The LHSC also effectively controlled oil secretion and the complexion.

K. Chilicka, M Rusztowicz, A.M. Rogowska, R Szyguła, B. Asanova, D. Nowicka, **Efficacy of Hydrogen Purification and Cosmetic Acids in the Treatment of Acne Vulgaris: A Preliminary Report**, J. Clin. Med. 2022, 11, 6269

Acne and skin lesions that appear in its course deteriorate the quality of life of patients, cause depression and the emergence of suicidal thoughts. Cosmetic treatments can have a positive effect on improving skin condition by cleaning up skin eruptions, thus improving the well-being of affected people. Hydrogen purification is a treatment that uses alkaline water generated by a device, which reduces

sebum from the surface of the epidermis. This is a novel treatment that has recently been introduced to beauty salons. On the other hand, cosmetic acids have been used for many years for treating people with acne vulgaris and give spectacular results in terms of improving the skin condition. In this study, skin condition was evaluated with a Derma Unit SSC 3 device. The Global Acne Grading System (GAGS) was used to check acne severity. Twenty-four women aged 19–21 years (M = 20.13, SD = 0.80) diagnosed with mild acne vulgaris and a high sebum level participated in the study. Group A underwent a hydrogen purification treatment using an H2jet manipulator, which ejected alkaline water from the manipulator under pressure. Group B underwent a hydrogen purification treatment with the use of a phytic, pyruvic, lactic and ferulic acids at 40% mixture (pH 1.4). A series of four treatments was performed at 14-day intervals in both groups. Skin parameters were measured before and 30 days after the series of treatment. Very good resultswere obtained in both groups. The skin eruptions in patients were reduced and we also observed lower amounts of sebum on the surface of the epidermis, and an improvement in skin hydration. However, in group B, the results were better than in group A. The study showed that the synergy of the treatments produced much better effects than those obtained by completing the hydrogen purification treatment alone.

N. Kaul, **Clinical testing for a booming men's sector**, Personal Care Magazine, October 2022

The male grooming industry is growing at a rapid pace Entlre ailes of drug stores are dedicated to men s grooming products. Product demand in the skin care, hair care, and fragrance Industries has grown dramatically and is expected to keep pace in the coming years. Whether this growth stems from celebrity advertising or social media influence, one thing is clear: men have come a long way from the days of merely using a soap bar as face and body wash. The modern man stands ready and willing to invest in skin and hair products that maintain their health and youth.

T. Nakamura, H. Yoshida, M. Haneoka, S. Nakamura, Y. Takahashi, **Season- and facial site-specific skin changes due to long-term mask wearing during the COVID-19 pandemic,** Skin Reasearch & Technology, Volume 28, Issue 5, September 2022, p. 749-758

Background: As people have regularly worn facial masks due to the coronavirus disease 2019 (COVID-19) pandemic, mask-wear-related adverse effects on the skin have been recognized. The aim of this study was to explore skin changes, their seasonal variations in the general population caused by commonly used masks and a possible mechanism underlying negative effects of mask-wearing. Materials and methods: Eighteen Japanese females participated in the study during summer and winter in Japan. Skin characteristics were measured in the non-mask-wearing preauricular area and the mask-wearing cheek and perioral areas. Results: Trans-epidermal water loss (TEWL) on the cheek area tended to be increased in winter, which was positively correlated with skin scaliness on the same area. Ceramide (CER) content and composition in the mask-covered stratum corneum (SC) were slightly changed between summer and winter, and CER [NP]/[NS] ratio was negatively correlated with the TEWL on the perioral skin in winter. Skin hydration and sebum secretion were higher on the cheek compared to the perioral area in summer. Skin redness was particularly high on the cheek in winter. Conclusion: Mask-wear-related skin changes were season- and facial site-specific, and alterations in SC CER may play a role in barrier-related skin problems caused by mask use.

M.Y. Fujii, A. Okishima, S.H. Ichiwata, O. Masatoshi, T. Oka, Y. Ashida, E. Hara, **Shape-Shifting Technology of High-Molecular-Weight Hyaluronic Acid Realizing Youthful Skin**, 32nd IFSCC Congress London, September 2022

Introduction: Hyaluronic acid (HA) is essential to maintain youthful skin. However, the level of HA in the epidermis diminishes with aging. This study was established todevelop novel technology that delivers high-molecular-weight HA (HMW-HA) to theepidermis without reducing its original functions to realize youthful skin. Methods: The size of HA was evaluated by multi-angle light scattering, partial specific volume, and molecular dynamics simulations. The amount of HA penetration was evaluated by the tape-stripping and cross-sectional observation of skin. The efficacy of the proposed technology was evaluated by measuring the softness and transparency ofstratum corneum (SC), water retention capacity of HA, SC water content, and skin surface contours. Results: It is difficult to achieve the skin penetration of HMW-HA without reducing its structure and properties. We demonstrated that HA shrank with the addition of magnesium chloride and that this shrunken HMW-HA showed drastic increases in HA penetration to the epidermis. In addition, the softness and transparency of SC were improved. Moreover, it was revealed that the addition of sodium metaphosphate expanded the overall volume of the shrunken HA. Combining this expansion method with shrunken HA achieved a fine and uniform skin texture because of restoration of HA's original water retention capacity.Conclusion: The shape-shifting technology made it possible not only to provide the highest reported levels of HMW-HA to the epidermis, but also to regenerate its original water retention capacity and volume. This technology can supply

natural HMW-HA noninvasively as a promoter of youthful skin in daily care.

R. Raffin, C. Kopp, M. Bianchin, A. Lemoine, D. Jamieson, F. Edouard, **Novel delivery system for reducing water consumption by altering hair wash frequency**, 32nd IFSCC Congress London, September 2022

Background: Consumers are seeking opportunities to adapt their hair wash routines to incorporate more convenient and sustainable solutions, particularly to combat scalp oiliness. Methods: For the delivery system, a combination of actives was used: Tea Tree, Sunflower, Rosemary and Pumpkin Seed. Clinical tests were performed using objective and subjectivedata (shampoo and conditioner, 1% active). Scalp oiliness was measured 1 and 7 days after using the product daily. A salon evaluation was conducted to determine extension of hair wash cycles.Results: Nanoparticle suspension was successfully obtained. For oiliness reduction, panellists using the encapsulated actives presented a reduction of 47.4% and 61.2% after use encapsulated actives for 1 and 7 days. After seven days without washing their hair, panellists were asked about their ideal hair wash routine. The wash frequency of panellists using the placebo remained unchanged, while it has been reduced for the panellists using the nanoparticles regime (29.4%).Conclusion: A new delivery system was developed intended to reduce hair wash cycles. Clinically, the proposed system can reduce scalp oiliness and alter the hair wash routine.

I. Dolečková, P. Orzol, K. Vašíčková, S. Karel, L. Petrovičová, G. Huerta-Angeles, M. Štěpánová, V. Velebný, **The anti-acne and anti-ageing activity of a new hexapeptide in complex with zinc and its comparison to retinol**, 32nd IFSCC Congress London, September 2022

Background: In this study, we evaluated a new hexapeptide in complex with zinc (Zn-peptide) for its ability to inhibit key acne-related processes *in vitro* and to improve the appearance of the acne-prone skin *in vivo* and compared it with retinol. Materials and methods: The hexapeptide was prepared by solid phase peptide synthesis and zinc sulfate was used for the preparation of the Zn-peptide complex. Expression of the selected genes was evaluated using quantitative RT-PCR in HaCaT or NIH-3T3 cells irradiated or not irradiated with UVB and treated with Zn-peptide. The antimicrobial activity was determined spectrophotometrically using *C. acnes* culture. We also performed a split-face, placebocontrolled in vivo study on 40 Caucasian volunteers with acne-prone skin treated with 13 µg/mL Zn-peptide or 0.2 % retinol for 6 weeks and evaluated various skin parameters.Results and discussion: Zn-peptide inhibited all four key processes in acne pathogenesis *in vitro*: downregulated 5α-reductase involved in sebum production, suppressed keratinization and showed anti-inflammatory and antimicrobial effects. In the vivo study Zn-peptide significantly reduced number of inflammatory lesions, skin pores, skin redness, sebum level and *C. acnes* number. We also observed anti-ageing effect represented by wrinkle reduction, elasticity improvement and collagen increase. The effects of Zn-peptide were comparable or better than that of 0.2 % retinol. No negative adverse effects were observed in contrast to retinol which irritated the skin at the beginning of treatment and worsened skin barrier function. Conclusion: Zn-peptide proved to be a new retinol alternative exerting anti-acne and antiageing properties with no negative side effects.

M.C. Reimberg, H. Chajra, M. Frechet, ***In vivo*** **performance of a social and environmentally sustainable blend of Brazilian Kaolin**, 32nd IFSCC Congress London, September 2022

Background: Clays are used since ancient times for medicinal and beauty purposes and their mineral compositions depend on their geological origins. Clays originated from volcanic soil are colored and rich in minerals while clays derived from the Amazonian lateritic soil are richin minerals and organic matter. Combining these different sources of clays opens the way to the creation of an infinite variety of clays with amazing cosmetic and aesthetic properties. This work demonstrates new skin benefits and multifunctional properties of Brazilian clays containing kaolinites, “the kaolin” for cosmetic applications. Methods: Proof of concept clinical study: skin hydration (Corneometer™), TEWL (Tewameter™), sebum (Sebumeter™) and firmness /tensor (Cutometer™). Short term or long term of product use respectively after 4 hours or 7 days of consecutive use. Results: The positive impact of kaolin on skin health was demonstrated such as the maintenance of hydration, protection of skin barrier function and increase of skin firmness (tensor effect). The use of kaolin was not associated with an increase in sebum secretion, a phenomenon classically observed with the use of clays and known as “rebound effect” due to the constant use of clays. Conclusion: The positive attributes show that kaolin can be used in multifunctional formulations, even for skin care. Kaolin provides also rheological stability for the formulations and can bring benefits to the mineral make up, color cosmetic products, face products, besides sunscreens, BB creams and CC creams. New formulations and uses of kaolin can be addressed with several benefits for skin and hair care.

A. Fontbonne, B. Teme, E. Abric, G. Lecerf, S. Callejon, A.Moga, B. Cadars, F. Giraud, M. Chavagnac-Bonneville, N. Ardiet, A. Guyoux, S. Trompezinski, **Photoprotective complementary effects of sun filters and a combination of active molecules on UV-exposed human volunteers**, 32nd IFSCC Congress London, September 2022

Background: Chronic exposure to ultraviolet (UV) irradiation causes immunosuppression, photoaging, and carcinogenesis by induction of a cascade of skin damage. Although sunscreens with a very high sun protection factor (SPF) absorb most of the sun's UVB rays, no sunscreen is effective in reducing total UV effects, particularly those induced by UVA. In the context of an ecobiological approach where skin natural resources and mechanisms must be preserved, and thus to increase UVA protection, UV filters and antioxidants have been combined to enhance their photoprotective effect, but studies in humans are lacking. Methods: Therefore, we studied an association of ectoine and mannitol to characterize its photoprotection properties *in vitro* and in humans, combined with UV filters. Results: Using *in vitro* irradiated skin cell model, we demonstrated that this association has a global ecobiological effect on skin, by preserving intracellular ROS levels. Non-invasive skin samplings in ten subjects on irradiated areas with and without pre-treatment with the active association and/or with SPF30 UV filters showed that use of UV filters with this activecompound association presented significantly higher protection of a natural defence system altered by UV compared to UV filters alone: squalene oxidation. Conclusion: This study demonstrates the ecobiological potential of combining UV filters with biological protection to increase skin photoprotection provided by specific active ingredients with antioxidative properties.

M. Maitre, E. Gravier, M. Leveque, C. Lauze, V. Turlier, M. Froliger, S. Bessou-Touya, H. Duplan, **Comparison of Oily or Dry Dandruff scalp: Clinical, Instrumental and Targeted Metagenomic Data**, 32nd IFSCC Congress London, September 2022

Oily dandruff (OD) is associated to high sebum production and inflammation, yellowish and flakes adherent to the scalp and hair, and dysbiosis microbiota. Dry dandruff (DD) are small, whitish flakes, not adherent to the scalp and can be associated with itching and dry scalp. The aim of this study was to compare DD scalps by clinical, instrumental, and targeted metagenomic data *versus* OD scalps.33 subjects with mild to moderate OD or DD were included. For both populations, the clinical status of dandruff was assessed. Instrumental measurements of hydration, lipid index, pH and trans epidermal water loss were done. Targeted metagenomic analysis and digital droplet PCR were performed on DNA extraction from swab samples. Microbiota population was compared between the two groups. Hydration and lipid index were significantly higher for OD than DD, while TEWL data were significantly higher in DD population. *Cutibacterium* and *Staphylococcus genus* dominate OD and DD bacteria populations. Significant differences were observed on under-represented microorganism communities. Regarding the fungal microbiota, the abundance of the family *Malasseziaceae* and the *genus Filobasidium* was different between OD and DD scalps. Dehydration and low sebum production are characteristic of DD scalps while OD scalps display high sebum production and inflammation. Interestingly, the barrier function of the skin scalp seems to be more impaired in DD scalp. In addition, we have shown here that scalpmicrobiota of these two dandruff states are different. These results highlight the importance to address DD and OD scalps with specific scalp care products.

H.-Y. Yoo, D.-R. Jung, M. Jeong, M.-J. Kim, Y.-J. Jang, S.-H. Park, B.-J. Park, J.-H. Shin, **Comparison of Scalp Microbiome According to the Severity of Androgenic Alopecia and Gender in a Korean Cohort**, 32nd IFSCC Congress London, September 2022

Introduction: Androgenic alopecia (AGA) is the most common alopecia case of men and women with hair loss and thinning at the parietal scalp and vertex. The treatment of AGA is not only a difficult and long-term process, but also reduces people's quality of life. Various factors influencing AGA induction have been suggested including environmental, genetic, and hormones. The studies have recently shown that bacteria community of scalp (*Cutibacterium* and *Staphylococcus*) affects scalp and hair-related diseases such as dandruff or seborrhoeic dermatitis. The purpose of this study is to analyze the difference in scalp bacterial flora between men and women according to the severity of AGA (normal, weak and severe hair loss). In addition, we intend to apply it to the prevention of hair loss by functional gene prediction analysis of beneficial or harmful bacteria associated with AGA. Methods: A total of 141 Korean men and women (47.2±1.4) aged 20 to 65 participated in the study, consisting of 46 normal group (21 men and 25 women) and 95 AGA group (46 men and 49 women). AGA group was further classified into stages 1 and 2 according to the severity of symptoms by referring the Basic and Specific (BASP) classification criteria with visual assessment of researchers. In order to standardize the scalp condition, subjects were prohibited from using hair care products and shampoo for one day before sampling. After measuring the clinical conditions of the scalp (moisturizing, sebum, desquamation, and temperature) and hair (thickness, density, and gloss), scalp microbial samples were collected by sterile

swabbed cotton. 16S rRNA gene was amplified from V4 to V5 hypervariable region and next generation sequencing was performed. Alpha and beta diversity, and taxa abundance differences were identified between groups. Functional analysis was predictied by PICRUSt2 and bacterial associations networks were revealed. In this study, all statistical analysis and visualization of our results results were performed with RStudio 1.4.1717. Results: In comparison with the overall clinical measurements between the normal and AGA groups, the results excluding the moisturization, density, and thickness of the scalp showed little difference significantly depending on whether or not hair loss was present. However, the structure of scalp bacterial communities was significantly different both by gender and severity of AGA. The men had a relatively diverse bacterial composition compared to women, and as AGA progressed, alpha diversity increased compared to normal group. The phylum and genus-level differences were identified. These differences included: (1) In both women and men, the ratio of total *Cutibacterium* and *Staphylcoccus* (dominating genus of healthy scalp) decreased in the AGA group compared to normal group, (2) In the AGA group, *Bifidobacterium* for women and *Corynebacterium* and *Massilia* for men increased, (3) Especially, in the men group, *Lawsonella* decreased significantly according to AGA stage. As a result of predicting the metabolic function of the microbial communities, lipoic acid and folate biosynthetic pathways, substances that stimulate proliferation of hair follicles, were relatively more predominant in healthy subjects than in AGA subjects. Depending on the severity of AGA, the bacterial co-occurence network became more diverse and complex, and the number of unique associations between bacteria increased compared to healthy subjects.Discussion and Conclusion: The results of this study indicated differences in the scalp bacterial communities associated with gender and severity of AGA. The increased diversity as hair loss progresses may be caused by increased contact with the scalp and external environment, decreasing *Cutibacterium* and *Staphylococcus* and increasing non-skin commensal bacteria. The decline of two genera bacteria involoved in maintaining scalp homeostasis and immune regulation was a very interesting founding. The results of this study demonstrated that, while it is important to understand the differences of individual microbes between each groups, the entire bacterial communities exhibited unique and distinct variations in the scalp. Futhermore, it can also serve as a scientific basis for future research on AGA by presenting candidate microbes and metabolic pathways that can lead a comprehensive understanding of AGA related scalp microbiome.

M. Saleem Qureshi, Q.A. Jamil, N. Akhtar, **Formulation and characterization of Anacyclus Pyrethrum Emulgels and its in vitro and in vivo evaluation as cosmeceutical product**, J Cosmet Dermatol, September 2022

Background: Plants containing high phenolic and flavonoids contents used widely as antioxidant agent byreducing skin photo damaging effects and play important role in skin rejuvenating. Aims: This study was performed to explore the cosmetic effects of Anacyclus Pyrethrum extract and to developstable oil in water (O/W) emulsion base gel loaded with Anacyclus Pyrethrum 10% extract. Objective: To explore and quantify phenols and flavonoids present in Anacyclus Pyrethrum extract and determine its cosmetic effects on human skin. Method: Emulgel formulation were developed by mixing o/w emulsion with carbopol gelling agent loaded with Anacyclus Pyrethrum (AP) extract and base gel without AP extract. In vitro study was done for the evaluation of color change, liquefaction, hardness, and pH change at different storage condition for the duration of 12 weeks. For in vivo study, emulgel applied on 13 healthy human volunteer's cheeks to evaluate its cosmetics effects and compared with placebo (base). Facial parameters including skin melanin, redness, sebum, moisture content, and skin elasticity were determined by using mexameter, sebumeter, corneometer, elastometer for the study duration of 12 weeks. Results: Total phenolic content in Anacyclus Pyrethrum extract was 80.04 ± 0.0043 mg GAE/g, and flavonoids were54.64 ± 0.0076 mg QE/g. Anacyclus Pyrethrum extract found significantly effective in reducing skin photo-damage effects ($p \leq 0.05$) as compared base gel. Conclusion: Anacyclus Pyrethrum extract being rich source of flavonoid and phenolic content, acts as strongantioxidant to protect skin against photo-damaging effect and improve skin conditions.

A. Kazmierska, I. Bolesławska, A. Polanska, A. Danczak-Pazdrowska, P. Jagielski, S. Drzymała-Czyz, Z Adamski, J. Przysławski, **Effect of Evening Primrose Oil Supplementation on Selected Parameters of Skin Condition in a Group of Patients Treated with Isotretinoin—A Randomized Double-Blind Trial**, Nutrients 2022, 14, 2980

Background: Retinoids, which include isotretinoin, reduce sebum levels, the degree ofepidermal wetness (CORN) and cause an increase in transepidermal water loss (TEWL). Weight gain has also been observed in isotretinoin-treated patients. An agent that can reduce the severityof isotretinoin side effects is evening primrose oil (*Oenothera paradoxa*). The purpose of this study was to evaluate the effect of evening primrose oil supplementation in patients with acne vulgaristreated with isotretinoin on skin hydration status (CORN), transepidermal water loss (TEWL), skin oiliness (sebum) and changes in body weight and BMI. Methods: Patients diagnosed with acne were assigned to the isotretinoin-treated

group (n = 25) or the isotretinoin and evening primrose oil-treated group (n = 25). The intervention lasted 9 months. CORN (with a corneometer), TEWL (with a tewameter) and sebum (with a sebumeter) were assessed twice, as well as body weight and BMI (Tanita MC-780). Results: The isotretinoin-treated group showed statistically significantreductions in CORN (p = 0.015), TEWL (p = 0.004) and sebum (p < 0.001) after the intervention. In the group treated with isotretinoin and evening primrose oil, TEWL and sebum levels also decreased significantly (p < 0.05), while CORN levels increased from 42.0 ± 9.70 to 50.9 ± 10.4 (p = 0.017). A significant decrease in body weight (p < 0.001) and BMI (p < 0.001) was observed in both groupsafter 9 months of intervention. Conclusions: During isotretinoin treatment, supplementation with evening primrose oil increased skin hydration. However, there were no differences between groups in transepidermal water loss, skin oiliness, weight loss and BMI.

D. Dobrouč, **Cosmetic Polysaccharides as Prebiotics for Skin**, Cosmetic & Toiletries, Vol. 137, No. 7, July/August 2022

The human skin provides a living space for a rich and diverse population of microorganisms collectively known as the skin microbiome. This consists of bacteria, archaea, fungi, viruses and mites, most of which are harmless commensals providing benefits for us. For example, they protect the skin against colonization by pathogens, produce various antimicrobial peptides and influence host innate and adaptive immunity; for a review, see Byrd et al. Microbial lipases also hydrolyze sebum triglycerides, releasing glycerol and moisturizing the skin; and free fatty acids, maintaining the acid mantle, which is important for skin barrier formation and, together with proper skin hydration, for desquamation. The most common members of the human skin microbiome are bacteria, with Cutibacterium acnes (formerly Propionibacterium) and Staphylococcus epidermidis being the most abundant species. Notably, an imbalance in the skin microbiome is often associated with a wide range of skin diseases such as acne, psoriasis, atopic and seborrheic dermatitis, etc.

K. Chilicka, A.M. Rogowska, R Szyguła, M Rusztowicz, D. Nowicka, **Efficacy of Oxybrasion in the Treatment of Acne Vulgaris: A Preliminary Report**, J. Clin. Med. 2022, 11

There are many cosmetic methods to reduce skin eruptions in people with acne vulgaris. As oxybrasion is a safe method of exfoliating dead epidermis, our objective was to investigate its effectiveness in young women with acne vulgaris. The Global Acne Grading System (GAGS) and Derma Unit SSC 3 device (Sebumeter SM 815, Corneometer CM 825) were used to assess acne vulgaris and skin properties. Twenty-four women aged 19–21 years (M = 19.50, SD = 0.66) with diagnosed mild acne vulgaris and a high level of sebum (more than 100 µg/cm2) participated in the study. Women on any dermatological treatment within the last 12 months and/or hormonal contraceptionwere excluded. Probands were randomly assigned to two equal groups. Group A (experimental) wasoxybrased with 0.9% sodium chloride solution simultaneously with compressed oxygen. Group B(placebo) was the group treated with non-carbonated mineral water and oxygen from the device (not pure). A series of five treatments was performed at 10-day intervals. Skin parameters were measured before and 30 days after the end of treatment. As a result, in group A (experimental), skin hydration and GAGS improved, while sebum on the epidermis was reduced. No side effects were noted. Weconcluded that oxybrasion is effective in women with acne and safe, as it improved skin parameters; however, further research is needed.

D. Martinovic, S. Lupi-Ferandin, D. Tokic, M. Usljebrka, A. Rados, A. Pojatina, S. Kadic, E. Puizina, A. Mihovilovic, M. Kumric, M. Vilovic, D. Leskur, J. Bozic, **Objective Skin Quality Assessment after Reconstructive Procedures for Facial Skin Defects**, J. Clin. Med. 2022, 11

Abstract: Local random skin flaps and skin grafts are everyday surgical techniques used to reconstruct skin defects. Although their clinical advantages and disadvantages are well known, there are still uncertainties with respect to their long-term results. Hence, the aim of this study was to evaluate outcomes more than one-year post operatively using objective measurement devices. The study included 31 facial defects reconstructed with local random flap, 30 facial defects reconstructed with split-thickness skin grafts (STSGs) and 30 facial defects reconstructed with full-thickness skin grafts (FTSGs). Skin quality was objectively evaluated using MP6 noninvasive probes (Courage + Khazaka GmbH, Cologne, Germany), which measure melanin count, erythema, hydration, sebum, friction and transepidermal water loss. The results showed that there were no significant differences in melanin count, erythema, hydration, sebum level, friction value and transepidermal water loss (TEWL) between the site reconstructed with random local flaps and the same site on the healthy contralateral side of the face. However, both FTSGs and STSGs showed significantly higher levels in terms of TEWL and erythema, whereas the levels of hydration, sebum and friction were significantly lower compared to the healthy contralateral side. Moreover, STSGs resulted in a significant difference in melanin count. These findings imply that the complex pathophysiology of the wound-healing process possibly results in better

skin-quality outcomes for random local flaps than skin autografts. Consequently, this suggests that random local flaps should be implemented whenever possible for the reconstruction of facial region defects.

Y. Du, C. Doraiswamy, J. Mao, Q. Zhang, Y. Liang, Z. Du, R. Vasantharaghavan, M. Kumar Joshi, **Facial skin characteristics and concerns in Indonesia: A cross-sectional observational study**, Skin Research & Technology, July 2022

Background: Facial skin characteristics and appearance vary according to ethnicity. While much of this knowledge is derived from the Caucasian population, lately there have been efforts to gain such understanding in various regions in Asia. In this paper, we have built an understanding of such features in Indonesia. In Indonesia, a section of females wears a traditional veil (hijab) to cover the scalp and part of face. The influence of the hijab on facial skin attributes was also investigated. Methods: In a cross-sectional observational study design involving 419 female volunteers in Jakarta, Indonesia, facial skin attributes (colour, radiance, hydration, trans-epidermal water loss [TEWL], wrinkles, fine lines, pores, and sebum levels) and conditions (melasma, post-inflammatory hyperpigmentation (PIH), solar lentigines/ senile lentigines, seborrheic keratoses and acne) were assessed by trained operators and dermatologists using standard validated instruments and scales. Results: With age, facial skin colour showed darkening in cheek; forehead on the other hand showed slight lightening. The skin evenness and radiance decreased, substantially. Aging attributes measured in terms of lines, wrinkles, and under-eye dark circles showed deterioration with age; the decline was progressively faster than colour change. Facial image data analysis corroborated these findings. Skin hydration remained similar across the age groups even though the skin barrier function measured in terms of TEWL improved with age. Sebum levels in the skin were similar up to the age of 50 but declined in the next group of 50–60 year. Pore severity increased with age. Melasma, seborrheic keratosis and PIH showed a high prevalence (>~50%) at the young age group (20–30 years), itself. Melasma prevalence attained 100% in the age group of 41–50 year and onwards, and its severity similarly showed a steady rise with age. PIH on the other hand showed a steady decline with age. Solar lentigines prevalence (~30%) did not change much across age groups, and the severity scores were similar in age groups up to 50 year but increased substantially in 51–60-year age groups. Seborrheic keratosis was similar (~47%) in age groups up 20–40 year but steadily increased in upper age groups. Its severity was similar in the age groups of 20–30 year and 31–40 year but showed a two-fold increase in subsequent age groups. Acne was 10% in the age group of 20–30 year and declined gradually to 0.7% in the 51–60-year age group. Hijab wearers showed slight protection in skin colour darkening and improvement of evenness and radiance but were similar on aging (fine lines and wrinkles on crow's feet, under eye and peri-oral areas) markers to non-wearers. In general, in majority of age-groups, hijab wearers showed a higher prevalence of melasma, solar/senile lentigines, seborrheic keratosis and PIH.

V. Manav, M.G. Karaali, O. Erdem, A.E. Koku Aksu, **Association between biophysical properties and anxiety in patients with sensitive skin**, Skin Research & Technology, Volume 28, Issue 4, July 2022, p. 556-563

Background: Sensitive skin (SS) is a syndrome in which neurosensory disorders accompany epidermal barrier dysfunction. However, it is not yet clear how high anxiety levels affect the biophysical parameters of the skin in patients with SS. Objectives: We aimed to investigate the relationship between anxiety levels and facial neurosensitivity, the erythema index, sebum content, and sensitive skin scale scores in individuals with sensitive skin. Methods: The study was carried out on 35 individuals with SS and 40 without SS over three months. In the study, a questionnaire to detect the presence of sensitive skin, the sensitive skin scale for sensitive skin severity, the lactic acid sting test (LAST) to show facial neurosensitivity, a Mexameter for erythema index measurement, and a Sebumeter for sebum content measurement were used. In addition, the anxiety levels of the patient and control groups were measured using the hospital anxiety and depression scale (HADS). Results: While the HADS-Anxiety scores were found to be significantly higher in patients with sensitive skin, there was no significant difference in the HADS-Depression scores. Moreover, a strong positive correlation was found between the HADS-Anxiety scores and the erythema index in patients with sensitive skin. Conclusions: Sensitive skin is a disorder that can sometimes occur without any dermatological examination findings. In particular, the sensations of the patients, along with their anxiety levels, are essential parameters that should be evaluated in the approach to patients with sensitive skin.

V.Y. Shi, W. Burney, A. Shakhbazova, A. Pan, L.A. Hassoun, S. Sharma, R.K. Sivamani, **The Effect of Synthetic Acetylhexapeptide-8 (AH8) on Sebaceous Function**, Int J Cosmet Sci, June 2022

Objective: This study aims to evaluate the in vitro and clinical effects of topical acetylhexapeptide-8 (AH8) on the appearance of oily skin. Methods: In vitro SEB-1 human sebocyte cell lines were exposed

to different concentrations of AH8, then the lipid content of the sebocytes was measured. For the randomized, controlled, split-face clinical study,participants received AH8 10% lotion formulated in Cetaphil Moisturizing Facial Lotion on one side of their face and the control vehicle lotion on the other side of their face. Facial oiliness was assessed by a trained physician using a 3-point grading system, high-resolution digital photographs, and a sebumeter (SM815). Participants also filled out self-assessments of their skin oiliness. Results: The in vitro experiments showed that sebocyte lipid content significantly decreased after AH8 treatment ($p < 0.05$ at 0.00005% AH8 , $p=0.09$ at 0.0005% AH8 , $p < 0.05$ at 0.005% AH8,and $p < 0.001$ at 0.025% AH8). In the clinical study, participants trended towards a 10% reduction ($p=0.16$) in sebum production after AH8 treatment in comparison to the vehicle treatment. Conclusion: AH8 inhibits the accumulation of lipids in sebocytes in vitro without altering cell proliferation or SREBP-1 expression. Topical AH8 trended toward decreased sebum production in human participants. The use of AH8 may serve as a promising agent to reduce sebocyte lipid production and the appearance of oily skin.

L. Schoeffel, E. Besic Gyenge, S. Hettwer, B. Suter, B. Obermayer, **Solving the Dandruff Dilemma Holistically and Naturally,** Cosmetics & Toiletries, June 22, p. 34-43

Seborrheic dermatitis (SD) and dandruff are often considered the same chronic dermatological condition, although the former affects multiple seborrheic areas of the body such as the face, chest and scalp, whereas the latter is restricted to the scalp. The symptoms associated with such conditions are often uncomfortable and can include irritation, itching and increased scaling of the scalp; it is still heavily debated whether inflammation symptoms such as red rashes and pruritus are specific to SD or if they can also occur in dandruff. In terms of scaling and flakes, these can be dry or greasy and are in fact clustered corneocytes detaching from the stratum corneum.

L. Shao, S. Jiang, Y. Li, Y. Shi, M. Wang, T. Liu, S. Yang, L. Ma, **Regular Late Bedtime Signifcantly Affects the Skin Physiological Characteristics and Skin Bacterial Microbiome**, Clinical, Cosmetic and Investigational Dermatology 2022:15, p. 1051–1063

Background: Late bedtime is a common form of unhealthy sleep pattern in adulthood, which influences circadian rhythm, and negatively affects health. However, little is known about the effect of regular late bedtime on skin characteristics, particularly on skin microbiome. Objective: To investigate the changes and effects of the regular late bedtime on skin physiological parameters and facial bacterial microbiome of 219 cases of Chinese women aged 18–38 years living in Shanghai. Methods: Based on the Self-Evaluation Questionnaire, bedtime was categorized as 11:00 PM; thus, the volunteers were divided into early bedtime group (S0) and late bedtime group (S1). The physiological parameters of facial skin were measured by non-invasive instrumental methods, and the skin microbiome was analyzed by 16S rRNA high-throughput sequencing. Results: The skin physiological parameters of the late bedtime group exhibited signifcant decrease in skin hydration content, skin frmness (F4) and elasticity (R2), while TEWL, sebum and wrinkle signifcantly increased. The result indicated that late bedtime signifcantly impaired the integrity of skin barrier, damaged skin structure, and disrupted water–oil balance. Furthermore, the analysis of α-diversity, Sobs, Ace and Chao index were found to signifcantly decrease ($P < 0.05$) in the late bedtime group, suggesting that late bedtime reduced both the abundance and the diversity of facial bacterial microbiota. Moreover, the abundance of *Pseudomonas* increased signifcantly, while *Streptococcus*, *Stenotrophomonas*, *Acinetobacter, Haemophilus, Actinomyces* and *Neisseria* decreasedsignifcantly. In addition, Spearman correlation analysis revealed strong correlations between the microbiota and the physiologicalparameters. Notably, the abundance of *Pseudomonas* signifcantly positively correlated with skin frmness and elasticity, butsignifcantly negatively correlated with skin hemoglobin content, melanin content and skin hydration. Conclusion: Bedtime is an important factor in maintaining skin health. Regular late bedtime not only damages the skin barrier and skin structure but also reduces the diversity and composition of facial bacterial microbiome.

P. Sirithanabadeekul, V. Leetrakulwanna, A. Suwanchinda, **A novel technique in reducing sebum production and improving atrophic acne scars**, J Cosmet Dermatol, June 2022

Objective: Fractional microneedling radiofrequency (FMR) has gained popularity for the treatment of acne scars, owing to favorable outcomes and short downtimes. This study aimed to investigate FMR use in reducing facial sebum production and treating acne scars. Materials and methods: This single-center, prospective, evaluator-blinded trial compared sebum production after three sessions of FMR (Fractora® 24-pin coated tip) performed one-month apart. Results were evaluated with a sebumeter (Cutometer®), sebaceous gland histology, and subjects' assessment. Acne scars were graded according to the Echelle d'Evaluation clinique des Cicatrices d'acné scale, Goodman and Baron's qualitative grading system, acne scar volume measurement, and subjects'

assessments.Results: Sebumeter results revealed a significantly decreased ($p < 0.05$) sebum production since the firsttreatment, sustained throughout the study period. Histological assessment showed decreased density and size of sebaceous glands. The mean acne scar volume decreased significantly, without a significant increase in the mean melanin levels. Conclusion: Fractora® 24-pin coated tip can be used as an alternative for patients with acne scars, who wish to concomitantly reduce their facial oiliness. A significant decrease in facial oiliness and acne scars' volume can be seen after a single treatment session, with up to 15.48% decrease in facial oil production.

R. Shawahna, **Effects of a grapeseed oil (Vitis vinifera L.) loaded dermocosmetic nanoemulgel on biophysical parameters of facial skin: A split-face, blinded, placebo-controlled study**, J Cosmet Dermatol, June 2022

Background: Worldwide, grapes (Vitis vinifera L.; family: Vitaceae) are one of the most important fruits. Grapeseed oil is rich in bioactive constituents that could be beneficial to the health and aesthetic features of human skin. Objective: This study was conducted to evaluate the effects of a novel grapeseed oil-loaded dermocosmetic nanoemulgel on biophysical parameters of facial skin. Methods: This was a split-face, blinded, placebo-controlled study. A novel grapeseed oil-loaded dermocosmetic nanoemulgel was developed and its effects on the biophysical parameters of the facial skin were evaluated and compared to those of a placebo formulation on the cheeks of 15 healthy volunteers. Melanin, erythema, sebum production, fine and large facial pores, moisture, and elasticity levels were measured using Mexameter®, Corneometer®, Sebumeter®, Cutometer®, and VisioFace®. Measurements were made on weekly basis for 12 weeks. Results: Compared to the placebo, the novel grapeseed oil-loaded dermocosmetic nanoemulgel received significantly higher sensory scores with regard to appearance, color, odor, consistency, adhesion, sensation, cohesiveness, and spreadability (p-value < 0.05). Additionally, the novel nanoemulgel continuously and significantly reduced skin melanin, erythema, sebum production, and fine and large pores (p-value < 0.05). On the other hand, the novel nanoemulgel continuously and significantly increased skin moisture contents and elasticity (p-value < 0.05). Conclusion: The novel grapeseed oil-loaded dermocosmetic nanoemulgel had attractive cosmetic attributes that could be useful for improving imperfections of the human skin. Future studies are still needed to test and evaluate the benefits of this novel grapeseed oil-loaded dermocosmetic nanoemulgel in disease conditions.

N. Li, X.-X. Yang, R.-Y. Yang, F. Yi, **Study of the characteristics of facial skin tone status in 1092 young Chinese females according to the ITA°**, J Cosmet Dermatol. 2022 May;21(5): p. 2073-2081

Background: The ITA° is the gold standard for skin tone classification. Different skin tones are often associated with different skin characteristics and issues. Different skin types are often associated with different skin characteristics and issues in China. Aims: To study the population's skin color distribution and accompanying skin problems according to the ITA° classification standard. Methods: A total of 1092 women aged 22-42 years were recruited in 7 cities in China. All biophysical parameter measurements (SM, CM, TWEL, pH, R2, GLOSS_DSCT, MEXA, ERYTH, ITA°; 9 indexes total) were quantified with noninvasive instruments. All volunteers provided consent before enrollment. Result: The main skin color categories were light (II), very light (I), intermediate (III), and tan (IV). The results demonstrated that the characteristics of the facial skin based on the ITA° were significantly different among cities and age groups and were associated with different skin issues. Conclusions: Lighter skin was associated with worse skin elasticity; intermediate skin was associated with worse skin hydration content and was most prone to being oily; and darker skin was associated with poor barrier function. Established principal component regression (PCR) indicated that pH, gloss GLOSS_DSC, MEXA, ERYTH, TEWL, and SM had significant effects on the ITA°.

S.M. Henning, J.B. Guzman, G. Thames, J. Yang, C.H. Tseng, D. Heber, J. Kim, Z. Li, **Avocado Consumption Increased Skin Elasticity and Firmness in Women - A Pilot Study**, J Cosmet Dermatol. 2022

Background: Avocados are a rich dietary source of monounsaturated fatty acids, carotenoids, and phenolic compounds. Clinical studies have demonstrated that oral consumption of carotenoids improved skin aging. However, no studies have investigated whether oral intake of avocado will reduce skin aging. Objectives: We therefore performed this pilot study to assess whether oral consumption of one avocado daily for 8 weeks can reduce skin aging in healthy overweight women assessing skin physical characteristics and resistance to UVB radiation. Methods: Thirty-nine female participants (age 27–73 years) with Fitzpatrick skin type II-IV were randomly assigned to consume either one avocado daily or continue habitual diet for 8 weeks. Facial skin elasticity, firmness, pigmentation, sebum, and hydration were determined using a cutometer on the forehead and under eye. Minimal erythema dose (MED) was determined by standardized protocol at inner arm. Results: Elasticity and firmness were

increased at forehead comparing 8 weeks to baseline in the avocado group. Comparing avocado to control, change in firmness marker from baseline to week 8 indicated a significant increase in forehead skin firmness in the avocado group. We did not observe any change in hydration, pigmentation, sebum, and UVB resistance between the avocado and control group, although changes in melanin and erythema were observed in both groups over time. Conclusions: Our findings suggest that daily oral avocado consumption may lead to enhanced elasticity and firmness of the facial skin in healthy women. Further studies of other skin locations are required to establish the connection between avocado consumption and skin aging.

W. Liu, L. Jie, D. Liu, E.T. Makino, J. Krutmann, R.C. Mehta, **Protective effects of a day/night dual-antioxidant serum on skin: A randomized, regimen-controlled study in Chinese women exposed to air pollution**, J Cosmet Dermatol. 2022

Background: Chronic exposure to air pollution can negatively affect skin health. Aims: To assess the efficacy of the LUMIVIVE® System (LVS), a skincare system consisting of individual day and night serums, in Chinese women exposed to air pollution. Patients/Methods: In this single-center, vehicle-controlled study, eligible females (mean age, 49.02 years) were randomized 1:1 to treatment group (LVS plus basic moisturizer) or control group (basic moisturizer). Skin color, sebum content, barrier function, elasticity, and texture were measured at baseline and at each follow-up visit (days 28, 56, and 84). Air pollution parameters were collected throughout the study. Results: Air pollution levels, including PM2.5 and NO2, were consistently high during the study. The treatment group showed significantly higher skin color L* ($p \leq 0.0001$) and lower a* values ($p \leq 0.05$) at all follow-up visits compared with the control group, indicating lower skin pigmentation and redness, respectively. Skin color L* and a* values remained unchanged over time for the control group but were significantly different at all follow-up visits compared to baseline ($p \leq 0.0001$ and $p \leq 0.05$, respectively) for the treatment group. There was an increasing trend for sebum content in the control group, which was not observed in the treatment group. Both groups showed improvements over time in other skin physiology parameters. Conclusions: The current analysis demonstrates the efficacy of LVS plus basic moisturizer compared with basic moisturizer alone to reduce skin pigmentation and redness, as well as to mitigate sebum production, in Chinese women exposed to air pollution.

T.K. Leo, E.S. Sing Tan, F. Amini, N. Rehman, E.S. Chye Ng, C.K. Tan, **Effect of Rice (*Oryza sativa* L.) Ceramides Supplementation on Improving Skin Barrier Functions and Depigmentation: An Open-Label Prospective Study**, Nutrients 2022, 14, 2737

Ceramides plays a crucial role in maintaining skin barrier function. Although foregoing evidence supported beneficial effects of topical ceramides for restoration of the skin barrier, studies on oral ceramides are extremely scarce, with most published data collected from in vivo and in vitro models. Thus, this study aimed to evaluate the efficacy of rice ceramides (RC) supplementation to improve skin barrier function and as a depigmenting agent through comprehensive clinical assessments. This study investigated the beneficial effects of orally administered RC supplementation in 50 voluntary participants. Skin hydration, firmness and elasticity, transepidermal water loss (TEWL), melanin index (MI), erythema index (EI), sebum production, pH, and wrinkle severity were assessed at baseline and during monthly follow-up visits. RC supplementation was found to significantly ($p < 0.01$) improve skin hydration, sebum production, firmness and elasticity, and wrinkle severity for three assessed areas, namely the left cheek, dorsal neck, and right inner forearm. Additionally, RC significantly ($p < 0.01$) reduced the rates of TEWL, levels of MI and EI. Analyses of data indicated that participants at older age were more responsive towards the effect of RC supplementation. Our findings suggest that RC supplementation can effectively improve skin barrier function, reduce wrinkle severity, and reduce pigmentation.

C. Theerawattanawit, P. Phaiyarin, S. Wanichwecharungruang, N. Noppakun, P. Asawanonda, C. Kumtornrut, **The Efficacy and Safety of Chitosan on Facial Skin Sebum**, Skin Pharmacol Physiol 2022;35: p. 23–30

Introduction: Seborrhea or oily skin has been one of the most common complaints affecting both men and women physically and psychologically. Chitosan is a biopolymer obtained from the alkaline deacetylation of chitin. Due to its positively charged nature, chitosan can effectively bind to lipids. Therefore, chitosan nanoparticle (CN) formulation may benefit in the reduction of skin sebum. Objective: The aim of this study was to evaluate the efficacy and safety of CN formulation in the reduction of skin sebum. Method: The study was a randomized, double-blinded, placebo-controlled trial in 24 participants aged 18-40 years with clinical seborrhea. Participants were randomly assigned to apply the CN and gum (CN-G) or placebo (gum alone) twice daily for 4 weeks. Sebum level, corneometry, transepidermal water loss (TEWL), and clinical seborrhea grading were evaluated at baseline and week 2 and 4. Results: In

the T-zone, sebum levels in the CN-G group were significantly lower than the placebo group at week 4 ($p = 0.043$), while for the U-zone, sebum levels were not different between groups. There were no statisticaldifferences in corneometry and TEWL at any visit. Although the clinical seborrhea grading in CN-G was lower, itwas not significantly different from the placebo. A few cases reported mild and self-limiting scaling and acneiform eruption. Conclusion: The CN-G gel could significantly reduce sebum levels on seborrhea patients with acceptable safety profiles.

K. Ahn, S. Han, K. Yun, W. Lee, D.-G. Lee, S.M. Kang, Y.-B. Choi, K. Han, Y.J. Ahn, **A Real-Time Detection Device for the Rapid Quantification of Skin Casual Sebum Using the Oil Red O Staining Method**, Sensors 2022, 22, 3016

The human skin sebum suggests that it (along with other epidermal surface lipids) plays a role in skin barrier formation, the moderation of cutaneous inflammation, and antimicrobial defense. Various methods have been developed for collecting and measuring skin sebum. We tested methods of detection using “color intensity”, by staining the skin casual sebum. This process was conducted in three steps; first, the selection of materials for sebum collection; second, staining the collected sebum; third, the development of a device that can measure the level of stained sebum. A plastic film was used to effectively collect sebum that increased with the replacement time of the sebum. In addition, the collected sebum was stained with Oil Red O (ORO) and checked with RGB; as a result, the R2 value was higher than 0.9. It was also confirmed that the correlation value was higher than 0.9 in the comparison result with Sebumeter®, which is a common standard technology. Finally, it was confirmed that the R2 value was higher than 0.9 in the detection value using the sensor. In conclusion, we have proven the proof of concept (PoC) for this method, and we would like to introduce an effective sebum measurement method that differs from the existing method.

A. Saleem Q.A. Jamil, H.M. Shaib Khan, S. Ijaz, **Development, characterization, and clinical investigation of Spinacia oleracea-based ultra-high pressure homogenized emulsion system for facial physiological parameters**, Cosmet Dermatol, April 2022

Background: Spinacia oleracea (SO) exhibits radical scavenging and tyrosinase inhibition activity indicating potential as a depigmenting agent. Aims: To develop and characterize a stable emulsified system containing SO extract through ultra-high pressure homogenization, evaluate skin permeability, and enumerate in vivo performance in terms of melanin index, skin spots analysis, and related skin physiological parameters. Method: Free radical scavenging and tyrosinase inhibition potential of SO extract was quantified through DPPH radical scavenging and mushroom tyrosinase inhibition assay, respectively. Six SO extract loaded ultra-high pressure emulsified systems (UHSO) were developed using ultra-high pressure homogenizer and assessed for size and polydispersity index (PDI). Among the prepared formulations, the optimized formulation (UHSO6) was subjected to 90 days stability studies performed at 8°C, 25°C, 40°C, and 40°C+75% RH (relative humidity) for organoleptic features, pH, and rheology. Ex vivo skin permeability studies were performed on abdominal skin from male albino rat. Changes in skin physiological parameters were evaluated in healthy female volunteers ($n = 13$) for 12 weeks utilizing Mexameter®, Corneometer®, and Sebumeter®. Skin spots were analyzed through computerized analysis of high-resolution images by VisioFace®. Results: SO extract exhibited promising antioxidant (88±0.0096%) and tyrosinase inhibition potential (90.6 ± 0.0015 mg of Kojic Acid Eq/g of extract). Optimized UHSO was found to be stable with respect to stability evaluation, globule size (1110 nm), zeta potential (-27.6), and PDI (0.34). Ex vivo skin permeation of UHSO was significantly higher than SO loaded coarse emulsion. Moreover, the formulation showed a significant decrease in skin melanin, spot count, and spot % area, whereas skin hydration index was improved significantly. Conclusion: Stable SO extract loaded emulsion system was successfully developed by a novel, cost-effective technique of ultra-high pressure homogenization which showed improved performance in terms of skin permeation and other skin physiological parameters.

N.-Y. Kim, B.-R. Kim, M.-G. Jung, S.-H. Park, H.-Y. Jin, H.-J. Jang, S.-J. Kim, **Comparison Analysis of Tests for the Sebum Content on the Scalp Using Meibometer® and Sebumeter®,** Asian J Beauty Cosmetol, 2022; 20(3): p. 315-323 (Article in Korean)

Purpose: The purpose of this study is to show that Meibometer® is a useful analysis technique for the measurement and evaluation of the sebum content on the scalp by comparing the test analysis results of the scalp sebum content using Meibometer® and Sebumeter®. Methods: In this study, Meibometer® and Sebumeter® were used for quantitative measurements of the sebum content on the scalp of the test volunteers, and the measurement results were analyzed using the paired t-test and Pearson’s correlation coeffcient. Results: The scalp sebum content was analyzed using Meibometer® and Sebumeter®, and according to the results, both measuring devices exhibited a reduction in the scalp sebum content, compared to before the testing product was applied ($p<0.001$). The Meibometer® and

Sebumeter® measurements showed a significant positive correlation (r=0.411) in the second measurement. Conclusion: These results showed that the measuring results of both Meibometer® and Sebumeter® had a high correlation and they were appropriate for measurement. However, it is suggested that for reducing the interference of the adjacent hair with sebum and quantitatively evaluating the sebum content on the scalp only, Meibometer® can be a relatively useful analysis technique, and it is expected that further test analysis and studies using Meibometer® will be actively conducted in the future.

S. Huma, H.M. Shoaib Khan, S. Ijaz, M. Sarfraz, H. Saqib Zaka, A. Ahmad, **Development of Niacinamide/Ferulic Acid-Loaded Multiple Emulsion and Its In Vitro/ In Vivo Investigation as a Cosmeceutical Product**, Biomed Res Int, 2022 Mar 17:2022:1725053

Objective: Multiple emulsions have the ability to incorporate both lipophilic and hydrophilic actives in the same preparation and facilitate permeation of active ingredients through skin. The current study was aimed at formulating niacinamide/ferulic acid-loaded stable multiple emulsion (MNF) and its in vitro/in vivo characterization as a cosmeceutical product. Methods: Both the compounds were evaluated for their radical scavenging potential by the DPPH method and FTIR analysis. Then, placebo and active formulations were prepared using a double emulsification method and were investigated for stability testing (changes in color, odor, and liquefaction on centrifugation, pH, and globule size) for a period of three months. Afterwards, MNF was investigated for in vitro sun protection factor, rheological studies, entrapment efficiency, zeta potential, zeta size, and ex vivo permeation. Moreover, after ensuring the hypoallergenicity and safety, it was also checked for its cosmeceutical effects on human skin using noninvasive biophysical probes in comparison with placebo. Results: Results demonstrated that MNF showed a non-Newtonian behavior rheologically and both MNF and placebo were stable at different storage conditions. Entrapment efficiency, zeta potential, and zeta size were 93.3%, -5.88 mV, and 0.173 μm, respectively. Moreover, melanin, sebum, and skin erythema were significantly reduced while skin elasticity and hydration were improved. Conclusion: It is evident that niacinamide and ferulic acid can be successfully incorporated in a stable multiple emulsion which has potent cosmeceutical effects on human skin.

J.I. Seo, H.I. Ham, J.H. Baek, M.K. Shin, **An objective skin-type classification based on non-invasive biophysical parameters**, J Eur Acad Dermatol Venereol, Volume 36, Issue 3, March 2022, p. 444-452

Background: Despite the invention of various non-invasive bioengineering tools, skin-type analysis has largely been based on subjective assessments. However, advancements in the functional cosmetic industry and artificial intelligence-assisted dermatology are creating a greater demand for an objective skin-type classification system. Objectives: To propose an objective skin-type classification system solely based on non-invasive, bioengineering devices; provide reference values applicable to the Korean population; and compare our reference values with those of published studies. Methods: Biophysical parameter measurements were obtained from the 2018 International Skin Characteristics Data Bank Project conducted by the Foundation of Korea Cosmetic Industry Institute. The participants were 434 healthy South Korean adults. Each participant was assessed using eight bioengineering devices (Tewameter®, pH-meter®, Corneometer®, Sebumeter®, Cutometer®, Spectrophotometer®, PRIMOS® lite, and Janus®). The measurements were divided into tertiles to determine reference points. Results: Our objective skin-type classification consists of five main categories (sensitivity, hydration, oiliness, elasticity, and skin tone) and five corresponding subcategories (erythema, roughness, pores, wrinkles, and pigmentation, respectively). Each skin type was assigned based on the reference point of the biophysical parameter, which was established as the tertile value associated with 'unfavourable' skin characteristics. Individuals were categorized as having sensitive skin when the TEWL scores were over 18.0 $g/m^2/h$ or the pH was over 5.45; dehydrated skin when the corneometric value measured below 47.17 A.U.; oily skin when the sebumetric value exceeded 70 $\mu g/cm^2$; and loose skin when the cutometric R^2 value was below 0.68 E/mm. Conclusions: This study is the first to provide a comprehensive skin-type classification system based solely on non-invasive biophysical parameters. As measurement data accumulate, the reference points will progress to become more accurate, and they will be subdivided according to gender, age, and ethnic group. Therefore, our classification system serves as a basis for artificial intelligence-based skin-type analysis.

C. Zanchetta, D. Vilanova, C. Jarrin, A. Scandolera, E. Chapuis, D. Auriol, P. Robe, J. Dupont, L. Lapierre, R. Reynaud, **Bacterial taxa predictive of hyperpigmented skins**, Health Sci. Rep. 2022;5: e609.

Background and Aims: Dark spots, brown spots, or hyperpigmented spots (HPS) are oval or irregular brown areas of skin. Their emergence is associated with dysregulation of the immune system,

and may also be caused by a deficiency in stromal cell-derived factor-1, leading to perturbed melanogenesis and accumulation of melanosomes within neighboring keratinocytes. The skin microbiota (living microorganisms present on the surface of the skin) is known to play essential roles in maintaining skin homeostasis and in regulating the immune system. Here, we investigated whether the microbiota could play a role in the emergence of HPS. Methods: The clinical study involved 38 European women, selected from among 74 volunteers. Participants were divided into two groups depending on the spot areas measured on their faces. The study was designed to avoid conflicting factors: both groups presented similar skin pH, hydration, transepidermal water loss, and sebum levels. The two cohorts were also age-matched, with a mean of 29-years-old for both. Results: Alpha-diversity of the microbiota was similar for the two groups. On skins with more HPS, seven bacterial genera were identified in significantly higher proportions and included opportunistic pathogens and inflammatory bacteria. Six bacterial genera, including bacteria showing antioxidant and anti-UV properties, were identified in significantly higher proportions on less spotted skins. Cross- domain association networks revealed distinct co-occurrences of genera between the two groups, suggesting nonidentical community structures and exchanges, depending on the HPS status. Conclusion: Our results reveal specific microbiota composition and networks on skins based on HPS status. Changes could alter communication with the immune system, leading to the emergence of dark spots. As an essential part of the overall skin ecosystem, and through its interaction with the skin matrix, the skin microbiota and its maintenance could be considered a new target for skincare applications.

D. Léger, C. Gauriau, C. Etzi, S. Ralambondrainy, C. Heusele, S Schnebert, A. Dubois, D. Gomez-Merino, M. Dumas, **"You look sleepy…" The impact of sleep restriction on skin parameters and facial appearance of 24 women**, Sleep Medicine 89 (2022), p. 97-103

Background: Total sleep deprivation has a visible impact on subjective facial appearance. However, there is a lack of knowledge on how moderate sleep restriction objectively impairs skin quality and facial aspect. Methods: Twenty-four healthy good-sleeping women, aged 30e55, volunteered for this study on the impact of sleep restriction (SR) on their facial skin. SR was limited to 3 h per night for 2 consecutive nights. We assessed the following parameters at the same time of day, before and after SR: sebumetry (Sebumeter SM 815), hydration (Corneometer CM 825), trans-epidermal water loss (Tewameter TM 210), biomechanical properties (Cutometer MPA 580), pH (PH-meter 900), desquamation quantification (DSquameter and microscopy), and image analysis (ColorFace - Newtone Technologies). We also obtained skin samples (swab) for malondialdehyde quantification (MDA). Results: We observed that some skin parameters are significantly associated with SR in both the morning and afternoon, including: lower hydration ($p < 0.001$), increased trans-epidermal water loss (PIE) ($p < 0.001$), and decreased extensibility (Uf; p ¼ 0.015) and viscosity (Uv; $p < 0.001$) of the skin. The average pH increased from 4.8 (±0.2) to 4.9 ± 0.4; $p < 0.001$. For face photography, brightness and saturation also significantly decreased with SR in mornings and afternoons ($p < 0.001$ for all tests). Finally, we observed a significant decrease in isolated corneocytes after desquamation associated with SR ($p < 0.001$ for all tests). SR was also associated with significantly increased MDA levels ($p < 0.001$ for all tests). Conclusions: Two nights of SR significantly altered the skin and facial appearances in our test group of typically good-sleeping women.

A. Lemoine-Dessaint, D. Jamieson, R. Raffin, **Holistic hair care innovation**, PERSONAL CARE Magazine, January 2022

Sebum is an oily substance composed of various materials, including triglycerides, wax esters, squalene and cholesterol, secreted by the sebaceous glands in the skin. As a result, the scalp can become oily, just like facial skin.

*S.H. Kim, J.H. Kim, S.J. Lee, M.S. Jung, D.H. Jeong, K.H. Lee***, Minimally invasive skin sampling and transcriptome analysis using microneedles for skin type biomarker research,** Skin Research & Technology, January 2022

Background: Minimally invasive skin sampling is used in various fields. In this study, we examined whether it was possible to obtain skin specimens using biocompatible microneedles composed of sodium hyaluronate and performed transcriptome analysis. Materials and methods: Thirty-three subjects with different skin conditions, such as skin aging, skin hydration, skin pigmentation, oily skin and sensitive skin, were recruited. Skin types were evaluated based on age, non-invasive measurement devices, 10% lactic acid stinging test and visual assessment; the skin specimens were sampled from the face using microneedles. Total RNA was extracted, and microarray was performed. Correlations between various biomarkers and skin condition parameters were analysed. Results: Several skin-type biomarkers are correlated with age, non-invasive device measurements, LAST score and visual assessment of acne lesions. Representatively, COL1A1 (Collagen type 1 alpha 1 chain), FN1

(Fibronectin 1) and PINK1 (PTEN-induced putative kinase protein 1) for skin aging, FLG (Filaggrin), KLF4 (Kruppel-like factor 4) and LOR (Loricrin) for skin hydration, GPNMB (Glycoprotein non-metastatic melanoma protein B), MLANA (Melan-A) and TYR (Tyrosinase) for skin pigmentation, IGF1 (insulin-like growth factor-1), MPZL3 (Myelin protein zero like 3) and AQP3 (Aquaporin 3) for oily skin and PGF (placental growth factor), CYR61 (cysteine-rich angiogenic inducer 61), RBP4 (retinol-binding protein 4), TAC1 (Tachykinin precursor 1), CAMP (Cathelicidin antimicrobial peptide), MMP9 (Matrix metallopeptidase 9), MMP3, MMP12 and CCR1 (C-C motif chemokine receptor 1) for sensitive skin. Conclusion: Microneedle skin sampling is a new and minimally invasive option for transcriptome analysis of human skin and can be applied for diagnosis and treatment efficacy evaluation, as well as skin type classification.

A. Szymańska, E. Budzisz, A. Erkiert-Polguj, **Long-term effect of azelaic acid peel on sebum production in acne**, Dermatol Ther, 2022 Jan;35(1): e15186

Seborrhea and the associated oily skin are undoubtedly the problem of women and men around the world. The pathogenesis of acne vulgaris involves excessive activity of sebaceous glands, as well as disturbances in the composition of sebum. The aim of the study was to assess the severity of seborrhea in a group of acne vulgaris patients and to determine the effect of a 20% azelaic acid solution on the activity of sebaceous glands. Twenty seven women, aged 19-25 years, underwent a series of six treatments with the application of a 20% solution of azelaic acid to the face. The mean values of sebum level showed a decreasing tendency. On the forehead, the results were as follows-195.5 before the treatment and 162.7 2 weeks after the last treatment. Measurements of the right cheek decreased from 175.3 to 141.3 The measurements taken 3 months after the study were 151.3 on the forehead and 138.9 on the cheek. Similarly, the values determining the total number of acne lesions and the severity of the disease according to the IGA scale also changed significantly. Chemical peel with 20% azelaic acid shows long-term sebostatic action, which inhibits the formation of new acne lesions.

*S.H. Kim, J.H. Kim, S.J. Lee, M.S. Jung, D.H. Jeong, K.H. Lee***, Minimally invasive skin sampling and transcriptome analysis using microneedles for skin type biomarker research,** Skin Research & Technology, January 2022

Background: Minimally invasive skin sampling is used in various fields. In this study, we examined whether it was possible to obtain skin specimens using biocompatible microneedles composed of sodium hyaluronate and performed transcriptome analysis. Materials and methods: Thirty-three subjects with different skin conditions, such as skin aging, skin hydration, skin pigmentation, oily skin and sensitive skin, were recruited. Skin types were evaluated based on age, non-invasive measurement devices, 10% lactic acid stinging test and visual assessment; the skin specimens were sampled from the face using microneedles. Total RNA was extracted, and microarray was performed. Correlations between various biomarkers and skin condition parameters were analysed. Results: Several skin-type biomarkers are correlated with age, non-invasive device measurements, LAST score and visual assessment of acne lesions. Representatively, COL1A1 (Collagen type 1 alpha 1 chain), FN1 (Fibronectin 1) and PINK1 (PTEN-induced putative kinase protein 1) for skin aging, FLG (Filaggrin), KLF4 (Kruppel-like factor 4) and LOR (Loricrin) for skin hydration, GPNMB (Glycoprotein non-metastatic melanoma protein B), MLANA (Melan-A) and TYR (Tyrosinase) for skin pigmentation, IGF1 (insulin-like growth factor-1), MPZL3 (Myelin protein zero like 3) and AQP3 (Aquaporin 3) for oily skin and PGF (placental growth factor), CYR61 (cysteine-rich angiogenic inducer 61), RBP4 (retinol-binding protein 4), TAC1 (Tachykinin precursor 1), CAMP (Cathelicidin antimicrobial peptide), MMP9 (Matrix metallopeptidase 9), MMP3, MMP12 and CCR1 (C-C motif chemokine receptor 1) for sensitive skin. Conclusion: Microneedle skin sampling is a new and minimally invasive option for transcriptome analysis of human skin and can be applied for diagnosis and treatment efficacy evaluation, as well as skin type classification.

I. Petriček, S. Vidas Pauk, M. Tomić, T. Bulum, **Dry eye and dry skin - is there a connection?,** Ophthalmic Epidemiol, 2021, December, 29; p. 1-10

Aim: To enquire whether patients with dry eye symptoms also report dry skin, whether their perception could be corroborated with objective measurement, and whether dry eye disease might be suspected based on patients' complaints. Methods: This cross-sectional study included 50 subjects, 25 with and 25 without dry eye symptoms. Schein questionnaire was used to determine the severity of dry eye symptoms. Ocular signs were assessed by monitoring conjunctival hyperemia, ocular surface staining, meibomian gland expression, tear film lipid layer thickness, tear break-up time, lid parallel conjunctival folds, Schirmer test, and meibometry. Skin dryness was assessed by noting patients' self-perception of their facial skin dryness and measured by sebumeter. Results: Subjects without dry eye symptoms had self-reported oilier facial skin than those with dry eye symptoms ($p < .001$). Sebumetry

scores measured on the forehead and cheek were significantly higher in subjects without dry eye symptoms than dry eye subjects (p = .003). After adjustment for age and gender in a logistic regression analysis, dry eye was independently and significantly associated with dry skin (AOR 0.69, p = .040), higher LIPCOF score of both eyes (AOR 2.28, p = .028), lower sebumetry score of the forehead (AOR 0.98, p = .041) and cheek (AOR 0.98, p = .041), and shorter TBUT score after gland expression (AOR 0.90, p = .018). Conclusion: This study showed that ocular dryness was subjectively and objectively positively correlated to facial skin dryness. Patients reliably described their skin condition. People with dry facial skin also had drier eyes.

L. Moretti Aiello, M. Massufero Vergilio, S. Arandas Monteiro e Silva, T. Anselmo, G. Ricci Leonardi, **Skin effect of facial cleansing combined with an electric sonic device**, J Cosmet Dermatol, 2021 Nov;20(11): p. 3537-3544

Background: New technologies, such as sonic devices, have been developed to optimize the skin cleansing process and improve its efficiency. To evaluate the effectiveness of these cosmetic procedures, skin bioengineering is an objective method to assess the biophysical parameters of the skin. Aims: This study aimed to assess the effect of facial cleansing on the physiological properties of the skin by comparing a cleansing process with cosmetic product applied manually to cleansing with cosmetic product associated with the use of an electric sonic device. Patients/methods: A gentle skin cleanser was applied to the entire face of 12 subjects; the sonic device was used on one half of the face and the manual process was performed on the other half. Instrumental skin analyses included sebumetry, corneometry, transepidermal water loss (TEWL), infrared thermography, and high-frequency ultrasound and were measured before and up to 90 min after cleansing. Results were compared using two-way ANOVA and Friedman tests. Results: Data obtained from the statistical analysis of sebummetry, TEWL, thermography, and ultrasound parameters did not show any significant difference. When assessing the corneometry parameters, a significant reduction in hydration values (17.19%) was observed in the manual cleansing area, while the values remained similar to baseline values in the area where the sonic device was used. Conclusion: The cleansing process with a sonic device did not cause a significant hydration reduction, suggesting better preservation of skin homeostasis when compared to manual cleansing.

T. Esposito, T. Mencherini, F. Sansone, G. Auriemma, P. Gazzerro, R.V. Puca, R. Iandoli, R.P. Aquino, **Development, Characterization, and Clinical Investigation of a New Topical Emulsion System Containing a *Castanea sativa* Spiny Burs Active Extract**, Pharmaceutics 2021, 13, 1634

The study focused on the development and characterization of an O/W emulsion for skincare containing *Castanea sativa* spiny burs extract (CSE) as functional agent. The emulsion was stable and had suitable physicochemical and technological properties for dermal applicationand CSE showed no cytotoxicity in spontaneously immortalized keratinocytes (HaCaT) at active concentrations. A single-blind, placebo-controlled, monocentric study was designed to evaluate the skin tolerability and the skin performance of the CSE-loaded emulsion on healthy human volunteers. An improvement was observed in skin biomechanical properties such as hydration, skin elasticity and a reduction in the periorbital wrinkles in 30 days without altering the skin barrier function, sebum, pH, and erythema values. A significant skin moisturizing effect was detected while the skin barrier function was preserved. The selected natural ingredient combined with the designed formulation and the optimized preparation method has led to a final product that satisfies the physico-chemical and technological requirements underlying the safety of use and the formulative stability over time. With no negative skin reactions and highly significant effects on skin elasticity, wrinkles, and moisturization, the CSE-based emulsion achieved very satisfying outcomes representing a promising functional formulation for skin care.

P.M.B.G Maia Campos, L. Nakamura, M. Isnard, **Association of Licorice Extract, Vitamins B3 and B5 in a cosmetic formulation for skin oiliness control: clinical efficacy, texture and sensory properties**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Skin oiliness is a condition characterized for the increase of sebaceous glands and influenced by factors such as age, gender, ethnicity, diet and climate. This condition gives a greasy appearance to the skin and negatively affects self esteem, mainly in women. For this reason, the development of effective formulations for skin oiliness control has been a challenge in the cosmetic area. Licorice (Glycyrrhiza) extract has a rich composition of licochalcone that helps to control sebaceous glands secretion. Vitamin B3 (Niacinamide) has been used in cosmetics for the hyperpigmentationtreatment but also demonstrated an anti-inflammatory effect.

J.W. Park, J. Han, E. Kim, **Relationship between water-sebum ratio and skin barrier function**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

People often use the term “oil and moisture balance” to describe their skin condition subjectively. However, there is no existing research on what the appropriate watersebum ratio is, and there is not enough explanation for their effects on skin characteristics. In this study, we studied the relationship between water-sebum ratio and skin barrier function.

J.-H. Shin, J.H. Park, H.-K. Lee, **The pattern of skin properties as distinctive facial area**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Chronically and environmentally stimulated skin turns its appearance. The skin mechanical properties are able to be evaluated through measurement devices such as Primos, Antera 3D CS, Corneometer® CM825, Sebumeter® SM815 and Spectrophotometer CM-700d. Primos is a three-dimensional skin-surface measurement device that uses fringe projection to assess skin topography and can visualize skin texture and wrinkle on the skin surface. Antera takes a photograph for skin topography and color-related skin chromophores and is more sensitive for wrinkle measurement.

C. Messaraa, R. Thibault, D. McNamee, S. Hurley, L. Doyle, A. Mansfield, **Exploratory investigation on the characteristics of Mexican Women’s skin**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Mexico population stems from a rich mosaic of various ethnic background and ancestries. In skin research, its population has been captured under several terms, some of them not always adequate. “Hispanics” for instance, rather define people of Spanish descendant. “Latin Americans” applies to persons or communities of Latin American geographic origin, which have a heterogeneous ancestry. “Latino”, a shortened term from Spanish “Latino Americano” is applied for both people living in the U.S. who are of Latin American origin and their U.S.-born descendant.

Y. Ye, Y. Li, A. Liu, L. Jiang, **Improvement of conspicuous skin pores with a serum containing supramolecular retinol, pyridoxine, salicyloyl phytosphingosine and lactobionic acid**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Conspicuous skin pores generate many aesthetic concerns or complaints. Despite the prevalence of conspicuous skin pores, there have been few published articles of topical cosmetics treatment to improve the appearance of conspicuous pores. Generally, pores are considered as conspicuous pores when the opening becomes visible to the naked eye and the facial appearance is compromised.

A. Pany, M. Wohlgenannt, S. Klopprogge, M. Wolzt, T. Heuser, H. Kotisch, C. Valenta, V. Klang, **Effect of hydroxypropyl-β-cyclodextrin in fluid and semi-solid submicron emulsions on physiological skin parameters during regular in vivo application**, International Journal of Cosmetic Science, 2021, 43, p. 263–268

Objective: The aim of the present study was to evaluate the effect of hydroxypropyl-β-cyclodextrin (HP-β-CD) in cosmetic submicron emulsions and submicron emulsion gels on physiological skin parameters during regular application in a clinical set-up. Methods: Formulation morphology was investigated using cryotransmission electron microscopy. Stability of the employed formulations was determined by photon correlation spectroscopy, measurement of pH and rheological properties. Effect on physiological skin parameters was evaluated during regular application over four weeks in a parallel group study (n = 15, healthy forearm skin) with a Corneometer, Sebumeter, skin-pH-Meter, Aquaflux and an Epsilon sensor. Confocal Raman spectroscopy was employed to monitor urea and NMF levels. Results: Both submicron emulsions and gels showed satisfying storage stability irrespective of cyclodextrin incorporation. No statistically significant effects on skin barrier function and any of the observed parameters were obtained, indicating good skin tolerability of all tested formulations. Conclusion: Results suggest good skin tolerability of the developed cosmetic submicron emulsions and gels with HP-β-CD.

H. Rajaiah Yogesh, T. Gajjar, N. Patel, R. Kumawat, **Clinical study to assess efficacy and safety of Purifying Neem Face Wash in prevention and reduction of acne in healthy adults**, J Cosmet Dermatol.. 2021 Sep 30

Background: Acne vulgaris is a chronic, inflammatory skin condition of pilosebaceous units. The standard treatment involves topical and oral antibiotics, retinoids, benzoyl peroxide, and other synthetic compounds, mostly associated with adverse effects. Hence, herbal skincare products are considered nowadays. Aim: To evaluate the safety and efficacy of Purifying Neem Face Wash (PNFW), an herbal skincare product in the prevention and/or reduction of mild-to-moderate acne. Methods: An open-label, single-center, single-arm, four-week clinical study was conducted with subjects having either mild-to-moderate acne or oily skin and non-existent acne. The performance of PNFW in the reduction and/or

prevention of acne was detected by counting cutaneous inflammatory and non-inflammatory acne lesions in each of the four visits. Sebum level and skin hydration of both cheeks were measured via sebumeter and corneometer, respectively. Self-assessment questionnaires were used to assess the subjects' responses toward PNFW. Results: Out of 120 study subjects, 79% and 72% showed either reduction or no new appearance of inflammatory and non-inflammatory acne lesions, respectively, from baseline to Visits 3 and 4. Skin sebum level and skin hydration showed a statistically significant decrease ($p < 0.001$) and increase ($p < 0.001$), respectively, in Visits 3 and 4. Self-assessment surveys showed the satisfaction of the subjects about the product in terms of condition improvement, ease in use, and fragrance. Conclusion: The present study indicated the beneficial effect of the herbal ingredients (neem and turmeric) of Himalaya's PNFW in the prevention and reduction of mild-to-moderate acne with no side effects.

J. Kim, J. Kim, Y.I. Lee, J. Suk, D. Lee, J.H. Lee, **A pilot study evaluating the efficacy and safety of retinaldehyde-loaded niosomes against mild-to-moderate acne**, J Cosmet Dermatol, 2021 Sep 29

Background: Retinoids are the mainstay of topical therapy for acne. To improve the efficacy and minimize the side effects of retinoids, various novel drug delivery mechanisms, including nanoparticles, have been developed. Aim: To evaluate the efficacy and safety of a retinaldehyde-loaded niosome (RA-N) nanoemulsion against sebum secretion and keratinization on mild-to-moderate acne. Patients/methods: Twenty-three participants exhibiting mild-to-moderate acne with both closed and open comedones were included. They applied a 0.05% RA-N nanoemulsion daily for 4 weeks, did not to use any other emollient or topical pharmaceutical, and were asked to report any symptoms and treatment satisfaction. Results: The participants demonstrated significantly fewer closed and open comedones after 2 and 4 weeks of treatment than at baseline ($*p < 0.05$). The mean sebum secretion, measured using Sebumeter®, was 327.95 ± 90.20 μg cm^{-2} at baseline and reduced to 282.60 ± 99.70 and 250.65 ± 97.6 μg cm^{-2} , respectively, after 2 and 4 weeks of treatment ($*p < 0.05$). The mean desquamation index, determined using Visioscan®, was 10.99 ± 1.69 at baseline and decreased to 9.81 ± 1.10 and 8.89 ± 1.32, respectively, after 2 and 4 weeks of treatment ($*p < 0.05$). The application of the RA-N nanoemulsion resulted in a significantly lower desquamation level, suggesting that the RA-N nanoemulsion was well-tolerated without any skin irritation. None of the participants reported a serious adverse event during this study. Conclusion: Our findings suggest that the RA-N nanoemulsion was effective in improving comedones in acne-prone skin and safe for long-term application. Further studies are necessary to investigate the long-term effects of the application of the RA-N nanoemulsion in participants with inflammatory acne and acne scars.

N. Kaul, **Clinical testing for a booming men's sector,** PERSONAL CARE Magazine, September 2021, p. 25-28

The male grooming industry is growing at a rapid pace. Entire aisles of drug stores are dedicated to men's grooming products. Product demand in the skin care, hair care, and fragrance industries has grown dramatically and is expected to keep pace in the coming years. Whether this growth stems from celebrity advertising or social media influence, one thing is clear: men have come a long way from the days of merely using a soap bar as face and body wash. The modern man stands ready and willing to invest in skin and hair products that maintain their health and youth. Globe News Wire reports the men's grooming market worldwide will reach $183.2 Billion by 2027, with the U.S. market alone estimated at $38 Billion, and China Forecast to grow at 6.9%.1 As men continue to open their wallets for new and improved grooming products, brands catering to this market are stepping up to meet those needs by expanding offerings to include anti-ageing, SPF and antiacne products. Customisation of products is proving equally important, such as specialized regimens for every combination of skin and hair.

K.J. Vanderwolf, C.J. Kyle, P.A. Faure, D.F. McAlpine, C.M. Davy, **Skin pH varies among bat species and seasons and between wild and captive bats**, Conservation Physiology, Volume 9, 2021

Skin is a key aspect of the immune system in the defence against pathogens. Skin pH regulates the activity of enzymes produced both by hosts and by microbes on host skin, thus implicating pH in disease susceptibility. Skin pH varies interand intra-specifcally and is influenced by a variety of intrinsic and extrinsic variables. Increased skin alkalinity is associated with a predisposition to cutaneous infections in humans and dogs, and inter-specifc and inter-individual variation in skin pH is implicated in differential susceptibility to some skin diseases. The cutaneous pH of bats has not been characterized but is postulated to play a role in susceptibility to white-nose syndrome (WNS), a fungal infection that has decimated several Nearctic bat species. We used non-invasive probes to measure the pH of bat flight membranes in fve species with differing susceptibility to WNS. Skin pH ranged from 4.67 to 8.59 and varied among bat species, geographic locations, body parts, age classes, sexes and seasons. Wild *Eptesicus fuscus* were consistently more acidic than wild *Myotis lucifugus*, *Myotis leibii* and *Perimyotis*

subflavus. Juvenile bats had more acidic skin than adults during maternity season but did not differ during swarming. Male *M. lucifugus* were more acidic than females during maternity season, yet this trend reversed during swarming. Bat skin was more acidic in summer compared to winter, a pattern also reported in humans. Skin pH was more acidic in captive than wild E. fuscus, suggesting environmental impacts on skin pH. The pH of roosting substrates affects skin pH in captive bats and may partially explain seasonal patterns in wild bats that use different roost types across seasons. Future research on the influence of pH on microbial pathogenic factors and skin barrier function may provide valuable insights on new therapeutic targets for treating bat skin conditions.

H.G Azaryan, K.M. Khachikyan, A. Taha, E. Badawy, **Comparative analysis of effects induced by hyaluronic acid and its combined formula on skin functional parameters in second-degree photoaging**, J Cosmet Dermatol, 2021 Aug;20(8): p. 2542-2551

Background and aims: The study aimed to compare the effectiveness of intradermal injections of modified hyaluronic acid (mHA) and combined injections of platelet-rich plasma (PRP) and mHA (HA-PRP) on clinical and functional parameters in women with second-degree photoaging. Methods: Seventy-six healthy female participants diagnosed with second degree of skin photoaging were involved in two interventional study groups. The first group was treated with "bio-reparative" method (mHA) and the second group with "combined HA-PRP therapy". Additionally, 20 practically healthy women, with the first degree of photoaging according to Glogau classification, constituted the control group. Parameters of facial skin were evaluated in all groups before and after the injections. The patients in both interventional groups were compared based on skin therapy outcomes, using corneometry, sebumetry, cutometry, transepidermal water loss (TEWL), and skin pH assessments. A post-interventional analysis was conducted to evaluate the level of satisfaction in physicians and study participants in accordance with GAIS. Intragroup and between-group analysis for the selected parameters was performed. Results: Compared with the control group, the combined therapy group did not show significant difference in parameters ($p > 0.05$) and the scores were significantly improved compared to mHA group ($p < 0.001$). Control and HA-PRP-treated groups were different only in sebumetry scores (SigDev = 2.1%). Significant difference was observed in the GAIS scores for patients between the interventional groups ($p = 4.03297E-11$ and 3.4093E-09, respectively). Conclusion: Implementation of combined therapy is significantly effective compared to the mHA therapy alone. The higher efficacy is derived from significant recovery of functional parameters and GAIS survey results.

A. Gripp, C. Abbastante, B. Kernick, **Sulfidal Colloidal™ Sulfur, a mild and effective choice for the treatment of acne and rosacea,** Cosmetic & Toiletries, August 2021

Acne is a skin condition affecting up to fifty million Americans per year and more than 90% of the world's population at some time in life. Acne can appear on various areas on the body and when visible on the face it can be difficult to mask.

T. Yazdanparast, K. Yazdani, S.A. Nasrollahi, L. Izadi Firouzabadi, P. Humbert, A. Khatami, A. Firooz, **Biophysical and ultrasonographic changes in pityriasis rosea compared with uninvolved skin**, International Journal of Women's Dermatology 7 (2021) 331–334

Background: Pityriasis rosea (PR) is a common, self-limited, inflammatory papulosquamous skin disease with a possible viral etiology. Objective: The goal of this study was to evaluate skin biophysical properties in patients with PR compared with uninvolved skin to better understand the pathogenesis of PR. Methods: Stratum corneum hydration, transepidermal water loss, surface friction, pH, sebum, melanin, erythema, temperature, elasticity parameters (R0, R2, R5), thickness, and echodensity of the epidermis and dermis were measured on lesions of classic PR in 21 patients and compared with control sites (average of uninvolved perilesional and symmetrical skin) with a paired t test. Results: Stratum corneum hydration ($p < .001$), R0 ($p = .003$), R2 ($p = .001$), R5 ($p = .003$), and echodensity of the dermis ($p = .006$) were significantly lower, whereas transepidermal water loss ($p = .001$), pH ($p < .001$), and erythema ($p < .001$) were significantly higher in PR lesions. There was no significant difference in friction index, sebum, melanin content, temperature, thickness of the epidermis and dermis, and echodensity of the epidermis between PR and normal skin. Conclusion: PR skin is characterized by certain alterations in biophysical properties, which are mostly correlated with histologic changes. These changes may be helpful in early, noninvasive diagnosis of PR.

J. Liu, L. Liu, L. Zhou, L. Chen, X. Chen, X. Xiong, Y. Deng, **The Effect of Intense Pulsed Light on the Skin Microbiota and Epidermal Barrier in Patients with Mild to Moderate Acne Vulgaris**, Lasers in Surgery and Medicine 53: p. 1348–1355 (2021)

Background and Objectives: The skin microbiota partly determined by epidermal barrier plays an important role in acne vulgaris and intense pulsed light (IPL) has been verified as a safe and effective

therapeutic option for this disease. Nevertheless, the exact role of the IPL treatment on the skin microbiota and epidermal barrier for patients with acne vulgaris remains unclear. This article was designed to solve this problem. Study Design/Materials and Methods: Nineteen healthy controls and 20 patients with mild to moderate acne were enrolled in this study, who received IPL treatment for 12 weeks. The epidermal barrier and skin samples were collected at baseline and after treatment. The microbial diversity was analyzed based on a high-throughput sequencing approach, which targets the V3–V4 region of the bacteria 16S ribosomal RNA genes. Results: After treatment of IPL, the Global Acne GradingSystem (GAGS) scores, sebum, sclererythrin, and red area of patients were significantly improved by IPL treatment ($P < 0.05$). Although there was no difference in microbiota diversity before and after IPL treatment, the Nonmetric Multidimension Scaling (NMDS) analysis showed thatthe samples of the acne patients before and after treatment could be divided into two different sets by skin microbiota ($P = 0.011$), which could be verified by heatmap analysis. Moreover, we found that the relative abundance of Staphylococcus epidermidis (S. epidermidis) significantly increased, but Cutibacterium acnes (C. acnes) decreased after IPL treatment. The sebum concentration was positively correlated with PH value ($R = 0.525$, $P = 0.017$), and the GAGS was positively associated with both sclererythrin ($R = 0.477$, $P = 0.002$) and red area ($R = –0.503$, $P = 0.001$). Conclusions: IPL could successfully improve the GAGS scores of acne vulgaris, as well as regulate the equilibrium between C. acnes and S. epidermidis, and inhibit the sebum secretion.

M. Mendes Fossa Shirata, P.M. Berardo Gonçalves Maia Campos, **Sunscreens and Cosmetic Formulations Containing Ascorbyl Tetraisopalmitate and Rice Peptides for the Improvement of Skin Photoaging: A Double-blind, Randomized Placebo-controlled Clinical Study**, Photochem Photobiol., 2021 Jul;97(4): p. 805-815

Photoprotective formulations containing substances with antioxidant properties in combination have been used as a strategy for the improvement of photoaged skin conditions. However, there is a lack of studies evaluating the clinical efficacy of these substances in young women with signs of photoaging. Thus, the objective of the present study was to evaluate the clinical efficacy of sunscreens and cosmetic formulations containing ascorbyl tetraisopalmitate and rice peptides for the improvement of skin photoaging in young women. A double-blind, randomized placebocontrolled clinical efficacy study was conducted on 60 female subjects aged 20-30 years with skin changes related to photoaging and without photoprotective habits. The hydrolipidic layer conditions and structural and morphological characteristics of the skin were evaluated by Photoprotective formulations containing substances with antioxidant properties in combination have been used as a strategy for the improvement of photoaged skin conditions. However, there is a lack of studies evaluating the clinical efficacy of these substances in young women with signs of photoaging. Thus, the objective of the present study was to evaluate the clinical efficacy of sunscreens and cosmetic formulations containing ascorbyl tetraisopalmitate and rice peptides for the improvement of skin photoaging in young women. A double-blind, randomized placebocontrolled clinical efficacy study was conducted on 60 female subjects aged 20-30 years with skin changes related to photoaging and without photoprotective habits. The hydrolipidic layer conditions and structural and morphological characteristics of the skin were evaluated by biophysical and skin imaging techniques. The results showed that the daily use of the formulations under study improved the skin conditions by increasing skin hydration and dermis echogenicity. In addition, the application of the active substances reduced skin hyperpigmentation and increased epidermal cell renewal. In summary, the present study showed the importance of daily application of sunscreens and formulations with antioxidant properties for the prevention and attenuation of skin changes related to photoaging in young women.

J. Kim, S. Yoo, O.-S. Kwon, E.-T. Jeong, J.M. Lim, S.G. Park, **Influence of quarantine mask use on skin characteristics: One of the changes in our life caused by the COVID-19 pandemic**, Skin Research & Technology, Volume 27, Issue 4, July 2021, p. 599-606

Background: The influence of various environmental factors on skin properties is well known. However, there is a lack of research into the effect of quarantine masks on skin properties, even though the use of masks has significantly increased after the COVID-19 outbreak. Therefore, this study aimed to investigate the influence of mask use on skin properties. Materials and Methods: Twenty subjects were enrolled in this study. The subjects used approved quarantine masks for 6 hours a day for 2 weeks. We measured eight skin biophysical parameters: temperature, redness, pore volume, texture, elasticity, trans-epidermal water loss (TEWL), sebum content, and pH, and evaluated acne lesions before and after using quarantine masks. The evaluation was performed on the mask-wearing area of the face. Results: Skin temperature, redness, and TEWL increased significantly after a 6-hour mask use, while the sebum content increased marginally. Skin elasticity was reduced by the use of masks over 1 and 2 weeks, whereas the pore volume and the number of acne lesions increased after a 2-week mask use.

The skin changes caused by mask use showed sex-based differences in the skin elasticity (after 6 hours), redness, and roughness (after 2 weeks). Conclusions: The use of quarantine masks causes a change in the skin temperature, redness, and TEWL in the short term and in skin elasticity, pores, and acne in the long term.This study revealed that prolonged mask use could have negative effects on the skin.

A. Puscion-Jakubik, R. Markiewicz-Zukowska, S.K. Naliwajko, K.J. Gromkowska-Kepka, J. Moskwa, M. Grabia, A. Mielech, J. Bielecka, E. Karpinska, K. Mielcarek, P. Nowakowski, K. Socha, **Intake of Antioxidant Vitamins and Minerals in Relation to Body Composition, Skin Hydration and Lubrication in Young Women***,* Antioxidants 2021, 10, 1110

The aim of this study was to estimate the consumption of selected dietary components with antioxidant properties, undertake body composition analysis, assess skin hydration and lubrication, and establish the relationships between the above parameters. The study was carried out on 172 young women. The consumption of ingredients (vitamins A, C, D and E, and Cu, Mn, Zn) was assessed using the Diet 6.0 program, body composition was assessed using electrical bioimpedance and skin hydration and lubrication were assessed using the corneometric and sebumetric methods, respectively. About one-third of students showed insufficient consumption of vitamin C, vitamin E and zinc, while about 99% showed insufficient vitamin D levels. The highest degree of hydration was observed in the areas of the eyelids, neckline and chin. The greatest amount of sebum was found in the area of the nose and forehead. Low positive correlations between hydration or lubrication and Cu, vitamin A and vitamin E were observed. In conclusion, to properly moisturize and lubricate the skin, young women should eat products that are rich in ingredients with antioxidant properties, in particular fat-soluble vitamins A and E, but also copper.

S.-R. Park, J. Han, Y.M. Yeon, N.Y. Kang, E. Kim, **Effect of face mask on skin characteristics changes during the COVID-19 pandemic**, Skin Research & Technology, Volume 27, Issue 4, July 2021, p. 554-559

Background: Previous studies have demonstrated the possibility of adverse effects of prolonged wearing of personal protective equipment in healthcare workers. However, there are a few studies about the effects on skin characteristics after wearing a mask for non-healthcare workers. In this study, we evaluated the dermatologic effects of wearing a mask on the skin over time. Materials and Method: Twenty-one healthy men and women participated in the study. All participants wore masks for 6 hours consecutively. Three measurements were taken (a) before wearing the mask, (b) after wearing the mask for 1 hour, and (c) after wearing the mask for 6 hours. Skin temperature, skin redness, sebum secretion, skin hydration, trans-epidermal water loss, and skin elasticity were measured. Results: The skin temperature, redness, hydration, and sebum secretion were changed significantly after 1 and 6 hours of wearing a mask. Skin temperature, redness, and hydration showed significant differences between the mask-wearing area and the non–mask-wearing area. Conclusion: Mask-wearing conditions and time can change several skin characteristics. In particular, it is revealed that the perioral area could be most affected.

A. Ayatollahi, A. Samadi, A. Bahmanjahromi, R.M. Robati, **Efficacy and safety of topical spironolactone 5% cream in the treatment of acne: A pilot study**, Health Sci Rep. 2021

Background: Spironolactone is an effective treatment for female patients with acne vulgaris. However, topical spironolactone could be a valuable treatment option in both male and female acne patients due to the less possibility of systemic side effects with its topical formulation. Objective: To evaluate the efficacy and safety of 5% spironolactone cream in the treatment of mild to moderate acne vulgaris. Methods: In this pilot clinical trial, topical spironolactone 5% was evaluated to treat patients with mild to moderate acne twice a day for 8 weeks. The rate of improvement as any alterations in the number of open and closed comedones, facial inflammatory papules, and acne global grading scores were assessed. Moreover, skin biometric characteristics including skin hydration, erythema, transepidermal water loss (TEWL), pH, sebum, and Propionibacterium acnes bacteria activity were also assessed following the treatment.Results: Fifteen patients participated in our study with a mean age of 25 ± 4.87 years old. A total of 66.6% (n = 10) were female and 33.4% (n = 5) were male. The number of acne papules, open and closed comedones, and acne global grading score decreased significantly 4 and 8 weeks after the beginning of treatment ($P < .05$). No considerable side effect was reported. Moreover, there was no significant difference between the skin hydration, melanin, erythema, TEWL, pH index, sebum, and P acnes bacteria activity before, 4, and 8 weeks after the treatment with topical spironolactone cream ($P > .05$). Conclusion: The topical 5% spironolactone cream seems to be an effective and safe treatment of acne vulgaris in both male and female patients.

Y. Ye, P. Zhao, L. Dou, Y. Zhang, K. Ken, H. Gu, Y. Dou, W. Gao, L. He, X. Chen, X. Huang, L. Zhang, Y. Li, L. Wang, W. Yan, **Dynamic trends in skin barrier function from birth to age 6 months and infantile atopic dermatitis: A Chinese prospective cohort study**, Clin Transl Allergy. 2021

Background: Skin barrier functions develop after birth and may be related to skin disorders in infants. We aimed to assess associations between dynamic trends of four skin barrier functional parameters in early life with infant atopic dermatitis (AD). Methods: Based on the prospective cohort MKNFOAD (NCT02889081), we examined transepidermal water loss (TEWL), stratum corneum hydration (SCH), skin pH, and sebum content at five anatomical sites (cheek, forehead, forearm, abdomen, and lower leg) in 418 term infants at birth, 42 days, and 6 months. Trend differences by sex and association with AD at age 1 year were tested using variance analyses. Associations of the parameters with AD risk were tested using discrete time survival analysis, adjusting extensive covariates including parental history ofallergy, infant's sex, birth weight (kg), and delivery mode. Odds ratios (ORs) and 95%confdence interval (CIs) were reported. Results: Overall TEWL and SCH appeared trends of increase while skin surface pH and sebum content showed trends of decrease within the frst six postnatal months. Sex differences were signifcant for sebum content only ($p < 0.001$). After adjustment for parental and children covariates, cheek TEWL at birth (OR = 1.26, 95% CI 1.00– 1.57, $p = 0.045$) and 42 days (OR = 1.52, 95% CI 1.17–1.97, $p = 0.002$) were signifcantly associated with increased AD risk. Associations were not observed between SCH, skin pH, and sebum content at birth or 42 days with AD. Conclusions: Skin barrier functions of Chinese term infants varied nonlinearly after birth. Higher postnatal TEWL levels in early life indicate higher risk of early-onset AD.

B.C. Sikora, M. Wortzman, D.B. Nelson, J.S. Dover, **A pilot study evaluating the efficacy and tolerability of a comprehensive, hydrating topical antioxidant developed specifically for men**, J Cosmet Dermatol. 2021; 20: p. 2816–2823

Introduction: There is growing interest in skincare products designed for men. This pilot study evaluated the efficacy and tolerability of a comprehensive antioxidant product in men. Methods: This 12-week study evaluated improvements from baseline in erythema, lines/wrinkles, skin tone, texture, brightness, dryness/flaking and pores (6-point scale), global improvements (5-point scale), and sebum levels following daily application in males with mild to moderate photodamaged skin. Subject self-assessments and adverse events (AEs) were captured. Results: Twenty-two subjects completed the study. Early mean percent improvements from baseline were demonstrated in all categories at week 4 with visible improvements in skin tone (29%; $p = .0001$) and pores (28%; $p < .0001$). Reductions in skin surface sebum levels (forehead region) from baseline were demonstrated at 8 ($p < .0001$) and 12 ($p < .0003$) weeks. Ninety-six percent of subjects reported overall visible improvement of their skin and that the study product calmed/soothed skin, reducing redness and irritation after shaving. One subject reported mild dryness.b Conclusion: Once daily application of a comprehensive topical antioxidant designed for men led to significant improvements in skin appearance, substantial reductions in skin surface sebum levels, and was well tolerated with a high level of subject satisfaction over 12 weeks.

N. Sampattavanich, N. Chandayani, J. Intarasupht, A. Nakakes, **An in vivo study to evaluate the influence of oil blotting paper on the efficacy of sunscreen**, Photodermatol Photoimmunol Photomed, 2021 Jul;37(4): p. 324-328

Background: Ultraviolet radiation (UVR) is a major cause of photoaging and photocarcinogenesis. An appropriate application of sunscreen can effectively protect UV damage but cause unpleasant skin oiliness. Oil blotting paper is commonly used to reduce oiliness in some parts of the world although its influence on the efficacy of sunscreen has not been carefully investigated. Objective: To evaluate the efficacy of sunscreen after applying oil blotting paper. Materials and methods: Measurement of oiliness and sunscreen efficacy was compared before and after the use of oil blotting paper in 11 healthy volunteers, 10 females, and 1 male. Specifically, 3 zones on each subject's back were exposed to UVR from a solar simulator, that is, 1) no sunscreen, 2) sunscreen (organic sunscreen at 2 mg/cm^2 SPF 30) left on for 30 minutes, and 3) sunscreen left on for 30 minutes followed by application of oil blotting paper. Skin oiliness was also compared before and after oil blotting using a sebumeter. All areas were phototested for the comparison of the minimal erythema dose (MED) and sun protection factor (SPF). Results: The averaged MED of our subjects is 4.3 standard erythema doses (SED) in the unprotected area. The averaged MED was decreased after oil blotting from 89.8 SED to 59.8 SED. The SPF was also decreased from 20.70 to 13.99. Conclusions: Application of oil blotting paper significantly reduces the efficacy of organic sunscreen.

D. Niwa, N. Izawa, A. Imaoka, T. Sone, **Development of a Novel Convenient Method for Analysis of the Relationship Between Human Skin Bacteria and Skin Properties**, IFSCC Magazine Volume 24, No. 2, June 2021

Recently, it is becoming important to relate the skin microbiome to the compounds on the skin to understand the relationship between the microbiome and its host. We evaluated a novel, convenient method for collecting skin samples using polyvinyl alcohol. Samples were prepared by dissolving the formed thin membrane in water after pasting polyvinyl alcohol on the skin. We compared this method with conventional methods. The polyvinyl alcohol samples were fully occupied by stratum corneum in the form of a few piled-up layers compared with conventional tape-stripping samples. The a-diversity of the bacteria and the number of Cutibacterium acnes (C. acnes) in the polyvinyl alcohol samples were not smaller than those in the other conventional swabs, whereas Propionibacteriaceae were the primary microbes in both samples. In addition, the values of fatty acids, triglycerides and the number of C. acnes in the polyvinyl alcohol samples were positively correlated signifcantly with each other in the study on healthy subjects of different genders and ages, which was consistent with previous fndings obtained using different methods. Our results indicate that the polyvinyl alcohol method makes it possible to analyze both sebum components and bacteria from the same sample and is promising for evaluating the relationship between the skin microbiome and its host.

T. Kaewsanit, P. Chakkavittumrong, N. Waranuch, **Clinical Comparison of Topical 2.5% Benzoyl Peroxide plus 5% Niacinamide to 2.5% Benzoyl Peroxide Alone in the Treatment of Mild to Moderate Facial Acne Vulgaris**, J Clin Aesthet Dermatol. 2021;14(6): p. 35–41

Background: The combination of benzoyl peroxide and a new topical therapy, such as topical niacinamide, reduces facial sebum production and also has a skin-lightening e- ect. This combined treatment might lead to improved efficacy in the treatment of facial acne vulgaris while also promoting the resolution of postacne erythema and postinflammatory hyperpigmentation. Objective: The primary objective was to evaluate and compare the clinical efficacy of topical 2.5% benzoyl peroxide plus 5% niacinamide and 2.5% benzoyl peroxide with cream base for mild to moderate facial acne vulgaris. Secondary objectives were to evaluate and compare clinical efficacy regarding postinflammatory hyperpigmentation, postacne erythema, reduction of facial sebum production, and side e- ects. Methods: Patients with mild to moderate facial acne vulgaris and aged 18 to 40 years were enrolled. Treatment was randomly assigned to the left or right side of the face for 12 weeks. Both inflammatory and noninflammatory acne lesions were counted by a physician, and the postinflammatory hyperpigmentation score and postacne erythema score were calculated using an Antera 3D® camera (Miravex, Dublin, Ireland). Sebum casual level was measured using a Sebumeter® (Courage+Khazaka Electronic, Köln, Germany) every two weeks. Physician improvement score, patient satisfaction index, and side effects were assessed by evaluation forms every two weeks. Results: At Week 12, the niacinamide group (5% niacinamide+2.5% benzoyl peroxide) showed significant reduction in both the acne lesion count and sebum casual levels from baseline (p=0.000 and p=0.001, respectively). The reduction in noninflammatory lesion count in the niacinamide group was better than that in the cream base group (2.5% benzoyl peroxide+cream base), with a statistically significant difference (p=0.004). However, the reduction in inflammatory lesions was not significantly di- erent between the two groups. The sebum casual level in the niacinamide group was reduced faster than that in the cream base group. The postacne erythema score was reduced from baseline in both groups, with no statistically significant di- erence within or between the two groups. The postinflammatory hyperpigmentation score showed increases in both groups above the baseline, with a statistically significant difference in the cream base group (p=0.000) but no such di- erence in the niacinamide group (p=0.58). There was no statistically significant difference between the two groups. Furthermore, no statistically significant differences were found between the two groups at every follow-up visit in terms of physician improvement scale, patient satisfaction index, or side effects. Conclusion: The combination of 2.5% benzoyl peroxide and 5% niacinamide is more effective than 2.5% benzoyl peroxide alone for mild to moderate facial acne vulgaris.

V. Campos, L. Pitassi, C. Kalil, J.E. Gonçalves Júnior, B. Sant'Anna, P. Correia, **Clinical evaluation of the efficacy of a facial serum containing dioic acid, glycolic acid, salicylic acid, LHA, citric acid, and HEPES in treating post-inflammatory hyperchromia and controlling oily skin in patients with acne vulgaris**, J Cosmet Dermatol, June 2021

Background: Acne is a chronic disease that affects the pilosebaceous follicle and is characterized by the presence of non-inflammatory and/or inflammatory lesions, affecting both adolescents and adults. Inflammatory acne lesions are capable to increase their melanin production and promote a post-inflammatory hyperchromia. Aims: To assess the efficacy of a serum containing dioic acid, glycolic acid, salicylic acid, LHA, citric acid, and HEPES in treating post-inflammatory hyperpigmentation and controlling skin oiliness in Brazilian patients with acne vulgaris. Patients/methods: A single-center, prospective, open-label clinical study included 42 subjects, from both genders, presenting acne (grade I or II), oily skin and a clinical diagnosis of acne post-inflammatory

hyperpigmentation. The study was conducted for 56 days, with clinical (skin quality and the number of post-inflammatory hyperchromic lesions) and instrumental (Sebumetry) evaluations after 7, 28, and 56 days of treatment. Standardized pictures were obtained using a VISIA-6® device. Results: A significant decrease in the grade of post-inflammatory hyperchromic lesions was observed after 28 and 56 days, while the number of lesions decreases by 29.4% after 56 days ($p < 0.001$). Sebumetry values showed a significant decrease of 30.7% in the oiliness after 7 days of treatment, and then stable during the study conduction period of 56 days ($p < 0.001$ for all measurements). Conclusions: The daily treatment using the investigational product showed an interesting decrease both in the grade and the number of post-inflammatory hyperchromia acne lesions after 56 days, and in the oiliness after 7 days, being stable for all study period.

L. Weiß, **Charakterisierung hautphysiologischer, lokal inflammatorischer und penetrationsdynamischer Parameter nach milder Hautbarriereschädigung - Praktische Bedeutung für transkutane Vakzinierungsstrategien**, Dissertation an der Medizinischen Fakultät Charité – Universitätsmedizin Berlin, Germany, June 2021 (in German)

Introduction: Transcutaneous vaccination strategies have been in the focus of research for several years. Amongst these, needle-free vaccination methods avoid many challenges associated with conventional vaccination. Concomitantly, overall efficacy for various different approaches has been shown by other authors with delivery via the cutaneous route favoring the induction of cellular immune responses. Furthermore, an increase in penetration and immune activation have been discovered to be significant aspects in transcutaneous vaccination. Whether physical, chemical or biochemical stimuli are able to procure this is has not been thoroughly investigated. Methods: Based on clinical studies using skin surface treatment in transcutaneous vaccination this project analysed the effects of physical and chemical skin barrier disruption in combination with topical vaccine application. Firstly, skin-physiological parameters were analysed to determine the degree of barrier disturbance by the disruption methods. Secondly, the inflammatory milieu of the epidermis was investigated with ELISA and Array analyses and a more detailed investigation using RT-qPCR was conducted for Cyanoacrylat Skin Surface Stripping (CSSS). Finally, the influence of skin barrier disruption on the penetration of topically applied vaccine was analysed using histological staining and ELISA. Results: For physical disruption no persistent impairment of the skin physiology was found. The evaluation of different inflammation markers however showed signs of IL-1alpha stimulation after tape stripping, and array analyses indicated increased immune response to CSSS compared to tape stripping. RT-qPCR uncovered an increased gene-expression of various pro-inflammatory molecules after CSSS and CSSS combined with topical vaccine application. In regard to the chemical disruption methods, occlusion of water and imiquimod indicated a mild effect on skin physiology, while more severe disruption was seen after 2 % SLS occlusion. Occlusion with water and imiquimod also showed a stimulating effect on the excretion of IL- 1alpha. Penetration was increased following occlusion of SLS. 9 Discussion: Tape stripping and CSSS seemed to result in improved penetration of topically applied vaccine despite only causing mild and temporary skin barrier impairment. Furthermore, CSSS has shown itself to be an efficient immune-stimulus, causing a diverse immune response in combination with topical application of vaccine.

C. Uhl, D. Khazaka, **Skin sensitization in pandemic times,** PERSONAL CARE MAGAZINE, June 2021

For almost a year and a half, an unprecedented pandemic has had us in its grip worldwide, forcing us to abandon many cherished activities and realign our entire daily lives. It is particularly important in these times to prevent the spread of the pandemic through protective measures, distance and significantly increased requirements for hygiene measures such as the wearing of protective mouth-nose masks and the frequent use of sanitisers on all kinds of surfaces and naturally also on the skin.

P. Bhargava, H. Singdia, S. Nijhawan, D.K. Mathur, R.K. Bhargava, **A study of biophysical profle of inguinal skin: An implication for health and disease**, Indian Journal of Sexually Transmitted Diseases and AIDS Volume 42, Issue 1, January-June 2021

Context: Inguinal skin is prone to various infectious dermatological conditions such as erythrasma, intertrigo, hidradenitis suppurativa, folliculitis, dermatophytic infection, and various sexually transmitted diseases, ascompared to the skin elsewhere. Aim: Our study attempts to compare the biophysical profle parameters (BPPs) of the genital skin with that of the rest of the body, while taking skin of the upper back as control. It alsoattempts to fnd out if there is a difference in BPPs of the two sites and that how the change in the BPPs, bring about change in microbiome and make inguinal skin more prone to infections. Materials and Methods: This was a hospital-based comparative study conducted over 976 patients (600 males and 376 females) of age group 18–60 years, where BPP parameters such as hydration, skin pH, transepidermal water loss (TEWL), and sebum content were

measured over the skin of the upper back and right inguinal region, and the results were summarized and presented as proportions (%). Chi-square test was used to compare abnormalfndings. $P \leq 0.05$ was taken as statistically signifcant. MedCalc 16.4 version software was used for all statistical calculations. Results: Signifcant difference was noted in skin pH and TEWL, where *P* value came out to be <0.05, which was statistically signifcant, whereas there was minimal difference in sebum content and skin hydration in both the areas, in males and females. Conclusion: Raised skin pH disturbs organization of lipid bilayers (disturbed barrier), decreases lipid processing (impaired SC cohesion), and increases serine protease activity (reduced AMP). Increased TEWL (defect in physical barrier) and decreased hydration predispose the genital skin to infections. Use of pH buffered solutions (3–4), barrier repair creams containing ceramides, and barrier protective creams with dimethicone can help preventthese inguinal dermatoses.

I. Dolečková, A. Čápová, L. Machková, S. Moravčíková, M. Marešová, V. Velebný, **Seasonal variations in the skin parameters of Caucasian women from Central Europe,** Skin Research & Technology, Volume 27, Issue 3, May 2021, p. 353-357

Background: The human skin is greatly affected by external factors such as UV radiation (UVR), ambient temperature (T), and air humidity. These factors oscillate during the year giving rise to the seasonal variations in the skin properties. The aim of this study was to evaluate the effect of seasons, environmental T, relative and absolute humidity on the skin parameters of Caucasian women, perform a literature review and discuss the possible factors lying behind the found changes.Materials and Methods: We measured stratum corneum (SC) hydration, transepidermal water loss (TEWL), sebum level, erythema index, and elasticity parameters R2 and R7 on the forehead and the cheek of Caucasian women from the Czech Republic throughout the year. We also performed a non-systematic literature review focused on the seasonal variations in these skin parameters. Results: We confirmed a well-documented low SC hydration and sebum production in winter. In spring, we found the lowest TEWL (on the forehead) and the highest SC hydration but also the highest erythema index and the lowest elasticity presumably indicating skin photodamage. For most of the skin parameters, the seasonal variations probably arise due to a complex action of different factors as we extensively discussed. Conclusion: The data about the seasonal variations in the skin parameters are still highly inconsistent and further studies are needed for better understanding of the normal skin changes throughout the year.

J.P. Santos-Caetano, R. Vila, **Can pigments in multifunctional cosmetic formulations affect sebumetry evaluation?**, Skin Research & Technology, Volume 27, Issue 3, May 2021, p. 464-465

Multifunctional cosmetic products are increasingly popular among time-poor consumers, with new preparations addressing multiple needs (eg for sunscreen, primer, moisturiser, skin treatment, concealer and foundation) in one product.1 Whereas sun protection factor (SPF) products are oily by nature, other cosmetic ingredients can reduce oiliness. New formulations should be evaluated for their effect on skin oiliness, as excess oiliness can affect the skin's cosmetic appearance.

R. Reynaud, Y. Rolland, B. Sennelier-Portet, A. Scandolera, M. Pélican, M. de Tollenaere, E. Chapuis, **Talgregulierung, der ethische Weg!**, sofw journal, 147, 05/21

Mangixyl™ (auch als “ wonnen und ist ein wirksamer kosmetischer Inhaltsstoff, der mikrobiomfreundlich ist und nachweislich durch Talgregulation *Mangifera Indica* Blätter aktiv” bezeichnet) wird aus der grünen Fraktionierung von Mangoblättern gegegen Ölhaut wirkt. Die kosmetische Innovation aktiviert spezifsche Rezeptoren des Genweges, der normalerweise durch die hochwirksame Retinsäure reguliert wird. In einer Zeit, in der Nachhaltigkeit und Rückverfolgbarkeit für die Verbraucher im Vordergrund stehen, unterstreicht die Sourcing-Geschichte von Mangixyl™ unser Engagement für unseren Unternehmenszweck. Die Mangoblätter werden in Zusammenarbeit mit der Association Bendia aus dem Dorf Koro (Burkina Faso, Afrika) gesammelt. Der Verein ist eine von Frauen geführte Initiative, um zur Verbesserung der Lebensbedingungen der Gemeinde beizutragen. So ist *Mangifera Indica* Leaves Active eine Zutat, die gut für die Verbraucher, gut für den Planeten und gut für die Menschen ist. Dieser Inhaltsstoff soll die Verbraucher von den Beschwerden befreien, die durch fettige Haut verursacht werden. Es aktiviert einige Rezeptoren des Retinsäure-regulierten Genweges und verringert *in vitro*, *ex vivo* und *in vivo* die Synthese von Lipiden bei allen Hautethnien. Zusätzliche klinische Daten zeigten eine Wirksamkeit gegen zu Akne neigende Haut und zur Regulierung von Talg auf der Kopfhaut. Inmitten der aktuellen COVID-19-Krise bietet es auch eine wirksame Antwort auf das Phänomen der „Maskne“, das in letzter Zeit an Dynamik gewonnen hat

A. Pappas, **A Look at Lipids - Profiles Across Ethnicity and Age, A Review**, Cosmetics & Toiletries, May 2021, p. 34-41

Skin lipids, including those of both sebaceous and keratinocyte origin, cover the surface of skin. Their apparent composition varies and is subject to the chosen method of sampling. Lipids produced by the epidermal cells are a mixture of long chain ceramides, free fatty acids and cholesterol. They represent a minor fraction of the total extractable surface lipids on areasrich in sebaceous glands. Lipids of epidermal origin seal the stratified comeocytes on the stratum comeum in a relationship similarly to the "mortar" in the brick-and-mortar skin structure model. Sebaceous lipids, on the other hand, are mainly non-polar triglycerides, wax esters and squalene. They are secreted as sebum due to the holocrine activity of the sebaceous gland and eventually released to the top of the skin, where they coat the surface, as well as hair shafts. The composition of sebaceous lipids is exceptional - e.g., sapienic acid and its metabolites plus the wax esters - and rather intriguing because they are not found anywhere else in the human body. Furthermore, elevated sebum excretion is a major factor involved in the pathophysiology of acne.

A. Samadi, S. Ahmad Nasrollahi, M. Nateghi Rostami, Z. Rezagholi, F. Abolghasemi, A. Firooz, **Long-term effects of two 24-hour moisturizing products on skin barrier structure and function: A biometric and molecular study**, Health Science Reports, 2021;4

Introduction: Recently, there are a few moisturizers showing hydrating effects up to 24 hours after single application. Aquaporin 3 might be associated with the degree of skin hydration. We aimed to assess the effects of two brands of 24-hour moisturizers on the skin barrier function, as well as the AQP3 gene expression. Method: Two moisturizers were applied once daily by 20 participants age 36.15 ± 9.55 years. Upper right and left forearms were randomly assigned to application of each product, whereas the right lower forearm served as control site for application of a cream base formulation. Biophysical assessments including trans epidermal water loss (TEWL), skin hydration, pH, surface lipids, and elasticity parameters were performed before intervention, 1, 4, and 24 hours after single application, following 2 weeks daily application and 1 week after termination of use. Also 5-mm punch biopsies were performed from application sites of product B and cream base formulation in for five participants after 2 weeks of application. Results: A single treatment with both products led to 24-hour increase in skin moisture in comparison with the control site (P-value <.01). Daily application of both products for 14 days also led to significant improvement in skin moisture (P-value <.01), TEWL (P-value <.01), and elasticity parameters. The increase in skin hydration was associated with upregulation of AQP3 gene expression in treated area for one of the formulations (P-value = .04). Conclusion: The tested 24-hour moisturizers only need to be applied once daily to improve skin barrier function and hydration and up-regulate AQP3 mRNA expression.

P. Orzol, I. Doleckova, J. Starigazdova, G. Huerta-Angeles, V. Velebny, **Safe and strategic – Hyaluronic and retinoic acid derivate allays aging and acne,** Cosmetics & Toiletries, April 2021, p. 61-70

Retinoids are a group of active molecules comprising vitamin A and its natural and synthetic derivatives. Commonly used in cosmetic products, these lipophilic molecules bind to specific nuclear receptors that modulate the expression of genes involved in cellular proliferation and differentiation, e.g., of keratinocytes, which can normalize desquamation. The topical application of retinoic acid, for one, has been shown to Improve clinical features of aged skin by reducing wrinkles and diminishing hyperpigmentation.

M.-J. Kim, K.-P. Kim, E. Choi, J.-H. Yim, C. Choi, H.-S. Yun, H.-Y. Ahn, J.-Y. Oh, Y. Cho, **Effects of Lactobacillus plantarum CJLP55 on Clinical Improvement, Skin Condition and Urine Bacterial Extracellular Vesicles in Patients with Acne Vulgaris: A Randomized, Double-Blind, Placebo-Controlled Study**, Nutrients 2021, 13, 1368

Lactobacillus plantarum CJLP55 has anti-pathogenic bacterial and anti-inflammatory activities in vitro. We investigated the dietary effect of CJLP55 supplement in patients with acne vulgaris, a prevalent inflammatory skin condition. Subjects ingested CJLP55 or placebo (n = 14 per group) supplements for 12 weeks in this double-blind, placebo-controlled randomized study. Acne lesion count and grade, skin sebum, hydration, pH and surface lipids were assessed. Metagenomic DNA analysis was performed on urine extracellular vesicles (EV), which indirectly reflect systemic bacterial flora. Compared to the placebo supplement, CJLP55 supplement improved acne lesion count and grade, decreased sebum triglycerides (TG), and increased hydration and ceramide 2, the major ceramide species that maintains the epidermal lipid barrier for hydration. In addition, CJLP55 supplement decreased the prevalence of *Proteobacteria* and increased *Firmicutes*, which were correlated with decreased TG, the major skin surface lipid of sebum origin. CJLP55 supplement further decreased the *Bacteroidetes:Firmicutes* ratio, a relevant marker of bacterial dysbiosis. No differences in skin pH, other skin surface lipids or urine bacterial EV phylum were noted between CJLP55 and placebo supplements.

Dietary *Lactobacillus plantarum* CJLP55 was beneficial to clinical state, skin sebum, and hydration and urine bacterial EV phylum flora in patients with acne vulgaris.

V. Nobile, I. Schiano, A. Peral, S. Giardina, E. Spartà, N. Caturla, **Antioxidant and reduced skin-ageing effects of a polyphenolenriched dietary supplement in response to air pollution: a randomized, double-blind, placebo-controlled study**, Food & Nutrition Research 2021, 65: 5619

Background: Air pollution exposure is one of the major threats to skin health and accelerates skin ageing mainly through oxidative stress mechanisms. Since it is diffcult to minimize skin exposure to air pollutants, especially in urban areas, strategies to protect the skin are needed. Plant phenolic compounds have been found to be effective in attenuating cellular oxidative stress and inflammation induced by different air pollutants and a dietary approach based on these compounds could provide an effcient protection measure. Objective: Here we investigated the effcacy of a commercially available polyphenol-enriched dietary supplement (Zeropollution®) in reducing pollution-induced oxidative stress and in improving different skin parameters related to skin ageing of Caucasian and Asian subjects exposed to air pollution. Zeropollution is composed of four standardized herbal extracts: Olea europaea leaf, Lippia citriodora, Rosmarinus offcinalis, and Sophora japonica. Design: A double-blind randomized, parallel group study was carried out on 100 outdoor workers living in a polluted urban European area (Milan) to assess the effcacy of the dietary supplement. The total antioxidant capacity on saliva (FRAP), the oxidative damage on skin (lipoperoxides content), skin moisturization (corneometer), transepidermal water loss (tewameter), skin radiance and colour (spectrophotometer), skin elasticity (cutometer), skin sebum content (sebumeter), and the skin roughness (image analysis) were measured. Results: Both inter-group and intra-group analysis proved that the dietary supplement improved all clinical and biochemical-monitored parameters, in both Caucasian and Asian individuals. Some of the positive effects such as decreased wrinkle depth, increased elasticity and frmness, improved skin moisturization and transepidermal water loss, and reduced dark spots pigmentation were statistically signifcant as early as 2 weeks of product consumption. Conclusions: The results of the study indicate reduced oxidative stress-induced skin damage in both Asian and Caucasian women living in a polluted urban area. Therefore, the oral intake of this four-plant based supplement could be considered a complementary nutrition strategy to avoid the negative effects of environmental pollution exposure.

I. Rybak, A.E. Carrington, S. Dhaliwal, A. Hasan, H. Wu, W. Burney, J. Maloh, R.K. Sivamani, **Prospective Randomized Controlled Trial on the Effects of Almonds on Facial Wrinkles and Pigmentation**, Nutrients 2021, 13, 785.

Background: Almonds have long been studied as a rich source of fatty acids, phytochemical polyphenols and antioxidants such as vitamin E. A recent study compared almond supplementations to a calorie-matched intervention for 16 weeks, yielding statistically significant improvement in wrinkle severity in postmenopausal women with Fitzpatrick skin types I and II that received almonds. This study furthers that assessment with a larger population and duration of 24 weeks to assess the influence of almond consumption on wrinkle severity, skin pigmentation and other skin biophysical profiles. Objective: To investigate the effects of almond consumption on photoaging such as wrinkles and pigment intensity as well as facial biophysical parameters such as sebum production, skin hydration and water loss. Design and interventions: A prospective, randomized controlled study assessed postmenopausal women with Fitzpatrick skin types I or II who consumed 20% of their daily energy consumption in either almonds or a calorie-matched snack for 24 weeks. A facial photograph and image analysis system was used to obtain standardized high-resolution photographs andinformation on wrinkle width and severity at 0, 8, 16 and 24 weeks. Measurements of transepidermal water loss (TEWL), skin pigmentation, skin hydration and sebum production were also completedat each visit. Results: The average wrinkle severity was significantly decreased in the almond intervention group at week 16 and week 24 compared to baseline by 15% and 16%, respectively. Facial pigment intensity was decreased 20% in the almond group at week 16 and this was maintained by week 24. There were no significant differences in skin hydration or TEWL in the almond group compared to the control, although sebum excretion was increased in the control group. Conclusion: The daily consumption of almonds may improve several aspects of photoaging such as facial wrinkles and pigment intensity in postmenopausal women. In conclusion, the daily consumption of almonds may contribute to the improvement of facial wrinkles and reduction of skin pigmentation among postmenopausal women with Fitzpatrick skin types I and II.

C. Uhl, D. Khazaka, A. Pouladi, **“Classic” biophysical methods for hair & scalp**, PERSONAL CARE, March 2021, p. 23-26 and **Métodos biofísicos ‘clásicos’ de análisis capilar,** Revista técnica de la Industria Cosmética, Perfumería e Higiene Personal, Primavera 2021 No. 018, p. 34-37

Hair is not only strands of horn made mainly of keratin. Hair indicates someone's personal beliefs or social status. The matter of hair care / grooming is not entirely all about women. For men, a well-kept, thick head of hair brings added good looks. However, there is more to it. Nowadays, social media, most of all Instagram, influences different generations. Besides skin, hair is the characteristic attribute for health, youth and attraction. Hair can even be a communication and political instrument. Just take as an example the men who let grow a moustache of their own style every November of a year, the so called Movember, to raise funds for men's health. Plenty of products and treatments are ready to fit the modern hair care market for thin, thick, curly, dry, oily, blonde, coloured, ethnic, young, or old hair. Imagine a claim, the product is already invented. As hair is unique, personalised products flood the hair care market. Respectively, a great number of claims around the various products exists. Hair care rituals can be complemented with food supplements and treatment devices.

Además de la piel, el cabello representa un atributo social característico de la salud, la juventud y la atracción. Multitud de productos y tratamientos están listos para ser adaptados al nuevo mercado de cuidado del cabello, específicamente para tratar cabellos finos, gruesos, rizados, secos, grasos, coloreados, jóvenes, envejecidos... Existe un gran número de afirmaciones en torno a los distintos productos existentes en el ámbito del cuidado capilar.

H.S. Han, S.H. Shin, J.W. Park, K. Li, B.J. Kim, K.H. Yoo, **Changes in skin characteristics after using respiratory protective equipment (medical masks and respirators) in the COVID-19 pandemic among healthcare workers**, Contact Dermatitis. 2021;85: p. 225–232

Background: The coronavirus disease-2019 (COVID-19) outbreak has presented unique dermatologic challenges due to respiratory protective equipment (RPE)– related skin conditions. Objective: To objectively evaluate the effects of RPE including medical masks and respirators on the skin barrier by measuring various physiological properties of the skin. Methods: A cross-sectional study was designed. Twenty healthy healthcare workers were included in this study. Skin parameters including skin hydration, transepidermal water loss (TEWL), erythema, sebum secretion, pH, and skin temperature were measured in the RPE-covered and RPE-uncovered areas of the face 4 and 8 hours after wearing RPE and 14 hours after not wearing RPE. Results: Skin hydration, TEWL, erythema, pH, and skin temperature increased in the RPE-covered areas after wearing RPE for 4 and 8 hours. By contrast, in the RPEuncovered areas, skin hydration decreased and TEWL, erythema, and pH showed minimal changes over time. Based on the repeated-measure analysis, the changes in skin physiological properties over time were significantly different between RPEcovered and RPE-uncovered areas. Conclusion: We observed that skin physiological characteristics change with the prolonged use of RPE such as medical masks and respirators. These changes may lead to various adverse skin reactions after long-term use.

E. Besic Gyenge, S. Hettwer, B. Suter, B. Obermayer, **Genderless cosmetics with gender-specific efficacy**, PERSONAL CARE, March 2021, p. 50-52

Unisex was yesterday's trend – genderless beauty is here to stay. The definition of gender has become very fluid. It now goes beyond simply 'male' and 'female', taking the form of a desire for acceptance and empowerment in one's own person. Man, woman, transgender and those who fall under any other definitions of gender should be able not only to share fashion but also their lotions and potions. From the consumers' point of view, this makes cosmetics more practical and sustainable. Nevertheless, genderless cosmetics should not be defined in terms of non-binary fragrances but rather by their mode of action, which should adapt to the respective needs of various skin types. However, where to start? Can genderless skin care truly cater to the distinct needs of male and female skin? Are there differences between male and female skin? With this in view, our approach has been to develop Reforcyl®-Aion, an active ingredient with the capability to spring clean skin cells, activating and rejuvenating them, improving overall skin appearance and positively influencing the personal perception of beauty. Reforcyl-Aion meets the individual needs of skin regardless of gender or age.

K. Chilicka, A.M. Rogowska, R. Szyguła, **Effects of Topical Hydrogen Purification on Skin Parameters and Acne Vulgaris in Adult Women**, Healthcare 2021, 9, 144

Background: Acne vulgaris is a prevalent dermatological disease characterized by skin eruptions, which may decrease the sufferer's quality of life. Hydrogen purification treatment is a new procedure used in cosmetology to improve the skin parameters of the face. This study examined the effectiveness of hydrogen purification treatment to improve women's skin conditions with regard to acne vulgaris. Methods: In this study, 30 women participated who suffered from a high level of sebum and acne. The control group was comprised of 30 healthy women with a low level of sebum. The Hellgren–Vincent Scale and Derma Unit SSC 3 device were used to assess acne vulgaris severity and skin

properties, respectively. Four hydrogen purification sessions were carried out at 7-day intervals, using the Hebe Hydrogenium+ generating alkaline water. Results: At baseline and 7 and 14 days after finishing the series of treatments, the levels of oiliness, moisture, and skin pH were tested. The main effects of treatment were significant in the following parameters: pH around the bottom lip, moisture between the eyebrows and around the nose, and oily skin in all three face sites. Conclusions: The level of sebum decreased and moisture levels increased during hydrogen purification. Topical hydrogen purification is an effective and safe treatment for acne vulgaris.

M. Majeed, L. Mundkur, S. Majeed, **LactoSporin® - A Dream Solution for Acne free Smooth Skin**, EURO COSMETICS, 1/2-2021, p. 24-25

Acne is the most common exasperating skin condition in teenagers and young adults, causing emotional distress. It is characterized by excessive sebum production, inflammation, keratinization of follicles, and overgrowth of the bacteria *Cutibacterium acnes*. Despite being one of the most widespread skin problems, and a hot research topic, the development of new therapeutic agents is still sluggish. Conventional agents like antibiotics, benzoyl peroxide, and retinol can cause antibiotic resistance, skin barrier disruption, leading to dryness and irritation. New treatment options targeting multiple pathologies by calming inflammation, maintaining skin moisture and barrier function along with preserving the skin microbiome with minimal side effects are essential for treating acne.

E. Öksüm Solak, G. Emel Gökçek, D. Kartal, N. Kalay, S. Levent Çinar, G. Savaş, M. Borlu, **The relationship between the severity of coronary artery disease and skin measurement parameters,** Skin Research & Technology, Volume 27, Issue 1, January 2021, p. 101-107

Purpose: This study aimed to investigate the relationship between skin parameters and CAD. Materials and Methods: The study included 50 patients diagnosed with coronary artery disease as the patient group and 45 volunteers without any known coronary artery disease as the control group. The participants' skin TEWL, pH, temperature, electrical capacitance, sebum, and elasticity values were measured using noninvasive methods at the forehead, back, and forearm. Findings: Skin temperature was significantly higher in the back and forehead regions in the patient group. No difference was found between the sebum values of the patient and control groups at the back and forehead. A significantly higher result was obtained for the forearm area. The pH was significantly lower in the patients' forearm, although the obtained values were within the normal range. The TEWL was significantly higher in patients in all three regions. In terms of flexibility, R2 was significantly higher in the back and forehead regions of the patient group, and the R6 was significantly higher in the patient group in all three regions. In addition, there was no correlation between skin parameter and SYNTAX score increase measurements. Conclusion: It can be suggested that skin sebum and TEWL measurements can be accepted as cheap and noninvasive methods of predicting CAD.

J.-Y. Park, S.I. Cho, K. Hur, D.H. Lee, **Intradermal Microdroplet Injection of Diluted Incobotulinumtoxin-A for Sebum Control, Face Lifting, and Pore Size Improvement**, J Drugs Dermatol Actions, 2021 Jan 1;20(1): p. 49-54

Background: Intradermal injections of botulinum toxin have been reported to improve sebum secretion, facial skin laxity, and facial pores. However, the effects of Incobotulinumtoxin-A for these indications have not been reported. Objective: To evaluate the efficacy of Incobotulinumtoxin-A for the improvement of sebum secretion, face laxity, and facial pores. Materials and methods: This single-center retrospective study included patients treated with Incobotulinumtoxin-A to improve facial skin laxity, sebum secretion, and facial pores. The microdroplet injection protocol included injection points on the lateral face, anterior medial cheek, mandibular line, depressor anguli oris points, mid-glabella area, and chin. Outcomes were measured using a Sebumeter and three-dimensional scanner and were evaluated by facial laxity ratings and the Global Aesthetic Improvement Scale. Results: Twenty patients were included in the analysis. Sebum secretion, mandibular length, facial pores, and facial laxity ratings were improved at 1 week and results were sustained through 12 weeks. All outcomes showed maximum improvement after 4 weeks. Evaluation using the Global Aesthetic Improvement Scale showed that all subjects reported at least a score of 2 (improved) after 4 weeks. Conclusion: This study showed that intradermal injection with Incobotulinumtoxin-A could be effective for face lifting, reduced sebum production, and improved facial pores.

*K. Ogai, K. Ogura, N. Ohgi, S. Park, M. Aoki, T. Urai, S. Nagase, S. Okamoto, J. Sugama***, Stability of Skin Microbiome at Sacral Regions of Healthy Young Adults, Ambulatory Older Adults, and Bedridden Older Patients After 2 Years**, Biological Research for Nursing, 2021, Vol. 23(1) p. 82-90

Objective: The sacral skin of bedridden older patients often develops a dysbiotic condition. To clarify whether the condition changes or is sustained over time, we analyzed the skin microbiome and

the skin physiological functions of the sacral skin in patients who completed our 2017 study. Methods: In 2019, we collected the microbiome on the sacral region and measured sacral skin hydration, pH, and transepidermal water loss from 7 healthy young adults, 10 ambulatory older adults, and 8 bedridden older patients, all of whom had been recruited for the 2017 study. For microbiome analysis, 16S ribosomal RNA-based metagenomic analysis was used. Results: No significant differences in the microbial compositions or any alpha diversity metrics were found in the bedridden older patients between the 2017 and 2019 studies; the higher gut-related bacteria were still observed on the sacral skin of the bedridden older patients even after 2 years. Only skin pH showed a significant decrease, approaching normal skin condition, in the bedridden older patients over 2 years. Conclusion: This study indicated that gutrelated bacteria stably resided in the sacral skin in bedridden patients, even if the patient had tried to restore skin physiological functions using daily skin care. We propose the importance of skin care that focuses more on bacterial decontamination for the sacral region of bedridden older patients, in order to decrease the chances of skin/wound infection and inflammation.

M. de Tollenaere, E. Chapuis, L. Lapierre, M. Bracq, J. Hubert, C. Lambert, J. Sandré, D. Auriol, A. Scandolera, R. Reynaud, **Overall renewal of skin lipids with Vetiver extract for a complete anti-ageing strategy**, International Journal of Cosmetic Science, 2021, 43, p. 165–180

Objective: Skin lipids are essential in every compartment of theskin where they play a key role in various biological functions. Interestingly, their role is central in the maintenance of hydration which is related to skin barrier function and in the skin structure through adipose tissue. It is well described today that skin lipids are affected by ageing giving skin sagging, wrinkles and dryness. Thereby, developing cosmetic actives able to reactivate skin lipids would be an efficient ant-ageing strategy. Due to the strong commitment of our scientists to innovate responsibly and create value, they designed a high value active ingredient named here as Vetiver extract, using a ground-breaking upcycling approach. We evidenced that this unique extract was able to reactivate globally the skin lipids production, bringing skin hydration and plumping effect for mature skin. Method: In order to demonstrate the global renewal of lipids, weevaluated the lipids synthesis on cutaneous cells that produce lipids such as keratinocytes, sebocytes and adipocytes then on Reconstructed Human Epidermis and skin explants. We evaluated the expression of proteins involved in ceramides transport and barrier cornification. We then evaluated hydration and sebaceous parameters on a panel of mature volunteers. Results: We firstly demonstrated that Vetiver extract induced sebum production from human sebocytes cells lines but also improved its quality as observed by the production of specific antimicrobial lipids. Secondly, we demonstrated that Vetiver extract was able to restore skin barrier with the increase of skin lipids neosynthesis on Reconstructed Human Epidermis and skin explants. We also evidenced that Vetiver extract stimulated the lipids transport and epidermal cornification. Finally, Vetiver extract showed a significant effect on adipogenesis and maturation of adipocytes at in vitro and ex vivo models. We confirmed all these activities by showing that Vetiver extract improved sebum production and brought hydration through an increase of lipids content and their conformation. Vetiver extract induced an improvement of skin fatigue and a plumping effect by acting deeply on adipose tissue. Conclusion: In conclusion, we developed an active ingredient able to bring anti-ageing effect for mature skin by a global increase of skin lipids.

C. Uhl, D. Khazaka, **Pomiar Rzeczywistego Wieku Skóry,** CHEMIA I BIZNES. 1/2021

Nagłówki w czasopismach i blogi coraz częściej ogłaszają, że „50 lat to nowe 30". Czy to faktycznie prawda? Czy osoby „po pięćdziesiątce" rzeczywiście są dziś bardziej sprawne fzycznie i umysłowo – i wyglądają młodziej – niż kiedyś?

J.N. Li, S.M. Henning, G. Thames, O. Bari, P.T. Tran, C.-H. Tseng, D. Heber, J. Kim, Z. Li, **Almond consumption increased UVB resistance in healthy Asian women**, J Cosmet Dermatol. 2021;20, p. 2975–2980

Background: Almonds are a rich source of phenolic and polyphenolic compounds, which have antioxidant activity. In vitro and in vivo studies have demonstrated that topical application of almond oil and almond skin extract reduces UVB-induced photoaging. Ultraviolet-B (UVB) protection by oral almond consumption has not been previously studied in humans. Objectives: To investigate whether oral almond consumption can increase resistance to UVB radiation and reduce skin aging in healthy Asian women. Methods: Thirty-nine female participants (18-45 years) with Fitzpatrick skin type II-IV were randomly assigned to consume either 1.5 oz of almonds or 1.8 oz of pretzels daily for 12 weeks. Minimal erythema dose (MED) was determined using a standardized protocol, which determined the minimal radiation needed to induce erythema on the inner arm following UVB exposure. Facial skin texture was evaluated by two dermatologists using the Clinician's Erythema Assessment scale and Allergan Roughness scale. Facial melanin index, hydration, sebum, and erythema were determined using a cutometer. Results: The MED was increased in the subjects consuming almonds compared to

the control group consuming pretzels. There were no differences noted between the groups consuming almonds versus pretzels in Allergan roughness, melanin, hydration, or sebum on facial skin. Conclusions: Our findings suggest that daily oral almond consumption may lead to enhanced protection from UV photodamage by increasing the MED.

M. Streker, M. S. Thill, M. Kerscher, **Einfluss oraler Kollagen-Peptide auf die Hautqualität am ganzen Körper**, Akt Dermatol 2020; 46: 87–93

Die Hautalterung ist ein komplexer Prozess, der sowohl extrinsischen als auch intrinsischen Einflüssen unterliegt. Neben sichtbaren Zeichen wie Falten und einem Verlust an Elastizität spielen sich insbesondere in der Dermis molekulare Veränderungen ab. Ein wesentlicher Faktor ist die Minderung der Qualität und Quantität von kollagenen Fasern sowie weiteren extrazellulären Matrixbestandteilen. Bereits in früheren In-vivo-Human-Studien wurde eine Verbesserung der Hautqualität im Gesicht durch die orale Supplementierung mit Kollagenpeptiden nachgewiesen. Es konnte mittels objektiver, validierter dermatologischer Mess methoden bestätigt werden, dass die orale Aufnahme von speziellen Kollagen-Peptiden über einen längeren Zeitraum die Hautphysiologie (Lipidgehalt der Hautoberfläche, Stratum-corneum-Hydratation, Hautelastizität, Hautglätte und Hautdichte) positiv beeinflusst. In der vorliegenden 12-wö- chigen Studie wurden die positiven Effekte eines Nutraceuticals mit bioaktiven Kollagen-Peptiden (ELASTEN®) auf die Hautqualität erstmals am gesamten Körper (Gesicht, Dekolleté, Arm und Oberschenkel) untersucht.

H.-J. Kwon, S.-B. Han, K.-W. Park, **Antioxidant Activity of Hydrogen Water Mask Pack Composed of Gel-Type Emulsion and Hydrogen Generation Powder**, Int. J. Mol. Sci. 2020, 21, 9731

In this study, hydrogen generation powder samples were prepared using zinc carbonate as a precursor, at a temperature varying from 400 to 700 ◦C in H2 atmosphere, and were characterized in terms of antioxidant activity. The concentration of dissolved hydrogen obtained by the powdersamples was measured using a dissolved hydrogen meter as a function of time. In addition, the antioxidant activity of the samples was evaluated based on the Oyaizu's method, removal rate of ·OH radicals, and ferric reducing antioxidant power. Finally, the hydrogen mask pack was fabricated using the hydrogen generation powder sample and gel-type emulsion. In the clinical test on the mask pack, the effect of the mask on skin aging was characterized and compared to that of a commercial sample. The skin densities of the participants in the experimental group and the control group increased by 18.41% and 9.93% after 4 weeks, respectively. The improved skin density of theparticipants who used the hydrogen mask pack in the experimental group, might be attributed to the recovery effect of the hydrogen molecule in the mask pack on the denatured thick skin layer.

T. Yazdanparast, K. Yazdani, S.A. Nasrollahi, L. Izadi Firouzabadi, P. Humbert, A. Khatami, M. Kassir, A. Firooz, **Biophysical and ultrasonographic changes in early patch/plaque stage of mycosis fungoides, compared with uninvolved skin,** Skin Research & Technology, Volume 26, Issue 6, November 2020, p. 859-866

Background: The goal of this study was evaluation of the skin biophysical properties in early patch/plaque stage of mycosis fungoides (MF) and its comparison with uninvolved skin in order to gain a better understanding of the pathogenesis of diseases. Materials and Methods: The stratum corneum hydration, transepidermal water loss (TEWL), surface friction, pH, sebum, melanin, erythema, temperature, elasticity parameters (R0, R2, R5), thickness, and echo density of epidermis and dermis were measured on lesions of 21 patients and compared with controls (average measures of uninvolved perilesional and symmetrical skins) by paired sample *t* test. Results: Stratum corneum hydration ($P < 0.001$) and echo density of dermis ($P = 0.044$) were significantly lower, whereas pH (P-value = 0.007), erythema ($P < 0.001$), and melanin content ($P = 0.007$) were significantly higher in lesions. There was not any significant difference in TEWL, friction index, sebum, temperature, R0, R2, R5, thickness of epidermis and dermis, and echo density of epidermis between lesions and normal skin. Conclusion: Parapsoriasis/MF lesions are specified by a set of certain changes in biophysical properties which are mainly correlated with histological changes. These sets of alterations may help in noninvasive, early diagnosis of parapsoriasis/MF.

M. Batory, E. Wołowiec-Korecka, H. Rotsztejn, **The influence of topical 5% tranexamic acid at pH 2.38 withand without corundum microdermabrasion on pigmentation and skin surface lipids**, Dermatol Ther. 2020, Nov;33(6):e14391.

Tranexamic acid (TA) has anti-hemorrhagic effects; however, oral administration has been found to decrease hyperpigmentation. The aim of the work was to compare the effects of treatment with 5% tranexamic acid in combination with corundum microdermabrasion on skin pigmentation, redness, pH, transepidermal water loss (TEWL), sebum level and hydration of back surface and dorsal surface

of the hand skin. Six treatments were performed every week on the back surface and both dorsal surfaces of the hands of 12 subjects. The entire back/both hands were treated with 5% tranexamic acid at pH 2.38; left side of the back or left hand were also subjected to corundum microdermabrasion. Skin parameters were measured using the Courage & Khazaka 580 Multi Probe Adapter. Clinical photos were taken using the Fotomedicus system. Significant differences between treatment methods were observed for melanin, erythema and pH. In addition, the two methods differed significantly with regard to the amount of sebum, TEWL and the level of moisture in the skin. Both methods gave similar acidic pH. Summing up tranexamic acid causes a significant reduction in epidermal melanogenesis, has a significant impact on the level of skin hydration, lipids of the epidermis and maintaining the proper TEWL. TA has a significant effect on reducing skin redness.

L. Binder, V. Klang, S. Sheikh Rezaei, O. Neuer, M. Wolzt, C. Valenta, ***In vivo*** **analysis of physiological skin parameters: Confocal Raman spectroscopy and classical biophysical techniques**, Poster University of Vienna, Department of Pharmaceutical Technology and Biopharmaceutica

New drug delivery systems have to overcome the skin barrier without causing irritation. Thus, knowledge of the skin composition is essential to obtain reliable data about the impact of dermal products. Besides the formulations' physicochemical properties and stability, its influence on skin physiology is an important aspect in the development of new dermal drug delivery systems. We have recently developed novel concentrated water-in-oil (W/O) emulsions based on a non-ionic silicone surfactant. The aim of thisstudy was to assess the effect of these formulations on physiological skin parameters of healthy volunteers after repeated application. To this end, confocal Raman spectroscopy (CRS) and classical biophysical techniques were used.

R. Navarro, A. Pino, A. Martínez-Andrés, E. Garrigós, M.L. Sánchez, E. Gallego, E. Anitua, **Combined therapy with Endoret-Gel and plasma rich in growth factors vs Endoret-Gel alone in the management of facial rejuvenation: A comparative study**, J Cosmet Dermatol, 2020 Oct;19(10): p. 2616-2626

Background: Skin suffers progressive decrement. An endogenous regenerative technology has been developed that has the versatility to provide an autologous injectable gel (Endoret-Gel) or a liquid plasma rich in growth factors (PRGF) based on the patient´s own platelet-rich plasma. Aims: To compare the efficacy of the combined therapy with Endoret-Gel and PRGF versus Endoret-Gel alone in the management of facial rejuvenation. Methods: Twenty clinically diagnosed patients with aged skin received either Endoret-Gel monotherapy or Endoret-Gel + PRGF combined therapy. Patients underwent three sessions at one-month intervals and were clinically assessed for six months. Corneometry, sebumetry, and high-resolution topographic analysis were carried out. Patient self-assessment questionnaires and clinical improvement scores were also performed. Results: The combined therapy showed to promote a higher hydration index. These results were also significant for spot improvement at three months, while conversely, monotherapy with Endoret-Gel demonstrated higher UVspot improvement. A significant decrease of sebum production and wrinkle development was observed for both treatment groups. Red areas also improved in a similar way at the end of the follow-up period. After Endoret-Gel or Endoret-Gel + PRGF therapy, 30% and 70% of patients referred to be very satisfied, respectively. Accordingly, 40% and 80% showed a "very improved" esthetic performance. None of the patients reported a negative change and no adverse events were recorded. Conclusion: Both Endoret-Gel monotherapy and the combined treatment with PRGF were shown to promote facial rejuvenation and to palliate the age-related cutaneous atrophy. The combined therapy may exert a synergistic effect that addresses both skin quality improvement and soft tissue restoration in a shorter period.

A.M. Marchena, L. Franco, A.M. Romero, C. Barriga, A.B. Rodríguez, **Lycopene and Melatonin: Antioxidant Compounds in Cosmetic Formulations**, Skin Pharmacol Physiol, 2020;33(5): p. 237-243

Background: The use of antioxidants has become a common practice in the development of antiaging cosmetics. Objective: The aim of this study was to evaluate the clinical efficacy of cosmetic formulations containing lycopene and melatonin antioxidants. Method: Thirty-six healthy women from 32 to 65 years were enrolled in this study. The study was carried out for 10 weeks, 2 preconditioning weeks with a control cream without antioxidants, and 8-week test with creams containing antioxidants in study. A multifunctional skin physiology monitor (Courage & Khazaka electronic GmbH®, Germany) was used to measure skin sebum content, hydration, elasticity, erythema index, and melanin index in 4 different regions of the face. Results: There were significant differences between them.

Z.B. Erdur, F. Öktem, E. İnci,' H.M. Yener, E.D. Gözen, A.Ö. Birben, S. Bayazit, B. Engin, **Effect of Nasal Skin Type on Skin Problems following Rhinoplasty**, Facial Plast Surg, 2020 Oct;36(5): p. 643-649

Skin problems following rhinoplasty may cause dissatisfaction concerning the esthetic expectations of the patients. This study was conducted to determine whether nasal skin type has an effect on skin problems after rhinoplasty. Thirty-five patients undergoing rhinoplasty in our tertiary referral center between May 2018 and August 2019 were included in the study. The nasal skin sebum level was measured with Sebumeter preoperatively and patients were divided into two groups according to the median sebum level. Among the 35 patients, half of them with higher nasal skin sebum were categorized as oily skin group (n = 17; 14 males, 3 females; mean sebum level: 200.3 ± 26.9), and the other half were categorized as dry skin group (n = 18; 10 males, 8 females; mean sebum level: 101.9 ± 38). Periorbital edema and ecchymosis were assessed at postoperative days 1, 3, and 7. Acne and seborrhea severity determined with Global Acne Grading System and Seborrheic Dermatitis Area Severity Index the day before operation and postoperative days 7 and 14 and months 1, 3, and 10. Compared with dry skin group, upper eyelid ecchymosis score at postoperative day 7 was statistically higher in oily skin group (p = 0.044). There was no significant difference in upper eyelid edema scores between postoperative days 1 and 3 for oily skin group (p = 0.020). No statistically significant differences were found for acne and seborrhea severity. Nasal skin sebum levels may affect periorbital edema and ecchymosis after the procedure but no significant effect has been observed for acne and seborrhea. Predicting the effect of nasal skin types on these problems may help the surgeon to inform patients more correctly.

M. Kepinska-Szyszkowska, A. Misiorek, M. Kapinska-Mrowiecka, J. Tabak, K. Malina, **Assessment of the Influence Systemic Cryotherapy Exerts on Chosen Skin Scores of Patients with Atopic Dermatitis: Pilot Study**, BioMed Research International Volume 2020

Background. One of the most important tasks in the treatment of atopic dermatitis (AD) is alleviation of racking skin dryness and persistent pruritus, because these factors exert a significant influence on worsening patients' quality of life. Cryotherapy being a new form of rehabilitation in AD may supplement and support a long-term process of AD treatment, because it has anti-inflammatory and antipruritic effects and exerts a positive influence on the nervous system. Methods. 14 adults (mean age 32 ± 10:8) with mild tomoderate AD were enrolled. WBC (15 treatments in total) took place in winter 2018/2019. Patient skin parameters (hydration of the epidermis, sebum level, and skin pH level) were measured with probes produced by Courage + Khazaka Electronic GmbH. Results. Changes were observed in the hydration level of the epidermis. The SCORAD index evaluating the AD intensity level also changed (decreased). Conclusion. Due to these properties, hypothesis has been put forward that WBC can be an effective, supporting method in the treatment of AD.

J. Yang, Y. Tu, M.-Q. Man, Y.-J. Zhang, Y.i Cha, X. Fan, Z. Wang, Z. Zeng, L. He, **Seasonal variations of epidermal biophysical properties in Kunming, China: A self-controlled cohort study,** Skin Research & Technology, Volume 26, Issue 5, September 2020, p. 702-707

Background: Epidermal biophysical properties can be affected by many factors, including body site, age, gender, ethnicity, disease, temperature, humidity, and ultraviolet (UV) radiation. Information about variation of epidermal biophysical properties with seasons is still limited. In the present study, we determined seasonal variation of epidermal biophysical properties of women in Kunming, China. Materials and Methods: A total of 72 women, aged 22.96 ± 2.11 years, were enrolled in this study. Transepidermal water loss rates (TEWL), stratum corneum (SC) hydration, sebum content, melanin index (MI), erythema index (EI), and L^*a^* values were measured on the right cheek and the right forearm, using a non-invasive skin physiological instrument in the spring, summer, autumn, and winter in Kunming, China. Results: On the cheek, TEWL, SC hydration, sebum, MI, and L^*a^* values varied greatly with seasons ($P < .05$). SC hydration, sebum, MI, and a^*value peaked in the summer, but went lowest in winter. In contrast, TEWL and L^*value went lowest in summer but peaked in winter. Similarly, SC hydration, MI, and L^*value also varied with seasons on the forearm ($P < .05$). In addition, SC hydration, sebum, MI, EI, and a^*value of the cheek were higher than that of the forearm ($P < .001$), but L^*values of the cheek were lower than that of the forearm ($P < .001$). There were no correlations among TEWL and MI, EI, and L^*a^*values in any season ($P > .05$). Conclusions: Both epidermal permeability barrier function, sebum, and skin pigment in healthy women vary seasons in Kunming, China.

H. van der Hoeven, H. Prade, **Catering to the skin of Generation Z**, PERSONAL CARE ASIA PACIFIC, September 2020

Gen Z'ers range roughly between early puberty and 25 years of age, born between 1995 and 2007. They are an interesting and important demographic group, because they behave rather differently

from older generations. They are described as "activists" with strong opinions and high demands. They are extremely engaged with the environment, for instance. They experience high rates of anxiety and depression, seemingly higher than other generations. A potentially important reason for this is that the cultural stigma that may have kept earlier generations from openly discussing and seeking help for mental health challenges appears to be much less of an issue for Generation Z. Gen Z'ers are much more willing to talk openly about their problems.

W. Hua, Y. Zuo, R. Wan, L. Xiong, J. Tnag, L. Zou, X. Shu, L. Li, **Short-term Skin Reactions Following Use of N95 Respirators and Medical Masks**, Contact Dermatitis, 2020 Aug;83(2): p. 115-121

Background: In the context of the COVID-19 pandemic, cases of adverse skin reactions related to masks have been observed. Objective: To analyze the short-term effects of N95 respirators and medical masks, respectively, on skin physiological properties and to report adverse skin reactions caused by the equipment. Methods: This study used a randomized crossover design with repeated measurements. Twenty healthy Chinese volunteers were recruited. Skin parameters were measured on areas covered by the respective mask and on uncovered skin 2 and 4 hours after donning, 0.5 and 1 hour after doffing, including skin hydration, transepidermal water loss (TEWL), erythema, pH and sebum secretion. Adverse reactions were clinically assessed, and perceived discomfort and incompliance measured. Results: Skin hydration, TEWL and pH increased significantly after donning. Erythema values increased from baseline. Sebum secretion increased both on the covered and uncovered skin with equipment-wearing. There was no significant difference between the physiological values between the two types of equipment. More adverse reactions were reported following N95 mask use that following use of medical mask, and a higher score of discomfort and incompliance. Conclusions: This study demonstrates that skin biophysical characters changes owing to mask and respirator wearing. N95 respirators were associated with more skin reactions than medical masks.

N. Tangkijngamvong, P. Phaiyarin, S. Wanichwecharungruang, C. Kumtornrut, **The anti-sebum property of chitosan particles**, J Cosm Dermatol, August 2020

Background: Seborrhea is linked to several medical and mental conditions. Although it is common, effective agents and the standardized sebum level for seborrhea are not elucidated. Aims: To determine the efficacy of chitosan particles (CP) formulation on controlling sebum secretion, its extended effects on skin redness and texture after combining with proretinal nanoparticles (CP-PRN), and a correlation of the clinical grading with sebum levels that affect mental health. Patients/methods: A four-week clinical trial with forty subjects was conducted. Subjects applied either CP formulation or CP-PRN during nighttime. Objective measurements including sebum levels, transepidermal water loss (TEWL), skin corneometry, skin redness, and texture were analyzed. Subjects completed a selfassessment clinical grading of skin oiliness at every visit. Results: Both CP and CP-PRN significantly decreased sebum levels ($P \leq .01$) at week 4 compared to baseline. CP also resulted in significant decreases in TEWL ($P \leq .05$) and skin corneometry ($P \leq .05$) throughout the study. A significant improvement in skin redness was observed with CP-PRN ($P \leq .01$). A moderate correlation between the clinical grading and sebum levels was detected (coefficient of 0.5, $P \leq .001$), with a sebum level of 106 μg cm indicating emotional discomfort. One subject experienced local irritation with the CP-PRN. Mild pruritic symptoms were reported in both groups. Conclusions: Chitosan particles exhibited an interesting anti-sebum effect. It could be combined with PRN to extend benefits without losing the sebum controlling effect. The clinical grading may be useful in practice due to a modest correlation with sebum levels.

E. Zareie , P. Mansouri , H. Hosseini , O. Sadeghpour , L. Shirbeigi , S. Hejazi , M. Emtiazy, **Effect of oral administration of Triphala, a polyphenol-rich prebiotic, on scalp sebum in patients with scalp seborrhea: A Randomized Clinical Trial**, J Dermatol Treat, Jul 2020

Background: Although there are various therapeutic options to control oily skin, they have potential side effects and limitations especially in long-term use. Pre/probiotics may have beneficial effects in atopic dermatitis' acne, dandruff, and seborrhea, demonstrated by some clinical trials. This trial conducted to determine whether herbal prebiotic Triphala is effective in reducing scalp sebum secretion in patients with scalp seborrhea. Methods: In this 8 week patient and outcome assessor-blinded, placebo-controlled trial participants with scalp seborrhea aged 14-50 years were randomized to Triphala or placebo groups. 1 g of Triphala (standardized as 91.82 ± 0.5 mg gallic acid) or placebo (wheat flour) were administered BID. Scalp sebum levels were detected objectively using Sebumeter® sm 815, and treatment satisfaction was measured using a score between 0 and 100. [Registration no. IRCT2014070218332N1].Results: Eighty patients completed the study (40 in Triphala group and 40 in placebo group). Participants in the Triphala group experienced 25.34 scores (95% CI, 0.39-50.29: $P = 0.047$) more improvement in scalp sebum levels compared with the placebo group. The mean percentage of patients' satisfaction was 37.91 (24.88) in the Triphala group and 17.89 (25.80) in the

placebo group (P = 0.001).Conclusion: Herbal prebiotic Triphala significantly reducedscalp sebum scores compared to placebo.

W. Arshad, H.M. Shoaib Khan, N. Akhtar, M. Nawaz, **Assessment of changes in biophysical parameters by dermocosmetic emulgel loaded with Cinnamomum tamala extract: A split-faced and placebo-controlled study**, J Cosmet Dermatol, 2020 Jul;19(7): p. 1667-1675

Background: Phenolic and flavonoid compounds found in plants alleviate the photo-damaging skin conditions by playing a major role in skin rejuvenation. Aims: The aim of the study was to explore the cosmeceutical effects of Cinnamomum tamala extract. Objective: Recent research was aimed to quantify phenols and flavonoids in the natural extract of C tamala leaves, to develop its phyto-cosmetic emulgel and to assess effects of emulgel on healthy human skin. Method: Phenols and flavonoids in C tamala (CT) extract were quantified by using ELISA assay. Emulgel formulation loaded with 4% C tamala (CT emulgel) was developed, and its cosmetic effects were evaluated on the cheeks of 13 healthy female test volunteers by comparing with placebo (base). Facial parameters including melanin, erythema, sebum, and visible facial pores (size and area) were studied by using Mexameter, Sebumeter, and VisioFace at regular interval for 90 days. Results: Total phenolic content and total flavonoids content of C tamala leaves extract were found to be 73.08 ± 0.0078 mg GAE/g and 52.63 ± 0.0060 mg QE/g CT extract respectively. As compared to placebo (base), CT emulgel was found to be significantly ($P \leq .05$) effective in minimizing skin photo-damaging effects by reducing the levels of melanin, erythema, and sebum and size and count of both fine and large facial pores. Conclusion: Cinnamomum tamala leaves extract, being a rich source of phenols and flavonoids minimized the photo-damaging effects by reducing skin melanin, erythema, and excess sebum; improving the skin imperfections by reducing facial pore count and area as assessed by advanced imaging and bioengineering techniques.

Moderne Hautanalyse - Die ungeschminkte Wahrheit, Fit for Fun, Juli 2020

Ein geschultes Auge sieht der Haut auf Anhieb das Wichtigste an – aber nicht alles. Präzise Informationen über den Hautzustand liefern diese fünf technischen Geräte.

S. Eisenberg, N. Beyer, J. zur Lage, A. Moschner, H. Driller, **Regulator for oily skin and balance of skin´s microflora**

In modern life, image matters and consumers around the world have become aware of their appearance. Oily skin is a major issue to some because it affects those areas that are most vulnerable and exposed, like the chin, forehead and nose. Additionally, oily and impure skin causes a real aesthetic problem as it may lead to a higher susceptibility of acne development. Alterations in the pilosebaceous unit, an association of sebaceous glands and hair follicles, are involved in acne development. Causes are increased sebum excretion, induced by e.g. stress and hormonal changes, colonization of the hair follicle by *Propionibacterium acnes*, alterations of lipid composition and its oxidization, and the release of inflammatory mediators into the skin. The skin is a complex ecosystem on its own, about 1.8m^2 in size, providing diverse habitats for a wide range of microorganisms. A balanced microbiota is usually related to healthier skin. Disruptions in microbial populations, therefore, can be linked to cutaneous pathological states such as acne and atopic dermatitis. Modulating unbalanced populations and their interactions, between microbiome and immune system, may prevent the risk of skin disorders, enabling a healthy and refined skin complexion. A new efficient cosmetic active has been designed to counteract oily skin and its consequences by reducing the sebum level and maintaining the skin´s beneficial microflora. Consumers could, therefore, benefit from shine-free, clear skin and would be less susceptible to acne development and skin irritation.

T. Falla, K. Rodan, K. Fields, D. Ong, C. Skobowiat, **Safety and efficacy of a novel three-step anti-acne regimen formulated specifically for women**, International Journal of Women's Dermatology 6 (2020), p. 419–423

Background: Due to ambient environmental- and lifestyle-associated stressors, the prevalence of acne in adult women has been increasing. Classical anti-acne treatments using benzoyl peroxide technology are associated with dehydration of the skin, which may accelerate aging and further reduce treatment compliance. The addition of bio-functional actives intended to replenish hydration and improve barrier function may hasten the onset of anti-acne benefits while restoring a healthy appearance and counteracting skin aging effects. Objective: The objective of this study was to test the safety and efficacy of a new three-step topical antiacne regimen designed specifically to improve the overall condition and appearance of the skin in women with acne. Methods: Safety and efficacy were tested in an 8-week study of women ages 22 to 44 years with mild to moderate acne. Skin endpoints were monitored at baseline and weeks 1, 4, and 8 by clinical grading, measurement of sebum secretion using a sebumeter, standardized pictures, and self-validation questionnaires. Results: A total of 31 women completed the

study. Acne severity and lesion counts, including comedones and papules, improved gradually starting from week 1 and continued to improve throughout the study period, reaching statistical and clinical relevance at weeks 4 and 8. Moreover, significant improvements in skin roughness, radiance, overall healthy appearance, and oiliness (further confirmed with decreased sebum production) were observed. Compared with baseline responses, participants reported noticeable improvements in acne lesions and overall healthier-looking skin. Participants also noticed overall younger-looking skin at the end of the study period. Conclusion: This three-step regimen provided efficacious anti-acne benefits to the skin that were also gentle, safe, and well tolerated.

C. Uhl, D. Khazaka, **Measuring skin's "true age"**, PERSONAL CARE June 2020, p. 66-68

The human desire to look young is as old as mankind and our skin plays central role in this craving. Even in ancient civilizations, people developed formulations for creams, tonics and bath additives to keep skin young and beautiful. The physiological process of skin ageing involves structural, biochemical and functional changes. Starting at approximately age 25, the content of collagen and other components of the connective tissue, such as elastin or hyaluronic acid, in the skin continuously decreases. This gradually results in a loss of bound water, leading to a deterioration of the water-protein interaction and an alteration of the overall protein stability.

N. Hazwani Mohd Ariffin, R. Hasham, **Assessment of non-invasive techniques and herbal-based products on dermatological physiology and intercellular lipid properties**, Heliyon 6 (2020)

Skin is the largest external organ of the human body. It acts as a barrier to protect the human body from environmental pollution, mechanical stress, and excessive water loss. The defensive function resides primarily on top of the epidermis layer commonly known as stratum corneum (SC). Human SC consists of three major lipids, namely ceramide, free fatty acid, and cholesterol that comprise approximately 50%, 25%, and 25% of the total lipid mass, respectively. The optimal composition of SC lipids is the vital epidermal barrier function of the skin. On the other hand, skin barrier serves to limit passive water loss from the body, reduces chemical absorption from the environment, and prevents microbial infection. In contrast, epidermal lipids are important to maintain the cell structure, growth and differentiation, cohesion and desquamation as well as formation of a permeability barrier. Multiple non-invasive in vivo approaches were implemented on a regular basis to monitor skin physiological and intercellular lipid properties. The measurement of different parameters such as transepidermal water loss (TEWL), hydration level, skin elasticity, collagen intensity, melanin content, sebum, pH, and tape stripping is essential to evaluate the epidermal barrier function. Novel non-invasive techniques such as tape stripping, ultrasound imaging, and laser confocal microscopy offer higher possibility of accurate and detailed characterisation of skin barrier. To date, these techniques have also been widely used to determine the effects of herbal plants in dermatology. Herbal plants have been traditionally used for ages to treat a variety of skin diseases, as reported by the World Health Organisation (WHO). Their availability, lower cost, and minimal or no side effects have created awareness among society, thus increase the demand for natural sources as the remedy to treat various skin diseases. This paper reviews several non-invasive techniques and evaluations of herbal-based product in dermatology.

S. Laneri, I. Dini, A. Tito, R. di Lorenzo, M. Bimonte, A. Tortora, C. Zappelli, M. Angelillo, A. Bernardi, A. Sacchi, M.G. Colucci, F. Apone, **Plant cell culture extract of Cirsium eriophorum with skin pore refiner activity by modulating sebum production and inflammatory response**, Phytotherapy Research. 2020; p. 1–11

Facial pore enlargement is considered a significant esthetic and health concern in skincare cosmetics. The pores fulfill the critical function of keeping the skin surface hydrated and protected against microbial infections. The hyperseborrhea, the stress factors, and the hormonal triggers can cause pore size enlargement, causing higher susceptibility of the skin to microbe aggressions and inflammatory reactions. Thus, reducing excessive sebum production and keeping functional pores are two of the most requested activities in skincare cosmetics. A Cirsium eriophorum cell culture extract was investigated for its role in sebum regulation, stratum corneum desquamation, and anti-inflammation. The extract was able to regulate essential markers associated with sebum secretion and pore enlargements, such as the enzyme 5α-reductase, which plays a central role in sebum production, and the trypsin-like serine protease Kallikrein 5, which promotes skin exfoliation and antimicrobial response. Moreover, the extract showed a sebum-normalizing and pore refining activity in individuals having seborrheic or acne-prone skins, suggesting a role of the C. eriophorum extract in rebalancing altered skin conditions responsible for pore enlargement.

S. Yoo, M.-R. Kim, T.-Y. Kim, S.J. Hwang, J.-M. Lim, S.G. Park, **Relationship of transcutaneous oxygen tension with age and skin elasticity in Korean women**, Skin Research & Technology, Volume 26, Issue 3, May 2020, p. 325-328

Background: Oxygen has several positive effects on the skin, including improving collagen synthesis and accelerating wound healing. However, only a few studies have investigated the relationship between skin oxygenation and skin aging parameters. Therefore, this study aimed to assess the correlation between skin oxygenation and skin aging parameters-elasticity, hydration, sebum, color (lightness, redness), and blood perfusion— in Korean women. Materials and Methods: We evaluated the transcutaneous partial pressure of oxygen, also known as transcutaneous oxygen tension ($TcP0_2$), and skin aging parameters, including elasticity, hydration, sebum, color (lightness or redness), and blood perfusion, in the cheek of 34 healthy women (aged 20-69 years) and assessed the correlation between $TcP0_2$ and other skin aging parameters using IBM SPSS Statistics 25 software (SPSS Inc). Results: Facial $TcP0_2$ was negatively correlated with age ($P < .05$). There were positive correlations between facial $TcP0_2$ and elasticity parameters ($P < .01$). We noted no correlation between facial $TcP0_2$ and skin lightness; however, skin lightness tended to slightly improve with increasing $TcP0_2$. Skin aging parameters, including hydration, sebum, skin redness, and blood perfusion, showed no correlations with $TcP0_2$. Conclusion: In Korean women, facial TcP02 tends to decrease with increasing age and is positively correlated with gross, net, and biological skin elasticity. Therefore, this study demonstrated that oxygen tension of facial skin can be a major causative factor of skin aging.

M.A. Nilforoushzadeh, S. Alavi, M. Heidari-Kharaji, A.R. Hanifnia, M. Mahmoudbeyk, Z. Karimi, F. Kahe, **Biometric changes of skin parameters in using of microneedling fractional radiofrequency for skin tightening and rejuvenation facial**, Skin Res Technol., Jun 2020

Background Fractional radiofrequency (RF) has been used for skin rejuvenation and tightening by dermatologists and cosmetic surgeons in recent years. Methods Twenty female patients (mean age of 51.9 years) with Fitzpatrick III to VI skin phototypes who desired to undergo skin lift/tightening received six sessions of fractional microneedle RF treatment and were assessed at baseline and then 3 months after the last session for biometric characteristics using a Colorimeter, Visioface 1000D, Tewameter, Cutometer, Mexameter, and Sebumeter and a skin ultrasound imaging system to evaluate the transepidermal water loss (TEWL), skin pores, color, melanin content, erythema, sebaceous content, and thickness and density of the epidermis and dermis. Patient satisfaction with visual analog scale (VAS) was also measured. Results The results showed that skin pores and spots decreased significantly. TEWL also decreased significantly (by 18.44%). Meanwhile, skin density increased significantly (R7, by 44.41%). The ultrasonographic assessments showed that both the density and thickness of the dermis and epidermis were increased. The changes in the other parameters were not significant. Conclusion FR increases the density and thickness of the dermis and thus also increases the collagen content and decreases skin pores and TEWL.

V. Mazzarello, E. Gavini, G. Rassu, M.G. Donadu, D. Usai, G. Piu, V. Pomponi, F. Sucato, S. Zanetti, M.A. Montesu, **Clinical Assessment of New Topical Cream Containing Two Essential Oils Combined with Tretinoin in the Treatment of Acne**, Clinical, Cosmetic and Investigational Dermatology 2020:13, p. 233–239

Background: Acne is a frequent adolescent disease characterized by inflammatory and noninflammatory lesions whose topical treatment very often presents adverse phenomena such as irritation or resistance to antibiotics that reduce the patient's compliance. The purpose of this study is to compare a commercial product (Acnatac gel) based on clindamycin-tretinoin (CTG) with a galenic compound containing 2 essential oils (Myrtus communisL. and Origanum vulgare) and tretinoin (MOTC) to evaluate its anti-acne effectiveness and action on the microclimate of the skin. Methods: Sixty volunteers were randomly divided into an A group using MOTC and a B group, as a positive control, using CTG. The effectiveness was assessed with non-invasive skin analysis (Sebumeter, pH meter, Tewameter and Mexameter) and the counts of the number of lesions, after 15 and 30 days. Results: In both groups, there is a worsening of transepidermal water loss (TEWL) due to tretinoin. MOTC has improved, starting from 15 days of treatment, the papular erythema ($p = 0.0329$ vs CTG) and has reduced at all times even the rashes of retinoids present in the healthy perilesional skin ($p = 0.0329$ and $p = 0.0017$, respectively, at 15 and 30 days). Conclusion: MOTC has shown, compared to Acnatac, to have anti-acne efficacy and to possess an anti-inflammatory activity, due to essential oils, able to reduce in vivo erythematous lesions and those induced by retinoids.

I. Montaño, C. Pickel, F. Wandrey, **Rebalancing the Excessive Sebum Production in the Scalp**, SOFW Journal 05/20, Volume 146, May, 2020

An oily scalp is caused by over-reactive sebaceous glands on the scalp. The oil or sebum attracts dirt more easily, produces even dandruff, and makes the hair stick together. To reduce the sebum and enhance the barrier effcacy on oily scalp, Mibelle Biochemistry has developed an active ingredient based on the Chinese medicinal herb *Astragalus membranaceus*. AstraForce is a liposomal preparation of *Astragalus membranaceus* root extract. This plant is one of the most important Chinese medicinal herbs and its roots have been used for more than 2500 years in Chinese medicine to strengthen qi, the body's life force. This liposomal form facilitates the penetration of actives into the sebaceous duct allowing the active components to target the sebaceous gland more straightforwardly. The sebum-reducing effect of AstraForce has been proven on volunteers having oily scalp and hair while maintaining the barrier effectiveness. *In vitro* the active ingredient has reduced the activity of enzymes involved in sebum lipid metabolism. AstraForce thereby has a positive effect on scalp purifcation and hydration as well as reducing sebum production in the context of oily hair.

A. Rigal, R. Michael-Jubeli, A. Bigouret, A. Nkengne, D. Bertrand, A. Baillet-Guffroy, A. Tfayli, **Skin surface lipid composition in women: increased 2,3-oxidosqualene correlates with older age**, Eur J Dermatol, Apr 2020

The importance of the hydrolipidic film of skin has been well documented, however, few data are available in cases of very old age. Our aim was to characterize the difference in skin surface lipid (SSL) composition between individuals of different age groups. Data were collected from the forehead of 22 young volunteers (18-24 years old) and 18 senior volunteers (70-75 years old). The amount of sebum was obtained by sebumetry. To acquire relevant information about the molecular composition of high complex mixtures, SSLs were analysed in a single run to ensure that the lipid structures remain intact, using high-temperature gas chromatography coupled with mass spectrometry. The major features associated with aged skin were documented. In aged skin, a lower sebum content was observed, together with modification of the relative SSL composition involving a significant reduction in the intensity of many components of the hydrolipidic film. In contrast, the intensity of 2,3-oxidosqualene was shown to increase with an inverse relationship between triglycerides and their hydrolytic products. These adaptations could be related to modifications of enzymatic activity.

Z. Chaoshuai, W. Xin, M.Yaqi, X. Ziqian, S. Yue, M. Xingyu, S. Weimin, **Variation of biophysical parameters of the skin with age, gender, and lifestyles,** J Cosmet Dermatol., April 2020

Background: Sweet, spicy or greasy food, staying up late, and using electronic products for a long time are common bad habits nowadays. Their role in skin diseases has been paid much attention. Objective: The aim of this study was to investigate whether unhealthy lifestyles would affect the skin sebum content, SC hydration, and pH and how do they affect. Methods: A total of 300 volunteers were enrolled, and a multifunctional skin physiology monitor measured the three skin biophysical properties on the forehead and dorsal hand. Lifestyle factors were evaluated by a self-administered questionnaire. Results: Eating oily, sweet, spicy food, and staying up late increased the sebum content of the forehead significantly. Dorsal hand SC hydration was higher in people eating more sweet food and oily food, and forehead SC hydration was higher in people eating more sweet food and go to bed earlier. Eating sweet food could increase pH in both forehead and dorsal hand. The forehead pH decreased in using electronic products over 6 hours a day or staying up late. There are significant differences in sebum, hydration, and pH value among different age groups. In males, the pH was lower than females, but the sebum was higher. Conclusion: Sebum content, SC hydration, and pH are affected by unhealthy lifestyles, age, and gender.

F. Murina, C. Caimi, R. Felice, S. di Francesco, I. Cetin, **Characterization of female intimate hygiene practices and vulvar health: A randomized double-blind controlled trial**, Journal of Cosmetic Dermatology, Apr 2020

Background: Inappropriate feminine hygiene practices are related to vulvar unpleasant symptoms (such as skin changes, lesions, burning, pruritus, fissures, and dyspareunia). Aims: We assessed the daily use effects of intimate cleansers on vulvar skin by comparing two specific products for intimate care: Saugella Hydraserum (SIS), based on natural extracts, and a standard product based on lactic acid, such as Lactacyd Feminine Hygiene (LTC). Forty healthy women were enrolled in this double-blind controlled study. Methods: After randomization, the cleansers were used twice daily for 30 days. The hydration level was determined using the Corneometer® CM 825, the pH using the Skin-pH-Meter PH 905® and the sebum level using the Sebumeter SM815®. Measurements were performed at baseline and on day 30 on the labia majora and labia minora. Results: Both cleansers showed a reduction in the hydration level, but this was much less evident in the SIS group (−6.3% SIS vs −23.7% LTC). The pH values of the SIS group were lower than those of the LTC group, especially on the labia minora (5.27 ± 0.08 and 5.6 ± 0.1, respectively, $P = .025$). The sebum increased in both groups, but in the LTC group, it was higher on the labia majora (+96.2% vs +46.8%, respectively, $P = .003$), while on

the labia minora, it was higher in the SIS group (+24.7% vs +17.1%, respectively *P* = NS). Conclusions: Both cleansers tested showed high performance for safety and tolerability on vulvar skin, but SIS showed better efficacy than LTC on some parameters.

K. Yonezawa, M.i Haruna, R. Kojima, **Validity of Infant Face Skin Assessment by Parents at Home**, Asian/Pacific Island Nursing Journal Volume 4(4): p. 159-164, 2020

Parents had better to assess their infant's skin daily to prevent the development of any skin problems. However, there are no standard methods for assessing infant skin at home. This study aimed to validate the assessment of infant face skin conditions by parents as compared to using skin barrier function clinical tests. In addition, we evaluated the degree of agreement between parents and physicians/midwives when assessing an infant's skin. A cross-sectional study involving 184 infants aged 3 months was conducted. To evaluate the parents' infant skin assessment, we used the Neonatal Skin Condition Score (NSCS). On the same day, we evaluated the skin barrier function on the infant's forehead and cheek, including transepidermal water loss (TEWL), stratum corneum hydration, skin pH, and sebum secretion. Skin barrier function values were correlated with infant skin condition assessed by parents, especially in cases of TEWL of the cheek, for which a moderate positive correlation was found between parental assessment score ($\rho = 0.448$). In addition, infant with skin problems based on parental assessment had a significantly higher TEWL, lower SCH, and higher skin pH. However, there was weak agreement between parental and physician/midwife assessment. Thus, there was a relationship between parental assessment and skin barrier function; thus, parents can use at-home assessment to assist with infant skin care. In the future, research focused on developing methods of examining infant skin conditions should consider incorporate parental daily skin assessment.

K.H. Kelekci, R. İnci, A. Karakuzu, Ş. Karaca, **Biophysical properties of skin in pregnancy: A controlled study**, Annals of Clinical and Analytical Medicine, April 2020

Aim: It is well-known that there are some physiologic changes in the skin during pregnancy. In this study, we aimed to compare the biophysical changes in the skin of pregnant women with healthy non-pregnant women's skin. Material and Methods: A total of 60 pregnant women in the third trimester and 30 age-matched healthy volunteers as a control group were included in our study. Stratum corneum hydration, erythema, melanin of forearm and sebum content of forehead of skin were measured with noninvasive cutometer and compared between groups with the use of IBM's SPSS sofware (SPSS version 17.0 for Windows). Results: We found a moderate but signifcant disturbance of melanin and erythema on the forearm between pregnant women and healthy volunteer women. There was no signifcant correlation between baby gender and skin parameters of pregnant women. Discussion: We conclude that even the clinically normal- appearing skin of pregnant women compared with healthy volunteers have increased melanin secretion and erythema properties.

S. Nagase, K. Ogai, T. Urai, K. Shibata, E. Matsubara, K. Mukai, M. Matsue, Y. Mori, M. Aoki, D. Arisandi, J. Sugama, S. Okamoto, **Distinct Skin Microbiome and Skin Physiological Functions Between Bedridden Older Patients and Healthy People: A Single-Center Study in Japan**, Frontiers in Medicine, April 2020, Volume 7, Article 101

With the increase in the older populations, the number of bedridden older patients is becoming a matter of concern. Skin microbiome and skin physiological functions are known to change according to lifestyle and community; however, such changes in case of movement- and cleaning-restricted bedridden older patients have not yet been revealed. To address this issue, we analyzed skin microbiome and skin physiological functions, including pH, hydration, sebum level, and transepidermal water loss (TEWL), of bedridden older patients, compared with those of ambulatory older and young individuals. For this analysis, we enrolled 19 healthy young and 18 ambulatory older individuals from the community and 31 bedridden older patients from a single, long-term care hospital in Japan. The area of interest was set to the sacral (lower back) skin, where pressure injuries (PIs) and subsequent infection frequently occurs in bedridden older patients. We observed a higher number of gut-related bacteria, fewer commensals, higher skin pH, and lower TEWL on the sacral skin of bedridden older patients than on that of young or ambulatory older individuals. In addition, we observed that 4 of the 31 bedridden older patients developed PIs during the research period; a higher abundance of pathogenic skin bacteria were also observed inside the PI wounds. These findings imply distinct skin microbiome and skin physiological functions in bedridden older patients in comparison with healthy individuals and may suggest the need for more stringent cleaning of the skin of bedridden older patients in light of the closeness of skin and wound microbiome.

K. Thadanipon, J. Kitsongsermthon, **Comparative study into facial sebum level, pore size, and skin hydration between oily-skinned and dry-skinned Thai women**, Skin Res Technol., March 2020, Volume 26, Issue 2, p. 163-168

Background: Subjective facial skin type is most frequently determined by the amount of sebum, which showed trends across subjective skin types in most previous studies while not in some. This study was conducted to evaluate the associations among subjective skin type, amount of sebum, stratum corneum hydration, and pore size in Thai women. Methods: Sixty-two healthy women with either self-described subjective oily or dry skin type were included and casual sebum level (CSL), sebum excretion rate (SER), clinical pore size score, mean pore area, and stratum corneum hydration were measured at several facial sites. Correlation coefficients between amount of sebum and other parameters were estimated. Results: Casual sebum level and sebum excretion rate were significantly higher in oily-skinned than dry-skinned group by 1.6-2.1 times. Mean pore area and clinical pore size score were not different between the 2 groups, nor did they correlate with CSL or SER. Corneometry was shown to be significantly higher in dry-skinned than oily-skinned group. Significant, negative correlations between corneometry and CSL were also found. Conclusion: The subjective facial skin types were consistent with the amount of sebum, but not pore size or corneometry, among Thai women.

D. Schmid, F. Wandrey, F. Zülli, **Treating large pores - Chios mastic to improve oily skin, large pores and acne**, Household and Personal Core Today - Vol. 15(1) January/February 2020

Mastic is the resin harvested from the Pistacia lentiscus trees from the Greek island of Chios. It has been used as a precious natural remedy against various ailments since ancient times. The water-insoluble oleoresin was made available for skin care application by using special extraction techniques. In this form, mastic inhibits the sebum production enhancing enzyme 5a-reductase type I and blocked IL- 1a effects in vitro. In clinical studies with volunteers suffering from oily skin, enlarged pores and acne signs it was shown that mastic visibly reduces pore size, shininess and the number of blemishes, which makes mastic an ideal active to treat impure skin.

N. Tangkijngamvong, P. Phaiyarin, S. Wanichwecharungruang, C. Kumtornrut, **The anti-sebum property of chitosan particles**, J Cosmet Dermatol., 2020 January

Background: Seborrhea is linked to several medical and mental conditions. Although it is common, effective agents and the standardized sebum level for seborrhea are not elucidated. Aims: To determine the efficacy of chitosan particles (CP) formulation on controlling sebum secretion, its extended effects on skin redness and texture after combining with proretinal nanoparticles (CP-PRN), and a correlation of the clinical grading with sebum levels that affect mental health. Patients/Methods: A four-week clinical trial with forty subjects was conducted. Subjects applied either CP formulation or CP-PRN during nighttime. Objective measurements including sebum levels, transepidermal water loss (TEWL), skin corneometry, skin redness, and texture were analyzed. Subjects completed a self-assessment clinical grading of skin oiliness at every visit. Results: Both CP and CP-PRN significantly decreased sebum levels ($P \leq .01$) at week 4 compared to baseline. CP also resulted in significant decreases in TEWL ($P \leq .05$) and skin corneometry ($P \leq 05$) throughout the study. A significant improvement in skin redness was observed with CP-PRN ($P \leq .01$). A moderate correlation between the clinical grading and sebum levels was detected (coefficient of 0.5, $P \leq .001$), with a sebum level of 106μg/cm^{-2} indicating emotional discomfort. One subject experienced local irritation with the CP-PRN. Mild pruritic symptoms were reported in both groups. Conclusions: Chitosan particles exhibited an interesting anti-sebum effect. It could be combined with PRN to extend benefits without losing the sebum controlling effect. The clinical grading may be useful in practice due to a modest correlation with sebum levels.

M.G. Almeida Leite, P.M.B.G. Maia Campos, **Correlations between sebaceous glands activity and porphyrins in the oily skin and hair and immediate effects of dermocosmetic formulations**, J Cosmet Dermatol. 2020;00: p. 1–7

Background: Oily skin and hair not only contain a large amount of sebum, but also exhibit other changes that compromise their physiology. The immediate effects of dermocosmetics are very important for adhesion to treatment. Aim: The aim of the present study was to characterize oily skin and scalp, to evaluate the correlation of sebum production with porphyrin counts and the immediate effects of topical formulations for sebum control. Patients/Methods: A total of 100 women aged 18-49 years were recruited. Sebaceous gland activity, sebum amount, stratum corneum water content (SCWC) transepidermal water loss (TEWL), skin gloss, amount of porphyrins and pores were determined in the face and SCWC, sebum amount, porphyrin count, and TEWL were also determined in the scalp. The immediate effects of formulations containing a guarana extract were determined after 2 hours of application. Results: A correlation between sebaceous gland activity and presence of porphyrins in the frontal region of the face was detected. Low gloss values and large amounts of pores in the malar region

were related to lower skin uniformity. High sebum values and low SCWC and porphyrin count were also observed in the vertex region. The studied formulations reduced the sebum content of face and scalp after 2 hours of application. Conclusion: Oily skin and hair showed high sebum values, which were correlated with porphyrin count and with the activity of sebaceous glands. Finally, the studied formulations had immediate reducing effects on sebum amounts on the skin and scalp.

I. Lacatusua, D. Istratia, N. Bordeib, M. Popescub, A.M. Seciuc, L.M. Pantelid, N. Badea, **Synergism of plant extract and vegetable oils-based lipid nanocarriers: Emerging trends in development of advanced cosmetic prototype products**, Materials Science & Engineering C 108 (2020) 110412

Phytochemicals are priceless sources of bioactive compounds with multiple health benefices. The main objective of the current investigation was to develop nanostructured herbal formulations conditioned as appropriate hydrogel (HG) conferring an enhanced transdermal absorption of bioactive compounds from selective extracts and vegetable oils. The direct impact of research is represented by the identification of prototype products which manifest an improved therapeutic response, by means of cumulative antioxidant, anti-inflammatory and antiacne actions, without causing any side health effects. The combinatorial effect of Carrot Extract (CE) and Marigold Extract (ME) – Nanostructured Lipid Carriers (NLC) based on rosehip oil or black cumin oils was accompanied by a high biocompatibility and a significant ability to capture both short- and long-life free radicals. HG-NLC-ME-CE has been shown to be an efficient carrier with a differentiated potential for in vitro release of the two active principles, e.g. it delayed the release of carotenoids while the hydrophilic active (azelaic acid, AA) was faster released. The HG-NLC efficacy in skin inflammation treatment (demonstrated by in vitro and in vivo tests) revealed a reduced expression of inflammatory cytokines (IL-1β and TNF-α), more pronounced in the case of TNF-α. Moreover, a superior in vivo anti-inflammatory effect of HG-based NLC-CE/ME-AA as compared to that obtained for a commercial product was detected, i.e. after 3 h of HG-NLC treatment, a significant reduction of rat paw edema was quantified. In pre-clinical studies, the quantification of the hydration and elasticity effects in the viable epidermis provided the evidence of the high potential of developed prototypes, suitable for implementation in the market area. The degree of skin hydration and skin elasticity were remarkable enhanced after topical application of developed prototypes, a hydration effect up to 74% being determined and a skin elasticity reaching 90%. The knowledge acquired from this investigation could be utilized by the cosmetic industry to design novel topical products with improved quality and health benefices, endowed with antioxidant, anti-inflammatory and anti-acne actions and with desired hydration and elasticity profiles, in order to achieve better therapeutic efficacy and no drug toxicity.

J.G.M. Logger, F.M.C. de Vries, P.E J. van Erp, E.M.G.J. de Jong, M. Peppelman, R.J.B. Driessen, **Noninvasive objective skin measurement methods for rosacea assessment: a systematic review**, British Journal of Dermatology (2020) 182, p. 55–66

Background Rosacea assessment and therapy monitoring can be challenging to standardize, as most clinical evaluation systems are prone to interobserver variability and not always validated. Therefore, objective, reliable and preferably noninvasive measurement tools are needed. Objectives To give insight into available noninvasive imaging techniques and biophysical methods in rosacea by performing a systematic review. Methods PubMed, Embase, Cochrane and Web of Science databases were searched until 1 September 2018 in accordance with PRISMA guidelines, to identify studies providing original data about objective noninvasive imaging and/or biophysical skin measurement techniques for diagnosis, assessing severity or therapy monitoring of adult patients with cutaneous facial rosacea. Risk of bias of included articles was assessed with the Cochrane Risk of Bias tool, Quality in Prognosis Studies tool, and the Newcastle–Ottawa Scale. Results A total of 78 studies were included, describing 14 imaging and biophysical methods. Widespread information about (sub)surface cutaneous morphology and functionality was obtained. Methodological study quality was relatively low and interstudy outcome variability was large. Several tools show promising value in research settings: for treatment follow-up Demodex mites are countable with reflectance confocal microscopy, spectrometry can quantify erythema, and rosacea severity could be objectified with skin hydration- and transepidermal water loss measurements. Conclusions This systematic review describes the spectrum of noninvasive imaging and biophysical methods in rosacea assessment, giving multifaceted information about structure and properties of rosacea skin, especially useful for research purposes. Larger studies with good methodological quality are needed to create validated protocols for further implementation into research.

E. Faucheux, C. Picard, M. Grisel, G. Savary, **Residual film formation after emulsion application: understanding the role 2 and fate of excipients on skin surface**, Science Direct, Elsevier, 2020

This study focuses on the fate of excipients contained in topical emulsions once applied on the skin.

The aim was thus to develop a methodology to characterize the residue left on the skin shortly after emulsion application. To this end, both the role and the impact of the different excipients on the formation and properties of the residue left on the skin surface once a product is applied were investigated. To that purpose, an O/W emulsion composed of an ester as oily phase, an emulsifier (alkylpolyglucoside-based vehicles), a polymer and a humectant (hydrophilic excipient) was first developed. Then, systems with fewer ingredients were prepared to understand their respective role in the residual film. This residual film was studied in vivo by means of biophysical instrumental methods, all being performed on the participants' forearm. Results highlighted the major role of the ester giving a bright and hydrophobic residue. While the surfactant structuration as the presence of glycerin and polymer provided a specific water distribution inside the residue on the skin surface. Finally, this work evidenced the ingredients organization in the residue depending on the systems composition, with a particular stratification on skin surface which could be considered in the formulation strategy for efficient active delivery and skin protection.

A. Tsochataridou, **Hautfunktionsmessung bei Patienten mit atopischer Dermatitis und Psoriasis vulgaris – Gibt es Unterschiede?,** Dissertation Hautklinik und Poliklinik der Universitätsmedizin der Johannes Gutenberg-Universität Mainz, Germany, 2020

Die atopische Dermatitis (aD), welche synonym auch als Neurodermitis, atopisches oder endogenes Ekzem bezeichnet wird, ist eine chronische oder chronischrezidivierende, entzündliche Hauterkrankung, die typischerweise mit ausgeprägtem Juckreiz einhergeht. Das morphologische Bild der in Schüben verlaufenden aD variiert je nach Schweregrad der Erkrankung und Manifestationsalter, sodass leichte, mittelschwere und auch schwere Erscheinungsbilder möglich sind. Schwere Ausprägungen der aD gehen mitunter mit Komplikationen, wie viralen, bakteriellen und mykotischen Superinfektionen der vorgeschädigten Haut einher. Die direkten Auswirkungen der aD, allen voran der Juckreiz, sowie die genannten Komplikationen, können zu einer erheblichen Einschränkung der Lebensqualität und umfangreichen Einschränkungen im Alltag der Betroffenen führen. Ein gezieltes Management ist daher sehr wichtig. Ungefähr 10-20% der Kinder in Europa erkranken an einer aD, bei circa 60% manifestieren sich die ersten Symptome sogar vor Vollendung des 1. Lebensjahres. Epidemiologischen Untersuchungen zufolge ergibt sich immerhin eine ungefähre 1-Jahres-Prävalenz von circa 3% bei Erwachsenen. Die aD ist eine multifaktoriell bedingte Erkrankung, für deren Erstmanifestation sowohl eine genetische Prädisposition als auch verschiedene individuelle Auslösefaktoren von Bedeutung sind. Differentialdiagnostisch sind andere Hauterkrankungen, das allergische, irritative oder toxische Kontaktekzemen, Pyodermien, Mykosen und sehr selten auch sogenannte transiente Formen der Psoriasis vulgaris (Pv) gerade im Kindesalter abzugrenzen. In der Literatur wird der hohe transepidermale Wasserverlust als klinisch messbares Korrelat der komplexen Barrierestörung der aD als für die Erkrankung kennzeichnend hervorgehoben. Die komplexePathophysiologie der aD ist Gegenstand aktueller Forschung. Während genetische Polymorphismen und eine loss-of-function-Mutation des Fillagrin-Gens als fundamentale Ursache der Hautbarrierestörung bei vielen Patienten mit aD bekannt sind, werden pathologische Veränderungen in der Fillagrin-Expression in den letzten Jahren zunehmend auch bei der Pv diskutiert. Trotz den unterschiedlichen klinischen Krankheitsbildern scheinen Überlappungen in der Pathogenese zu bestehen, die zum besseren Verständnis der Erkrankungen zurzeit weiter untersucht werden.

C. Schrammek-Drusio, **Anamnese & Hautanalyse**, medical skincare, 2019/20

Eine professionelle Hautanalyse ist die Grundlage jeder zielführenden Anti-Aging Behandlung. Denn jeder Hauttyp und –zustand hat verschiedene Anforderungen. Die Kosmetikerin benötigt dafür fundiertes Detailwissen und natürlich Erfahrung. Zur exakten Analyse ist darüber hinaus auch eine auch eine apparative Grundausstattung unverzichtbar.

*J.S. Lee, J. Ha, K. Shin, H. Kim, S. Cho***, Different Cosmetic Habits Can Affect the Biophysical Profile of Facial Skin: A Study of Korean and Chinese Women**, Ann Dermatol 31(2), p. 175-185, 2019

Background: Previous studies on the age-, climate, and skin care habit-related changes of biophysical parameters have mainly focused on Caucasians, and studies on Asians are in paucity. Objective: This study was aimed to investigate the variations of cutaneous biophysical parameters in Chinese and Korean women (northeast Asians) and to assess the association between those parameters and age, climate, and cosmetic habits. Methods: A cross-sectional study included 361 healthy Chinese and Korean women between 18 and 49 years of age in 4 cities (Guangzhou, Nanjing, and Shijiazhuang in China, and Suwon in Korea). We measured skin surface temperature, hydration, transepidermal water loss (TEWL), sebum, elasticity, skin pore, wrinkle, and skin tone (brightness) using non-invasive instruments. Demographic profiles and cosmetic habits were assessed using a

questionnaire. Results: Skin elasticity and tone decreased, and pore size and wrinkle increased with age. Subjects in Suwon (Korean) showed higher hydration level, lower TEWL and lower sebum, less severe wrinkle and brighter skin than those in the 3 cities in China. After adjusting for age and region, using sunscreen everyday, wearing base makeup daily, and using moisturizers improved hydration, TEWL, and elasticity significantly. Conclusion: Women in Suwon (Korea) were found to have a better profile of biophysical parameters than women in the 3 Chinese cities, which might be attributed to cosmetic habits, besides age and climatic factors. The fact that appropriate cosmetic habits are associated with favorable skin biophysical parameters underscores the importance of daily skin care routine in preserving skin functions.

L. Nakamura Silva, M.G. Almeida Leite, P.M.B.G. Maia Campos, **Development of hair care formulations containing *Spirulina platensis* and *Ascophyllum nodosum* extracts**, International Journal of Phytocosmetics and Natural Ingredients 2019;6:13

Introduction: Considering that oily skin and hair is a constant concern, the search for active substances that helps skin and hair oiliness control it is a challenge in the Research & Development of cosmetics. Seaweeds are much known for its use as foods and microalgae are a type of seaweeds that convert solar light in bioactive compounds attractive for commercial interest. *Spirulina platensis* and *Ascophyllum nodosum* are microalgaes present potential to be applied in cosmetic formulations, due to its properties, such as antioxidant activity, skin hydration and skin and hair oiliness control. Thus, the aim of this study was to develop and evaluate the effcacy of hair care formulations containing *Spirulina platensis* and *Ascophyllum nodosum* extract. Methods: Shampoo and conditioner formulations supplement or not (vehicle) with *Spirulina platensis* and *Ascophyllum nodosum* extract were developed. Two hair samples of virgin brown hair with 10 g each were selected to perform the hair characterization tests and were evaluated in terms of Break force, combability and shine. After, 26 study participants were recruited for the clinical effcacy study and the sebum content were evaluated before and after 28 days of use. Results: After 28 days of application of the conditioner containing *Spirulina platensis* and *Ascophyllum nodosum*, a decrease of the combability force for the wet and dry hair sample and an increase of hair shine were observed. Conclusion: The formulation containing microalgae in combination presented benefits to the hair fber, once the obtained results showed an improvement of hair mechanical properties and fibers surface.

C. Songsantiphap, P. Asawanonda, **The Correlations between Follicular Fluorescence and Casual Sebum Levels in Subjects with Normal Skin**, J Clin Aesthet Dermatol, 2019;12(8): p. 24–27

Oliness of the skin usually depends upon the balance of skin hydration and the amount of lipids on the skin. Generally, the skin, especially on the face, is classified into three types: dry, normal, and oily. The facial lipid film consists of two parts: the epidermal lipids from keratinocytes and the complex mixture of lipids known as sebum, produced from the sebaceous glands. With available topical and systemic agents that can alter sebum contents within the follicles, it is important that objective measurements are available to evaluate these changes. The Sebumeter® (Courage+Khazaka electronic GmbH, Köln, Germany) is a device that can directly measure the amount of lipids on the skin's surface. This system relies on a direct photometric reading of lipids collected on a probe of plastic strip that turns transparent in proportion to the content of skin lipids. The values are then automatically calculated into micrograms of lipid per square centimeter for the specific area.

A. Hameed, N. Akhtar, H.M. Shoaib Khan, M.Asrar, **Skin sebum and skin elasticity: Major influencing factors for facial pores**, Journal of Cosmetic Science, Volume 18, Issue 6, December 2019, p. 1968-1974

Objective: The current research work was initiated to develop anti-aging phytocosmetic formulation of phytoantioxidant, to evaluate their effect on human skin, and to link R parameters of skin with skin sebum and aging. Methods: According to COLIPA, 10 healthy male volunteers, aged between 20 and 30 years, having no skin infection or other hypersensitivity disorders, were included in the study. The effect of formulation was evaluated on skin pores and skin elasticity on cheeks for 90 days at regular interval. Various parameters of visible facial pores were assessed using the Skin VisioFace®, Cutometer®, Elastometer®, and Sebumeter®. These data were compared and correlated to examine the possible relationship between visible facial pores, skin elasticity, and skin sebum. Results: From R0 to R9, R0, R5, and R9 were negatively correlated with elasticity while R7 shows a positive correlation with elasticity. R7 parameter of Cutometer® was negatively correlated with facial large pores (r=−0.337, P=0.033). R9 parameter of Cutometer® was significantly positively correlated with facial large pores (r=0.54, P=0.000). Conclusion: We could assume that the enhancement of skin elasticity would be the fundamental strategies in the prevention of size and count of visible facial pores (fine and large) by the application of formulation containing natural compounds.

Y. Song, Y. Pan, H. Wang, Q. Liu, H. Zhao, **Mapping the face of young population in China: Influence of anatomical sites and gender on biophysical properties of facial skin**, Skin Res Technol. 2019;25: p. 333-338

Background: Facial skin exhibits unique biophysical properties, which are influenced by anatomical regions and genders. The aim of this study was to comprehensively assess the regional and gender differences in facial skin biophysical parameters among Chinese population. Materials and Methods: The 12 skin biophysical parameters at four distinct facial skin sites (forehead, cheek, canthus and chin) were measured in a normal population (n = 212) with 42 males and 141 females aged 18-29 years living in Beijing. These parameters consisted of skin hydration, transepidermal water loss, sebum content, erythema/melanin indices, L*a*b* color, skin gloss and elasticity, all quantifying with non-invasive instruments. Results: The results demonstrated that the characteristics of the facial skin were significantly different between the regions and genders. The forehead had weaker skin barrier function but secreted the most sebum content, while the cheek was the driest and brightest region on the face. The canthus was the most hydrated area and the chin displayed higher sebum secretion, darker skin color and less elastic. The females showed more hydrated, less oil, lighter and more elastic facial skin compared with males. Conclusion: This study indicates that the young Chinese facial skin significantly varies with face anatomical regions and differs between genders.

T. Sugawara, N. Nakagawa, N. Shimizu, N. Hirai, Y. Saijo, S. Sakai, **Gender- and age-related differences in facial sebaceous glands in Asian skin, as observed by non-invasive analysis using three dimensional ultrasound microscopy**, Skin Res Technol. 2019;25: p. 347-354

Background: While determining sebaceous gland morphology is useful in the treatment of skin disorders such as acne, a non-invasive assessment method has not been developed. Since age and gender affect sebum level, differences in sebaceous gland morphology according to these factors were investigated. Methods: Facial skin was measured using a high-frequency three-dimensional ultrasound microscope. First, the ultrasound images were compared with skin sections. Next, we assessed sebaceous gland morphology. Images of sebaceous gland in the cheeks of young male, young female and elderly female subjects were obtained using ultrasound microscopy, and *en face* images were processed to measure the sebaceous gland area. Results: In the ultrasound images, sebaceous glands and also thin collagen fibers, which surrounded the glands, could be detected as low-intensity regions. We called them sebaceous units.In young male subjects, the sebaceous unit areas 900-pm beneath the skin surface werelarger thanthoseat 700 pm.Incontrast,depth-dependent differences in sebaceous unit area were not observed in young female subjects, indicating that males had cauliflower-shaped sebaceous glands while young females had somewhat more cylindrical and smaller sebaceous glands than the young males. Regarding age, the areas of sebaceous units at 900 pm were diminished and the depth of maximum area was shallower in elderly female subjects compared to young female subjects. Hence, sebaceous glands are considered to shrink with age. Conclusion: Differences in facial sebaceous unit morphology between genders as well as by age groups could be observed using high-frequency ultrasoundmicroscopy.

S.-I. Jang, J. Han, M.I. Lee, J. Seo, B.-J. Kim, E. Kim, **A study of skin characteristics according to humidity during sleep**, Skin Res Technol. 2019; 25: p. 456-460

Introduction: During sleep, the skin is exposed to various environments for example low or high humidity and temperature. And the average of 7-8 hours of sleeping in those situations can affect skin condition. Therefore, the objective of this study was to determine skin characteristics according to humidity during sleep. Method: Eleven healthy women in their ages of 20s and 30s were controlled. They slept more than 7 hours at lower than 30% relative humidity (RH) environment on the first day and at higher than 70% on the second day. The room temperature was controlled to 22 ± 5°C. Three measurement points were (a) before for sleep (after wash), (b) after 7 hours sleep (morning), and (c) after wash. Skin hydration, sebum secretion, and trans-epidermal water loss (TEWL) were measured. The statistical significance was determined at $P < 0.05$. Result: After 7 hours of sleep in 30% RH condition, skin hydration decreased by 24.23% significantly, but there was no significant difference after sleeping in 70% RH. The sebum level was increased after sleep at 30% RH. The TEWL did not show differences according to the humidity during sleep but significantly increased after facial cleansing in 30% RH sleeping condition. Discussion: In this study, we confirmed that the changes in skin characteristics may be affected by humidity during sleep. When sleeping in dry environment, skin hydration decreases but the amount of sebum increases to compensate for skin dryness. Therefore, this study might suggest how to care the skin before sleep depending on the room humidity.

C. Cho, E. Cho, N. Kim, J. Shin, S. Woo, E. Lee, J. Hwang, J. Ha, **Age-related biophysical changes of the epidermal and dermal skin in Korean women,** Skin Res Technol. 2019; 25: p. 504-511

Introduction: The clinical characteristics of skin were investigated to study the interrelationship and changes in the biophysical properties of the epidermal and dermal layers associated with aging using noninvasive methods. Methods: Our study included 100 healthy women aged between the early 20s and late 60s. Biophysical characteristics of skin such as color (brightness and spots), transparency, wrinkle on crow's feet, elasticity, hydration, sebum content, glossiness, and transepidermal water loss measured under controlled conditions. Results: This study performed in a Korean population demonstrated that aging significantly affects human skin in terms of parameters such as wrinkles, skin color, elasticity, and epidermal hydration. Age-related changes in skin hydration showed varying patterns between the epidermis and dermis. Skin color showed heterogeneous characteristics between the upper and lower epidermal layers associated with aging. Skin elasticity and wrinkles were observed to show and inversely proportional relationship in the early 40s. Conclusions: We confirmed the significant influence of aging on the biophysical properties of skin and determined the distinct age-related biophysical changes in the epidermal and dermal layers of skin using noninvasive method. This study indicates the need for further research to investigate the distinctive age-related changes in characteristics of the epidermal and dermal layers of human skin.

T. Yazdanparast, K. Yazdani, P. Humbert, A. Khatami, S.A. Nasrollahi, H. Zartab, L. Izadi Firouzabadi, A. Firooz, **Biophysical and ultrasonographic changes in lichen planus compared with uninvolved skin**, International Journal of Women's Dermatology 5 (2019), p. 100–104

Background: Lichen planus (LP) is a chronic inflammatory disease of the skin. Currently, noninvasive techniques are used to evaluate biophysical properties of the skin in vivo. Objective: In this study, we aimed to evaluate skin biophysical properties in patients with LP and make a comparison between involved and uninvolved skin to provide a better understanding of the pathogenesis of LP. Methods: The stratum corneum hydration, transepidermal water loss, pH, erythema, melanin, sebum, friction, temperature, elasticity parameters (R0, R2, R5), and thickness and echo-density of the epidermis, dermis, and subepidermal low echogenic band were measured on lesions of classic LP in 21 patients and compared with the average of perilesional and symmetrical uninvolved skin (as control) with a paired t test. Results: Stratum corneum hydration (p = .002), sebum (p = .04), R0 (p = .005), and echo-density of the dermis (p = .005) were significantly lower, but pH (p = .007), melanin content (p b .001), erythema (p b .001), temperature (p = .01), thickness of dermis (p = .02), and subepidermal low echogenic band (p b .001) were significantly higher in LP lesions. Conclusion: An evaluation of its biophysical, biomechanical, and ultrasonographic characteristics showed that the skin is an objective, noninvasive, and quantitative measuring tool that can be used to provide valuable information about skin changes in classic LP.

P. dos Passos Menezes, C. Vilaça Campos Gomes, Y.M. Barbosa Gomes de Carvalho, N. Gomes Lima Santos, V. Matos Andrade, A.M. Santos Oliveira, C. Moreira de Lima, A. Antunes de Souza Araújo, **Evaluation of the Use of Compressive Stockings Impregnated With Hesperetin-Based Nanocapsules in the Healing of Venous Ulcers: A Case Report, Clinical Medicine Insights**: Case Reports, Volume 12, 2019: p. 1–6

Venous ulcers are a more severe complication of chronic venous insufficiency, significantly compromising patient quality of life (QoL). Compressive stockings are still the gold standard treatment method with alternative therapies currently being evaluated. In this perspective, we investigate the influence of compressive stockings impregnated with hesperetin-based nanocapsules in the healing process of venous ulcers. Compressive stockings impregnated with hesperetin-based nanocapsules were applied to a consenting patient for 6 months following all relevant ethical principles for patient studies. The patient was evaluated at baseline (T0), 3 months (T3), and 6 months (T6), using photographic register (healing) probes to measure skin melanin, erythema and hydration parameters, and venous diameters, followed by questionnaires regarding QoL and pain perception. Healing was observed at the 3-month time point and with 91.6% and 93.1% of retraction area in larger ulcers of the right leg and lateral portion of the left leg, respectively. The deepest ulcer in a medial portion of the left leg healed 47.3%. A reduction of all measured skin parameters was observed, indicating a possible hesperetin effect. The scores of QoL and pain were, respectively, in the ranges of 91.6 to 31.2 and 7 to 0. Reduction in venous diameters also indicates healing function. These preliminary findings suggest that compressive stockings impregnated with hesperetin nanocapsules enhance venous ulcer healing. Further clinical trial controlled by placebo, involving a greater number of patients, is required to confirm the findings of this case report.

W. Arshad, H.M.S. Khan, N. Akhtar, M. Nawaz, **Assessment of changes in biophysical parameters**

by dermocosmetic emulgel loaded with Cinnamomum tamala extract: A split-faced and placebo-controlled study, J Cosmet Dermatol. 2019 Nov

Background: Phenolic and flavonoid compounds found in plants alleviate the photo-damaging skin conditions by playing a major role in skin rejuvenation. Aims: The aim of the study was to explore the cosmeceutical effects of *Cinnamomum tamala* extract. Objective: Recent research was aimed to quantify phenols and flavonoids in the natural extract of *C tamala leaves*, to develop its phyto-cosmetic emulgel and to assess effects of emulgel on healthy human skin. Method: Phenols and flavonoids in *C tamala* (CT) extract were quantified by using ELISA assay. Emulgel formulation loaded with 4% *C tamala* (CT emulgel) was developed, and its cosmetic effects were evaluated on the cheeks of 13 healthy female test volunteers by comparing with placebo (base). Facial parameters including melanin, erythema, sebum, and visible facial pores (size and area) were studied by using Mexameter®, Sebumeter®, and VisioFace® at regular interval for 90 days. Results: Total phenolic content and total flavonoids content of *C tamala* leaves extract were found to be 73.08 ± 0.0078 mg GAE/g and 52.63 ± 0.006 mg QE/g CT extract respectively. As compared to placebo (base), CT emulgel was found to be significantly ($P \leq .05$) effective in minimizing skin photo-damaging effects by reducing the levels of melanin, erythema, and sebum and size and count of both fine and large facial pores. Conclusion: *Cinnamomum tamala* leaves extract, being a rich source of phenols and flavonoids minimized the photo-damaging effects by reducing skin melanin, erythema, and excess sebum; improving the skin imperfections by reducing facial pore count and area as assessed by advanced imaging and bioengineering techniques.

L. Xiao, B. Che, H. Lu, J. Li, G. Zhou, Y. E, **Evaluation of a Scalp Essence on Human Scalp Health and Subclinical Conditions Based on Multiple Dimensions Physiological and Biological Approaches,** presentation at the 25th IFSCC Conference Milan, October 2019

Varieties of methods have long been considered to evaluate cosmetic efficacies and health benefits on hair care and scalp care products. In general, scalp health and its conditions are normally determined at the following dimensions including scalp hydration level, scalp oil level, dandruff scale, scalp micro organism conditions, and scalp sensations such as itching, stinging, burning, pain, numb, and other related scalp sensational issues. It is believed that scalp health conditions are influenced by hair cleansing habits, scalp microorganism environment, inflammatory lesions such as psoriasis, and hair follicle health status. On the other hand, scalp health and its conditions are also well documented and determined by Traditional Chinese Medicine (TCM) theories and clinical diagnosis. This is because TCM practitioners consider most of the symptoms such as scalp conditions through a integral grading system as Qi-Blood, of which represents functions of vital energy and nutritional supporting mass respectively, range from balance to stagnation and to deficiency including the deficiency of vital energy, stagnation of the circulation of vital energy, weakness of vital energy, deficiency of blood, stasis of Blood, cold in Blood, heat in Blood, to stagnation of vital energy and Blood stasis, and both Qi-Blood deficiency, etc. Here, we considered to measure hair follicle hydrocortisone level one of the TCM Qi-Blood markers. This presented study focused on evaluation of a commercial scalp essence with an integrated quantification methods on human subject scalp moisture, dandruff, redness, acidity, sensations, hair quality, as well as Qi-Blood based on TCM categorized as Blood balance, stagnation and deficiency.

E. Lee, J.Y. Lee, S. Woo, Y. Noh, J. Shin, P. Ruan, J. Ha, **Variation of Biophysical Parameter with Skin Aging from Distinct Geographic Locations in South Korean and Chinese women**, presentation at the 25th IFSCC Conference Milan, October 2019

There are the differences of skin properties with aging in various ethnic groups. Within the same ethnic group, it is also important to understand that the change of skin with aging as well as skin characteristics be influenced by external environment, such as climatic condition, UV radiation and environmental pollution. The purpose of this study was to investigate the alteration of biophysical parameter with aging in different locations.

A.M. Motta, **A new natural and biomimetic detergent concept,** PERSONAL CARE NORTH AMERICA, October 2019, p. 27-30

It is widely recognized that a toned and well moisturized skin can be maintained only if the superficial layers of the epidermis are able to fully accomplish their barrier function, protecting the deepest and delicate areas of the derma from sensitizing agents and controlling permeability and transpiration of the physiological water present in the intercellular spaces. The skin barrier function is continuously exposed to aggressions. The daily use of soaps and potentially aggressive detergents can alter the hydrolipidic skin film and skin barrier integrity, reducing its impermeabilizing action and favoring skin dehydration. Trans Epidermal Water Loss (TEWL) constitutes one of the main indicator to evaluate skin barrier integrity. The ideal detergent must be able to effectively remove dirt, greasiness and

pollutants, meanwhile respecting the lipidic and protein fractions of the horny layer and the superficial hydrolipidic film.

E. Baldaro, V. Placa, A. L'Hermitte, **Olive leaf extract delivers skin and sensorial benefits**, PERSONAL CARE NORTH AMERICA, October 2019, p. 37-40

The demand for greener cosmetic products has been steadily growing for the past decade. However, modern consumers are posing new challenges to the industry. They want products that make extensive use of natural, vegetable-derived ingredients, but they rightly expect the formulae to be highly effective and esthetically pleasing as well. Emollients play a major role in delivering sensorial experiences as well as moisturization, a skin benefit that is at the very core of product effectiveness. In this article we describe the first 'active emollient' ever produced in the cosmetic industry: Sensolene® Light ET. This emollient has all the characteristics that every eco-conscious cosmetic formulator could desire to deliver superior products that meet the most demanding consumer's expectations.

P. Tarka , K. Gutkowska, A. Nitsch-Osuch, **Assessment of tolerability and acceptability of an alcohol-based hand rub according to a WHO protocol and using apparatus tests**, Antimicrobial Resistance and Infection Control (2019), 8:191

Background: The effectiveness of alcohol-based hand rubs (ABHRs) depends substantially on their acceptability and tolerability. In this study, we assessed the acceptability and tolerability of a new ABHR (product EU 100.2018.02). Methods: Among physicians, nurses, and cosmetologists who used the ABHR for 30 days, we assessed the product's acceptability and tolerability according to a WHO protocol. Additionally, we used instrumental skin tests. Participants assessed the product's color, smell, texture, irritation, drying effect, ease of use, speed of drying, and application, and they gave an overall evaluation. Moreover, they rated the tolerability, i.e. their skin condition, on the following dimensions: intactness, moisture content, sensation, and integrity of the skin. The tolerability was also assessed by an observer as follows: redness, scaliness, fissures, and overall score for the skin condition. Instrumental skin tests included transepidermal water loss, skin hydration, sebum secretion, and percentage of skin affected by discolorations. All assessments were made at baseline (visit 1), and 3–5 days (visit 2) and 30 days (visit 3) later. Results: We enrolled 126 participants (110 [87%] women) with a mean age of 34.3 ± 11.65 years. Sixty-five participants (52%) were healthcare professionals (physicians, nurses), and 61 (48%) were cosmetologists. During visit 2 and visit 3, about 90% of participants gave responses complying with the WHO's benchmark for acceptability and tolerability. Similarly, the ABHR met the WHO criteria for observer-assessed tolerability: on all visits, in more than 95% of participants, the observer gave scores complying with the WHO benchmark. Transepidermal water loss decreased from baseline to visit 3 ($p < 0.001$), whereas skin hydration, sebum secretion, and the percentage of skin affected by discolorations did not change significantly during the study ($p \geq 130$). Conclusions: The EU 100.2018.02 had both high acceptability and tolerability, meeting the WHO criteria. The WHO protocol proved useful in the analysis of acceptability and tolerability of ABHRs.

*D. Khazaka, C. Uhl***, In-house tests complement CRO final product testing,** PERSONAL CARE EUROPE. September 2019

Before a cosmetic product is offered on the market, final tests are obligatory for the manufacturer to prove its safety and to substantiate the various claims on the products, e.g. reduces wrinkles up to 20%, increases skin hydration for 24 h. There are no limits to modern claims. All over the world, contract research organisations (CROs) varying from small laboratories to vast multinational institutes offer their services to the cosmetic manufacturers to perform all kind of tests and compile the final necessary product documentation.

A. Kołodziejczak, A. Wieczorek, H. Rotsztejn, **The assessment of the effects of the combination of microdermabrasion and cavitation peeling in the therapy of seborrhoeic skin with visible symptoms of acne punctate**, J Cosmet Laser Ther. 2019 Aug;21(5): p. 286-290

Objective: The aim of this study was to assess objectively the effects of the combination of corundum microdermabrasion and cavitation peeling in the therapy of seborrheic skin with visible symptoms of acne punctata. Material and methods: The study involved a group of nine women. A series of six treatments with the combination of microdermabrasion and cavitation peeling were performed within facial skin at 10–14 days intervals. Corneometric measurements examining skin hydration level and sebumetric measurements analyzing skin sebum level were made before the series of treatments and after second, fourth and sixth procedure in five facial areas. Clinical assessment of the efficacy of the therapy was performed on the basis of photographic documentation (Fotomedicus). Anonymous questionnaires were used in order to evaluate patients' satisfaction rate. Results: Statistically significant improvement in skin sebum level was observed in all examined areas (forehead $p = 0.002$; nose p =

0.001, chin p = 0.01, left cheek p = 0.009, right cheek p = 0.007). In case of skin hydration, significant improvement was found only in the area of chin (p = 0.03). 78% of participants estimated that the improvement was in the range of 55–70%, while 22% of participants of 75–100%. The reduction in the amount and visibility of comedones and pimples were demonstrated on the basis of questionnaire and photographic documentation. Conclusions: Combined microdermabrasion and cavitation peeling treatments improve the condition of seborrheic skin.

E.J. Song, J.A. Lee, J.J. Park, H.J. Kim, N.S. Kim, K.S. Byun, G.S. Choi, T.K. Moon, **A study on seasonal variation of skin parameters in Korean males**, Int J Cosmet Sci., 2015 Feb;37(1): p. 92-97

Objective: The physiological characteristics of the skin are varied greatly, depending on gender, age, region and race, and many dermatologic researches have been performed through various research methods. This study aimed to examine how Korean men's skin conditions were influenced by temperature or humidity changes caused by seasonal rotations. Methods: A total of 100 healthy Korean men, age range 20-59 years, participated in the study for both summer and winter. We compared on the characteristics of skin between summer and winter. The skin hydration, skin pH and TEWL were evaluated on the forehead, cheek and forearm. The skin sebum content of the glabella, nasal ala and cheek was measured using Sebumeter(®) (SM810, Courage+Khazaka, Germany). Cutometer(®) (MPA 580 Courage+Khazaka, Germany) the elasticity was measured by on the cheeks, and PRIMOS lite(®) (Phase shift Rapid in vivo Measurement of Skin, GFMesstechnik GmbH, Germany) was used to evaluate wrinkles on crow's feet. Lastly, in addition, the skin pore of the face was measured using the Janus(®) (PSI, Korea) which is a facial analysis system. Results: The results were as follows: the comparison of hydration in summer and winter shows significant differences in their forehead, cheeks and forearm. The pH values of the skin surface were generally higher in winter, and significantly different on each site, and the sebum content was higher in summer than in winter. As a result of the pore measurement, the summer showed more pores compared to the winter, and there was a statistically significant difference in skin pores between summer and winter. The sensitivity measured by stinging test increases significantly more in winter than in summer. However, there were no seasonal differences in wrinkles and skin brightness. Conclusion: The skin surface pH, TEWL, sebum content, hydration, elasticity, wrinkles, skin pore and skin sensitivity vary with seasons and body regions in Korean men.

C. Uhl, **Claim support for Microbiome Skin Care**, happi, July 2019

Since the dawn of mankind, humans have struggled to understand why they were struck by disease. Many theories have been established, most of them discarded now. In the first century BC, Roman medical author Cornelius Aulus Celsus mentioned the term"virus,"the Latin term for"poison."He used it to describe the phlegm that transmits rabies. Until the 17th Century, this term was used for all infectious diseases.

H. Dobrev, **Value of non-invasive bioengineering investigations of the human skin in vivo,** Dissertation in Dermatology and Venerology at the University of Plodiv, 2019, Bulgaria

The skin is the largest organ of the human body. It has a surface area of about 2 m^2 and a weight of about 16% of the body weight. Skin is a great visual field. Most of the changes that occur in it are visible and accessible to dermatologists. For centuries, the dermatologist's eyes and fingers have been his main diagnostic tools. Old physicians are known to describe the rash elements with great love, diligence and methodicality, especially with regard to morphological details. Today, this descriptive phase in the evolution of dermatology has lost its dominance. According to Prof. J. Serup, "*The dermatologist's eyes and hands are already becoming archaic diagnostic tools.*" With the introduction of modern skin bioengineering methods, there has been a transition from the "visible" to the "invisible". From the "visual" field, dermatology is increasingly becoming an "instrumental" field. The advantage of the new research methods created is that they enable the detection of invisible changes in skin functions, as well as their objective and quantitative measurement. This dissertation is devoted to the new methods of skin functional diagnostics. It illustrates the practical application of some of them in the field of dermatology and cosmetic science based on the experience of the sector of "Functional diagnostics of the skin" at the Department of Dermatology and Venereology, University Hospital "St. George", Plovdiv, Bulgaria. The literature review part provides an overview of current bioengineering methods for functional skin diagnostics. The apparatus used to carry out the present work is described in detail. Additionally, two little-known aspects of skin bioengineering research are presented - protocol and research ethics. Data on Bulgarian experience in the field of skin functional diagnostics have also been reported.

M. Ogita, K. Sekiguchi, K. Akahane, R. Ito, C. Haga, S. Arai, Y. Ishida, J. Kawamori, **Damage to sebaceous gland and the efficacy of moisturizer after whole breast radiotherapy: a randomized controlled trial**, BMC Cancer (2019) 19:125

Background: We conducted a randomized trial to evaluate the efficacy of heparinoid moisturization for radiation dermatitis. We report the time-course of sebum content after whole breast radiotherapy (WBRT) and the efficacy of heparinoid moisturizer. Methods: Patients receiving adjuvant breast RT were randomly assigned into three groups; prophylaxis, post-WBRT and control groups. Patients used moisturizer on the irradiated breast from the beginning of RT in the prophylaxis group, 2 weeks post-RT in the post-WBRT group, and no moisturizer in the control group. Sebum content of the irradiated and non-irradiated breast was measured to assess sebaceous gland damage. Sebum composition was also analyzed. Results: A total of 76 patients were analyzed; 30 in the post-WBRT group, 32 in the control group, 14 in the prophylaxis group. The sebum content in the irradiated breast significantly decreased after WBRT in the post-WBRT and control groups. The decrease was sustained in the control group. In the non-irradiated breast, sebum content also decreased after WBRT in the post-WBRT and control groups. After moisturizer application, sebum content by sebumeter returned to pre-RT level in the post-WBRT group, while the decrease was sustained in the control group. Sebum content measured by evaporative light scattering detector and sebumeter was similar in the control group, but the dissociation was observed after moisturizer application in the post-WBRT group. The proportion of wax esters decreased in the irradiated breast after WBRT. Conclusions: Radiotherapy significantly reduced sebum content in both irradiated and non-irradiated breast, indicating that RT caused quantifiably persistent sebaceous gland damage in irradiated sites and the surrounding tissue. Combined with the results from our previous study, heparinoid moisturizer treatment effectively prevents waterloss by retaining oil contents on the skin surface.

R. Voegeli, J. Gierschendorf, B. Summers, A.V. Rawlings, **Facial skin mapping: from single point bio-instrumental evaluation to continuous visualization of skin hydration, barrier function, skin surface pH, and sebum in different ethnic skin types**, International Journal of Cosmetic Science, 2019, p. 1–14

Dry skin is one of the most important concerns of consumers worldwide. Despite huge efforts over several decades, the personal care industry still does not offer a perfect solution to satisfy the unmet needs of consumers for moisturising treatments in different ethnic groups. The paucity of data for the underlying cellular and biochemical problems in, and the effects of moisturisers on photodamaged facial skin may partly explain this. Mainly, single point measurements are used to understand the effects of products on skin physiology even on surrogate skin sites such as the non-photodamaged volar forearm. Some groups have developed discontinuous facial maps of skin biophysical properties, however, in 2014 a continuous facial analysis of bio-instrumental evaluations was developed using a heat map approach. These maps enabled a continuous visualization of features that not only revealed an unexpected complexity of facial skin but also indicated that use of surrogate skin sites for facial skin is inappropriate. We have demonstrated that remarkable gradients of skin hydration, TEWL, skin surface pH and sebum exist within short distances across the face and the gradients are distinctive among different ethnic groups. In addition, these studies have demonstrated that darkly-pigmented individuals do not necessarily have a better skin barrier function than their less-pigmented counterparts and that Caucasians have a lower facial skin surface pH compared with more pigmented subjects. Overall, there are no correlations between capacitance, TEWL and skin surface pH including individual topology angle values. Novel 3D camera approaches have also been used to facilitate a more precise assignment of measurement sites and visualisation. The 3D facial colour mappings illustrated precisely the local moisturising effects of a moisturising cream. There were subtle ethnic differences in efficacy that may be related to underlying skin biochemistry and/ or ethnic differences in product application. A placebo-controlled study using conductance measurements in Chinese subjects is also reported. Finally, a new whole face statistical approach has been taken to prove differences in skin parameters but also of moisturiser treatment that adds further to our understanding of the ethnic differences in skin physiology and product application. This paper reviews the background of the development and application of this methodology.

S.E. Eskandari, A. Firooz, M. Nassiri-Kashani, M.R. Jaafari, A. Javadi, A. Miramin Mohammadi, A. Khamesipour, **Safety Evaluation of Topical Application of Nano-Liposomal Form of Amphotericin B (SinaAmpholeish) on Healthy Volunteers: Phase I Clinical Trial**, Iran J Parasitol: Vol. 14, No. 2, Apr-Jun 2019, p.197-203

Background: We aimed to evaluate the safety of SinaAmpholeish in a doubleblind, randomized, phase 1 clinical trial in healthy human volunteers. Methods: The study was carried out in DermaLab of Center for Research and Training in Skin Diseases and Leprosy, Tehran University of Medical Sciences,

Tehran, Iran in 2012. A topical Nano-liposomal formulation of 0.4% Amphotericin B was developed against Leishmania under trade name of SinaAmpholeish. In this randomized, double-blind, right-left, comparative, phase I clinical trial, in 2 steps; 7 and 20 healthy volunteers were recruited and applied SinaAmpholeish on the right and its vehicle on the left volar side of forearm, twice a day for one week or 3 times a day for two weeks. Seven biophysical skin parameters were measured in standard conditions before and 2 wk after application. Results: There was no adverse effect when SinaAmpholeish and its vehicle were used twice a day for seven days. However, when were used 3 times a day for two weeks, both SinaAmpholeish and its vehicle induced severe local skin reactions in 2 volunteers leading to discontinuation of application. Mild and temporary local reactions were observed in about half of the application sides and there was no significant difference between SinaAmpholeish and its vehicle. Conclusion: The new formulation is safe and worth to be tested in further phase 2 clinical trial and since there was no adverse effect with twice a day application it was decided to use SinaAmpholeish twice a day in phase 2 clinical trial.

X. Lin, A. Nomachi, J. Yang, **Rise to the top - Decylene Glycol for Scalp Health and Care**, Cosmetics & Toiletries, June 2019, p. 64-70

Scalp care products have, in the past, primarily focused on controlling dandruff and itching. However, a recent trend is moving toward scalp health maintenance andthe prevention of inflammation.

N. Weber, K. Schwabe, C.M. Schempp, U. Wölfle, **Effect of a botanical cleansing lotion on skin sebum and erythema of the face: A randomized controlled blinded half-side comparison**, J Cosmet Dermatol., 2019 Jun;18(3): p. 821-826

Background: Elevated levels of skin sebum are associated with the growth of Propionibacterium acnes. Intensive degreasing of the skin reduces Propionibacterium acnes but also may cause skin irritation. Aims: We assessed the degreasing effect and skin tolerability of a botanical face cleanser with hops and willow bark extract and disodium cocoyl glutamate as mild cleansing agent compared to a standard face cleanser with sodium laureth sulfate (SLES). Materials and Methods: A total of 21 healthy volunteers with normal to oily skin were enrolled in this study. Both cleansers were applied twice a day on the left or right side of the forehead for 15 days in a standardized manner. Bioengineering measurements were performed on day 8 and 15 and on day 17 after an application break of 48 hours. The sebum level was determined using a Sebumeter®, and skin redness was measured using a Mexameter®. Results: The botanical face cleanser significantly reduced the sebum level ($P < .01$) in the test area on day 17. The SLES containing cleanser showed a statistically relevant degreasing effect already on day 15, but after the application break the sebum level increased again on day 17. None of the cleansers caused skin irritation as determined by skin redness measurements. Conclusions: In contrast to the SLES containing cleanser, the botanical skin cleanser with hops and willow bark extract had a continuous degreasing effect without reactive seborrhoe after the treatment break. Skin cleansing without SLES might be advantageous for sensitive skin.

P. Suchonwanit, K. Triyangkulsri, M. Ploydaeng, K. Leerunyakul, **Assessing Biophysical and Physiological Profiles of Scalp Seborrheic Dermatitis in the Thai Population**, BioMed Research International, Volume 2019

Background: Scalp seborrheic dermatitis (SD) is a common and chronic inflammatory skin disease which tends to recur over time. By measuring biophysical properties of the stratum corneum, many studies report abnormal biophysical profiles and their association in various dermatologic diseases. The aim of the study is to analyze the biophysical properties and skin barrier defects of scalp SD compared to healthy controls. Materials and Methods: Tis study is a cross-sectional study assessing the correlation of various biophysical and physiological profiles in scalp SD. Forty-two Tai participants with scalp SD were enrolled in the study and 40 healthy participants were also enrolled as the control group. Both SD and control group were subjected to a one-time biophysical and physiological properties' measurement of transepidermal water loss (TEWL), stratum corneum hydration (SCH), skin surface pH, skin surface lipid, and skin roughness. Results: The mean TEWL of lesional skin of SD cases were significantly higher than those of control group ($P<0.05$). Relating to high mean TEWL, the mean SCH was found to be significantly lower in SD cases ($P<0.05$). Skin surface lipid was also found to be significantly higher in SD group ($P<0.05$). However, there were no differences in skin surface pH ($P=0.104$) and roughness ($P=0.308$) between the two groups. Pairwise comparison of each subgroup found that moderate and severe SD demonstrated significantly higher mean skin surface lipid than that of control group ($P<0.05$). Conclusion: Scalp SD may be associated with seborrhea in Tai population. Monitoring of SCH, TEWL, and skin surface lipid could be helpful in assessing severity and evaluating the treatment outcome in patients with scalp SD.

D.-M. Ding, Y. Tu, M.-Q. Man, W.-J. Wu, F.-Y. Lu, X. Li, Y. Li, J.-T. Yang, Y.-M. Jin, C.-Y. Yang, L. He, **Association between lactic acid sting test scores, self-assessed sensitive skin scores and biophysical properties in Chinese females**, International Journal of Cosmetic Science, 2019, 41, p. 398–404

Background: Lactic acid sting test (LAST) is a classical method to identify sensitive skin. However, some subjects with self-perceived sensitive skin are negative for LAST. Objective: To determine whether LAST scores are associated with specific phenotype of sensitive skin. METHODS: A total of 292 subjects with self-perceived sensitive skin were enrolled in this study. The Sensitive Scale was used to evaluate the severity of burning, stinging, itching, tautness, erythema and scaling based on 0–10 scale scores. In addition to the assessment of LAST scores, epidermal biophysical properties were measured using an MPA system. Results: The Sensitive Scale scores of stinging, itching, tautness and scaling were significantly different between the LAST-positive and -negative groups. However, burning and erythema scores did not differ between the LAST-positive and -negative groups. LAST scores were positively correlated with the Sensitive Scale scores for stinging, itching, tautness and scaling, but not for burning and erythema scores. Moreover, LAST scores negatively correlated with stratum corneum hydration, but positively with transepidermal water loss (TEWL) rates. CONCLUSIONS: Lactic acid sting test scores positively correlated with TEWL rates. LAST scores could be used to identify subjects with sensitive skin characterized mainly by stinging and itching, but not those mainly by burning and erythema.

E. Kotroni, E. Simirioti, S. Kikionis, I. Sfiniadakis, A. Siamidi, V. Karalis, A. Vitsos, M. Vlachou, E. Ioannou, V. Roussis, M. Rallis, **In Vivo Evaluation of the Anti-Inflammatory Activity of Electrospun Micro/Nanofibrous Patches Loaded with *Pinus halepensis* Bark Extract on Hairless Mice Skin**,* Materials 2019, 12

Skin inflammation is the most common symptom in dermatological diseases. It is usually treated by topically applied products, such as creams, gels and lotions. Skin dressings offer a promising alternative as they are endowed with more controlled administration conditions. In this study, the anti-inflammatory activity of electrospun alginate micro/nanofibrous dressings loaded with the aqueous extract of *Pinus halepensis* bark (PHBE) was evaluated in vivo in mice. The upper back skin of SKH-1 female hairless mice was exposed to a single dose of ultraviolet radiation (3 MEDs) and the inflamed area was treated daily by the direct application of a nanofibrous patch. The condition of the skin was evaluated primarily on the basis of clinical observation, photo-documentation and histopathological assessment, while measurements of the erythema, hydration, transepidermal water loss (TEWL) and sebum production were also taken into account. The results showed that the topical application of alginate micro/nanofibrous dressings loaded with PHBE on UV-inflamed skin significantly attenuated inflammation damage, reducing the healing period. Increase of the loading dose of PHBE resulted in a proportional reduction of the extent, the density and the depth of skin inflammation. With the steadily increasing interest of the skin dressing industry towards nanofibrous matrices, electrospun nonwovens could serve as ideal candidates for the development ofmultifunctional anti-inflammatory care systems.

I. Montaño, **Invisible Yet Indispensable, the Skin Microbiota Needs to be Properly Supported**, SOFW Journal 09/19, Volume 145

Billions of microorganisms colonize the human skin at various sites and constitute the skin microbiota. They form complex com munities that function together with the host immune system to defend against pathogens and to maintain skin health. Sincehaving a well-balanced cutaneous microflora is important for a healthy and beautiful skin, protecting its balance and its recovery represents a winning strategy for skin care products. The active ingredient Black BeeOme™ that results from the fermentation of honey from the rare wild dark bee *Apis mellifera mellifera* with the bacteria Zymomonas mobilis, has been designed to harmonize the skin microflora after stress to ensure a healthy and pure skin. The fermentation eliminates the basic sugars glucose, fructose and sucrose in the honey. As a result, the carbon source for unwanted bacterial growth on the skin is removed. On the other hand, the ferment of Zymomonas mobilis contains factors that may help to control the growth of microorganisms on the skin. Black BeeOme™ has been shown to effciently exert its prebiotic effect to restore the healthy skin's natural microbiota following daily stress.

C. Uhl, **Efficacy testing of microbiome skin care**, PERSONAL CARE EUROPE, April 2019, p. 41-45, PERSONAL CARE ASIA, May 2019, p. 51-55, косметолог 2 [94] 2019 (in Ukranian), Cosmetics & Toiletries Brasil, Vol. 31, Mai-June, 2019, p. 22-27 (in Portuguese)

For years now, we have accepted the idea that we can nourish our intestinal tract with dedicated bacterial ingredients from food supplements and thereby improve our general health. Books written on this subject have become bestsellers. But why should we focus only on our intestinal tract? There are

so many different microbial communities that can be found on and inside our body. Especially the colonization of the skin being our largest organ, tangible to the hands, visible to the eye, and in constant contact with the outside environment has moved to the front of cosmetic research. The idea of being a complex ecosystem is adding to the existing trend of personalised cosmetics, and will confirm the customer in their feeling of uniqueness.

В течение многих лет мы принимали идею о том, что можем обогащать наш кишечный тракт специальными бактериальными ингредиентами из пищевых добавок и тем самым улучшать общее состояние здоровья. Книги, написанные на эту тему, стали бестселлерами. Но можем ли мы сосредотачиваться только на нашем кишечном тракте?

O microbioma cutâneo é a população de microrganismos que habita a pele. Neste trabalho, o autor apresenta uma breve descrição da importância da atividade do microbioma e dos meios analíticos instrumentais para medir a eficácia de produtos cosméticos de interesse do microbioma cutâneo.

H. Azaryan, **Comparative Aanalysis of the Effiencency of the Skin Functional Statement Correction Methodas in Women with 3rd Degree of Photo Aging**, Georgian Med News, 2019 May;(290): p. 100-107

The purpose of this study was to conduct a comparative analysis of the effectiveness of isolated and combined use of intradermal injections of bioreparant (hyaluronic acid modified with vitamin C, glutathione and cysteine) and platelet-rich autologous plasma on functional indicators of the face skin of women with signs of 3-rd degree of photoaging. In this study, 120 women with 3-rd degree of photoaging were examined (mean age 34.5±1.54) and divided into 3 groups in accordance with the applied therapy method (isolated and combined use of plasma therapy and bio reparation). The study of the functional parameters of the skin, including corneometry (determination of the degree of epidermal hydration), sebometry (assessment of the sebum regulating function of the epidermis), cutometry (determination of the deformation and elastic properties of the skin), TEWL (determination of the transepidermal water loss level), mexametry (assessment of skin pigmentation) and pH-metry (assessment of the skin acid-base balance) was performed in all examined patients. The obtained results testify to various shifts in functional parameters, caused by the use of various therapeutic approaches. A comparative analysis of the data obtained has provided a basis for concluding that efficacy of the autologous plasma and modified hyaluronic acid combined implementation is significantly higher compared to the isolated application of these methods.

E. Guaitolini, A. Cavezzi, S. Cocchi, R. Colucci, S.U. Urso, V. Quinzi, **Randomized, Placebo-controlled Study of a Nutraceutical Based on Hyaluronic Acid, L-carnosine, and Methylsulfonylmethane in Facial Skin Aesthetics and Well-being**, JCAD Journal of Clinical and Aesthetic Dermatology, April 2019, Volume 12, Number 4

Objective: The purpose of this study was to evaluate the e- cacy and safety of a multicomponent nutraceutical (MCN) on facial skin. Methods: A randomized, placebo-controlled, single-blind trial was conducted involving two groups of female subjects a ected by facial skin photoaging. For two months, volunteers took a daily dose of MCN containing 200mg of hyaluronic acid, 500mg of L-carnosine, and 400mg of methylsulfonylmethane, or a placebo. At Day 0 (T0) and Day 60 (T60), face skin hydration, elasticity, and sebometry were measured with an instrumental skin tester, and digital images of facial wrinkles were scored. A subject-based quali-quantitative assessment evaluating satisfaction/quality of life was performed at T60. Results: The MCN and placebo groups each included 25 volunteers (mean ages: 49.3 and 47.8 years, respectively). After 60 days of MCN intake, glabella skin hydration and elasticity improved by 15.2 percent and 22.6 percent, respectively ($p=0.03$; $p=0.004$), glabella sebaceous secretion decreased by 24.2 percent ($p=0.01$), skin hydration and elasticity of the periocular area increased by 12.6 percent and 15.9 percent, respectively, and skin hydration and elasticity of the oral commissural area increased by 17.6 percent and 16 percent, respectively ($p<0.001$). No significant variation occurred in the placebo group. Wrinkle depth improved slightly in the MCN group ($p=0.043$ in the periocular area) but not in the placebo group. A slight improvement in joint pain and mucosae/hair appearance was reported in the questionnaire in the MCN group only. Conclusions: Our results suggest that MCN is safe and effective for facial skin aesthetics and well-being.

D. Blasi, C Paratore, **A bright 'star' in the anti-acne universe**, PERSONAL CARE EUROPE, April 2019, p. 79-81

Among all the dermatoses, *Acne vulgaris* is the most common multifactorial disease in patients between 11 and 30 years old, as it affects up to 80% of people belonging to this age segment. Moreover,

due to its high diffusion in the population and to its significant morbidity, it causes both physically and psychologically side-effects on patients, in terms of scarring, depression, anxiety and low self-esteem.

S. Lim, J. Shin, Y. Cho, K.-P. Kim, **Dietary Patterns Associated with Sebum Content, Skin Hydration and pH, and Their Sex-Dependent Differences in Healthy Korean Adults**, Nutrients 2019, 11, 619

Sebum content, skin hydration and acidic skin pH are major factors in maintaining skin health. Various nutrients are reported to influence skin health, but the effect of dietary patterns (DPs) on skin health is unclear. In this study, we considered the DPs associated with these three skin health parameters in 84 healthy adults aged 19–37 years. Dietary intake was assessed using a food frequency questionnaire (FFQ) and skin health parameters were determined on the forehead of each subject. Among the four DPs extracted from the FFQ, DP2, characterized by a high intake of cereals, potatoes and starch, saccharides and fish and shellfish, was negatively associated with skin hydration. DP3, characterized by a high intake of potatoes and starch, seeds and nuts, fruits and eggs, was positively associated with acidic skin pH only before adjusting for potential confounders. On the other hand, DP4, characterized by a low intake of beans, and a high intake of meats, dairy products and beverages and alcohol, was negatively associated with acidic skin pH and positively associated with sebum content. The data stratified by sex revealed a negative association between skin hydration and DP2 in males and a negative association between sebum content and DP3 and a positive association between sebum content and DP4 in females. In conclusion, we demonstrated that specific DPs were associated with sebum content, skin hydration and pH in healthy Korean adults and that those associations were affected by sex.

H. Lee, Y.-P. Ng, U. Rho-Wan Chong, K.-H. Chong, F.Y. Yeo, H Teah, S.-Y. Tan, Y.-F. Chen, N. Abd-Aziz, K.-L. Ng, M.-S. Toh, **From Molecular Characterization to Clinical Validation: unveiling- New Science of Skin Glycation and the Skin Lightening Effect of Dimethylmethoxy Chromanol Mediated via an Anti-Glycation Mechanism**, IFSCC Magazine 3, 2019

Skin glycation is a nonenzymatic reaction of a sugar molecule and the functional group of a protein to form an advanced glycation end product, which is oneyof the considerable factors involved in accelerating skin aging intrinsically The aim of this study was to develop an in vitro skin glycation model to characterize the impact of glycation stress on skin physiology and further to be used for identifying potent antiglycation molecules. As a result, a new skin model based on the presence of Ne-(carboxylmethy)lysine as glycation biomarker in glyoxal-challenged human reconstituted skin was developed. From microarray profiling, skin glycation was found to affect multiple skin biological activities, including epidermis keratinization, skin lipid degradation, dermis extracellular matrix and hemidesmosome disassembly, the trigger point for skin oxidative stress and inflammatory responses. Intriguingly, skin glycation was shown to be highly correlated with skin darkening without involvement of melanocyte activity. We could show that dimethylmethoxy chromanol demonstrated potent antiglycation activity even through it was known for its antioxidant property. However, it is highly reactiveand prone tobedegraded in formulations. Therefore, a nanoemulsion formulation was designed to improve its stability and its topical anti-glycation activity was validated subsequently. Further, a clinical trial with a dimethylmethoxy chromanol encapsulated nanoemulsion demonstrated significant improvement in skin complexion (ITA°), reduction of skin redness and antihyperpigmentation efficacy. In summary, a profound understanding of skin glycation stress at the molecular level was established and it is also highly associated with skin darkening. In addition, dimethylmethoxy chromanol could be used as the lead molecule in cosmeceutical applications to further improve overall skin complexion and hyperpigmentation via its antiglycation effects.

S.A. Nasrollahi, M.S. Nematzadeh, A. Samadi, A. Ayatollahi, S. Yadangi, C. Abels, A. Firooz, **Evaluation of the safety and efficacy of a triple combination cream (hydroquinone, tretinoin, and fluocinolone) for treatment of melasma in Middle Eastern skin**, Clinical, Cosmetic and Investigational Dermatology 2019:12, p. 437–444

Background: Melasma is the most common pigmentary skin disorder, especially in females and those with darker complexion. The current study evaluated the safety and efficacy of a triple combination cream containing hydroquinone 4%+tretinoin 0.05%+fluocinolone acetonide 0.01% (Januluma® cream produced by Janus Pharmaceutical Co, Tehran, Iran) in the treatment of melasma. Patients and methods: Twenty-two female volunteers (mean±standard deviation of age: 39.20±4.16 years) who fulfilled the eligibility criteria participated in this study after signing the informed consent. They were requested to apply the Januluma® cream every night for 8 weeks. Modified melasma area and severity index (mMASI), skin lightness (L value), and severity of pigmentation (E value) by Visio Face, and skin biophysical parameters including pH, melanin index, erythema index, sebum, hydration, trans epidermal water loss, thickness and density of epidermis, and dermis (using 22 MHz ultrasonography) were

measured before and 4 and 8 weeks after treatment. Also patients' satisfaction was assessed 4 and 8 weeks after treatment using visual analog score. Results: mMASI decreased significantly from 3.37 to 2.60 at week 4, and to 2.40 at week 8 (P-values=0.00 and 0.01, respectively). Also, E and L values improved significantly after 8 weeks of treatment (P=0.01 and 0.00, respectively). Skin melanin index decreased from 237.49 AU to 196.30 AU at week 8 (P=0.01). Also echo density of dermis increased significantly after 8 weeks of treatment (P=0.029). Almost all participants experienced some degrees of pruritus, scaling, and erythema, esspecially during the first month of application, which were generally mild and tolerable. The mean satisfaction of patients with the treatment was 6.77. Conclusion: The triple combination formula was reasonably safe and effective for treatment of melasma in Middle Eastern patients.

T. Yazdanparast, H. Hassanzadeh, S.A. Nasrollah, S.M. Seyedmehdi, H. Jamaati, A. Naimian, M. Karimi, R. Roozbahani, A. Firooz, **Cigarettes Smoking and Skin: A Comparison Study of the Biophysical Properties of Skin in Smokers and Non-Smokers**, Tanaffos 2019; 18(2): 163-168

Background: Tobacco smoke is toxic for cells and could be a damaging factor to skin. The purpose of this study was to compare the biophysical properties of skin in smokers and non-smokers. Materials and Methods: The study population consisted of 28 current smokers and 24 non-smokers. The hydration of the stratum corneum, trans epidermal water loss, pH, erythema, melanin content, sebum, friction and elasticity parameters (R0, R2, R5) of skin, epidermis and dermis thickness and echodensity were measured on middle forehead, right cheek and right inner arm of participants. Also volume, surface area and depth of right nasolabial folds were measured. The mean of these values in smokers were compared with nonsmokers by independent sample T- test. Results: Gross elasticity was significantly lower in smokers on forehead (p= 0.048). Thickness of epidermis was higher in smokers in all measured sites but the differences were not statistically significant. Thickness of dermis was higher in smokers in all measured sites too, but only the difference on cheek was statistically significant (p= 0.009). Density of epidermis was lower in smokers in all measured sites, but only the difference on forehead was statistically significant (p= 0.019). Density of dermis was lower in smokers in all measured sites, but only the difference on arm was statistically significant (p= 0.028). Volume and area of nasolabial folds were higher in smokers, but only the difference of area was statistically significant (p = 0.031). Conclusion: Tobacco smoking could affect the biophysical parameters of skin, especially thickness and density of dermis and epidermis and nasolabial folds.

N. Singh, D. Deflorio, **Taking the rough with the smooth: aging effects on tactile surface texture perception**, University of Birmingham, UK

Over the course of the day most of us handle different items. We grasp them and also run our fingers over the surface. Our current project is a collaboration of expertise from academia and industry to understand how information from multiple sources and senses are combined in surface texture perception, and how does it changes with age. The current project is a collaboration of University of Birmingham, University of Nottingham and Proctor & Gamble Brussels Innovation Center.

M. Augustin, D. Wilsmann-Theis, A. Körber, M. Kerscher, G. Itschert, M. Dippel, P. Staubach, **Positionspapier: Diagnostik und Therapie der Xerosis cutis / Diagnosis and treatment of xerosis cutis – a position paper**, Positionspapier / Position Paper, JDD 2018

Hintergrund und Rationale: Die Xerosis cutis (Synonym: Xerodermie, trockene Haut, hydrolipidarme Haut) ist mit > 10 Millionen Betroffenen nicht nur eine der häufigsten dermatologischen Diagnosen in Deutschland, sondern auch Leitsymptom vieler dermatologischer, internistischer und neurologischer Erkrankungen. Trotz der medizinischen Relevanz der topischen Basistherapie für die Xerosis cutis gibt es in Deutschland für ihr Management bisher keinen wissenschaftlich belegten Diagnostikund Therapiealgorithmus. Ziel: Dieses Positionspapier vermittelt Ärzten fachübergreifend einen an individuellen Symptomen orientierten, praxisnahen Leitfaden für die Prävention, Diagnostik und Therapie der Xerosis cutis. Methodik: Im Rahmen eines strukturierten Entscheidungsprozesses wurden von erfahrenen dermatologischen Experten zunächst praxisrelevante Fragestellungen definiert und systematisch aufgearbeitet. Auf der Basis von Evidenz und Expertenkonsens wurden daraus diagnostische und therapeutische Algorithmen mit Empfehlungen für die Praxis entwickelt und konsentiert. Ergebnis: Die Xerosis cutis kann grundsätzlich klinisch diagnostiziert werden. Auslöser und/oder Grunderkrankungen müssen abgeklärt und vermieden bzw. spezifisch behandelt werden. Bei der Wahl der geeigneten Basistherapie ist es wichtig, dass nicht nur die Hauthydratation verbessert, sondern auch die Barrierefunktion der Haut wiederhergestellt wird. Sie sollte daher aus einer Kombination von rückfeuchtenden und rückfettenden Inhaltsstoffen bestehen. Je trockener die Haut, desto lipidhaltiger sollte die Hautpflege sein (bevorzugt Wasser-in-Öl-Formulierungen). Die individuelle Auswahl der Inhaltsstoffe orientiert sich nach kausaler Prüfung an den Symptomen Schuppung (v.a. Urea), Fissuren/Rhagaden (v.a. Urea oder Dexpanthenol), Rötung (v.a. Licochalcone A) und Pruritus

(v.a. Polidocanol), sowie an der Lokalisation und dem Alter der Patienten. Inhaltsstoffe bzw. Inhaltsstoffkombinationen mit guter Studienevidenz sind zu bevorzugen. Die mit Abstand beste Evidenz bei der Xerosis cutis weist Urea auf, dessen Wirksamkeit in Kombination mit anderen natürlichen Feuchthalte-Komponenten und Ceramiden noch gesteigert werden kann. Zur Arbeitserleichterung am Patienten und zum besseren Erlernen wurde das Xerosimeter entwickelt, das die praktische Umsetzung der Diagnostik und Verlaufskontrolle, eine Klassifikation der Inhaltsstoffe und einen strukturierten Therapiealgorithmus enthält. Schlussfolgerung: Das hier vorgeschlagene strukturierte symptom- und evidenzorientierte Vorgehen mit Diagnostik- und Behandlungspfad soll für die Prävention und frühzeitige Behandlung der Xerosis cutis sensibilisieren. Damit können die Lebensqualität verbessert und Folgeerkrankungen verhindert werden.

Background and rationale: Xerosis cutis (also referred to as xeroderma, dry skin, asteatosis) affects more than 10 million individuals in Germany. It is among the most common dermatological diagnoses and a cardinal symptom of many dermatological, internal and neurological diseases. Even though it has been established that basic skin care plays a significant role in the management of patients with xerosis cutis, there are as yet no evidence-based algorithms for diagnosis and treatment. Objective: The present position paper provides physicians across all specialties with a practical, symptom-based approach to the prevention, diagnosis and treatment of xerosis cutis. Methods: Within a structured decision-making process, a panel of experienced dermatologists first defined questions relevant to everyday clinical practice, which were then addressed by a systematic review of the literature. Based on the evidence available as well as expert consensus, diagnostic and treatment algorithms were subsequently developed and agreed upon. Results: Xerosis cutis is generally diagnosed on clinical grounds. Possible trigger factors must be avoided, and comorbidities should be adequately and specifically treated. Suitable skin care products should be chosen with a view to improving skin hydration and restoring its barrier function. They should therefore contain both rehydrating and lipid-replenishing components. The “drier” the skin appears, the greater the lipid content should be (preferably using water-in-oil formulations). The choice of ingredients is based on a patient’s individual symptoms, such as scaling (e.g., urea), fissures/rhagades (e.g., urea or dexpanthenol), erythema (e.g., licochalcone A) and pruritus (e.g., polidocanol). Other factors to be considered include the site affected and patient age. Ingredients or rather combinations thereof for which there is good clinical evidence should be preferentially used. The best evidence by far is available for urea, whose efficacy in the treatment of xerosis is further enhanced by combining it with other natural moisturizing components and ceramides. The “xerosimeter” is a tool developed in an effort to facilitate patient management and for training purposes. It not only includes practical tools for diagnosis and follow-up but also a classification of ingredients and a structured treatment algorithm. Conclusion: The structured symptom- and evidence-based approach proposed herein contains a road map for diagnosis and treatment of xerosis cutis. It aims to raise awareness in terms of prevention and early treatment of this condition and may thus improve quality of life and prevent potential sequelae.

K. Yonezawa, M. Haruna, M. Matsuzaki, M. Shiraishi, R. Kojima, **Effects of moisturizing skincare on skin barrier function and the prevention of skin problems in 3-month-old infants: A randomized controlled trial,** Journal of Dermatology 2018; 45: p. 24–30

An effective newborn skincare protocol has not been established. We aimed to evaluate the effects of moisturizing skincare, including using lotion and reducing routine bathing. Our hypothesis was that moisturizing skincare would improve skin barrier function. This randomized controlled trial included 227 healthy Asian newborns between 1 week and 3 months old. We compared moisturizing skincare (bathing every 2 days and using lotion daily; intervention, n = 113) to daily bathing without lotion (control, n = 114). We assessed the skin barrier function (transepidermal water loss [TEWL], stratum corneum hydration [SCH], skin pH and sebum secretion) as a primary outcome at 3 months old. We also assessed the incidence of skin problems according to parents’ diary reports. Compared with the control, the intervention group had a lower face TEWL (mean standard deviation, 14.69 7.38 vs 17.08 8.26 g/m2 per h, P = 0.033), higher face SCH (60.38 13.66 vs 53.52 14.55, P = 0.001) and higher body SCH (58.89 12.96 vs 53.02 10.08, P < 0.001). Compared with the control, newborns in the intervention group had significantly lower rates of diaper dermatitis between birth and 1 month old (6.3% vs 15.9%, P = 0.022), and tended to have lower rates of body skin problems between 1 and 3 months (42.1% vs 55.2%, P = 0.064). Moisturizing skincare was effective for improving skin barrier function and preventing newborns’ diaper dermatitis. The results of our study may help parents make informed decisions about newborn skincare.

M. Ostermeier, M. Kerscher, **Der diurnale Rhythmus der Haut: Mythos oder Realität?: Evaluation mittels biopyhsikalischer Messmethoden,** Aktuelle Dermatologie 44(12): p. 539-546, Dezember

2018

Zusammenfassung Hintergrund Bisher weisen nur wenige Studien auf tageszeitabhängige Rhythmen des transepidermalen Wasserverlustes (TEWL), der Talgproduktion und des pH-Wertes hin. Detailliertere Beschreibungen des Hautbarriere-Rhythmus' könnten für die Wahl des richtigen Zeitpunktes der dermalen Applikation von pharmazeutischen und kosmetischen Wirkstoffen von großer Bedeutung sein. Es ist denkbar, dass eine Optimierung der Wirkung oder Verträglichkeit dermatologischer Behandlungen erreicht werden kann. Somit ist es Ziel dieser Studie, den diurnalen Rhythmus der Hautbarriereparameter Hautrötung, transepidermaler Wasserverlust (TEWL), Stratum corneum-Hydratation, mechanische Eigenschaften, pH-Wert und Sebum zu erfassen. Methoden Insgesamt 24 hautgesunde Probandinnen (21 – 39 Jahre) wurden innerhalb von 12 Stunden in einem 4-Stunden-Rhythmus an den Wangen und an der Stirn anhand biophysikalischer Messverfahren untersucht. Ergebnisse Die Tageszeit wirkt sich auf die Barrierefunktion der Haut aus. Der mittlere Erythem-Wert ist nachmittags signifikant höher als morgens. Anhand der Datenanalyse ist zu erkennen, dass der TEWL-Mittelwert sich abends statistisch sehr signifikant gegenüber dem Mittelwert morgens unterscheidet. Schlussfolgerung Die Erkenntnisse über die tageszeitliche Veränderung der Barrierefunktion können Aufschluss über ideale Zeitfenster verschiedener Kosmetikbehandlungen geben. Somit bietet z. B. ein erhöhter TEWL am Abend aufgrund der Permeabilität eine bessere Absorption von Wirkstoffen mit höherem Molekulargewicht.

C. Uhl, G. Lanzendörfer-Yu, **How effective is your anti-acne product?**, SPC December 2018

For assessing, treatment analysis and documentation, acne has to be either graded or lesion scoring has to be done. Both methods strongly depend on the skills of the examiner and bear high inter-individual deviations. Biophysical measurements using sebumetry, porphyrin fluorescence, and standardized photographic images of the face can overcome these disadvantages.Additionally, they can be used for comprehensive evaluation of the treatment protocol.

T. Yazdanparast, K. Yazdani, P. Humbert, A. Khatami, S.A. Nasrollah, H. Hassanzadeh, A.H. Ehsani, L. Izadi Firouzabadi, A. Firooz, **Comparison of biophysical, biomechanical and ultra-sonographic properties of skin in chronic dermatitis, psoriasis and lichen planus**, Med J Islam Repub Iran. 2018(5 Nov);32.108

Background: Skin biometrology is a useful method for evaluation of inflammatory skin disorders such as dermatitis, psoriasis, and lichen planus. The current study tries to compare the biophysical features of skin in dermatitis, psoriasis, and lichen planus. Methods: By a convenient sampling method, 22 mild to moderate chronic dermatitis, 26 psoriasis, and 21 lichen planus patients were recruited in the study. Stratum corneum (S.C.) hydration, Transepidermal water loss (TEWL), pH, erythema, melanin, sebum, friction, elasticity parameters (R0, R2, and R5), skin temperature, skin thickness, and echo-density of epidermis and dermis were measured on the lesional (selected active lesion), uninvolved perilesional, and uninvolved symmetrical skin. The average of perilesional and symmetrical uninvolved parameters was used as control, while the percentage change of each parameter [(lesion – control / control) ×100] was calculated, and compared among three diseases by ANOVA test using SPSS software version 18. The significance level was set at α=0.05. Results: Comparison of percentage changes showed that the changes in TEWL, friction index, sebum content, R2 (gross elasticity), R5 (net elasticity), skin temperature, dermal thickness, and epidermal density are not significantly different among three skin diseases. But there were significant differences in three diseases considering the decrease in S.C. hydration ($p<0.001$), R0 (opposed to firmness) ($p<0.001$), and dermal density ($p<0.001$) compared to control skin. Moreover, the increase in skin pH ($p<0.001$), melanin content ($p=0.048$), erythema ($p=0.023$), and epidermal thickness ($p <0.001$) significantly differed among these diseases. Conclusion: Dermatitis, psoriasis and lichen planus lesions had specific biophysical changes. It may be helpful in their differential diagnosis.

M. Emitiazy, E. Zareie, L. Shiribeigi, O. Sadeghpour, P. Mansouri, **Effect of Oral Herbal Medicament on Scalp Seborrhea and Gastrointestinal Symptoms in a Male Patient: A Case Report**, Iran J Public Health, Vol. 47, No.7, Jul 2018, p. 1030-1033

A 32-yr-old man with a 10-yr history of scalp seborrhea referred to Skin and Stem Cell Research Center, Tehran, Iran, in 2015. He suffered from scalp seborrhea. Concurrent gastrointestinal symptoms and the changes in the clinical symptoms after consumption of the polyherbal traditional drug called Triphala are discussed. The scalp sebum was measured with a Sebumeter SM815. Gastrointestinal symptoms were followed using a valid questionnaire. After two months of treatment, scalp sebum secretion had decreased substantially. The patient also experienced remarkable improvement in gastrointestinal symptoms. Considering the positive effect of this known and safe polyherbal drug on skin sebum, it is an appropriate option for detailed large-scale clinical trials.

M.O. deMelo, P.M.B.G. Maia Campos, **Characterization of oily mature skin by biophysical and skin imaging techniques,** Skin Res Technol. 2018; 24: p. 386-395

Background: The skin is a complex biological system and may suffer change according to the environmental factors, as higher temperatures can increase sebum excretion, presenting oiliness and acne. These alterations can persist during the aging and provoke more changes in aged skin. In this study we evaluated the mature oily skin characteristics using biophysical and skin imaging techniques. Material and methods: Sixty healthy female subjects, aged between 39 and 55 years old were recruited and separated into 2 groups according to their skin type: normal/ dry and oily skin. The skin was evaluated in terms of stratum corneum water content, transepidermal water loss (TEWL) sebum content, dermis thickness and echogenicity, skin microrelief, and pores content. Results: The mature oily skin presented no significant differences when compared to the normal/dry skin on the stratum corneum water content and TEWL parameters. The sebum content was significantly higher on the oily skin group. The microrelief analysis showed an increase of skin roughness values in the oily skin and increase of scaliness in the normal/dry skin. The oily skin showed lower dermis echogenicity mainly in the frontal region and higher dermis thickness when compared to normal/ dry skin. Conclusion: The mature oily skin showed different characteristics from normal/dry skin in terms of sebum content, microrelief parameters, and dermis thickness. This way, the characterization of mature oily skin in an objective way is very important to development of dermocosmetic products for more effective treatments focused specially on this type of skin.

H.-J. Kim, H. Kim, J.J. Kim, N.R. Myeong, T. Kim, T. Park, E. Kim, J.-Y. Choi, J. Lee, S. An, W.J. Sul, **Fragile skin microbiomes in megacities are assembled by a predominantly niche-based process**, Science Advanced 2018; 4

Given the higher incidence of skin diseases in more urbanized populations and its association with the skin microbiome, we questioned how the skin microbiome differed depending on the degree of urbanization. Skin microbiomes of 231 healthy subjects in five large cities in China varied mainly with environment and socioeconomic status of the cities in question. The differences among microbiomes could be explained by the predominantly niche-based assembly of microbial communities, which was supported by a dominance test, b-null deviation, and edge-length abundance distribution. Networks among microbes in larger cities were more fragile, which may contribute to the higher incidence of skin diseases in more urbanized environments. These results suggest that microbial ecological theory can provide a framework for understanding crucial health-associated features of the human microbiome.

A. Desnos, D. Gely, D. Chollet, C. Soleau, **The Skin Balancing Effect of *Polygonum bistorta,*** IFSCC Congress, Munich, September 2018

Sebaceous glands produce and secrete sebum that coats and protects the skin against bacteria and keeps it hydrated. Through the pore of the hair follicle, sebum reaches the surface of the skin. It is composed of triglycerides and fatty acid breakdown products (55-60%), wax esters (25%), squalene (12%), cholesterol esters and cholesterol (<5%) (1). However, sebum synthesis can be dysregulated and influenced by multiple molecular pathways and stimulus including oxidation and inflammation (2).

S. Pain, L. Danoux, N. Berthelemy, S. Cadau, D. Herault, V. Andre, A.F. de Bengy, N. Forraz, C. McGuckin, **Highly efficient plant extract against oily skin determined by 2D and 3D sebaceous models,** IFSCC Congress, Munich, September 2018

People with oily skin often complain that their skin feels unclean and is shiny. Oily skin is not only an aesthetic concern, but can also contribute to acne development. The main origin of oily skin is the hyperactivity of sebocytes, which results in an excessive secretion of sebum from sebaceous glands. Sebaceous glands are mostly found on scalp, face, and trunk in association with hair follicles forming the pilosebaceous unit. The secretion of sebum is carried out through a holocrine breakdown of mature sebocytes characterized by a high density of cytoplasmic lipid droplets. Sebum is a unique complex mixture of lipids with triglycerides (30- 50%), free fatty acids (15-30%), wax esters (26-30%) and squalene (12-20%). However, sebum is beneficial as it helps to protect and moisturize the skin and hair, keeping them healthy. Therefore, managing or treating oily skin is always a challenge to retain an appropriate moisturization. Sebaceous glands also support the growth of facultative anaerobes such as *Propionibacterium acnes* (*P. acnes*), a common skin commensal bacterium. Encoding lipases of *P. acnes* degrade skin lipids of sebum, they especially hydrolyses the triglycerides present in sebum, releasing irritant free fatty acids onto the skin. Managing the lipase activity may contribute to decrease *P. acnes* virulence and related skin impact.

G. Dell'Acqua, C. Heusele, S. Schnebert, **Clinical evaluation of hyperpigmentation on skin**

phototype IV and V, IFSCC Congress, Munich, September 2018

Increased production of melanin can lead to pigmentation disorders characterized by hyperpigmentation and uneven melanin distribution, especially in darker skin individuals. This phenomenon can have different causes: inflammation due to a wound, an acne lesion, or a chronic and prolonged sun exposure. These clinical features can be visible for a variable period of time, causing serious psychological discomfort. To identify pigmentation disorders and their manifestation, a clinical study was performed in the United States on 61 healthy women (30 aged 20-30 years old and 31 aged 54-65 years old), phototype Fitzpatrick IV-V, mostly African Americans or Hispanics, presenting nonpathological hyperpigmentation on the cheeks. A board-certified dermatologist classified lesions as post-inflammatory hyperpigmentation (PIH), melasma, solar lentigo/age spot, maturational dyschromia and assigned scores based on lesion's intensity, size and distribution. In particular, PAHPI – Postacne Hyperpigmentation Index and MASI - Melasma Area and Severity Index were scored. Pigmented areas were instrumentally quantified by image analysis (VISIA, Vaestro, Canfield). Pores number and size were also measured (VISIA, Vaestro, Canfield). Sebum output was quantified on the forehead using a Sebumeter (Courage & Khazaka). A Skindex-16 questionnaire was used to evaluate skin-related quality of life. Type and intensity of skin dyspigmentation was studied according to subject's age, phototype, ethnic origin, sebum output, pore size and pore number. Results show that PIH was mostly carried by the younger group with a prevalence in phototype V (African American). Melasma and maturational dyschromia were mostly common in the older group with melasma lesions number more prevalent in phototype V and more evident on the malar region of the face. When analyzed by imaging, the older group presented a statistically significant higher hyperpigmentation than the younger group. The older group also presented more and larger pores than the younger group. The Skindex-16 questionnaire evidenced significant concern and discomfort about the condition specifically in the younger group. This study highlights in details age-related skin pigmentation differences on a specific dark skin phototype targeting an African American and a Hispanic population.

P. Sewraj, A. Laurent, **Kinetics of sebum excretion on the scalps of Black South African Women,** IFSCC Congress, Munich, September 2018

Background: Several studies that include instrumental evaluation of sebum production on the scalp showed that sebum levels on the scalp differ among populations living in different parts of the world. This study completes the picture with data on Black South African women. Methods: Two groups of 15 black women differently aged (18- 35y) and (45- 65y) were enrolled in the study. Inclusion criterion specified that no relaxer was used in the 4 weeks prior to the test. The study was conducted over a 72 hour period (0, 24, 48 and 72h) and measurements were made on the scalp and forehead using a SebumeterÒ (sebum score). Kinetics of sebum production were studied, in particular the time needed to reach a plateau, as well as the age impact on that kinetics. Results: The basal scalp sebum level of South African women was found of much lower value than that of African American scalps and the lowest of all populations, when referring to a previous work of our Research group (1). For the kinetics of sebum production (Sebum Excretion Rate), black South African women present a much lower sebum production on the scalp. It takes longer to reconstitute the scalp sebum at 48 hours when compared to womenof other countries, globally.

M. Hisama, A. Kishita, N. Yamaguchi, C. Takeuchi, S. Matsuda, K. Yoshio, H. Kanayama, K. Masui, T. Miyazawa, R. Takimi, **Age Related Changes of Human Skin Investigated on Biophysical, Physiological and Histological Characteristics**, IFSCC Congress, Munich, September 2018

Japan's life expectancy has increased steadily over the past century, and currently stands as the highest in the world at almost eighty-four years. As life expectancy increases and with it the proportion of the aged in the population appropriate care of elderly skin becomes a medical concern of increasing importance. The skin is the largest multifunctional organ in the body. It functions as a protective physical barrier by absorbing UV radiation, preventing microorganism invasion and chemical penetration, and controlling the passage of water and electrolytes. The skin has a major role in thermoregulation of body, in addition to immunological, sensory, and autonomic functions. As skin ages, the intrinsic structural changes that are a natural consequence of passing time are inevitably followed by subsequent physiological changes that affect the skin's ability to function as the interface between internal and external environments. As numbers of the elderly increase, cosmetic dermatological interventions will be necessary to optimize the quality of life for this segment of the population. It is important to examine the associations between elderly skin condition and aging for development of anti-aging care products for elderly skin. Understanding the physiological, chemical, and biophysical characteristics of the skin helps us to arrange a proper approach to the management of skin diseases. However, it is critical to consider the influence of genetic and environmental factors on most of the skin characteristics. In this study, we investigated the comparison between the elderly skins in five different

age groups on biophysical, physiological and histological characteristics by in *vivo* measurements in order to quantify aging processes on human skin.

Q. Peijin, C. Jianjie, J. Lili, D. Gan, W. Yue, **Composition and diversity of microbial community of Chinese female facial skin from different age and its association with skin characteristics,** IFSCC Congress, Munich, September 2018

Skin is the largest organ of the human body. As the interface between the body and the external environment, skin is the first line to protect the human body against the pathogen invasion. Meanwhile human skin harbors a variety of commensals, including bacteria, fungi and viruses. Each area of human body hosts its unique microbial community. Many factors contribute to the structure and function of skin microbiome, for example the host, their age, genetic variation, hygiene, life style and it shifts according to the characteristics of the micro-environments. The adverse shifts might cause a dysbiosis state and it has been reported to be associated with skin disease, such as atopic dermatitis, acne and dandruff. Therefore, exploration of skin microbiome not only helps us understand the correlation between microorganisms and the skin physiological status, but also provide a new perspective to pathogenic factors and new therapeutic targets. In previous study, skin microbiota was demonstrated that varies from different body sites and individuals. However, the reports mainly focused on the Western people and limited study on Chinese skin microbiome. In preliminary work, researchers paid more attention on skin microbiome associated with skin disorders, especially in AD patients, while the relationship between descriptive skin-related characteristics of individual (like wrinkles, hydration, *etc.*) and skin microbiota is ambiguous. In this work, 34 Chinese female volunteers living in Shanghai were recruited for facial skin microbial community study. Skin samples were collected and Miseq gene sequencing platform was operated. To achieve overall and details of skin appearances, the skin types and characteristics were clinically graded by dermatologist and measured by instruments. The goal of this study is to characterize the composition and variability of the skin microbiota in health people divided into age groups. Moreover, the aim of study is to evaluate the association of the skin microbial distribution with skin physical and physiological properties and the interaction of microorganisms themselves. In our study, it is suggested that *Proteobacterium* is prevalent in elder group together with wrinkles. Additionally, higher trans-epidermal water loss is correlated with *S. aureus* and this may in turn to design a product to recover the skin microbiome balance. In addition, gain more knowledge about microbes interaction with each other is critical to design the skin care products with probiotics and prebiotics. These findings expand our insights in health skin microbiome and will be useful in clinical treatment near the further.

N. Zacaula Juárez, A. Galvan, Gerardo, L. Gómez, **Evaluation of the recovery of the biomechanical properties in hypertrophic burn scar: Looking for a suitable treatment and Care**, IFSCC Congress, Munich, September 2018

Background: The skin is the largest organ of the human body and serves as physical and chemical barrier to the environment. Burn injuries are one of the most common traumatic wounds, this represents a costly public health problem. Many of burned patients develops a hypertrophic scar that can cause an aesthetic and functional problems. The aim of this research was had a better understanding of the recovery of biomechanical properties in hypertrophic burn scar to find new therapeutic strategies to control adverse scarring. Method: Cutometer MPA 580 is a non-invasive an objective suction device to make measurements of scar components as melanin, erythema, hydration, sebum, elasticity and viscoelasticity. Nine patients on the upper extremities with hypertrophic burn scars were evaluated with Cutometer MPA 580 to determine the recovery of the biomechanical properties respect a counterpart without burn injury. The analysis of the different biomechanical parameter was performed with a 2 mm aperture probe and a negative pressure of 450 mbar with 2 seconds of suction and 2 seconds to relaxation in a series 10 suction/relaxation, by triplicate. Also were evaluated *stratum corneum* hydration values by Corneometer, the presence of melanin and erythema by Mexameter and sebum production by Sebumeter probe. Nine patients with an age range between 26-37 years, a skin phototype III, IV and V, a mean value 30.6% of the Total Body Surface Area (TBSA), second and third degree burns were treated with autograft. For this study, approval from the Ethics Committee of the Instituto Nacional de Rehabilitación in Mexico City was obtained (26/15) and Informed consent was obtained from all patients. Results: The results are presented as a percentage (%). In the melanin Index of hypertrophic scars, there is an increase of 13.8 % respect a counterpart without injury or hyperpigmentation in autograft. The results of the erythema index rise with 29.5% of scars, the hydration value of *stratum corneum* decreased a 19 % and the sebum production decreased a 68 % on hypertrophic scar. The relative biomechanical parameters R0 (Maximal deformation), R5 (Net elasticity) and R6 (indicates a relative contribution of viscoelastic, viscous and elastic deformation ”viscoelasticity”). The maximal deformation (R0) in hypertrophic scar decreased by 49%, there is a reduction of 33% in net elasticity (R5) and was observed a increase of 5.6% in R6 “viscoelasticity”. The

biomechanical properties (R0, R5 and R6) and hydration, sebum, melanin and erythema in hypertrophic burn scar was altered. Conclusion: This data can be useful for a better diagnosis and find new strategies suitable for the treatment of hypertrophic burn scars and contribute to outpatient burn care.

V.H. Pacagnelli Infante, J. Migliati, P.M.B.G. Maia Campos, **Why should I use sunscreen? The impact of lifestyleon the hydrolipidic, structural and morphological characteristics of young men skin**, IFSCC Congress, Munich, September 2018

The consumption of cosmetics among men has grown in the last years. However there is some resistance to the use of these products due to the culture, sensory, perception and access for this audience to consume cosmetic products. Considering that the use of sunscreens is a public health issue and directly affects the quality of life, the objective of this study is to show the skin differences between two groups, one that uses sunscreen regularly and one that does not use, using biophysics and skin imaging techniques. Sixty men between 18 and 28 years old, phototypes II, III and IV were randomly selected and questioned about their photoprotection habits. Hydration, integrity of the stratum corneum (TEWL, Corneometer and VisioScan), amount of sebum (Sebumeter) and activity of the sebaceous glands (Sebufix) were made. We analyzed the amount of pores (Visioface), formation of erythema (Mexameter), ultrasound of the dermis (DermaScan C) in the frontal and malar regions and we obtained reflectance confocal microscopy images (RCM) for analysis of the quality of the epidermis and papillary dermis at the cellular level in the frontal region. Of the 60 participants, 24 regularly uses sunscreens (group A) and 36 were not (group B). When questioned about the reasons for not using sunscreen, group B mentioned that did not obtain family incentive and /or sunscreens was sticky or oily. Changes in the integrity of the stratum corneum were observed, with thickening of this layer of the epidermis and impairment of the barrier function with increase of TEWL and decrease of the hydration for group B. The granular layer of the epidermis is also thicker for this group. There was an increase in microrelief roughness for the same group. Moreover, there is also a higher activity of the sebaceous glands, with consequent greater number of pores for group B. Also, a decrease in the echogenicity ratio of the group B were observed, evidenced by the decrease of the dermoepidermal junction layer (related to the depth of the papillae), increase in pore diameter and worst collagen quality. We observed a disruption of the honeycomb pattern of the epidermis and the presence of polycyclic papillae for group B. This same group showed dilatation in the veins in the basal layer of the epidermis and a significant increase in erythema, evidencing signs of possible inflammation. The presented damages evidences the necessity of UVB photoprotection (more related to the damages in the integrity of the barrier) and UVA, too (damages in the region of the papillary dermis). The lifestyle influences the choices and their consequences, showing that sun exposure can cause damage even early, especially in groups that present a certain cultural resistance to the use of cosmetics such as the male. Furthermore, we have shown that the damages of unprotected sun exposure happen in different layers of the skin, which increases the need to develop suitable sunscreens with UVA and UVB protection and with a good sensorial improving the adhesion of photoprotection among men.

M. Fak, H. Rotsztejn, A. Erkiert-Polguj, **The early effect of microdermabrasion on hydration and sebum level,** Skin Res Technol. 2018; 24, p. 650-855

Background: Microdermabrasion is a popular form of mechanical peel, used for many aesthetic purposes. Because it removes the superficial epidermal layer, it has an impact on hydrolipid skin coat. Objective: The aim of the study was to examine the changes taking place in the hydrolipid coat of the skin after microdermabrasion measured by skin hydration and sebum level. Methods: Sixteen healthy women were included in the study, and the aluminium oxide crystal microdermabrasion device was used over the entire face of each patient. Measurements of stratum corneum hydration and sebum level were taken at baseline, just after the treatment, and 30 and 60 minutes later. Results: A statistically significant difference in stratum corneum hydration was found on the cheeks 30 minutes after treatment and in the T-zone immediately after the procedure. Sebum reduction was observed immediately after the procedure irrespective of skin type and face area. In addition, sebum value was found to return to baseline1hour after the procedure. Conclusions: The observed changes in epidermal barrier function may be responsible for the clinical improvement following microdermabrasion.

D. Blasi, C. Paratore, **A bright 'star'in the anti-acne universe**, PERSONAL CARE ASIA PACIFIC, September 2018, p. 69 – 71

Among all the dermatoses, Acne *vulgaris* is the most common multifactorial disease in patients between 11 and 30 years old, as it affects up to 80% of people belonging to this age segment. Moreover, due to its high diffusion in the population and to its significant morbidity, it causes both physically and psychologically side-effects on patients, in terms of scarring, depression, anxiety and low self-esteem.

Acne vulgaris is an inflammatory disorder in which many agents can act as triggers: androgens, drugs, genetic factors, regulating neuropeptides and environmental factors, such as pollution and UV radiation.

T. Yadzanparast, S.A. Nasrollah, L.I. Firouzbadi, A. Firooz, **A Phase II Trial to Assess the Safety and Efficacy of a Topical Repair Cream Containing Skin-identical Ceramide Complex in Patients with Contact Dermatitis**, J Clin Aesthet Dermatol. 2018; 11(11): p. 40–44

Background: Contact dermatitis is a common skin condition observed by dermatologists, presenting a burden on healthcare systems. Recently, there has been a trend in producing skin-identical topical preparations for the repair of skin. However, there is a limited number of experimental studies to assess the safety and efficacy of this products. Objective: This study assessed the clinical efficacy and safety of a skin-identical ceramide complex cream (Dermalex Repair Contact Eczema; Omega Pharma, Nazareth, Belgium) in the treatment of contact dermatitis. Design: This was a Phase II, before-after trial. Setting: This study was conducted at the Center for Research and Training in Skin Diseases and Leprosy (CRTSDL) at Tehran University of Medical Sciences in Tehran, Iran. Participants: Fifteen patients with contact dermatitis (8 men and 7 women) between the ages of 25 and 62 years (median age: 36.4 years) were enrolled in this study. Measurements: Changes were assessed using six skin biophysical parameters (transepidermal water loss [TEWL], stratum corneum [SC] hydration, melanin index, erythema index, skin pH, and skin friction), Physician Global Assessment (PGA) score, and Three-Item Severity (TIS) score at baseline, Week 2, and Week 4 of the study. Results: Skin hydration and TIS showed a statistically significant improvement after treatment with study cream ($p=0.023$ and $p=0.007$, respectively). Although the reduction in TEWL was not significant, a slight decrease was observed at Week 4. Conclusions: The skin-identical ceramide complex cream improved contact dermatitis with a decrease in TIS and an increase in skin hydration, implying a repair of the skin barrier.

K. Kimori, C. Konya, M. Matsumoto, **Venipuncture-Induced Hematomas Alter Skin Barrier Function in the Elderly Patients**, SAGE Open Nursing, June 2018

We aimed to compare the barrier function of the skin site with the color of hematoma induced by venipuncture and the area surrounding the skin site to help improve skin care for hospitalized elderly patients. There were 50 patients with a median age of 84 years who were included in the analysis. There was no significant difference between the hematoma site-induced venipuncture and the area surrounding the hematoma site in terms of transepidermal water loss and skin sebum level. The status of stratum corneum hydration and skin elasticity on the hematoma sites was significantly lower than that on nonhematoma sites. The median skin pH was significantly higher on hematoma sites than that on nonhematoma sites. The study variables did not reveal any significant correlation with the intensity of skin erythema. These findings showed that hematoma formation in the subcutaneous tissue affected the skin barrier function and that these sites need moisturizing skin care regardless of the intensity of skin erythema.

P.E.J. van Erp, M. Peppelman, D. Falcone, **Noninvasive analysis and minimally invasive in vivo experimental challenges of the skin barrier**, Experimental Dermatology, 2018;27: p. 867–875

In this review, we aim to give a concise and selective overview of noninvasive biophysical analysis techniques for skin barrier analysis (transepidermal water loss, electrical methods, confocal Raman microspectroscopy, sebumeter, reflectance spectrophotometry, tristimulus colorimetry, diffuse reflectance spectroscopy and reflectance confocal microscopy), including advantages and limitations. Rather than giving an exhaustive description of the many techniques currently available, we show the usefulness of a representative selection of techniques in the functional and morphological evaluation of the skin barrier. Furthermore, we introduce human minimally invasive skin challenging models as a means to study the mechanisms regulating skin homoeostasis and disease and subsequently show how biophysical analysis techniques can be combined with these in vivo skin challenging models in the functional and morphological evaluation of the skin barrier in healthy human skin. We are convinced that the widespread application of biophysical analysis techniques in dermatological practice and in cosmetic sciences will prove invaluable in offering personalized and noninvasive skin treatment solutions. Furthermore, combining the human in vivo challenging models with these novel noninvasive techniques will provide valuable methodology and tools for detailed characterization of the skin barrier in health and disease.

J.P. Andrade, T.A.L. Wagemaker, D.G. Mercurio, P.M.B.G. Maia Campos, **Benefits of a dermocosmetic formulation with vitamins B3 and a B6 derivative combined with zinc-PCA for mild inflammatory acne and acne-prone skin**, Biomed Biopharm Res., 2018; (15) 2: p. 214-223

Acne is a chronic inflammatory disorder of the pilosebaceous follicles that affects 80% of the population. As topical agents for acneic skin treatment are often irritants, dermocosmetics, may improve

therapy. Thus, we developed cosmetic formulations with nicotinamide (vitamin B3), pyridoxine tris-hexyldecanoate (a vitamin B6 derivative) and zinc- pyrrolidone carboxylic acid (PCA) in association, and evaluated their clinical efcacy, skin compatibility, and sensory properties. The formulation (vehicle) added with vitamin B3, the vitamin B6 derivative and zinc-PCA in combination was applied twice daily for six weeks on the forehead, malar and chin skin regions of sixteen subjects. Before (pre-treatment) and after treatment, these regions were evaluated using biophysical and skin imaging techniques. Inflammatory acne lesions were reduced by 60% after application of the complete formulation. Porphyrine reduction was shown in the majority of volunteers. The results shown an improvement of inflammatory acne lesions based on porphyrine reduction, lesion counts, skin compatibility and comedogenicity testing. The skin barrier function was not impaired by the experimental formulation, which demonstrates its efcacy in acne treatment without undesirable effects. The combination of Zn-PCA and vitamins B3 and B6 vehiculated in an adequate topical formulation can be considered as a safe and effective alternative treatment for mild inflammatory acneic skin.

A. Rigal, R. Michael-Jubeli, A. Bigouret, A. Nkengne, A. Baillet-Guffroy1, A. Tfayli, **Lipides**: **Systèmes Analytiques et Biologiques,** ISBS Conference San Diego, May 2018

Introduction: Clinical manifestations of skin aging like xerosis, wrinkles and slackness are related to underlying complex molecular phenomena in the different layers of the skin. The combinations of classical biometric measurements with more complex and informative techniques like *in vivo* Raman spectroscopy can provide interesting information on the organization of lipids in the *Stratum Corneum (SC)*, their barrier function and on water content and mobility, in order to better characterize the skin aging. Methodology: Biometric information (TEWL, corneometry, sebumetry, skin pH, mechanical stress) and Raman spectra and in-depth profiles were collected from the forehead of twenty-two young womens (18- 24 years old) and eighteen elderly womens (70-75 years old). Results and Conclusions: Important modifications on biometric skin parameters, structure of the SC and water mobility can be observed for elderly. Our results show a good association between biometric parameters and *in vivo* Raman descriptors. Interestingly, higher compacity of lipids, higher total water content and lower unbound water content are observed for elderly.

V. Hourblin, S. Nouveau Stéphanie, J. Faugère, C. Gomes, I. Tardy, L. Aguilar, **Characterization and Statistical Modeling of Facial Skin Radiance in Senior Women,** ISBS Conference San Diego, May 2018

Introduction: Dull skin is a major concern for senior women but even though some parameters such as optical parameters seem to be involved in the perception of skin radiance, there is a lack of objective assessments, and it remains difficult to assess. A typological study was conducted in order to characterize the drivers of lack of facial skin radiance in senior women using a holistic and cartographic approach. Knowing this, the change level required for each key driver was determined to improve overall skin radiance then confirmed through a validation study. Methodology: In a first step, a typological study was carried out on 150 French women, phototype II or III, aged over 55 years, and distributed in two groups according to their lack of radiance as scored by a dermatologist (severe versus light to moderate). A large number of parameters including skin type and texture, skin aging signs, wrinkles, pigmentary disorders and dark circles were assessed by a dermatologist and by self-assessments. Instrumental measurements were also performed, skin color using the L*a*b* system (Spectrophotometer® CM-700d), skin shininess (Lightcam®), backscattered light (Translucymeter® TLS850), current level of sebum (Sebumeter® SM815), skin conductance (Corneometer® CM810), and skin density by ultrasounds (DUB®SkinScanner 75). Qualitative andquantitative Bayesian Belief Networks were designed to characterize the lack of radiance and to set a predictive model of radiance improvement for both women and dermatologist. In a second step, a 10 validation study was carried out on 90 women with a similar profile, and presenting a lack of radiance according to the key features. The predictive model was used to define the expected change range of each feature; this prediction was validated with a combined cosmetic routine. Results and Conclusions: Bayesian statistical approach was effective for identifying and ranking the key drivers of facial skin radiance. The first striking result was that lack of radiance as assessed by the expert was driven by dark circles, skin shininess, pigmentary disorders, backscattered light and skin density, but usual aging signs such as wrinkles did not contribute to it. Interestingly, these key drivers were also perceived as such by the women enrolled in the study. According to the statistical model, improvement of facial skin radiance in senior women can be reached by decreasing dark circles and skin tone unevenness and by increasing the skin shininess. For each of the key features, we were able to define target values (clinical scores or instrumental measurements) in order to improve the overall radiance. These targets have been validated through the second study, by clinical and self-assessments of radiance after combined skin care and make up applications. These two clinical studies allow us to have now, a tool based on objective clinical targets,

in order to get more radiant skin in senior population.

M.O. Melo, L. Kakuda, P.M.B.G Maia Campos, **Clinical Efficacy of a Multifunctional Cosmetic Formulation for Mature Oily Skin**, Poster Presentation at ISBS Conference San Diego, May 2018

Introduction: The skin may change due to factors as high temperatures, increasing sebum excretion and presenting oiliness and acne. These alterations can persist during the aging and provoke more changes that influence the use of cosmetics. The objective of this study was to evaluate the clinical efficacy of a cosmetic product developed for the mature oily skin. Methodology: The clinical efficacy was evaluated on 30 participants aged between 39 to 55 years old with oily skin. The analyzed parameters were: stratum corneum water content, TEWL, sebum content and percentage, microrelief and dermis echogenicity. The analyses were performed on different regions of the face. A placebo formulation was also tested. Results and Conclusions: The developed formulation improved the sebum content and percentage, skin microrelief in terms of skin roughness and desquamation and dermis echogenicity. The biophysical and skin imaging techniques utilized in this study were useful to test the clinical efficacy of an effective formulation for mature oily skin.

M. Mendes Fossa Shirata, P.M. Berardo Gonçalves Maia Campos, **Evaluation of Young Skin Photoaging Using Biophysical and Imaging Techniques**, Poster Presentation at ISBS Conference San Diego, May 2018

Introduction: Photoaging is associated to an intense solar exposure, thus the photoaging signs can be observed also in the young skin, mainly in countries with high UV incidence, like Brazil. The aim of this study was to evaluate the skin changes resulted from photoaging in Brazilian young skin in comparison to photoaged mature skin. Methodology: Thirty participants were divided in two groups: the first between 18 to 35 years old and the second, 40 to 60 years old. Analyzes were performed on the randomized facial malar region. TEWL, stratum corneum water content, sebum content, high resolution imaging, echogenicity and dermis thickness, skin color and elasticity parameters were analyzed. Results and Conclusions: The obtained results showed that sun exposure can cause changes even in the young skin, with the appearance of spots and the reduction of the echogenicity of the dermis, besides there were no significant differences between young skin and mature skin in most parameters. In conclusion, signs of photoaging may be frequent even in young skin.

M. Gabarra Almeida Leite, P.M. Berardo Gonçalves Maia Campos, **Evaluation of Oily Hair and Skin: Comparison between Self Perception and Clinical Analysis Using Biophysical and Imaging Techniques**, Poster Presentation at ISBS Conference San Diego, May 2018

Introduction: Excess of oiliness can cause skin changes such as acne and compromise the cutaneous physiology, affecting of both skin and hair. Thus, the aim of this study was to evaluate skin and hair alterations due to excessive amount of sebum using biophysical and imaging techniques. Methodology: 100 participants (18 - 49 years), with oily skin and hair, were recruited. Skin was evaluated in terms of stratum corneum water content, TEWL, activity of the sebaceous glands, amount of porphyrins and pores. Scalp was evaluated in terms of sebum content. Results and Conclusions: Participants were divided 4 groups: 1- Oily skin and hair (45,23%), 2- Oily skin and normal hair (10,71%), 3- Normal skin and oily hair (34,52%) and 4- Normal skin and hair (9,52%). The participants with oily skin presented activity of the sebaceous glands of 9.1 ± 1.1 surface (%), high amount of pores and presence of porphyrins, and scalp amount of sebum of 330,6 ± 9,8 µg/cm². Although all the panelists considered their hair and skin oily, they were classified differently, showing that the tropical weather can influence the self-perception and lead to a wrong treatment without the correct evaluation.

J. Attia-Vigneau, M. Shortt, R. Seguin, I. Lacasse, E. Loing, **Safeguarding Squalene: Lemon Myrtle Antioxidant for Pollution Protection and Oleostasis**, C & T online May 2018

Sebum, the lipid film produced by sebaceous glands in the skin, has important functions including reducing water loss from the skin surface, serving as a vehicle for lipophilic antioxidants, protecting against harmful microorganisms and shielding against environmental aggressors.1 Human sebum is a complex mixture of lipids consisting of triglycerides, diacylglycerols and fatty acids (50–60% altogether); wax esters (20–30%); squalene (10–16%); and cholesterol esters (2–4%).

A. Ezerskaia, N.E. Uzunbajakva, G.J. Puppels, J. de Sterke, P.J. Caspers, H.P. Urbach, B. Varghese, **Potential of short-wave infrared spectroscopy for quantitative depth profiling of stratum corneum lipids and water in dermatology**, Biomedical Optics Express 2436, May 2018, Vol. 9, No. 5

We demonstrate the feasibility of short wave infrared (SWIR) spectroscopy combined with tape stripping for depth profiling of lipids and water in the stratum corneum of human skin. The proposed spectroscopic technique relies on differential detection at three wavelengths of 1720, 1750, and 1770

nm, with varying ratio of the lipid-to-water absorption coefficient and an ‘isosbestic point’. Comparison of the data acquired using SWIR spectroscopy with that obtained by a gold standard for non-invasive quantitative molecularspecific skin measurements, namely confocal Raman spectroscopy (CRS), revealed specificity of the proposed modality for water and lipid quantification. At the same time, we provide evidence showing aberrant sensitivity of Corneometer hydration read-outs to the presence of skin surface lipids, and a lack of sensitivity of the Sebumeter when attempting to measure the lipids of the cornified lipid envelope and intracellular lipid layers. We conclude that a spectroscopic SWIR-based spectroscopic method combined with tape stripping has the potential for depth profiling of the stratum corneum water and lipids, due to superior measurement sensitivity and specificity compared to the Corneometer and Sebumeter.

M.L. Vazquez-Gonzalez, M. Cocerra, J. Nestor, G. Rodriguez, R. Saldana, L. Barbosa-Barros, O. Lopez, **Innovative approach to control acne-prone skin**, PERSONAL CARE ASIA PACIFIC, March 2018 & PERSONAL CARE EUROPE, April 2018, p. 153-156

Excessive sebum production can give rise to oily skin, shiny appearance, enlarged pores and favour the development of acne lesions. The care of acne-prone skin involves the use of harsh molecules, wash out and multi-step products that irritate the skin and limit user compliance. This study describes the development of a bicosome system that targets the epidermis and follicles to effectively deliver a sebostatic active compound and potentiate its effects on sebum production and acne lesion prevention. This is an alternative approach to that offered by current products, which can be included in the daily care of acne-prone skin.

B. Walzel, B. Senti, S. Banziger, U. Batz, **The natural solution to pollution,** PERSONAL CARE EUROPE, April 2018, p. 83-88

Exposure to air pollutants is one of the major threats to skin health. Contaminants attack the skin on several levels: they induce oxidative stress, they stimulate inflammatory pathways, and they accelerate the ageing process of skin. As a consequence, consumers demand functional cosmetics that prevent and repair pollution-induced skin damage. In this respect, the most promising approach is using the body's endogenous detoxification machinery, which is composed of a multitude of cell-protective and detoxifying mechanisms. These powerful systems are capable of neutralising thousands of toxic molecules per second, whereas the mere application of antioxidants is much less efficient, as one antioxidant molecule is capable of neutralising only one free radical. HerbaShield URB addresses these concerns. The COSMOS-approved multicomponent active ingredient targets three mechanisms to naturally reduce pollutioninduced skin damage: (1) It strengthens the skin's barrier through hydrogenated lecithin; (2) it protects from radical oxygen species through natural antioxidants; and (3) it enhances the endogenous detoxification machinery through natural activators of detoxifying enzymes. The presented anti-pollution ingredient is a perfect fit for anti-ageing cosmetics and to be formulated in skin care applications, such as face care, body care, and cleansing products.

S. Rahrovan, F. Fanian, P. Mehryan, P. Humbert, A. Firooz, **Male versus female skin: What dermatologists and cosmeticians should know**, International Journal of Women's Dermatology 4 (2018) p. 122–130

Introduction: The skin is important for the perception of health and beauty. Knowledge of the physiological, chemical, and biophysical differences between the skin of male and female patients helps dermatologistsdevelop a proper approach not only for the management of skin diseases but also to properly take care
of cosmetic issues. The influence of genetic and environmental factors on skin characteristics is also critical to consider. Methods: A literature search of PubMed and Google was conducted to compare the biophysical and biomechanical properties of the skin of male and female patients using the keywords "skin", "hydration", "water loss", "sebum", "circulation", "color", "thickness", "elasticity", "pH", "friction", "wrinkle", "sex", "male", and "female". Results: A total of 1070 titles were found. After removing duplications and non-English papers, the number was reduced to 632. Of the 632 titles, 57 were deemed suitable for inclusion in this review. The studies show that the skin parameters of hydration, transepidermal water loss, sebum, microcirculation, pigmentation, and thickness are generally higher in men but skin pH is higher in women. Conclusions: These parameters can be considered as age markers in some cases and are susceptible to change according to environment and life style. Biometrological studies of the skin provide useful information in the selection of active principles and other ingredients of formulations to develop a specific approach for cosmetic treatments.

S. Léglise, **Rebalancing for lighter, less oily hair,** PERSONAL CARE ASIA PACIFIC, March 2018 and PERSONAL CARE EUROPE, April 2018, p. 158-159

Because oily hair comes from a functional imbalance in the hair bulb, this needs to be corrected through targeted action on the production of oily substances, and also on the general protection of the hair.

P. Meetham, M. Kanlayavattanakul, N. Lourith, **Development and clinical efficacy evaluation of anti-greasy green tea tonner on facial skin**, Revista Brasileira de Farmacognosia 28 (2018), p. 214–217

Green tea (Camellia sinensis (L.) Kuntze, Theaceae) polyphenols have activities against skin disorders; however, anti-sebum efficacy of green tea cosmetic has sparely been reported. The facial tonner containing green tea was therefore developed and clinical evaluated. The base formulas which stabled following accelerated tests were sensorial assessed in ten volunteers. The base with hydroxyethyl cellulose, glycerin and panthenol (totally 3.6%) with the significant ($p < 0.05$) preference (82.3 ± 0.55%) over the others was further developed to green tea preparations. All of the products were stable and caused none of skin irritation as closed patch tested in twenty volunteers. Thereafter, they were clinical evaluated in the same group of the volunteers and monitored with Sebumeter® by means of a split-face, randomized singleblind, placebo-controlled study. Anti-greasy efficacy of 2, 4.5 and 7% green tea tonners were 3.47 ± 0.10, 8.18 ± 0.44 and 17.87 ± 0.46% following 14 days of facial treatment. The efficiency was pronounced at the end of the study; day 28 (8.48 ± 0.13, 20.26 ± 1.03 and 31.57 ± 1.22%). Anti-sebum efficacy of the 4.5 and 7% green tea tonners were significantly better than the base formula (day 14; $p < 0.05$, day 28; $p < 0.01$). The efficacy of 28 days treatment was significantly better than 14 days ($p < 0.05$). The safe and efficientgreen tea tonner for oily face treatment was therefore approved in this context.

B. Walzel, B. Senti, S. Banziger, U. Batz, **The natural solution to pollution**, PERSONAL CARE ASIA PACIFIC, January 2018

Exposure to air pollutants is one of the major threats to skin health. Contaminants attack the skin on several levels: they induce oxidative stress, they stimulate inflammatory pathways, and they accelerate the ageing process of skin. As a consequence, consumers demand functional cosmetics that prevent and repair pollution-induced skin damage. In this respect, the most promising approach is using the body's endogenous detoxification machinery, which is composed of a multitude of cell-protective and detoxifying mechanisms. These powerful systems are capable of neutralising thousands of toxic molecules per second, whereas the mere application of antioxidants is much less efficient, as one antioxidant molecule is capable of neutralising only one free radical. HerbaShield URB addresses these concerns. The COSMOS-approved multicomponent active ingredient targets three mechanisms to naturally reduce pollutioninduced skin damage: (1) It strengthens the skin's barrier through hydrogenated lecithin; (2) it protects from radical oxygen species through natural antioxidants; and (3) it enhances the endogenous detoxification machinery through natural activators of detoxifying enzymes. The presented anti-pollution ingredient is a perfect fit for anti-ageing cosmetics and to be formulated in skin care applications, such as face care, body care, and cleansing products.

S. P. Cannavo, F. Guarneri, R. Giuffrida, E. Aragona, C. Guarneri, **Evaluation of cutaneous surface parameters in psoriatic patients,** Skin Research and Technology 2017; 23: 41-47

Purpose: The purpose of this study was to compare cutaneous surface parameters in lesional and non-lesional skin of psoriaticpatients and in corresponding areas of control subjects.

C. J. Borzdynski, W. McGuiness, C. Miller, **Comparing visual and objective skin assessment with pressure injury risk,** International Wound Journal ISSN 1742-4801

Contemporary approaches to pressure injury (PI) risk identifcation rely on the use of risk assessment tools and visual skin assessment. Objective biophysical measures that assess skin hydration, melanin, erythema and lipids have not been traditionally used in PI risk; however, these may prove useful as a risk assessment tool. The relationship between subjective visual assessments of skin condition, biophysical measures and PI risk warrants investigation. This study used a descriptive correlational design to examine the relationship between measures of skin hydration, colour (melanin and erythema) and lipids at PI-prone areas amongst geriatric persons (n = 38), obtained using biophysical skin measures and visual skin assessment.

C. J. Borzdynski, W. McGuiness, C. Miller, **Emerging Technology for Enhanced Assessment of Skin Status,** *J Wound Ostomy Continence Nurs.* 2017; 44(1): p.48-54

Pressure injury (PI) prevention has become a key nursing priority that requires clear identifcation of visual cues representative of PI risk. There is generalized agreement that erythema and skin wetness and/or maceration should be routinely examined by the clinician as part of PI risk assessment. Such an assessment is largely qualitative, deeply reliant on the perception and interpretation of the clinician.

Consequently, skin parameters may be misinterpreted, underestimated, or even missed completely. Objective techniques are needed to augment accurate assessment of erythema and skin wetness and/or maceration. Biophysical skin analysis devices have been widely used in the cosmetic industry and clinical research to measure certain skin parameters for the purpose of skin health evaluation. This article describes 3 devices that enable noninvasive digital measurements of epidermal hydration, erythema, and epidermal lipids, respectively. The clinical application of biophysical skin analysis instruments in the assessment PI-related skin parameters could provide a feasible alternative to subjective assessment.

F. Tabri, I. Patellongi, S. Wahab, K. Djawad, **Analysis of Nutritional Status and Levels of Sebum on Various Age Groups,** American Journal of Clinical and Experimental Medicine, 2017; 5(1): 26-29

The effects of aging on skin physiology have been reported previously. In this study we tried to elucidate the correlation of skin types with age and nutritional status. There is a correlation between the age groups with nutritional status, correlation between age groups with the sebum levels on the forehead, and also there is a correlation between nutritional status and sebum level on forehead.

F. Pouradier, C. Liu, J. Wares, E. Yokoyama, C. Collaudin, S. Panhard, D. Saint-Léger, G. Loussouarn, **The worldwide diversity of scalp seborrhoea, as daily experienced by seven human ethnic groups**, Int J Cosmet Sci, 2017 Dec;39(6): p. 629-636

Objective: The re-greasing process and kinetics of the human scalp, post-shampooing, have been previously documented, in vivo, on a few Caucasian subjects. The objective of the presented research was to extend such knowledge over seven different ethnic groups. Methods: The post-shampooing re-greasing kinetics of the scalp was studied on 1325 subjects (women and men of two distinct age classes) from seven different ethnic groups in their residential and native country. Sebum amounts were determined onto small shaved scalp areas at various times post-shampooing, using the Sebumeter® technique. Results: As previously published on Caucasian subjects, scalp re-greasing process follows a hyperbolic-like kinetics over days. However, amounts of collected sebum highly vary with ethnicity. As recorded through the casual level (CL) at the equilibrium phase, 2-3 days post-shampooing, the highest amount of sebum was found in African American subjects, followed in descending order by Caucasian American, Japanese, Chinese, Thai, Caucasian European and Indian subjects, the latter showing very low values. Lower amounts of sebum were recorded in the older age class in all ethnics, as compared to the younger one, and male subjects were found higher sebum producers than women, irrespective of ethnicity. Conclusion: The kinetics and slopes of the re-greasing process of the human scalp appear similar in all ethnic groups studied. However, striking quantitative differences are found between the seven ethnic groups, resulting from different sebaceous production levels and scalp hygiene routines.

J. Kitsongsermthon, K. Duangweang, J. Kreepoke, A. Tansirikongkol, **In vivo cleansing efficacy of biodegradable exfoliating beads assessed by skin bioengineering techniques,** Skin Research and Technology 2017; 23: p. 525-530

Background/purpose: The plastic microbeads, used in many cleansers, will be banned in cosmetic and personal care products within 2017 since they are non-degradable and can disturb the living organisms in water reservoirs. Various choices of biodegradable beads are commercially available, but their efficacy has not been proven yet. This study aimed to compare the cleansing efficacy in dirt and sebum removal aspects of three types of exfoliating beads. Methods: The gel scrubs with polyethylene (PE) beads, mannan beads or wax beads, were formulated and evaluated for their stability. The in vivo evaluation was done in 38 healthy volunteers and the skin irritation, efficacy for dirt and sebum removal were measured by Mexameter®, Colorimeter®, and Sebumeter®, respectively. Results: The selected gel scrubs did not cause an irritation in any volunteers. The differences in dirt residues between before and after scrubbing were not statistically significant among three gel scrubs and the similar result was also reported in the sebum removal study. Conclusion: All gel scrubs demonstrated the comparable cleansing efficacy in term of dirt and sebum removal. Thus, mannan beads and wax beads may be replaced nonbiodegradable PE beads to achieve the similar cleansing effect.

J. Novoseletsky, **A Hint of Peppermint for the Hair and Scalp (Abstract)**, www.cosmeticsandtoiletries.com, November 2017

During SCS Formulate 2017, Naolys launched EtHAIReal Peppermint (INCI: *Mentha Piperita* (Peppermint) Leaf Cell Extract), a new active plant cell developed to rebalance and enhance the appearance of oily hair and improve the overall scalp. Tests were carried at concentrations of 0.5% (20% cells; 80% glycerin). The clinical study showed, after 28 days of treatment: A 44% decrease in

sebum via Sebumeter measurements; A 71% decrease in irritation, reported by self-scoring of subjects; and An increase in hair shine, as indicated by a 62% reduction in dullness (also self-scored by subjects). These results complement the outcome of the in vitro test, which showed a reduction of the enzyme 5α-reductase combined with a reduction in the release of inflammation mediators and in the development of free radicals at the level of hair bulb and scalp. EtHAIReal Peppermint is not allergenic, is preservative free and can be used in any type of hair care formulation, including shampoos, masks, serums and long-term hair treatments.

B. Algiert-Zielińska, M. Batory, J. Skubalski, H. Rotsztejn, **Evaluation of the relation between lipid coat, transepidermal water loss, and skin pH,** International Journal of Dermatology, Volume 56, Issue 11, November 2017, p. 1192-1197

Objective: The epidermis is an epidermal barrier which accumulates lipid substances and participates in skin moisturizing. An evaluation of the epidermal barrier efficiency can be made, among others, by the measurement of the following values: the lipid coat, the transepidermal water loss (TEWL) index, and pH. Materials: The study involved 50 Caucasian, healthy women aged 19–35 years (mean 20.56). Methods: Measurements were made using Courage & Khazaka Multi Probe Adapter MPA 580: Tewameter TM 300, pH-Meter PH 905, Sebumeter SM 815. The areas of measurements included forehead, nose, left cheek, right cheek, chin, and thigh. Results: In the T-zone, the lipid coat was in the range between 0 and 270 μg/cm^2 (mean 128 μg/cm^2), TEWL between 1 and 55 g/m^2/h (mean 11.1 g/m^2/h), and pH 4.0–5.6 (mean 5.39). Lower values of the lipid coat up to 100 μg/cm^2 were accompanied by TEWL greater than 30 g/m^2/h and less acidic pH of 5.6–9.0. In the U-zone the range of lipid coat was up to 200 μg/cm^2 (mean 65.2 μg/cm^2), the skin pH remained 4.0–5.6 (mean 5.47), and TEWL was in the range between 1 and 20 g/m^2/h (mean 8.7 g/m^2/h). Lower values of the lipid coat up to 100 μg/cm^2 were accompanied by TEWL between 1 and 20 g/m^2/h and less acidic pH of 5.6–9.0. High values of the lipid coat between 180 and 200 μg/cm^2 were connected with TEWL of 1–15 g/m^2/h. On the skin of the thigh, we observed a very thin lipid coat – 35 μg/cm^2 (mean 5.6 μg/cm^2), pH (mean 5.37), and TEWL (mean 8.5 g/m^2/h) were considered by us to be within regular limits. Conclusions: In the T-zone, a thinner lipid coat resulted in relatively high TEWL and pH levels changing toward alkaline. In the U-zone, thinner lipid coat was accompanied by lower TEWL and pH changing toward alkaline. We also observed that lower values of lipid coat up to 100 μg/cm^2 were associated with higher pH values ranging toward the basic character pH 5.6–9.0).

M.A.R. Abdallah, N.M. Zuelfakkar, R.H. Elbana, **Comparative Study of Male and Female Sebum Production**, The Egyptian Journal of Hospital Medicine (October 2017) Vol.69 (2), p. 1874-1879

Background: Evidence is given that gender-related differences in skin physiological properties exist. The aim of this study was to evaluate the difference between male and female sebum production by measuring sebum production over ½ hour, 1 hour and 11/2 hours in both males and females. Subjects and Methods: The study included 200 healthy volunteers and was carried out in the Dermatology outpatient clinic- AinShams University – during the period from January and February 2017 (as the sebum secretion is lower during this time of year). A total of 200 healthy male and female subjects (Fitzpatrick's skin types I–IV) with their age ranged from 15-25years old participated in this clinical study after giving avocal informed consent. Participants were divided to 100 males and 100 females. Results: Among male participants, it was found that sebum production significantly increase with time; sebum production at 1 hour was significantly higher than that at 0.5 hour; furthermore, sebum production at 1.5 hour was significantly higher than that at 0.5 hour. Conclusion: Sex difference is a significant factor affecting the amount of sebum production; which is significantly higher among males in comparison to age matched females. Rate of casual sebum production significantly increase among both males and females over time. Recommendations More studies are recommended to determine the factors and mechanism; molecular and endocrinal, behind the strong relation between male gender and the increased amount of sebum production.

J. Kozlowska, A. Kaczmarkiewicz, N. Stachowiak, A. Sionkowska, **Evaluation of Sebostatic Activity of Juniperus communis Fruit Oil and Pelargonium graveolens Oil Compared to Niacinamide**, Cosmetics 2017, 4, 36

As a facial skin condition, oily skin causes cosmetic problems, such as large pores, shiny appearance, and the feeling of greasiness and heaviness. Furthermore, extensive sebum production leads to common skin disorders such as acne vulgaris or seborrheic dermatitis. This study investigated the efficacy of sebum control tonics containing Juniperus communis fruit oil, Pelargonium graveolens oil, or niacinamide. The effects of Juniperus communis fruit oil, Pelargonium graveolens oil, and niacinamide on sebum excretion rates were investigated using Sebumeter®. Sebum measurements (Sebumeter® SM 815, Courage & Khazaka®, Köln, Germany) were made on the skin surface in three

places by applying the sebumeter probe to the forehead after 10, 60, and 120 min from application of the tonic. The results indicated that the application of the tonic maintained a lower sebum secretion 10 min and 60 min after the application of the cosmetic, compared to those before it. However, a visible sebum-reducing efficacy after 2 h was reported only for tonic containing 0.25% Pelargonium graveolens oil and for the tonic with the addition of 3% niacinamide. After 2 h, the values of sebum measurements were 44 ± 5.13 a.u. and 58 ± 9.07 a.u., respectively. Our results show that the tonic with the addition of 0.25% Pelargonium graveolens oil is the most effective in reducing sebum production.

Y.-S. Jeong, T.-S. Yun, J.-H. Kang, M.-P. Yang, B.-T. Kang, **Variation in repeated measurements of transepidermal water loss, skin hydration, and sebum level in normal beagle dogs**, J Biomed Transl Res 2017;18(3): p. 97-101

Skin barrier function can be assessed non-invasively, including by transepidermal water loss (TEWL), skin hydration, and sebum level. The aim of this study was to evaluate day-to-day variation in measurements of TEWL, skin hydration, and sebum level at various anatomic sites and the relationship between these parameters in normal dogs. Measurements were repeated five times on two separate days in five clinically normal Beagle dogs at seven anatomic sites, i.e., the left and right pinnae, left and right axillae, left and right groin areas, and ventrum. Coefficient of variation was used to show the variation in measurements. Correlations between each of the measurements were analyzed to determine the contribution of skin hydration and sebum level to TEWL. There was no variation in the measurements obtained according to time or anatomic site ($P>0.05$). The coefficient of variation was highest for sebum level (209.0 ± 81.8%) followed in descending order by skin hydration (62.7 ± 34.5%) and TEWL (41.1 ± 6.9%). Of the seven anatomic sites sampled, the left and right pinnae showed the lowest variation in repeated measurements for TEWL (39.2%), skin hydration (29.6%), and sebum level (75.5%). There was no significant relationship between the results for each measurement ($P>0.05$). Because of its relatively low variation on repeated measurement, TEWL might be the most useful way of evaluating skin condition in dogs.

E. Kim, Ji. Han, H. Park, M. Kim, B. Kim, J. Yeon, L. Wei, L. Wei, H. Lee, **The Effects of Regional Climate and Aging on Seasonal Variations in Chinese Women's Skin Characteristics**, Journal of Cosmetics, Dermatological Sciences and Applications, 7, 2017, p. 164-172

Objectives: Skin characteristics change depending on the external environment such as UV, temperature and humidity. But the research how to affect the regional climate, age and seasonal variation on the skin conditions was not well studied. Therefore, we investigated the seasonal variation in the skin by comparing Beijing women and Guangzhou women by age groups. METHODS: 440 healthy Chinese women participated in this study. The skin hydration, sebum secretion, TEWL and skin pH were measured on the cheek front. All the parameters were analyzed in terms of the age, season and region. RESULTS: The skin hydration in Beijing was lower than that in Guangzhou and significantly decreased during winter than summer. The sebum secretion in their 20s and 30s was significantly high in summer in both regions, and this phenomenon was more remarkable in Guangzhou ($p < 0.05$). The skin pH increased with age during winter, but it decreased in the old age groups in Beijing during summer. TEWL increased during winter, and differences in TEWL between summer and winter were greater in the old age groups. CONCLUSIONS: Skin hydration and barrier function decreased more during a cold, dry winter than summer. The barrier dysfunctions such as an increase in TEWL and pH occurred more commonly in old age groups. The greater the differences between summer and winter climates, the greater damage to skin barrier and skin hydration. The sebum secretion was more affected by hot, humid summers. Further, the aged skin was influenced by seasonal variation except for sebum secretion.

C. Uhl, D. Khazaka, **Test equipment supports anti-pollution claims,** PERSONAL CARE ASIA PACIFIC, May 2017, p. 27-29 and PERSONAL CARE EUROPE, September 2017, p. 74-76

Pollution and its impact on the skin have recently become the main topic at all important cosmetic events, and products claiming to protect the skin from pollution effects are a major trend in the cosmetic and personal care industry.

U. Wölfle, B. Haarhaus, J. Seiwerth, A. Cawelius, K. Schwabe, K.-W. Quirin, C.M. Schempp, **The Herbal Bitter Drug *Gentiana lutea* Modulates Lipid Synthesis in Human Keratinocytes In Vitro and In Vivo,** Int. J. Mol. Sci, 2017, 18, 1814

Gentiana lutea is a herbal bitter drug that is used to enhance gastrointestinal motility and secretion. Recently we have shown that amarogentin, a characteristic bitter compound of *Gentiana lutea* extract (GE), binds to the bitter taste receptors TAS2R1 and TAS2R38 in human keratinocytes, and

stimulates the synthesis of epidermal barrier proteins. Here, we wondered if GE also modulates lipid synthesis in human keratinocytes. To address this issue, human primary keratinocytes were incubated for 6 days with GE. Nile Red labeling revealed that GE significantly increased lipid synthesis in keratinocytes. Similarly, gas chromatography with flame ionization detector indicated that GE increases the amount of triglycerides in keratinocytes. GE induced the expression of epidermal ceramide synthase 3, but not sphingomyelinase. Lipid synthesis, as well as ceramide synthase 3 expression, could be specifically blocked by inhibitors of the p38 MAPK and PPARγ signaling pathway. To assess if GE also modulates lipid synthesis in vivo, we performed a proof of concept half side comparison on the volar forearms of 33 volunteers. In comparison to placebo, GE significantly increased the lipid content of the treated skin areas, as measured with a sebumeter. Thus, GE enhances lipid synthesis in human keratinocytes that is essential for building an intact epidermal barrier. Therefore, GE might be used to improve skin disorders with an impaired epidermal barrier, e.g., very dry skin and atopic eczema.

V. Bicard-Benhamou, J. zur Lage, L. Heider, D. Kleefeld, S. Eisenberg, F. Pfluecker, **Evaluation of the potential of a cyclohexyloxyl derivative targeting impure skins,** 42th SICC National Congress & 1st IPCE Conference June 2017, Stresa**,** Italy

Butyl hydroxycyclohexane carboxylate (BHCC, structure shown on Figure *1*, a cyclohexyloxyl derivative is an adequate innovative solution to an issue well-known from our teenage years and yet more rarely associated with adulthood: oily skin and its impact on the appearance of acne formation. At all ages impure skin issues may lead to a real aesthetic problem considering that in nowadays life, image resulting from own appearance matters more and more and because it appears on body parts most exposed to view like for instance forehead, nose and chin. Oily skin may result in skin especially prone to open pores, blackheads, spots and pimples, skin appearing greasy and coarse and skin looking uneven. Most people associate oily skin with teenage years, but oily skin can persist long beyond adolescence and for some people it might last a lifetime. Nevertheless, acne most often begins in puberty when androgens level increases causing sebaceous glands to become more active resulting in increased sebum production. *Propionibacterium acnes* (*P. acnes*), mainly colonized in the pilosebaceous unit, plays a crucial role in the development of acne. Acne patients demonstrate marked increases of this microorganism (1), *P. acnes* and its metabolites, the porphyrins, are also associated with inflammation processes in the skin. The perception of the skin as an ecosystem can advance our understanding of the delicate balance between host and microorganism. Disruptions in the balance on either side of the equation can result in skin disorders or infections (2) and non-beneficial bacteria are associated with them. On the other way beneficial bacteria helps preventing pathogenic microorganisms from colonizing the surface of the skin and preserving them is essential. A heathy and balanced microflora is therefore crucial. BHCC helps relieving skin from susceptibility to acne development and supporting skin health. BHCC provides a triple effect: it Regulates Sebum, it Reduces inflammation, and finally it Rebalances skin's microflora and all the results shown here provide a scientific demonstration of these claims.

E. Yenilmez, Y. Yazan, **Formulation, Characterization and in vivo Efficacy of α-Tocopherol Iimprinted Polymeric System for Cosmetic Application**, European International Journal of Science and Technology, Vol. 6 No. 3, April 2017

The purpose of this study was to formulate an antioxidant topical cosmetic molecularly imprinted system for skin aging and was to evaluate the formulation in vivo on human volunteers. Molecular imprinted cyclodextrins (CDs) were prepared by cross-linking cyclodextrins (CD) in the presence of a vitamin E (VE) as template molecule. Characterization studies were performed on molecularly imprinted polymers (MIP) and non-imprinted polymers (NIP). Antioxidant effects of formulations prepared were investigated by 2,2-diphenyl-1-picrylhydrazyl (DPPH) test. In vivo skin measurements were done on human volunteers including sebum, moisture, pH, net elasticity and roughness parameters. It was seen that temperature increase influced the particle size of imprinted polymers. It was determined that MIP systems have an antioxidant effect. Formulations showed a positive effect on skin roughness parameter was determined statistically ($p \leq 0.01$). The preparation method of MIP is simple and quick and it will provide opportunities in future on specific cosmetic formulations.

E. Loing, E. Lamarque, M. Borel, **New targets in the battle against dandruff**, J Cosmet Sci, 2017 Jan/Feb;68(1): p. 107-113

Dandruff is a scalp disorder characterized by flaking skin and itch of an excessive oily scalp skin. It affects 55% of the global youth and adult population. Seborrheic dermatitis is a similar scalp skin disorder with aggravated itchy rashes and flaking. Different factors are identified in the dandruff development: increased sebum production, uncontrolled fungal growth of *Malassezia* strains and individual reaction to pro-inflammatory environment, and the susceptibility to trigger an immunological

response. Using *in vitro* and *ex vivo* models, we show that an *Epilobium angustifolium* extract dose dependently reduces lipid synthesis in sebocytes to a maximum of -43% (1% extract), and protects the epidermis from *Malassezia*-induced morphological changes. *Epilobium angustifolium* extract also acts through innovative mechanisms involving regulations of defensins (human beta-defensins [hBD2] and hBD3) and toll-like receptor 2 involved in the immunological response of the skin. The anti-dandruff and sebum-regulating efficacy of *E. angustifolium* extract (1.5%) was confirmed in a clinical study that mobilized 24 volunteers with dandruff and greasy scalp for 30 days. At the end of the study, nonadherent and adherent dandruffs were significantly ($p < 0.0001$) reduced in average by -54% and -48%, respectively. Using Sebumeter® measurements, scalp sebum production was inhibited by -67% ($p < 0.0001$) in average over baseline. In conclusion, *E. angustifolium* extract offers a new innovative approach to dandruff reduction through immunomodulation of the skin response to *Malassezia* invasion.

Xi Li, C. Yuan, L. Xing, P. Humbert, **Topographical diversity of common skin microflora and its association with skin environment type: An observational study in Chinese women**, Scientific Reports, (2017) 7:18046

This study evaluated cutaneous microbial distribution, and microbial co-occurrence at different body sites and skin environments in Chinese women (39.6 ± 11.9 years, N= 100) during the winter season. Microbial distribution (*Propionibacterium acnes*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Lactobacillus*, Pseudomonadaceae, and *Malassezia furfur*), association with biomarkers (antimicrobial peptides: LL-37, β-defiensins [HBD-2, HBD-3]), and claudin-1) and skin biophysical parameters (transepidermal water loss, pH, skin scaliness and roughness, sebum and hydration levels) were also determined. Skin sites (glabella [GL], hand-back [HB], interdigital web-space [IS], antecubital fossa [AF], volar forearm [VF], back [BA]) were classified as normal, oily or dry based on two-step cluster analysis and exposed or unexposed (uncovered or covered by clothes, respectively) based on seasonal apparel. Pseudomonadaceae and *Staphylococcus aureus* had the highest and lowest detection rate respectively at all sites. Cluster analysis identified skin sites as 'normal' (HB, BA, AF, VF), 'dry' (IS) and 'oily' (GL). Bacterial alpha diversity was higher in exposed (HB, IS, and GL) compared with unexposed sites (BA, AF and VF). Co-occurrence of *Staphylococcus aureus* with any of the other five microorganisms was lower in dry and oily skin versus normal skin. Skin exposure, biophysical/barrier profile and biomarkers were found to be associated with bacterial distribution and co-occurrence.

M. Mangier, D. Boudier, L. Mariaud, M. Rouy, M. Quillet, L. Marchand, M. LeGuillou, S. Bordes, B. Closs, **Natural anti-seborrhoea active for multi-ethnicskin,** PERSONAL CARE ASIA PACIFIC, January 2017, p. 41-43

The cosmetics industry continually seeks innovation and effective molecules to treat oily skin and hair regardless of ethnicity. This cosmetic problem results from excessive sebum secretion. Based on recent progress in sebocyte biology, silab is now proposing its sebum regulating cosmetic active ingredient that can improve the comfort of Caucasian, South American and Asian skins. Sebocytine® is rich in flavonoids from wild rose berries and returns sebum in facial skin and the scalp to normal levels. The skin is matte rather than shiny, radiant and refined, and hair regains its lost suppleness and shine.

R. Rayner, K. Carville, G. Leslie, S.S. Dhaliwal, **Measurement of morphological and physiological skin properties in aged care residents: a test–retest reliability pilot study**, International Wound Journal, 2016

This test–retest pilot study investigated the intra-rater reliability and reproducibility of non-invasive technologies to objectively quantify morphological (colour, thickness and elasticity) and physiological (transepidermal water loss (TEWL), hydration, sebum and pH) skin properties in an aged care population. Three consecutive measurements were taken from fve anatomical skin sites, with the mean of each measurement calculated. The intra-class correlation coeffcient (ICC) and the standard error of measurement (SEM) were used to examine the intra-rater reliability and reproducibility of measurements. Non-invasive technologies in this study showed almost perfect reliability for ultrasound measurements of the subepidermal low echogenicity band (SLEB) (ρ = 0·95–0·99) and skin thickness (ρ = 0·95–0·99) across all sites. The ICC was substantial to almost perfect for pH (ρ = 0·76–0·88) and viscoelasticity (ρ = 0·67–0·91) across all sites. Hydration (ρ = 0·53–0·85) and skin retraction (ρ = 0·57–0·99) measurements ranged from moderate to almost perfect across all sites. TEWL and elasticity were substantial to almost perfect across four sites. Casual sebum levels and most colour parameters showed poor ICC. The use of non-invasive technologies in this study provided an objective and reliable means for quantifying ageing skin and may offer future studies a valuable option for assessing skin tear risk.

E.O. Okoro, N. Gadzama Bulus, C.C. Zouboulis, **Study of Facial Sebum Levels and Follicular Red Fluorescence in Patients with Acne Vulgaris in Nigeria**, Dermatology 2016; 232: p. 156–161

Background: Increased sebum levels are triggering factors of acne vulgaris. No studies on sebum levels exist among acne patients in Africa. Aims/Methods: Cross-sectional study to determine facial sebum levels, acne lesions and red fluorescence among adolescents (n = 80) with acne vulgaris in Nigeria, who were interviewed and clinically examined. Results: Facial sebum levels were higher among adolescents with acne than among those without. There was a positive correlation between sebum levels and acne lesions in the U zone but not in the T zone. There was also a positive correlation between the size of red fluorescence and acne lesions and mean sebum levels. Both correlations were highly significant in the U zone but not in the T zone. Conclusion: Facial sebum levels are higher among black African acne patients. Sebum is responsible for facial red fluorescence. The U zone may serve as a more reliable site than the T zone for measurements of sebum levels in black African acne patients.

H. Gamze Demirdağ, H. Özcan, Ş. Gürsoy, G. Beker Akbulut, **The effects of sebum confguration on Demodex spp. Density**, urk J Med Sci (2016) 46: p. 1415-1421

Background/aim: Demodex spp. are ectoparasites living in the pilosebaceous units, which feed on the host's sebum and cellular proteins. Te protective barrier of the skin consists of sebum secretion, moisture, and the acid mantle. In this study, we aimed to determine the effects of skin sebum, moisture, pH levels, and sebum confguration on Demodex spp. Density Materials and methods: Forty-fve patients who had demodicosis were enrolled in the study group, while the control group consisted of 40 subjects without demodicosis. Body fat percentage, serum triglyceride and cholesterol levels, skin sebum, moisture, and pH levels were measured. Demodex spp. density was determined with a standardized skin surface biopsy. Sebum samples were taken from the forehead and a high-performance thin-layer chromatography (HPTLC) method was performed on these samples. Subsequently, densitometric analyses were applied to the HPTLC plates. Results: Demodex spp. were found on the cheeks and lived in an alkali environment. Skin sebum and moisture levels were low in all groups. Te skin pH levels and cholesterol ester in the sebum confguration were determined to be signifcantly higher in the group with demodicosis. Conclusion: We suggest that Demodex spp. may use cholesterol ester in the sebum as nutriment. In other words, cholesterol ester may be a suitable growth medium for the proliferation of Demodex spp.

S. Eisenberg, H. Hanau, D. Kleefeld, V. Bicard-Benhamou, H. Driller, **3R regulation of oily skin and microflora balance,** Personal Care April 2016

There is something many of us remember from our teenage years but only a few associate with adulthood: oily skin. Oily skin is a major issue, because it affects those areas that are the most exposed, like the chin, forehead and nose. Oliy and impure skin causes a real asthetic problem and may lead to higher acne susceptibility. Even in adults, a healthy facial skin and complexion play an important role. Consumers around the world have become very self-conscious of their appearance.

C. Richter, C. Trojahn, G. Dobos, U. Blume-Peytavi, J. Kottner, **Follicular fluorescence quantity to characterize acne severity: a validation study,** Skin Research and Technology 2016; 0: 1-9

Background: Porphyrins are native fluorophores in the follicle openings, visible under ultraviolet-A light. Acne severity might be associated with increased Propionibacterium acnes colonization and porphyrin production. Aim of this study was to investigate whether the parameter fluorescence quantity can be used to measure acne severity. Methods: A validation study was conducted in 24 patients with acne using split-face design. Acne severity was measured using Investigator Static Global Assessment scores and lesion counts. Reliability, construct validity and sensitivity to change in fluorescence quantity were investigated. Results: Mean baseline Investigator Static Global Assessment score was 2.7 (SD 0.1). Mean baseline fluorescence quantities were 24.8 (SD 4.0) on the cheek and 20.3 (SD 4.6) on the chin. On day 25, values ranged from 6.0 (SD 6.0) to 18.1 (SD 18.4) on the cheek and from 2.6 (SD 4.4) to 14.7 (SD 16.2) on the chin. The intraclass correlation coefficients of fluorescence quantity ranged from 0.513 to 0.987. Effect sizes for fluorescence measurements were highest on the chin and cheek ranging from 0.24 to 0.77 and 0.32 to 0.75, respectively. Conclusion: Fluorescence quantity indicates acne severity, especially on the inner cheek and chin areas. Fluorescence quantity is reliable but is not as sensitive as manual lesion counting.

J. Eo, Y.K. Seo, J.H. Baek, A.R. Choi, M.K. Shin, J.S. Koh, **Facial skin physiology recovery kinetics during 180 min post-washing with a cleanser**, Skin Research and Technology 2016; 22: 148-151

Background/Purpose: Facial cleansing is important to clean and exfoliate the skin while maintaining optimal physiologicfunction. However, there is insufficient data on the very early stage of skin change after applying soap or cleansing foam. We investigated the recovery kinetics of facial skin physiologyduring 180 min after exposure to the cleanser.

J.H. Baek, S.M. Ahn, K.M. Choi, M.K. Jung, M.K. Shin, J.S. Koh, **Analysis of comedone, sebum and porphyrin on the face and body for comedogenicity assay**, Skin Research ami Technology 2016; 22: 164-169

Background/Purpose: Many ingredients used in cosmetics evoke a comedogenic response. Rabbit ear model (REM) is a useful method that can replace human in examining materials and products in early developmental stage. However, a number of studies pointed out its disadvantage that it overreacts to comedogenic materials. The purpose of this study was to find the most appropriate region for evaluating comedogenicity in human skin.

B. Moncada, C. Castillo-Martmez, E. Arenas, F. Leon-Bejarano, M. G. Ramirez-Elias, F. J. Gonzalez, **Raman spectroscopy analysis of the skin of patients with melasma before standard treatment with topical corticosteroids, retinoic acid, and hydroquinone mixture,** Skin Research and Technology 2016; 22: 170-173

Background: Melasma is an abnormal acquired hyperpigmentation of the face of unknown origin, it is considered a singledisease and very little has been found regarding its pathogenesis. It is usually assumed that melasma is due to excessive melanin production, but previous work using Raman spectroscopy showed degraded molecules of melanin in some melasma subjects, which may help to explain the success orfailure of the standard therapy.

L. Agren, E. Nilsson, **The effect of Nordicseed oilon dry, irritated scalp,** PERSONAL CARE EUROPE, September 2016, p. 32-34

Many experience difficulty finding something that helps to reduce scalp problems even though there is a wide range of products available on the market - shampoos, creams, gels and liniment. The unique combination of valuable nutrients and fatty acid composition make blackcurrant seed oil and sea buckthorn oil interesting for an irritated scalp. We aimed to investigate whether Q for Skin's concept based on blackcurrant seed oil and sea buckthorn pulp/seed oil can help people with a dry, irritated scalp.

M. Lee, Y. Jung, E. Kim, H.K. Lee, **Comparison of skin properties in individuals living in cities at two different altitudes: an investigation of the environmental effect on skin**, J Cosmet Dermatol. 2016 Sep 11

Background: Skin properties vary depending on exogenous factors. Various studies have been used for comparing skin properties between cities for studying environment influence on skin properties. However, for comparison of skin properties between cities, various environmental factors have to be considered. Objectives: The purpose of this study therefore was to compare skin properties in individuals of the same ethnicity and sex (Indonesian women) between different altitudes and to interpret the environmental effect on skin. Methods: In this study, we reanalyzed the data obtained from previous study. The data were for healthy Sundanese Indonesian females [(n = 136) at Jakarta (n = 49) and Bandung (n = 87)], and the data consisted of published data (skin hydration, sebum level, pH, elasticity, and transepidermal water loss) and unpublished data [skin color (L*, a*, and b*)]. The skin parameters were measured on Indonesian females aged 20-34 using C+K devices (corneometer, sebumeter, pH meter, and cutometer), Delfin vapometer, and Minolta spectrophotometer, respectively. Results: Sundanese Jakarta (low-altitude) females had higher sebum level and greater redness (a*) value in the forehead than Sundanese Bandung (high-altitude) females. In contrast, Bandung females had higher skin pH, brighter skin color, and greater forehead skin elasticity than Jakarta females. Conclusions: The skin properties can be influenced by changing altitude because different altitudes have different environments such as air temperature, humidity, UV radiation, and so on, and it is also necessary to investigate the factors which can influence with perceived skin condition such as skin type and skin concerning.

M. Zhou, H. Xie, L. Cheng, J. Li, **Clinical characteristics and epidermal barrier function of papulopustular rosacea: A comparison study with acne vulgaris,** Pak J Med Sci 2016 Vol. 32 No. 6

Objective: To evaluate the clinical characteristics and epidermal barrier function of papulopustular rosacea by comparing with acne vulgaris. Methods: Four hundred and sixty-three papulopustular rosacea patients and four hundred and twelve acne vulgaris patients were selected for the study in Xiangya Hospital of Central South University from March 2015 to May 2016. They were analyzed for major facial lesions, self-conscious symptoms and epidermal barrier function. Results: Erythema**,** burning, dryness and itching presented in papulopustular rosacea patients were signifcantly higher than that in acne vulgaris patients (P<0.001). The clinical scores of erythema, burning, dryness

and itching in papulopustular rosacea patients were signifcantly higher than those in acne vulgaris patients (P<0.001). The water content of the stratum cornuem and skin surface lipid level were both signifcantly lower in papulopustular rosacea patients than that of the acne vulgaris patients (P<0.001) and healthy subjects (P<0.001); Water content of the stratum cornuem and skin surface lipid level were higher in acne vulgaris patients in comparison with that of healthy subjects (P>0.05, P<0.001; respectively). Transepidermal water loss was signifcantly higher in papulopustular rosacea patients than that of acne vulgaris patients and healthy subjects (P<0.001); transepidermal water loss was lower in skin of acne vulgaris patients than that of healthy subjects (P<0.001). Conclusion: Erythema, burning, dryness and itching are the characteristics of papulopustular rosacea, which makes it different from acne vulgaris. The epidermal barrier function was damaged in papulopustular rosacea patients while not impaired in that of acne vulgaris patients.

H.J. Youn, S.Y. Kim, M. Park, W.H. Jung, Y.W. Lee, Y.B. Choe, K.J. Ahn, **Efficacy and Safety of Cream Containing Climbazole/Piroctone Olamine for Facial Seborrheic Dermatitis: A Single-Center, Open-Label Split-Face Clinical Study,** Ann Dermatol Vol. 28, No. 6, 2016, p. 733-739

Background: Seborrheic dermatitis (SD) is a multifactorial disease; Malassezia species play an important role in its pathogenesis. Objective: We aimed to determine whether a cream containing climbazole/piroctone olamine (C/P cream), antifungal agents with expected efficacy against Malassezia species, could improve SD symptoms. Methods: We instructed 24 patients with mild-to-moderate SD to apply the C/P cream and emollient cream on the right and left sides of the face, respectively, every morning and evening for 4 weeks. The casual sebum level (measured with Sebumeter®; Courage & Khazaka Electronic GmbH, Germany) and the extent of erythema (measured with Mexameter®; Courage & Khazaka Electronic GmbH) on the face were measured at baseline and after 4 weeks. The minimal inhibitory concentration (MIC) was determined to demonstrate the antifungal activity of the C/P cream. Results: The casual sebum level and erythema were measured at week 4, and the median values demonstrated a quantitative improvement on the C/P cream-treated right side of the face compared to the emollient cream-treated left side. For the C/P cream, the MICs were 0.625, 5, 0.625, and 2.5 mg/ml for Malassezia restricta, M. globosa, M. sympodialis, and M. slooffiae, respectively. Conclusion: Based on the reduced casual sebum level and extent of erythema, the antifungal activity of C/P cream against Malassezia species seems useful for the treatment of mild to moderate SD.

A. Firooz, H. Zartab, B. Sadr, L. Naraghi Bagherpour, A. Masoudi, F. Fanian, Y. Dowlati, A. Hooshang Ehsani, A. Samadi, **Daytime Changes of Skin Biophysical Characteristics: A Study of Hydration, Transepidermal Water Loss, pH, Sebum, Elasticity, Erythema, and Color Index on Middle Eastern Skin,** Iranian Journal of Dermatology, Dec. 2016

Background: The exposure of skin to ultraviolet radiation and temperature differs signifcantly during the day. It is reasonable that biophysical parameters of human skin have periodic daily fluctuation. The objective of this study was to study the fluctuations of various biophysical characteristics of Middle Eastern skin in standardized experimental conditions. Materials and Methods: Seven biophysical parameters of skin including stratum corneum hydration, transepidermal water loss, pH, sebum, elasticity, skin color, and erythema index were measured at three time points (8 a.m., 12 p.m. and 4 p.m.) on the forearm of 12 healthy participants (mean age of 28.4 years) without any ongoing skin disease using the CK MPA 580 device in standard temperature and humidity conditions. Results: A significant difference was observed between means of skin color index at 8 a.m. (175.42 ± 13.92) and 4 p.m. (164.44 ± 13.72, P = 0.025), between the pH at 8 a.m. (5.72 ± 0.48) and 4 p.m. (5.33 ± 0.55, P = 0.001) and pH at 12 p.m. (5.60 ± 0.48) and 4 p.m. (5.33 ± 0.55, P = 0.001). Other comparisons between the means of these parameters at different time points resulted in nonsignifcant P values. Conclusion: There are daytime changes in skin color index and pH. Skin color index might be higher and cutaneous pH more basic in the early morning compared to later of the day.

H. Khan, N. Akhtar, A. Ali, **Assessment of Combined Ascorbyl Palmitate (AP) and Sodium Ascorbyl Phosphate (SAP) on Facial Skin Sebum Control in Female Healthy Volunteers**, Drug Res (Stuttg) 2016 Oct 18

The skin is fortified with a setup of lipophilic and hydrophilic, enzymatic and non-enzymatic antioxidant systems.Ascorbyl palmitate (AP) and sodium ascorbyl phosphate (SAP) are reported as lipophilic and hydrophilicantioxidants, respectively used for skin care. Present study was aimed to assess the combined AP (in oil phase) and SAP (in aqueous phase) via multiple emulsion (MEi) for controlling sebum secretions in healthy human females. FTIR analysis of AP and SAP was performed for identification. Multiple emulsions (MEi and control) were prepared and analyzed for physical stability. Antioxidant activities of AP, SAP as well as MEi (with combination of these compounds) were determined by DPPH method. 11 female volunteers were included in a single-blinded, placebo-

controlled, split-face comparative study. Volunteers were instructed to apply MEi on left cheek while control (without AP and SAP) on right cheek, for a period of 90 days. A non-invasive photometric device (Sebumeter) was used for the measurement of sebum secretions on both sides of the face with subsequent time intervals. A good antioxidant activity of MEi was observed. MEi treatments reduced significant facial sebum secretions as compared with control/placebo treatments. It was concluded that combined AP and SAP supplementations to skin proved a promising choice for controlling facial sebum secretions and could be evaluated for undesired oily skin and acne reductions for beautifying the facial appearance.

S.*A. Kim, B.R.Kim, M.Y. Chun, S.W. Youn,* **Relation between pH in the Trunk and Face: Truncal pH Can Be Easily Predicted from Facial pH**, Ann Dermatol 28(2) p. 216-221, 2016

Background: The clinical symptoms of facial and truncal acne differ. Skin surface acidity (pH), which is affected by sebum secretions, reflects the different clinical characteristics of the face and trunk. However, no studies have been conducted on truncal sebum production and skin pH. Objective: We evaluated the differences and relationship between pH values of the face and trunk. We also evaluated the relationship between pH and the quantity of sebum produced in the trunk. Methods: A total of 35 female patients clinically diagnosed with truncal acne were included. We measured pH on the face and truncal area using the Skin-pH-Meter PH 905®. We measured truncal sebum secretions using the Sebumeter SM 815®. Statistical analysis was performed to evaluate the correlations and differences between pH and sebum. Results: Facial pH was significantly higher than chest and back pH values. The correlation between pH on the trunk and the face was significant. We used linear regression equations to estimate truncal pH using only measured pH from the chin. There was no significant relationship between truncal sebum secretion and pH. Conclusion: This was the first study that evaluated the differences and correlations between facial and truncal pH. We found that facial pH can predict truncal pH. In addition, we conclude that differences in pH and sebum secretion between the face and trunk are one of the reasons for differences in acne symptom at those sites.

Z. Xu, Z. Wang, C.Yuan, X. Liu, F. Yang, T. Wang, J. Wang, K.i Manabe, O. Qin, X. Wang, Y. Zhang, M. Zhang, **Dandruff is associated with the conjoined interactions between host and microorganisms,** Scientific Reports, 6:24877, 2016

Dandruff is an unpleasant scalp disorder common to human populations. In this study, we systematically investigated the intra- and inter-associations among dandruff, physiological conditions such as sebum of the scalp, host demographics such as gender, age and the region of the scalp, and the microorganisms on the scalp. We found that the physiological conditions were highly relevant to the host age and varied in different regions of the same scalp. The sebum quantity and water content were negatively correlated with the formation of dandruff and had signifcant relationships with the two dominant but reciprocally inhibited bacteria on the scalp (*Propionibacterium* and *Staphylococcus*). The dominant fungus (*Malassezia* species) displayed contrary roles in its contribution to the healthy scalp micro-environment. Bacteria and fungi didn't show a close association with each other, but the intramembers were tightly linked. Bacteria had a stronger relationship with the severity of dandruff than fungi. Our results indicated that the severity of dandruff was closely associated with the interactions between the host and microorganisms. This study suggests that adjusting the balance of the bacteria on the scalp, particularly by enhancing *Propionibacterium* and suppressing *Staphylococcus*, might be a potential solution to lessen dandruff.

G. Stinco, F. Piccirillo, F. Valent, E. Errichetti, N. Di Meo, G. Trevisan, P. Patrone, **Efficacy, tolerability, impact on quality of life and sebostatic activity of three topical preparations for the treatment of mild to moderate facial acne vulgaris**, G Ital Dermatol Venereol, 2016 Jun;151(3): p. 230-238

Background: Acne is treated according to the clinical observations and pathophysiologically relevant mechanisms, such as hyper-keratinization, seborrhea and bacterial proliferation. In mild and moderate forms of inflammatory acne, topical antimicrobials are recommended as a monotherapy or in combination with topical retinoids. The aim of this study was to compare the clinical effectiveness, tolerability, impact on quality of life and effect on sebum excretion of three antimicrobial preparations: clindamycin phosphate, benzoyl peroxide and a combination of clindamycin phosphate plus benzoyl peroxide. Methods: In total, 240 patients were randomized into treatment groups for an 8-week study. Every two weeks the patients were evaluated using the following methods: photography, the Global Acne Grading System, sebumetric evaluation, and the Acne-Specific Quality of Life questionnaire. In addition, 80 healthy controls were enrolled for the sebumetric evaluation. Results: A significant improvement in acne and the quality of life was observed for all three therapies at the end of the study. The sebum excretion results for the three treatment groups displayed significant and unpredictable variation, whereas the controls groups exhibited no significant variation. The three treatments were well

tolerated. Conclusions: The efficacy of the three antimicrobial preparations likely results from their anti-inflammatory and bacteriostatic activities. In contrast, seborrhoea seems to be minimally impacted.

A. Ezerskaia, F. Pereira, H.P. Urbach, R. Verhagen, B. Varghese, **Quantitative and simultaneous non-invasive measurement of skin hydration and sebum levels**, Biomedical Optics Express 2311, June 2016, Vol. 7, No. 6

We report a method on quantitative and simultaneous noncontact in-vivo hydration and sebum measurements of the skin using an infrared optical spectroscopic set-up. The method utilizes differential detection with three wavelengths 1720, 1750, and 1770 nm, corresponding to the lipid vibrational bands that lay “in between” the prominent water absorption bands. We have used an emulsifier containing hydro- and lipophilic components to mix water and sebum in various volume fractions which was applied to the skin to mimic different oily-dry skin conditions. We also measured the skin sebum and hydration values on the forehead under natural conditions and its variations to external stimuli. Good agreement was found between our experimental results and reference values measured using conventional biophysical methods such as Corneometer and Sebumeter.

C. Nualsri, N. Lourith, M. Kanlayavattanakul, **Development and clinical evaluation of green tea hair tonic for greasy scalp treatment,** J Cosmet Sci, 2016 May-Jun;67(3): p. 161-166

Green tea has cosmetic benefits that include activities against androgen disorders. A hair tonic containing green tea for reduction of scalp sebum was developed and clinically evaluated. Stable green tea hair tonics were closed-patch tested and clinically evaluated in 20 volunteers for 28 days by using a Sebumeter®. Hair tonic base with glycerin and butylene glycol (total 4%) gained the highest consumers’ preference was incorporated with green tea extract. All of the products were stable and none caused skin irritation. Green tea hair tonic (2%) significantly ($p \leq 0.024$) lowered scalp sebum for 21 and 28 days following the application, suggesting that this topical therapy of scalp greasiness is safe and efficient.

A.C. da Silva Marques, **Biometrologic Evaluation of Cosmetic Products**, Dissertation in pharmaceutical sciences at the University of Coimbra, Portugal, 2016

Given the growing importance that cosmetic products have on human’s health and in our daily life, it is important to increase the control of these products, both in terms of safety and effectiveness. Taking into account that conducting animal tests for the production and validation of cosmetic products is prohibited by law, producers of these products have to resort to alternative methods. Biophysical methods have gained an important highlight in the scientific community, in particular the non-invasive methods. They allow a safe and faster evaluation of cosmetics. The purpose of this work is to describe some methods and equipments used at national and European level to test the effectiveness of cosmetic products and correlate the parameters evaluated with the alleged properties in the products. The methods include evaluation tests of the following skin properties: hydration, elasticity, coloring, sebum production and perspiration.

J. M. Crowther, **Method for quantification of oils and sebum levels on skin using the Sebumeter,** International Journal of Cosmetic Science**,** 2016, Volume 38, Issue 2, p. 210-216

Objective: The Sebumeter® is widely used in both cosmetic and medical research, for measuring changes in sebum levels on skin. It is commonly reported that the units correlated to a mass of sebum on the skin in *jig* cm-2; however, validation for this has not been published. Also, its use for assessing the presence of other oily materials which are widely utilized in topical skincare products on skin has not been widely discussed. Determining a calibration scale and whether the response of the device is linear with the level of oils present enables quantification of the output of the device, and would validate the device for claims substantiation. Methods: Different doses of a variety of oily materials (paraffin oil, white soft paraffin, capric-caprylic triglyceride, 350cSt silicone fluid and synthetic sebum) were applied to skin, and the Sebumeter used to collect and quantify them. The mass per square centimetre of the oily material delivered to the skin was then compared to the Sebumeter output to develop calibration curves for the different materials. Measurements were carried out on a single volunteer as this work was to verify the concept of quantitative oil assessment using the device. Results: A linear correlation between the mass of the oily material and the Sebumeter output was seen for all the materials tested. However, the absolute response of the device was different for each material, and the output values did not directly give the mass of material on the skin in lg cm^2. As part of the calibration, it was also demonstrated that to remove all the oily material from a given area of the skin required multiple 30-s applications of the Sebumeter cartridge. Conclusion: The Sebumeter is a precise analytical instrument capable of quantitative measurement of deposition of oily materials onto skin from topical products (down to the lg cm2level), as well as its traditional use of measuring sebum levels. However, the output values do not

directly correlate with the mass of oil present, and generation of a calibration curve is necessary for any ingredient of interest to produce quantitative data for claim support and formulation development.

A. Ezerskaia, S.F. Pereira, **Infrared spectroscopic measurement of skin hydration and sebum levels and comparison to corneometer and sebumeter**, in J. Popp et al. (Editor): Biophotonics: Photonic Solutions for Better Health Care V

Skin health characterized by a system of water and lipids in Stratum Corneum provide protection from harmful external elements and prevent trans-epidermal water loss. Skin hydration (moisture) and sebum (skin surface lipids) are considered to be important factors in skin health; a right balance between these components is an indication of skin health and plays a central role in protecting and preserving skin integrity. In this manuscript we present an infrared spectroscopic method for simultaneous and quantitative measurement of skin hydration and sebum levels utilizing differential detection with three wavelengths 1720, 1750, and 1770 nm, corresponding to the lipid vibrational bands that lie “in between” the prominent water absorption bands. The skin sebum and hydration values on the forehead under natural conditions and its variations to external stimuli were measured using our experimental set-up. The experimental results obtained with the optical set-up show good correlation with the results obtained with the commercially available instruments Corneometer and Sebumeter.

A.I. Arshad, S.H. Khan, N. Akhtar, A. Mahmood, R.M. Sarfraz, **In vivo evaluation of skin irritation potential, melasma and sebum content following long-term application of skin care cream in healthy adults using non-invasive biometrological techniques**, Acta Pol Pharm. 2016 Jan-Feb;73(1): p. 219-27

The present investigation was conducted to evaluate non-invasively, various functional skin parameters i.e. irritation potential, melasma and sebum contents following long term application of topical cream (w/o) loaded with 2% methanolic extract of Ananas comosus L. versus placebo control (base) in healthy adults. Healthy human volunteers (n = 11, aged 20-30 years) were recruited for investigation and written informed consent was taken from each volunteer. In this single blinded study every volunteer applied formulation on one side of face and placebo on the other side of face twice daily for a period of 12 weeks (three months). Different skin parameters i.e., skin irritancy, melasma, and sebum contents were measured on both sides of face at baseline and after two weeks interval, using photometric device Mexameter and Sebumeter in a draught free room with modulated conditions of temperature (22-25°C) and humidity (55-60%). It was evident from the results that no primary skin irritancy was observed with patch test. Besides, statistical interpretation indicates that treatment with formulation is superior to placebo because it significantly ($p < 0.05$) reduced the skin irritancy, melasma and sebum secretions throughout the study and reaching maximum -20.76 ± 0.89, -54.2 ± 0.37 and -40.71 ± 0.75%, respectively, at the end of study period. Antioxidant activity of extract was 92% compared to standard antioxidant. Conclusively, active cream loaded with fruit extract was well tolerated by all the volunteers and suitable to treat contact dermatitis, greasy skin, acne and seborrheic dermatitis and augmenting beauty and attraction by depigmentation of human skin. So, in the future, there is need to clinically evaluate these formulations in patients with compromised skin functions i.e., contact dermatitis, melasma, and acne vulgaris in order to explore the actual potential of this fruit.

G.W. Nam, J.H. Baek, J.S. Koh, J.K. Hwang, **The seasonal variation in skin hydration, sebum, scaliness, brightness and elasticity in Korean females,** Skin Research and Technology 2015; 21: 1-8

Background/purpose: Age, gender, regional, and ethnic differences influence skin conditions. The purpose of this study was to obverse the effects of enviroments, especially the air temperature, relative humidity, air pressure, duration of sunshine, and percipitation on skin and the seasonal variation in skin hydration, sebum, scales, brightness, and elasticity in Korean females.

K. Isoda, Y. Takagi, K. Endo, M. Miyaki, K. Matsuo, K. Umeda, K. Umeda-Togami, H. Mizutani, **Effects of washing of the face with a mild facial cleanser formulated with sodium laureth carboxylate and alkyl carboxylates on acne in Japanese adult males,** Skin Research and Technology 2015; 21: 247-253

Background/purpose: Washing the face with a mild cleanser is generally recommended for acne care. Occasionally, the general public has the misconception that acne is exacerbated by cleansers and furthermore it has concerns about inducing skin irritation and xerosis by intensive wahing. Recently, we developed a new cleanser based on sodium laureth carboxylate and alkyl carboxylates (AEC/soap) that cleans sebum well without penetrating the stratum corneum.

M. Schultz, **Charakterisierung der Hautbarrierefunktion von Früh- und Reifgeborenen innerhalb der ersten Lebensjahre unter Berücksichtigung angewandter Pflegekonzepte in der Neonatalperiode,** Dissertation Charité - Universitätsmedizin Berlin, Germany, September 2015

Die Reifungsprozesse der Hautbarriere dauern vermutlich bis ins Kleinkindalter hinein an und führen zu einer erhöhten Vulnerabilität der Hautbarriere gegenüber externen Einflüssen. Deshalb ist es wichtig, den Einfluss von Hautpflege auf die kindliche Hautbarriere wissenschaftlich zu untersuchen. Ziel dieser Studie war die Charakterisierung der kindlichen Hautbarriere in ihrer postnatalen Entwicklung unter Berücksichtigung standardisierter postnataler Pflegekonzepte und weiterer Faktoren.

H. Chajra, F. Lerfevre, P. Salmassinia, **Multifunctional actives for oily skin and scalp disorders**, Personal Care, May 2015

Though the conventional hair care market is a mature one, there are still many opportunities to innovative and radicalise this sector. As the needs of consumers are becoming more complex, the corresponding products evolve towards more sophisticated and solution-oriented concepts by default. Just in the first of half of 2014, 72% of global hair care launched had a “beauty enhacing” calim. Between 2009 and 2014, there were almost 10,000 product launches that addressed oily skin and oily hair concerns.

Y. Takagi, N. Tanaka, M. Miyaki, K. Takeuchi, K. Matsuo, **An effective novel facial cleanser for mild acne: Cleanser formulated with Sodium Laureth Sulfate and Alkyl Ether Carboxylates,** H&PC Vol. 10 (2) March/April 2015

Abstract: Many people suffer from acne. Washing the face with cleansers is generally recommended for acne care and cleansers containing salicylic acid are frequently used in the United States. However, salicylic acid has many side effects such as inducing dryness and irritation. Here we demonstrate that a facial cleanser based on alkyl ether carboxylates (AEC) and sodium laureth sulfate (SLES), which does not contain and anti-acne ingredients including salicylic acid, improved the acne more quickly than general cleansers containing salicylic acid (≈ 1.5%). No side effects were observed and a favorability rating was obtained from the subjects in a questionnaire. These results suggest that the skin cleanser formulated with AEC and SLES is an effective cleanser for the care of mild acne.

C. Uhl, D. Khazaka, **Claims and measurement methods for hair and scalp,** Personal Care March 2015

Hair diversity (style, shape, growth pattern or colour) is one of the most important features to define us physically. Therefore it is no surprise that the market of hair care products with a value of US$39 billion is one of the most important sectors in the complete area of cosmetic products. Hair care products for women are the most frequently bought and used cosmetic products of all. Shampoos and conditioners are leading in the field. For men, hair care is the most important and favoured sector of all cosmetics.

A. Tuzuner, S. Akdagli, T. Sen, et al., **An objective analysis of sebum, pH and moisture levels of the external ear canal skin**, American Journal of Otolaryngology (2015) 424-428

Abstract: Objective: To determine sebum, pH and moisture levels of external ear canal skin, and compare the patients who complain of ear itching and the normal population for these parameters. And evaluate the improvement subjectively in the ones given dexamethasone sodium phosphate (DSP) cream or placebo-water in oil emulsion type cream, and to determine the changes in sebum, pH and moisture levels after the treatment. Methods: 32 females with the complaint of isolated external ear canal itching and 42 healthy women were included in this randomized prospective controlled study. The sebum, pH and moisture levels of ear skin of the patients and the controls were determined from baseline and following treatment. Patients used DSP in their right and the placebo in their left ears for 15 days. Subjective analysis of itching level was measured at baseline, and on 15th and 30th days using visual analog scale (VAS).

O. Bilaic, C. Altinvazar, H. Hira, M. Doadu, **Investigation of the Association of the Second-to-Fourth Digit Ratio with Skin Sebum Levels in Females with Acne Vulgaris**, Am J Clin Dermatol. 2015 Dec; 16 (6): p. 559~64

Background: A relationship between acne vulgaris (AV) and the masculinized (lower) second-to-fourth digit (2D:4D) ratio in females was demonstrated in our previous study. Development of the digits and the sebaceous glands both occur during the same gestational period; therefore, the association between the 2D:4D ratios and AV may result from the effects of the prenatal endocrine environment on the sebaceous glands. Objective: The aim of this study was to evaluate the relationship between the 2D:4D ratio and sebum levels in the skin of females with AV. Methods: In total, 215 female

AV patients and 92 healthy controls, aged 18-35 years, were enrolled in this study. Finger-length measurements were made using a digital Vernier caliper, and the sebum levels of five facial areas were measured using a Sebumeter SM 815. Acne severity was assessed using the International Consensus Conference on Acne Classification System. Results: The 2D:4D ratios of the AV patients were significantly lower than those of the controls, for both hands. The mean sebum levels in the T-zone, U-zone and whole face were significantly higher for AV patients compared with controls. The 2D:4D ratio in the left hand showed significant negative correlations with the sebum levels in the U-zone; however, no association was found between the 2D:4D ratios and sebum levels in the T-zone and whole face. While acne severity was positively correlated with skin sebum levels, no correlation between acne severity and 2D:4D ratios was observed. Conclusions: This study provides preliminary evidence regarding the association between lower 2D:4D ratios and higher rates of sebum secretion in the U-zone for females with AV. The 2D:4D ratio might be a predictor ofsebum levels, as well as acne development, in females.

T. Nakahara, Y. Moroi, K. Takayama, E. Itoh, M. Kido-Nakahara, Y. Nakanishi, M. Furue, **Changes in sebum levels and the development of acneiform rash in patients with non–small cell lung cancer after treatment with egFr inhibitors**, OncoTargets and Therapy 2015:8 p. 259–263

Background: It has recently been shown that patients treated with epidermal growth factor receptor (EGFR) inhibitors often develop various cutaneous adverse events. While the pathogenesis underlying these events remains unclear, the relationship between skin toxicity induced by EGFR inhibitors and the sebaceous glands that express EGFR has been previously reported. Objectives: The primary aim of this study was to determine the relationship between cutaneous sebum levels and acneiform rash, a typical skin toxicity of EGFR inhibitors, by measuring the sebum levels before and after EGFR inhibitor treatment. Methods: Eight patients diagnosed with non–small cell lung cancer (NSCLC) (three men and fve women with an average age of 69.3 years) who were initiated on treatment with EGFR inhibitors (either geftinib [Iressa®] or erlotinib [Tarceva®]) were enrolled. Using a Sebumeter®, sebum levels in the face, chest, and back of each patient were measured before and after EGFR inhibitor treatment. The development of acneiform rash in each skin region was also assessed. Results: Changes in sebum level along with the development of an acneiform rash were observed after patients were started on EGFR inhibitor treatment. Patients who developed an EGFR inhibitor–induced acneiform rash tended to have higher pretreatment sebum levels (baseline) than did patients who did not experience an acneiform rash. At each time point measurement, sebum levels were found to be signifcantly higher in patients who had developed an acneiform rash at that time. Patients who developed rash during treatment showed greater differences in sebum level compared with pretreatment baseline. Conclusion: Patients who had increased levels of sebum or whose sebum levels showed greater change from pretreatment baseline developed an acneiform rash, suggesting that sebaceous gland activity may be involved in the mechanism underlying the development of acneiform rash, in patients treated with EGFR inhibitors.

C.S.C. Pereira, A. R. Baby, MV R. Velasco, M.T. Scotti, **Correlação Instrumental e Sensorial de Composição Aromática no Ciclo Menstrual,** Cosmetics & Tolietries (Brasil) Vol 27, set-out 2015, *(Article in Portuguese)*

In order to know the variables that may influence the fragrance-substarte interface and consumer perception in the menstrual cycle, and contribute to the development of fragrances, there was a study correlating the sensory analysis and instrumental (biochemical and chromatographic measurements) as a function of the cycle menstrual.

M. Mehrbani, R. Choopani, A. Fekri, M. Mehrabani, M. Mosaddegh, M. Mehrabani, **The efficacy of whey associated with dodder seed extract on moderate-to-severe atopic dermatitis in adults: A randomized, double-blind, placebo-controlled clinical trial**, J Ethnopharmacol, 2015 Aug 22;172: p. 325-32

Ethnopharmacological Relevance: Atopic dermatitis is a common chronic inflammatory skin condition that is on the rise and adversely affects quality of life of the affected individual. Dry skin and pruritus, major characteristics of this disease, are associated with the dysfunction of the skin barrier. Though mild cases of the disease can be controlled with antihistamines and topical corticosteroids, moderate-to-severe cases often require treatment with immunomodulatory drugs, which have many side effects. It is now more common to use complementary and alternative medicines in the treatment of atopic dermatitis. In traditional Iranian medicine, the use of whey with the aqueous extract of field dodder (Cuscuta campestris Yunck.) seeds in severe and refractory cases of atopic dermatitis is common and has no side effects. The aim of this study was to assess the efficacy and safety of whey associated with dodder seed extract in the treatment of moderate-to-severe atopic dermatitis in adults. Materials and

Methods: The study was a randomized, double-blind placebo control trial that was conducted on 52 patients with moderate-to-severe atopic dermatitis for 30 days. In this study patients received freeze dried whey powder with spray dried water extract of field dodder or the placebo for 15 days. At baseline (week zero), after the end of the 15 day treatment period (week three) and 15 days after stopping the drug or placebo (follow-up/week five), patients were evaluated in terms of skin moisture, elasticity, pigmentation, surface pH and sebum content on the forearm with Multi Skin Test Center® MC1000 (Courage & Khazaka, Germany) and the degree of pruritus and sleep disturbance in patients were also recorded. Results: 42 patients completed 30 days of treatment with the medicine and the follow-up period. At the end of the follow-up period a significant increase in skin moisture and elasticity in the group receiving whey with dodder was observed compared with the placebo group ($p<0.001$). There was a significant difference between the two groups regarding the pruritus after 15 days of receiving treatment or the placebo ($p<0.05$), and at the end of the 30-day study period the difference was clearly significant ($p<0.001$). Sleep disturbance showed significant changes at the end of follow-up period ($p<0.05$). There was no significant difference between the two groups concerning changes in skin pigmentation, however, a significant decrease was observed in the group receiving whey associated with dodder seed extract over time ($p<0.001$). There were no significant alterations in skin surface pH and the amount of sebum between the two groups. Temporary side effects were reported including anorexia and mild gastrointestinal problems in drug use. It is noteworthy that in this study despite the fact that patients received whey with dodder for just 15 days, moisture and elasticity of the skin continued to increase in the second half of the study (follow-up period). This shows that the effect of whey with dodder is not transient and this drug really helped skin barrier reconstruction and accelerated the healing process of skin. This positively influenced the skin parameters and consequently the improvement of pruritus and sleep disturbance. Conclusions: The results indicate that whey associated with dodder seed extract can serve as a promising alternative for the treatment of moderate-to-severe atopic dermatitis.

L. Pouran, M. Masoud, R.M. Seyed, Y. Hadis, M. Akram, S. Golmohammadzadeh, M. Balali-Mood, **Epidermal hydration and skin surface lipids in patients with long-term complications of sulfur mustard poisoning**, J Res Med Sci. 2015 Jul; 20(7): p. 640-645

Background: Despite almost the three decades passed since the chemical attacks of Iraqi's army against the Iranian troops, some veterans are still suffering from long-term complications of sulfur mustard (SM) poisoning, including certain skin complaints specially dryness, burning, and pruritus. We thus aimed to evaluate the skin's water and lipid content in patients with a disability of >25% due to complications of SM poisoning and compare them with a matched control group. Materials and Methods: Sixty-nine male participants were included in this study; 43 SM-exposed patients, and 26 normal controls from their close relatives. The water and lipid content was measured in four different locations: Extensor and flexor sides of forearms and lateral and medial sides of legs by the Comeometer CM 820/Sebumeter SM 810. Collected data was analyzed and $P < 0.05$ was considered as statistically significant. Results: The mean age of the patients and controls was 49.53 ± 11.34 (ranges: 40-71) and 29.08 ± 8.836 (ranges: 15- 49 years), respectively. In the veterans group, the main cutaneous complaint was itching and skin dryness. Cherry angioma, dry skin, and pruritus were significantly more common in the SM-exposed cases than in the controls. *(*$P = 0.01$, 0.05, and 0.04, respectively). The moisture and lipid content of all areas were lower in the SM-exposed group, but it was only significant in skin sebum of lateral sides of legs *(*$P = 0.02$). Conclusion: Exposure to SM could decrease the function of stratum comeum and lipid production as a barrier, even after several years of its exposure.

P. Min, W. Xi, L. Grassetti, A. Trisliana Perdanasari, M. Torresetti, S. Feng, W. Su, Z. Pu, Y. Zhang, S. Han, Y.X. Zhang, G. Di Benedetto, D. Lazzeri, **Sebum Production Alteration after Botulinum Toxin Type A Injections for the Treatment of Forehead Rhytides. A Prospective Randomized Double-Blind Dose-Comparative Clinical Investigation,** Aesthet Surg J, 2015 Jul, 35(5): p. 600-610

Background: Research has investigated the decrease in human skin sebum after the application of botulinum toxin. Few studies of the mechanism and objective assessments of this phenomenon have been conducted and the correlation between the sebum production and injection dosages or techniques remains unclear. Objectives: We prospectively investigated the sebum regulation and its gradient around the injection site in patients who received intramuscular injections of botulinum toxin A (BTX-A) for forehead rhytides, comparing two injection doses. Methods: Forty-two female volunteers with rhytides on the forehead region were randomly assigned to receive 10 or 20 units of BTX-A, which was administered in five standard injection sites. The baseline and post-treatment sebum production was measured using a Sebumeter. Results: Treatment with BTX-A exhibited significant sebum alteration at the injection site of both groups, with a sebum gradient surrounding the injection point. The efficacy did not improve at higher injection doses, with the four-unit regimen generally not being more potent than the two-unit regimen. The sebum production recovered to normal levels at the 16 week follow-up for

both treatment groups, indicating that a higher dosage (four units) did not result in a longer duration until relapse compared with the two-unit dose. Conclusions: We determined that the sebum production has a positive correlation with the distance away from the injection point. Intramuscular injection of BTX-A significantly reduces sebum production at the injection site but increases the sebum production of the surrounding skin at a radius of 2.5 cm at the 2, 4, and 8 week follow-ups.

B.R. Kim, M.Y. Chun, S.A. Kim, S.W. Youn, **Sebum Secretion of the Trunk and the Development of Truncal Acne in Women: Do Truncal Acne and Sebum Affect Each Other?,** Dermatology, 2015;231(1): p. 87-93

Background: There are few published data on truncal acne because most studies have focused on facial acne. Aims: The objective of this study was to investigate truncal sebum secretion levels in patients with acne vulgaris and to evaluate the relationship between sebum secretion and the development of acne lesions. Methods: The sebum casual levels at five different facial sites and ten truncal sites were measured in 35 Korean females with acne using a Sebumeter®. We performed an analysis of the correlation between sebum excretion and acne lesion number. Results: We found that all of the truncal sites analyzed had lower sebum secretion levels than the facial sites. There was no significant correlation between sebum secretion and acne lesions on the trunk. Conclusion: Pathogenic factors other than sebum may have a predominant role in the development of truncal acne.

A. Ali, N. Akhtar, **The safety and efficacy of 3% Cannabis seeds extract cream for reduction of human cheek skin sebum and erythema content,** Pak J Pharm Sci, 2015 Jul;28(4): p. 1389-1395

Escalated sebum fabrication is seen with an unattractive look and adds to the growth of acne. We aimed to investigate the efficacy and safety of 3% Cannabis seeds extract cream on human cheek skin sebum and erythema content. For this purpose, base plus 3% Cannabis seeds extract and base (control) were prepared for single blinded and comparative study. Healthy males were instructed to apply the base plus 3% Cannabis seeds extract and base twice a day to their cheeks for 12 weeks. Adverse events were observed to determine skin irritation. Measurements for sebum and erythema content were recorded at baseline, 2nd, 4th, 6th, 8th, 10th and 12th week in a control room with Sebumeter and Mexameter. Base plus 3% Cannabis seeds extract was found to be safe in volunteers. Measurements demonstrated that skin sebum and erythema content of base plus 3% Cannabis seeds extract treated side showed significant decrease ($p<0.05$) compared with base treated side. Base plus 3% Cannabis seeds extract showed safety. It was well tolerated for the reduction of skin sebum and erythema content. Its improved efficacy could be suggested for treatment of acne vulgaris, seborrhea, papules and pustules to get attractive facial appearance.

S. Higurashi, Y. Haruta-Ono, H. Urazono, T. Kobayashi, Y. Kadooka, **Improvement of skin condition by oral supplementation with sphingomyelin-containing milk phospholipids in a double-blind, placebo-controlled, randomized trial,** J. Dairy Sci. 98, 2015: p. 6706–6712

Sphingomyelin (SM), an essential phospholipid for the skin, is contained largely in the milk fat globule membrane surrounding milk fat, concentrated fractions of which are also generated concurrently during the manufacture of dairy products. Such an SM-containing milk phospholipid concentrate (SM-MPC) is useful for investigating the benefits of dietary SM. Here, we examined the effect of consuming SM-MPC on the condition of skin in a double-blind, placebo-controlled, randomized trial. Ninety-six healthy subjects aged 20 to 39 yr with low skin hydration were randomly assigned to 3 groups: a high-SM group supplemented with SM-MPC at a dose equivalent to 10 mg/d of SM, a low-SM group supplemented with SM-MPC equivalent to 5 mg/d of SM, and a placebo group fed a vehicle composed of olive oil and beeswax. During daily supplementation for 12 wk, parameters related to the condition of skin were evaluated at baseline and every 3 wk. Skin hydration at the heel was significantly increased at wk 9 and 12 in the low-SM group compared with the placebo group. Skin elasticity in the region below the eye was significantly increased at wk 9 in the high-SM group versus placebo. Questionnaire-based subjective perceptions of skin conditions were significantly improved for facial skin moisture at wk 3 and 12, and in the wrinkle around the eyes at wk 9 and 12 in the high-SM group versus placebo. Our results indicate that constant and long-term supplementation with SM-MPC is capable of improving the general condition of skin.

A. Wójcik, E. Bartnicka, P. Namieciński, H. Rotsztejn, **Influence of the complex of retinol-vitamin C on skin surface lipids,** J Cosmet Dermatol, 2015 Jun;14(2): p. 92-99

Background: Retinol is used to reduce symptoms of skin aging. It affects surface lipids and increases skin regeneration ability. Aim: The aim of our study was to investigate the effect of retinol peel on the face and neck skin lipids in women, aged 50-69. Materials and Methods: The level of secreted sebum was measured using Sebumeter SM15 (Courage & Khazaka, Germany) on the forehead,

cheeks, nose, chin, and neck. The measurements were carried out before each of the 3 retinol peel treatments applied at 3-week interval and 3 weeks after the last treatment. Results: A statistically significant increase of lipid film in both U-zone and T-zone and on the neck was observed in the study group. Conclusion: Retinol peel treatments can help to increase the amount of skin surface lipids in women during menopause.

D. Mahrhauser, C. Nagelreiter, A. Baierl, J. Skipiol, C. Valenta, **Influence of a multiple emulsion, liposomes and a microemulsion gel on sebum, skin hydration and TEWL,** Int J Cosmet Sci. 2015 Apr;37(2): p. 181-6

Objective: In this study, the influence of three cosmetically relevant, priorly characterized vehicles on skin hydration, sebum content and transepidermal water loss was investigated. Methods; The chosen vehicles included a liposomal pre-formulation, a multiple W/O/W emulsion and a microemulsion gel. The in vivo effects of these vehicles were demonstrated and compared among them. The stability of the prepared vehicles was determined visually, microscopically, rheologically by pH measurements and particle size. Interactions with skin were assessed by non-invasive biophysical techniques using the Corneometer(®), Aqua Flux(®) and Sebumeter, measuring skin hydration, TEWL and skin sebum content, respectively. Results: All vehicles remained stable over an observation period of 6 weeks. The multiple emulsion increased sebum content and skin hydration. In case of the liposomes, each monitored parameter remained almost constant. In contrast, the microemulsion gel lowered skin hydration and increased TEWL values, but even 1 week after termination of the treatment TEWL decreased almost close to control levels. Conclusion: All produced vehicles were proven to remain physically stable over the duration of this study. The used multiple emulsion showed very skin-friendly properties by increasing sebum and skin hydration. Likewise, the liposomal pre-formulation exhibited no negative effects. On the contrary, the investigated microemulsion gel seemed to have skin dehydrating and TEWL increasing features. However, the multiple emulsion as well as liposomes was identified to be well-tolerated vehicles for skin which might qualify them for the use in cosmetic formulations.

N. Srivastava, S. Gehlot, S. Singh, B.M. Singh, **Application of different parameters for selecting normal and abnormal skin characteristics in determination of Prakriti in infants,** Int. J. Res. Ayurveda Pharm. 6(2), Mar - Apr 2015

Prakriti (Basic physical constitution) of an individual is decided at the time of conception and subsequently during intra-uterine life, as a result of overall effect of dominant Dosha of Shukra (Sperm), Shonit (Ovum), Ahara (diet) and Vihara (regimen) of Garbhini (pregnant women), Kaalgarbhashaya (in-utero duration and condition of uterus) and Mahabhautic components. Assessment of Prakriti and Vikriti in children is essential and enables the pediatrician to evaluate metabolic imprinting, individual physiology and susceptibility to specific disease, its diagnosis, prevention, treatment as well as the prognosis after illness. There are many subjective criteria to determine the Prakriti in adults, but as far as infants are concerned, no detail description is available in Ayurvedic classics. Individual Prakriti can be determined as per the characteristics specified in Brihattrayi and Laghutrayi, which include the examination of skin, hair, nails, eyes, palm, sole and other physical and psychological features, and may be used in children for Prakriti determination. However, it can be better understood and differentiated each other by considering various methods and modern technology. Out of various characteristics of body parts, skin characteristics such as texture (roughness or smoothness, elasticity and thickness), color and temperature of skin significantly contribute in Prakriti determination. Use of objective parameters such as RGB and HSV method, Fitzpatrick Scale method and derma spectrometer for the skin color differentiation; skin-pH, stratum corneum hydration, TEWL, sebum content, cutometer and ultrasonography for skin texture as well as thermometer, thermister via pulse oxymeter for skin temperature may be very useful tools to differentiate individual Prakriti under controlled conditions. The aim of this conceptual study was to explore importance of various methodologies for differentiating Prakritaskin characteristics from the Vaikrita skin characteristics more precisely and scientifically in infants.

J. Kottner, L. Ludriksone, N.G. Bartels, U. Blume-Peytavi, **Do Repeated Skin Barrier Measurements Influece Each Other's Results? An Explorative Study,** Skin Pharmacology and Physiology 2014; 27:90-96

Background: Biophysical skin measurement techniques are widely used to quantify the skin barrier function. In clinical research usually several parameters are subsequently measured in the same skin areas. In this study, possible interfering effects of subsequent measurement procedures on transepidermal water loss (TEWL), stratum corneum hydration (SCH) and skin surface pH were investigated. Methods: An exploratory study was conducted. Twelve young (mean age 32.9 ± 7.2 years)

and 12 elderly (mean age 68.3 ± 2.5 years) subjects without any skin diseases were enrolled. The parameters TEWL, skin surface pH, SCH, sebum content, and surface evaluation of living skin were obtained successively in pairs from 4 contralateral volar forearm skin areas.

S. Rösler, **Hautphysiologie im Säuglingsalter: Einfluss von Babyschwimmen mit und ohne anschließender Anwendung einer Pflegelotion auf die Hautbarriere von Säuglingen im Alter von 3 bis 6 Lebensmonaten**, Dissertation zur Erlangung der Doktorwürde der Charité Universitätsklinik Berlin, 2014

C. Soica, C. Oprean, F. Borcan, C. Danciu, C. Trandafirescu, D. Coricovac, Z. Crăiniceanu, C.A. Dehelean, M. Munteanu, **The Synergistic Biologic Activity of Oleanolic and Ursolic Acids in Complex with Hydroxypropyl-γ-Cyclodextrin,** Molecules 2014, 19, 4924-4940

Abstract: Oleanolic and ursolic acids are natural triterpenic compounds with pentacyclic cholesterol-like structures which gives them very low water solubility, a significant disadvantage in terms of bioavailability. We previously reported the synthesis of inclusion complexes between these acids and cyclodextrins, as well as their in vivo evaluation on chemically induced skin cancer experimental models. In this study the synergistic activity of the acid mixture included inside hydroxypropyl-gamma-cyclodextrin (HPGCD) was monitored using in vitro tests and in vivo skin cancer models. The coefficient of drug interaction (CDI) was used to characterize the interactions as synergism, additivity or antagonism. Our results revealed an increased antitumor activity for the mixture of the two triterpenic acids, both single and in complex with cyclodextrin, thus proving their complementary biologic activities.

B. Gabard, A.O. Barel, P. Clarys, **Sebumetry and Sebumtape,** Non Invasive Diagnostic Techniques in Clinical Dermatology; Springer Berlin Heidelberg 2014; ISBN 978-3-642-32108-5

Introduction: Sebum is the general term defining the lipids excreted by the sebaceous glands and spreading on the surface of the skin. These skin surface lipids (SSL) are in fact a mixture of the epidermal lipids and lipids from the sebaceous glands (sebaceous lipids). The quantity and the composition of SSL are not the same on different areas of the human body. Epidermal lipids are found on the whole body and are the sole component of SSL in anatomical regions where no or only few sebaceous glands are present. High quantities of SSL are present on cutaneous areas with many sebaceous glands such as the face (forehead, nose and cheeks), the scalp and the upper parts of the trunk and of the back. Here the proportion of sebaceous lipids may be important (up to 95-97%) and the one of epidermal lipids negligible (3-5%).

X. Li, C. Galzote, X. Yan, L. Li, X. Wang, **Characterization of Chinese body skin through in vivo instrument assessments, visual evaluations, and questionnaire: influences of body area, inter-generation, season, sex, and skin care habits,** Skin Research and Technology 2014; 20: 14-22

Background/Purpose: The varying influence of mutiple factors (e.g., aging, sex, season, skin care habits) on skin structure and function necessitates study within ethnic groups to fully characterize their skin. Methods: Men and women aged 40-50 years (n=43) and their consanguineous same sex-children, aged 18-25 years (n=43), living in Chengdu, China were enrolled in this single center, non-interventional study. Volunteers attended two study visits (summer, 2010 and winter, 2011) at which dermatologists measured transepidermal water loss (TEWL), skin hydration, sebum secretion, fine lines/roughness, melanin/erythema, termperature, and color, and clinically graded participants‘ skin.

S.H. Youn, C.W. Choi, J.W. Choi, B.R. Kim, S.Y. Byun, S.W. Youn, **Novel facial cosmetic area ‚O zone‘ shows unique characteristics in sebum excretion and acne lesion distribution,** Skin Research and Technology 2014; 20: 164-169

Background: We usually divided cosmetic facial zone into the T zone und U zone by the level of sebum secretion. Our recent studies suggested that the perioral area showed different characteristics in the aspect of acne development. Objective: To investigate the unique characteristics of the O zone (perioral area) among the three facial areas. Methods: A total of 102 patients clinically diagnosed as acne vulgaris were included. The acne lesions were counted from the clinical digital photographs by facial areas. The sebum level was measured using Sebumeter. Area-weighted (AW) sebum and AW density of three areas of face were calculated. Statistical analysis was performed according to age and gender.

S. Luebberding, N. Krueger, M. Kerscher, **Age-Related Changes in Male Skin: Quantitative Evaluation of One Hundred and Fifty Male Subjects,** Skin Pharmacol Physiol 2014;27:9–17

Background/Purpose: Modern men have changed their beauty and grooming habits, which has resulted in an increasing demand for cosmetics for men. However, very little information is available

about the dermatological needs of male skin. Therefore, the aim of this present clinical study was to conduct the first systematic assessment of the skin physiology of men with special attention to lifetime changes. *Methods:* A total of 150 healthy male subjects (aged 20– 70 years) were selected following strict criteria, including age, sun behavior and smoking habits. Transepidermal water loss (TEWL), hydration level, sebum production and pH values were measured with worldwide-acknowledged biophysical measuring methods at the forehead, cheek, neck, volar forearm and dorsum of hand. *Results:* TEWL and sebum production vary by localization, but generally not with increasing age, whereas stratum corneum (SC) hydration decreases significantly at the face and neck. The greatest decrease was assessed at the f rehead. Skin surface pH significantly increases with aging in the face.

E.J. Kim, J.Y. Han, H.K. Lee, Q.Q. He, J.C. Cho, L. Wei, X. Wang, L. Li, L. Wei, H. Liang, X. Gao, B.J. Kim, G.W. Nam, **Effect of the regional environment on the skin properties and the early wrinkles in young Chinese women,** Skin Research and Technology 2014; 20: 498-502

Background: There are ethnic differences in the skin characteristics, also the skin is susceptible to be influenced by the external environment such as UV radiation and the climates. It can be shown that the skin in same race or twins varies by the enviroment. Objectives: This study was designed to investigate the skin characteristics and the early wrinkles of young Chinese women from four different regions, and to identify the correlation among the wrinkles, the other skin characteristics, and environmental conditions. Methods: A total of 441 healthy Chinese women aged between 20 and 35 years participated in the study: 110 from Beijing, 110 from Shanghai, 111 from Wuhan, and 110 from Guangzhou. The skin hydration, sebum contents, TEWL, pH, elasticity, and wrinkles were measured on the cow's feet area.

K. Shingaki, S. Kawaguchiya, Y. Hasegawa, M. Sumitani, Y. Yamamoto, K. Torii, **Analysis of environmental factors and related molecular mechanisms that reduce cutaneous sensation and the development of cosmetics to prevent and improve functional decline of cutaneous sensation**, IFSCC 2014 Paris

Summary: The beneficial effects of touch have been well investigated in infant psychological and physiological development and adult homeostasis. Cutaneous sensation, which facilitates the beneficial effects of touch, alters under the influence of disease and aging. However, the environmental factors that affect cutaneous sensation, their related molecular mechanisms, and the possibility of cosmetics against decline have not been well studied. In this study, we showed a significant positive correlation between age and the perception threshold of a 2000-Hz current which stimulates Aβ-fibres and a significant negative correlation between a 2000-Hz current perception threshold (CPT) and the skin's physiological parameters. In addition, ultraviolet (UV) radiation significantly increased the 2000-Hz CPT in the skin, decreased the expression of neuroprotective growth factors, and altered the expression of matrix components which are the scaffoldings of nerve fibres in the normal human dermal fibroblasts. Furthermore, we showed a significant 2000-Hz CPT decrease 1 month after treatment with cosmetics that included moisturizing ingredients and vitamins. From these results, it is suggested that chronic UV exposure induces the functional decline of cutaneous sensation by decreasing the neuroprotective functional components of the skin and that cosmetics are useful for preventing and improving the decline of cutaneous sensation.

Y.S. Cho, J.H. Jeon, A. Hong, H.T. Yang, H. Yim, Y.S. Cho, D.H. Kim, J. Hur, J.H. Kim, W. Chun, B.C. Lee, C.H. Seo, **The effect of burn rehabilitation massage therapy on hypertrophic scar after burn: a randomized controlled trial**, Burns. 2014 Dec;40(8): p. 1513-20

Background: To evaluate the effect of burn rehabilitation massage therapy on hypertrophic scar after burn. Method: One hundred and forty-six burn patients with hypertrophic scar(s) were randomly divided into an experimental group and a control group. All patients received standard rehabilitation therapy for hypertrophic scars and 76 patients (massage group) additionally received burn scar rehabilitation massage therapy. Both before and after the treatment, we determined the scores of visual analog scale (VAS) and itching scale and assessed the scar characteristics of thickness, melanin, erythema, transepidermal water loss (TEWL), sebum, and elasticity by using ultrasonography, Mexameter(®), Tewameter(®), Sebumeter(®), and Cutometer(®), respectively. Results: The scores of both VAS and itching scale decreased significantly in both groups, indicating a significant intragroup difference. With regard to the scar characteristics, the massage group showed a significant decrease after treatment in scar thickness, melanin, erythema, TEWL and a significant intergroup difference. In terms of scar elasticity, a significant intergroup difference was noted in immediate distension and gross skin elasticity, while the massage group significant improvement in skin distensibility, immediate distension, immediate retraction, and delayed distension. Conclusion: Our results suggest that burn

rehabilitation massage therapy is effective in improving pain, pruritus, and scar characteristics in hypertrophic scars after burn.

H. Khan, N. Akhtar, A. Ali, **Effects of Cream Containing Ficus carica L. Fruit Extract on Skin Parameters: In vivo Evaluation**, Indian Journal of Pharmaceutical Sciences, November - December 2014

This study was aimed to investigate the effects of cream containing Ficus carica L. fruit (Fig) extract on various skin parameters such as skin melanin, erythema, moisture content, trans-epidermal water loss and sebum. For this purpose, formulation with 4% concentrated extract of F. carica fruit and base without extract were developed. Base served as a control. Both base and formulation were applied to the cheeks of human volunteers for 8 weeks to investigate the effects on different skin parameters using non-invasive bioengineering instruments. Formulation decreased the skin melanin, trans-epidermal water loss and skin sebum significantly. Formulation increased the skin hydration significantly and insignificant effects on skin erythema. We concluded that a stable topical cream (w/o emulsion) containing F. carica fruit extract have effects on skin melanin, trans-epidermal loss, hydration values and sebum content and possibly could be used against for hyper pigmentation, acne, freckles and wrinkle.

W. Henschel, **Prospektive Pilotstudie zum dermatologischen Nutzen der Einführung von Hautschutz- und Hautpflegecreme in ein chirurgisches Team**, Dissertation der Universitätsmedizin der Ernst-Moritz-Arndt Universität Greifswald, Germany, Oktober 2014

Das Wort Chirurgie setzt sich aus dem altgriechischen Wort χείρ (kheir) für „Hand“ und ἔργον (ergon) für „Arbeit“, „Werk“, „Tat“ zusammen. Das bedeutet, dass ein Chirurg im wörtlichen Sinn ein Handarbeiter ist. Diese Übersetzung aus dem Altgriechischen rückt die Tatsache in den Mittelpunkt, dass der Chirurg täglich mit seinen Händen arbeitet. Ein altes Sprichwort - „Der Mann, der zu beschäftigt ist, sich um seine Gesundheit zu kümmern, ist wie ein Handwerker, der keine Zeit hat, seine Werkzeuge zu pflegen.“ - nimmt Bezug darauf, dass man sowohl für seine Gesundheit als auch für sein Werkzeug Sorge tragen sollte. Dieses Sprichwort ist für Chirurgen von besonderer Bedeutung, da ihre Hände einerseits im Rahmen ihrer allgemeinen Gesundheit gepflegt werden müssen und ihnen ihre Hände andererseits als Werkzeug dienen. Die besondere Gewichtung, die dem Hautschutz und der Hautpflege zukommen sollte, spiegelt sich jedoch nicht nur in Volksweisheiten wider.

H. Kimoto-Nira, Y. Nagakura, C. Kodama, T. Shimizu, M. Okuta, K. Sasaki, N. Koikawa, K. Sakuraba, C. Suzuki, Y. Suzuki, **Effects of ingesting milk fermented by *Lactococcus lactis* H61 on skin health in young women: A randomized double-blind study**, J. Dairy Sci. 97, 2014: p. 5898–5903

We conducted a randomized double-blind trial to evaluate the effects of fermented milk produced using only *Lactococcus lactis* strain H61 as a starter bacterium (H61-fermented milk) on the general health and various skin properties of young women. Healthy female volunteers (n = 23; age = 19–21 yr) received H61-fermented milk (1010 cfu of strain H61/d) or conventional yogurt (1010 cfu of both *Lactobacillus delbrueckii* ssp. *Bulgaricus* and *Streptococcus thermophilus* per day), as a reference food, daily for 4 wk. Before and at the end of 4 wk, blood samples were taken, and skin hydration (inner forearms and cheek) and melanin content, elasticity, and sebum content (cheek only) were measured. Skin hydration at the inner forearm was higher at wk 4 than at wk 0 in both groups. Sebum content in cheek rose significantly after intervention in the H61-fermented milk group, but not the conventional yogurt group. Other skin parameters did not differ in either group. Serum analysis showed that total protein concentration and platelet count were elevated and reactive oxygenspecies decreased in both groups after the intervention. Although H61-fermented milk and conventional yogurt had similar effects on skin status and some blood characteristics of participants, an increase of sebum content in cheek is preferable to H61-fermented milk. As skin lipids contribute to maintaining the skin barrier, H61-fermented milk would provide beneficial effects on skin for young women.

L. Gallego, **Pore refining and control of sebum production,** Household and Personal Care Today, Vol. 9 No. 3 May/June 2014

Introduction: Oily skin is a prevalent problem affecting men and women of all ages and ethnic groups. Although, generally speaking, an oily skin does not have serious consequences on body functions, a chronically oily skin can lead to obvious aesthetic problems (a greasy shiny skin with enlarged pores, acne…) and it can cause negative psychological effects (1). Several studies claim that between 66 percent and 75 percent of young people from 15 to 20 years are affected by this problem. However, it does not affect only young people, since it has been seen that half of women between 20 and 30 years old and also 70 percent of Asiatic women from 40 to 60 years complain about problems related to oily skin such as enlarged pores (2). Pores are conically shaped holes, full of nucleated cells,

located in the skin furrows. Nowadays, pore size is known to be related to the size and activity of sebaceous gland, thus if we reduce this activity we will also obtain narrower pores (3).

O. Freis, G.Perie, A. Rathjens, **Correlating Aging with Skin's Mechanical and Optical Properties,** www.cosmeticsandtoiletries.com, April 2014

The evolution of skin's biomechanical and optical properties as a function of aging and/or photoaging is one of the main targets of cosmetic and dermatological research. Many noninvasive devices to measure skin's biomechanical properties have been developed using alternative methods such as stretching, torsion, indentation and suction. Measurements of skin deformation after suction or torsion are the most widely used techniques in cosmetic research.

B.A. Khan, N. Akhtar, **Clinical and sebumetric evaluation of topical emulsions in the treatment of acne vulgaris,** Postep Derm Alergol 2014; XXXI, 4: p. 229–234

Introduction: Numerous plant products described in the scientifc literature show distinct activities on the skin, such as moisturizing, antioxidant, sunscreen, anti-acne and depigmentation. Aim: The main objective of this study was to compare the effectiveness of emulsion formulations containing plant extracts (*Hippophae rhamnoides* and *Cassia fstula*) and placebo (without plant extracts) on acne patients. Material and methods: A single-blind, randomized, placebo-controlled, split-face study was designed. Two groups of 25 patients each (aged 18–37 years) with grade I and grade II acne vulgaris received active formulations on the left side of their cheeks and placebo on the right side of their cheeks twice daily for 12 weeks. Prior to the study, signed consent was obtained from each patient. The anti-bacterial activity of the extracts and formulations was tested *in vitro*. The skin sebum contents of patients were evaluated by the sebumeter® and subjectively using a clinical evaluation before and after treatment of 12 weeks. One way ANOVA and Kruskal-Wallis tests were used in the statistical analysis. Results: A signifcant ($p \leq 0.05$) decrease in the level of sebum contents was observed in both groups who used formulations (F1 and F2) containing the plant extract. The difference between pre- and post-treatment levels of sebum contents was statistically signifcant ($p \leq 0.05$). Formulations containing plant extracts were found effective in the reduction of skin sebum contents (anti-acne effects) sebumetrically as well as clinically when compared to placebo (F3). Conclusions: Formulations with 5% plant extracts could be effective, safe, and well-tolerated topical medications for grade I and grade II acne vulgaris.

B. Eberlein, J. Huss-Marp, F. Pfab, R. Fischer, R. Franz, M. Schlich, M. Leibl, V. Allertseder, J. Liptak, M. Kriegisch, R. Hennico, J. Latotski, C. Ebner von Eschenbach, U. Darsow, J. Buters, H. Behrendt, R. Huber, J. Ring, **Influence of alpine mountain climate of Bavaria on patients with atopic diseases: studies at the Environmental Research Station Schneefernerhaus (UFS - Zugspitze) – a pilot study**, Clinical and Translational Allergy 2014, 4:17

Mountain and maritime climate therapy takes advantage of specific climatic conditions to treat chronic allergic diseases. It was the aim of the study to investigate effects of a 5 day sojourn on atopic diseases at the highest German mountain. In this pilot study 18 patients with grass pollen-induced rhinoconjunctivitis, atopic ezcema or asthma and 11 non-allergic controls were included. Skin physiology parameters, changes of the respiratory and nasal functions, subjective symptoms and blood parameters were measured during a 5-day observation period in the Environmental Research Station Schneefernerhaus (UFS) at the moderate altitude mountain region (Zugspitze; 2650 m alt.) compared to a low altitude area (Munich; 519 m alt.). Several of the skin physiology parameters changed significantly during the observation period (decrease of skin hydration, increase of skin smoothness, skin roughness, skin scaliness and pH-value). In patients with atopic eczema, the SCORAD (Severity Scoring of Atopic Dermatitis) and the scores of the DIELH (Deutsches Instrument zur Erfassung der Lebensqualität bei Hauterkrankungen) did not change significantly. Histamine induced itch decreased significantly. Parameters of nasal function did not change significantly. Several lung parameters showed a slight, but statistically significant improvement (forced expiratory volume in one second/volume capacity [FEV1/VC], peak expiratory flow [PEF], maximum expiratory flow at 50% of vital capacity [MEF 50], maximal mid-expiratory flow between 25% and 75% of vital capacity [MMFEF 25/75]), whereas the vital capacity (VC) decreased significantly. ECP (eosinophil cationic protein) in the serum and parameters of blood count changed significantly. These results show that the benefit of a moderate altitude mountain climate sojourn over a period of 5 days differs in depending on the atopic disease. Especially asthma parameters and itching of the skin improved. It would be interesting to assess the parameters during longer observation periods in alpine climate.

L.S. Baumann, R.D. Penfield, J.L. Clarke, D.K. Duque, **A Validated Questionnaire for Quantifying Skin Oiliness**, Journal of Cosmetics, Dermatological Sciences and Applications, 2014, 4, p. 78-84

Increased sebum production is a common skin complaint and plays an important role in acne and oily scalp conditions. To choose the correct skin care products, which mostly are marketed for dry, oily or normal skin, the consumer must self-assess their skin type. Studies show that individuals incorrectly self-assess their sebum secretion levels. In order to be able to correctly determine skin oiliness, we have developed a six-item skin oiliness scale (SOS) that correlates with sebumeter measurements. The resulting correlation was 0.54, which was significantly different from zero ($p < 0.01$). This result indicates a strong relationship between the SOS scores and the associated sebumeter measurements. This is easy to administer questionnaire to accurately determine skin oiliness and can be useful in screening and recruiting patients for research trials, performing outcome research, and recommending skin care products and procedures. Our study shows that this skin oiliness scale is an accurate way to identify and quantify skin oiliness.

G.W. Nam, E.J. Kim, Y.C. Jung, C.B. Jeong, K.H. Shin, H. K. Lee, **Differences in Skin Properties of Korean Women at the Initial Aging Phase,** Journal of Cosmetics, Dermatological Sciences and Applications, 2014, 4, p. 44-52

Many studies on aging have focused on evaluating differences between older and younger people, but only a few have focused on differences in skin properties among subjects from the same age group according to their skin aging status. In this study, we evaluated the facial skin condition and life style factors in 110 Korean women aged 25 to 35 in an attempt to evaluate factors which may affect the skin aging status in the initial aging phase. The facial skin condition of 110 healthy Korean women was assessed over two successive 6-month periods, summer and winter. Using clinical assessments including aging, wrinkles and skin's elasticity values, the subjects were divided into 7 groups. Then, various facial skin conditions and life style factors were examined between a severe aging group and mild aging group. In the severe aging group, the mean value pH was lower and the mean value of water content was slightly lower than that of women in the mild aging group. Also, the seasonal site variation in water content and sebum secretion level were significantly higher in the severe aging group than in the mild aging group. Topical sunscreen using percentage was not significantly different between the two groups. However, the number of cosmetic subject use was slightly higher in the mild aging group than in the severe aging group. The study suggested that there were several differences in skin characteristics between women in the severe aging group and in the mild aging group at the initial aging phase. Seasonal site variation between cheek and forehead was the most dominant differences. We also considered that life style factors such as cosmetic use could affect skin aging status.

B. Marczyk, P. Mucha, E. Budzisz, H. Rotsztejn, **Comparative study of the effect of 50% pyruvic and 30% salicylic peels on the skin lipid film in patients with acne vulgaris**, J Cosmet Dermatol, 2014 Mar; 13(1): p. 15-21

Pyruvic (alfa-keto acid) and salicylic (beta-hydroxy acid) acids are superficial peels frequently used in patients with acne vulgaris. Aim: The aim of the study was to compare the effect of 50% pyruvic and 30% salicylic peels on facial sebum secretion in patients with acne vulgaris, aged 13-30. Material and Methods: The level of secreted sebum was determined in 20 men and women. Ten patients were treated with 50% pyruvic acid and the remaining 10 with 30% salicylic acid. Each peel was applied five times at 2-week intervals. The sebum measurements were taken in the T- and U-zones using a Sebumeter SM 815 (Courage & Khazaka, Germany). The last, sixth measurement was taken 2 weeks after the treatment. Results: A statistically significant decrease in the level of secreted sebum in both U- and T- zones was observed in the patients studied after the third application of 50% pyruvic peel and the second application of 30% salicylic peel. Two weeks following the completion of therapy, sebumetric measurements demonstrated a greater reduction in the facial skin lipid film among the patients treated with salicylic peel. Conclusions: Peels with 50% pyruvic acid and 30% salicylic acid are the procedures that significantly contributed to a decrease in the level of secreted sebum on the facial skin surface in the group of patients studied. A greater therapeutic effect was observed following 30% salicylic peel, which might be associated with its high lipophilic properties and easier penetration through the lipid barriers of the epidermis.

M. Farwicka, T. Köhlera, J. Schilda, M. Mentela, U. Maczkiewitza, V. Paganic, A. Bonfiglic, L. Riganoc, D. Bureikb, G.G. Gauglitz, **Pentacyclic Triterpenes from *Terminalia arjuna* Show Multiple Benefits on Aged and Dry Skin**, Skin Pharmacol Physiol 2014;27: p. 71–81

Background: Pentacyclic triterpenoids improve epidermal barrier function and induce collagen production. Here, their effects on cutaneous aging by means of objective instrumental measurements were elucidated. Methods: Reconstituted human epidermis, cultivated keratinocytes and fibroblasts were incubated with *Terminalia arjuna triterpenes* (*T. arjuna* bark extract), and mRNA and protein expression of various genes was determined using microarray analysis, qRT-PCR and ELISA

techniques. Clinical efficacy of *T. arjuna* bark extract versus vehicle control cream was elucidated in 30 patients and transepidermal water loss (TEWL), skin hydration and elasticity were measured. Another 30 female patients in their postmenopausal phase were treated with a similar regime, and skin sebum content, cutaneous blood microcirculation and skin density/echogenicity were assessed. Results: Incubation with T. arjuna triterpenes increased FGF-2, TSP-1, TGF-β and CTGF expression, and VEGF secretion in vitro. Elevated lactate dehydrogenase release upon sodium dodecyl sulphate challenge was reversed by the application of *T. arjuna* bark extract. *T. arjuna* bark extract decreased TEWL, improved skin moisturization, reduced scaliness and led to significantly improved skin elasticity. Also, increases in blood microflow and skin sebum contentas well as improved skin thickness/echogenicity were noted on postmenopausal skin, resulting in visible reduction of sagging skin on the jowls as demonstrated by digital photography. Conclusion: *T. arjuna* bark extract appears as an innovative active ingredient that exerts versatile antiaging properties in vitro and in vivo.

M.S.B Kriegisch, **Einflüsse des alpinen Hochgebirgsklimas auf Parameter allergischer Erkrankungen: Untersuchungen an der Umweltforschungsstation Schneefernerhaus (UFS - Zugspitze),** Dissertation am ZAUM – Zentrum Allergie und Umwelt der Technischen Universität München, Germany, 2013

Definitionsgemäß wird die Atopie als familiär auftretende Überempfindlichkeit von Haut und Schleimhaut gegenüber Umweltstoffen beschrieben, die mit einer erhöhten Immunglobulin E-Bildung und/oder einer veränderten unspezifischen Reaktivität assoziiert ist. Sie stellt ein heterogenes Syndrom dar und manifestiert sich in unterschiedlichsten Organen, wobei die allergische Rhinokonjunktivitis, das atopische Ekzem und das Bronchialasthma die häufigsten Manifestationen darstellen. Diese drei Erkrankungen, die auch als atopische Trias bezeichnet werden, treten sowohl gleichzeitig als auch nach einander auf, wobei das atopische Ekzem als Erstmanifestation im Kindesalter überwiegt. Im Rahmen des „Etagenwechsels“ kann sich aus dem atopischen Ekzem sowohl ein Bronchialasthma als auch eine allergische Rhinokonjunktivitis entwickeln.

A.B. Stefaniak, J. du Plessis, S.M. John, F. Eloff, T. Agner, T.-C. Chou, R. Nixon, M.F.C. Steiner, I. Kudla, D.L. Holness, **International guidelines fort he in vivo assessment of skin properties in non-clinical settings: part 1. pH,** Skin Research and Technology 2013; 19: 59-68

Background: Skin surface pH is known to influence the dissolution and partitioning of chemicals and may influence exposures that lead to skin diseases. Non-clinical environments (e.g. workplaces) are highly variable, thereby presenting unique measurements challenges that are not typically encountered in clinical settings. Hence, guidelines are needed for consistent measurement of skin surface pH in environments that are difficult to control. Methods: An expert workshop was convened at the 5th International Conference on Occupational and Environmental Exposure of Skin to Chemicals to review available data on factors that could influence the determination of skin surface pH in non-clinical settings with emphasis on the workplace as a worst case scenario.

K. Mizukoshi, H. Akamatsu, **The investigation of the skin characteristics of males focusing on gender differences, skin perception, and skin care habits,** Skin Research and Technology 2013; 19: 91-99

Background/purpose: Various studies have examined the properties of male skin. However, because these studies mostly involved simple measurement with non-invasive devices, a lack of understanding of the properties of male skin remains. Methods: In this study, we focused and investigated not only on simple instrumental measurements but also on gender differences and men’s subjective perceptions of skin and daily skin care habits.

C.W. Choi, J.W. Choi, S.W. Youn, **Subjective facial skin type, based on the sebum related symptoms, can reflect the objective casual sebum level in acne patients,** Skin Research and Technoloy 2013; 19: 176-182

Background: The relationship between the subjective skin type and the casual sebum level was not fully clarified. Objectives: To investigate the characteristics of subjective skin type and to find the relationship between the subjective skin types and the skin type-related symptoms, casual sebum level, along with the objective skin type. Methods: Seven hundred and nine patients, clinically diagnosed with acne, were included. The questionnaire and the casual sebum level measurement were performed. The determining symptoms of each subjective skin type were investigated. The 95% confidence interval of casual sebum level of each subjective skin type was calculated.

R.S. Teixeira, L.A. Araújo, D.G. Mercúrio, P.M.B.G. Maia Campos, **Application of biophysical techniques to evaluate the efficacy of a gel with zinc pca,** University of Sao Paulo, 2013

The biophysical and skin imaging techniques are effective tools to help characterize the skin type and to evaluate the'clinical efficacy of products cosmetics because they are non-invasive methods and enable to evaluate die products directly in human skin.

L. Rigano, A. Bonfigli, S. Cherel, R. Walther, **Quillaja saponin normalises dermal sebaceous imbalance**, Personal Care November 2013

Abstract: Saponin rich extracts of the Chilean soapbark tree Quillaja saponaria were traditionally used by the Mapuche Indians for washing and for medical practices. Intense research in recent decades has further proven the applicability of quillaja extracts in food, feedstock and pharma. Due to their exceptional ability as a non-irritant tensioactive, quillaja extracts are widely used in cosmetics as a cleanser, foaming agent, emulsifier and dispersing agent, but its objective efficacy as a bioactive in skin treatment was never studied. Thus the aim of this study was to confirm the property of quillaja saponins to improve the condition of sensitive, greasy and acne-prone skin.

M. Wagh, **Skin Deep: Exploring the Hidden World of Dogs (and Humans),** Bellwether Magazine, Volume 1, Number 80, Fall 2013

By current estimates, the human body contains 10 times more microbial cells than human cells. Acting in ways both beneficial and harmful, the microorganisms living on the surface of the skin, as well as in the gut and other organs, constitute a complex ecosystem known to influence digestion, allergies, and a variety of diseases.

T. Sugawara, N. Nakagawa, N. Shimizu, N. Hirai, Y. Saijo, S. Sakai, **Non-invasive analysis using three-dimensional ultrasound tomography demonstrates gender- and age-wise differences in facial sebaceous glands**, ISBS, Milan 15-16.10.2013

Summary Facial skin is rich in large sebaceous glands (SGs). Although age and gender related differences in SG activity and sebum levels have been reported, changes in SG morphology remain inconclusive. Three dimensional ultrasound microscopy with a central frequency of 120 MHz allows, with a spatial resolution of 20 μm, non-invasive visualization of the structure of skin appendages such as SGs. To explore the differences in SG morphology by age or gender, we measured facial skin using a high-frequency 3D ultrasound microscope. SG images of the cheek of young male, young female and elderly female subjects were obtained using 3D ultrasound microscopy over an area of 4.8 mm × 4.8 mm and to a depth of 1.5 mm. Then, 150 consecutive B mode images were reconstructed to obtain volume data, and en face images were processed at 700 or 900-μm beneath the skin surface to measure the SG area. In young male subjects, the areas of the low-intensity circular regions, which represent SG morphology, at 900-μm beneath the skin surface were significantly larger than at 700 μm. In contrast to the male subjects, in young female subjects the areas of low-density circular regions at 900 μm did not differ from those at 700 μm.

H. Ohno, N. Nishimura, K. Yamada, Y. Shimizu, S. Iwase, J. Sugenoya, M. Sato, **Effects of water nanodroplets on skin moisture and viscoelasticity during air-conditioning**, Skin Research and Technology 2013;19;375-383

Background/purpose: In air-conditioned rooms, dry air exacerbates some skin diseases, for example, senile xerosis, atopic dermatitis, and surface roughness. Humidifiers are used to improve air dryness, which often induces excess humidity and thermal discomfort. To address this issue, we investigated the effects of water nanodroplets (mist) on skin hydration, which may increase skin hydration by penetrating into the interstitial spaces between corneocytes of the stratum corneum (SC) without increasing air humidity. Methods: We examined biophysical parameters, including skin conductance and transepidermal water loss (TEWL), and biomechanical parameters of skin distension/retraction before and after suction at the forehead, lateral canthus, and cheek, with or without mist, in a testing environment (24°C, 35% relative humidity) for 120 min.

F. Pouradier, C. Cornillon, M.F. D'arras, F. Flament, S. Panhard, S. Diridollou, G. Loussouarn, **Functional and structural age-related changes in the scalp skin of Caucasian women,** Skin Research and Technology 2013;19;384-393

Background: Ageing of the skin, being chronological or sun induced is highly documented. Scalp, as a specific skin site, has, however, received little attention. This work attempted to describe functional and structural alterations that occur in scalp skin with ageing. Methods: Two different age groups (N=15 each; 30 ± 3 and 62 ± 2 y.o. respectively) of Caucasian women participated in the study. Some functional parameters (TEWL, Sebum level, Hydration, T°) were recorded on the vertex part of the scalp, after having cut the hair flat on the scalp surface. Imaging of some structural criteria was

carried out using high-frequency ultrasound technique and optical coherence tomography on the same scalp site and on the mid-forehead, as a close control skin site.

C. Galzote, R. Estanislao, M.O. Suero, A. Khaiat, M.I. Mangubat, R. Moideen, H. Tagami, X. Wang, **Characterization of facial skin of various Asian populations through visual and non-invasive instrumental evaluations: influence of age and skincare habits,** Skin Research and Technology 2013;19; 454-465

Background/purpose: We aimed to evaluate the impact of age and skincare habits on facila skin of different Asian ethnicities by comparing skin properties and skincare habits among various Asian populations of varying age groups. Methods: We evaluated approximately 100 female subjects each from a total of eight Asian cities in China, Indian, South Korea, Japan and the Philippines grouped according to age ranging from 14 to 75 years during a summer season. Facial skin was characterized using dermatological examinations of the cheek. Information regarding personal skincare habits was collected using a questionnaire.

Y. Wu, Y. Niu, S. Zhong, H. liu, Y. Zhen, D. Saint-Leger, M. Verschoore, **A preliminary investigation of the impact of oily skin on quality of life and concordance of self-perceived skin oiliness and skin surface lipids (sebum),** Abstracts from the Member Society Journals, IFSCC Magazine Volume 16, Number 4 2013

Objectives: This preliminary study investigated both the impact of oily skin on quality of life (QoL) and the agreement between subjective oily skin self-assessment and objective skin surface sebum measurement in young to middle-aged Chinese women in Beijing. Methods: A 18-item Chinese version of the Oily Skin Self-Image Questionnaire (QSSIQ) was used to assess the impact of oily skin on QoL in 300 helathy female subjects (age groups: 20-25; 26-30; 31-35). The subjects were divided equally into the oily skin group and the non-oily skin group based on their self-perception of skin oiliness. The level of skin surface lipids (SSL) was measured on the middle of the forehead, and both cheeks using the Sebumeter. In order to assess the agreement between self-perceived skin oiliness and measured SSL, we tentatively used the SSL median value as a dividing piont to regroup all subjects.

S. Luebberding, N. Krueger, M. Kerscher, **Skin physiology in men and women: in vivo evaluation of 300 people including TEWL, SC hydration, sebum content and skin surface pH,** IFSCC Magazine Volume 16, Number 4 2013

Objectives: Evidence is given that differences in skin physiological properties exist between men and women. However, despite an assessable number of available publications, the results are still inconsistent. Therefore, the aim of this clinical study is the first systematic assessment of gender-related differences in skin physiology in men and women, with a special focus on changed over lifetime.

S. Luebberding, N. Krueger, M. Kerscher, **Age-related changes in skin barrier function – Quantitative evaluation of 150 female subjects,** International Journal of Cosmetic Science, 2013, 35, 183–190

Synopsis: The protection against water loss and the prevention of substances and bacteria penetrating into the body rank as the most important functions of the skin. This so-called ‘skin barrier function’ is the natural frontier between the inner organism and the environment, and is primarily formed by the epidermis. An impairment of the skin barrier function is often found in diseased and damaged skin. An influence of ageing on skin barrier function is widely accepted, but has not been conclusively evaluated yet. Therefore, the aim of this clinical study was to assess the potential influence of ageing on skin barrier function, including transepidermal water loss (TEWL), stratum corneum hydration, sebum content and pH value. One hundred and fifty healthy women aged 18–80, divided into five age groups with 30 subjects each, were evaluated in this study. TEWL, hydration level, sebum secretion and pH value of hydro-lipid acid film were measured with worldwide acknowledged biophysical measuring methods at cheek, neck, d_ecollet_e, volar forearm and dorsum of hand. Whereas TEWL and stratum corneum hydration showed only very low correlation with subject’s age, the sebum production decreased significantly with age, resulting in the lowest skin surface lipids levels measured in subjects older than 70 years. The highest skin surface pH was measured in subjects between 50 and 60 years, whereas the eldest age group had the lowest mean pH. The dorsum of the hand was the location with the highest TEWL and lowest stratum corneum hydration in all age groups. The results show that only some parameters related to skin barrier function are influenced by ageing. Whereas sebum production decreases significantly over lifetime and skin surface pH is significantly increased in menopausal woman, TEWL and stratum corneum hydration show only minor variations with ageing.

M.L. Kmieć, A. Pajor, G. Broniarczyk-Dyła, **Evaluation of biophysical skin parameters and assessment of hair growth in patients with acne treated with isotretinoin,** Postep Derm Alergol 2013; XXX, 6: p. 343–349

Introduction: Treatment of the severe forms of acne vulgaris remains a challenge. Isotretinoin is a drug often used in these cases. Retinoids affect the mechanisms that play a role in the pathogenesis of acne, reduce the production of sebum and sizes of the sebaceous glands. However, isotretinoin appears to have undesirable side effects in the skin, mucous membranes and hair. Aim: The aim of this study was to assess the effect of acne vulgaris treatment with isotretinoin on biophysical skin parameters: skin sebum and stratum corneum hydration levels, transepidermal water loss values, pH, erythema and hair growth parameters: total number, density and proportion of anagen hair. Material and methods: The study included thirty patients with acne types: papulopustular, conglobata and phlegmonosa. Patients were treated with isotretinoin at a dose of 0.5–1.0 mg/kg/day for a period of 4–7 months. The measurements of skin biophysical parameters were performed before and after the treatment using Sebumeter SM815, Corneometer CM825, Tewameter TM300, MX Mexameter MX18 and Skin-pH-Meter PH908. Hair growth parameters were evaluated with FotoFinder Dermoscope using the TrichoScan Professional V3.0.8.76 software. Results: The results of biophysical skin parameter measurements after the treatment showed a reduction in the severity of seborrhea. However, the skin was dry, which confrmed a lowered degree of stratum corneum hydration and an increase in transepidermal water loss values. Moreover, severity of erythema, an increase in pH value, and variations in selected hair growth parameters: decrease in total count, density and proportion of anagen hair were demonstrated. Conclusions: The reduction in the skin sebum levels was observed after the treatment. There was dryness of the skin, which was confrmed by biophysical skin parameter measurements. Changes in the hair growth parameters showed telogen efuvium hair loss.

T. Mahmood, N. Akhtar, C. Moldovan, **A comparison of the effects of topical green tea and lotus on facial sebum control in healthy humans,** Hippokratia 2013, 17, 1: p. 64-67

Background and aim: Green tea and lotus hold several synergistic antioxidant compounds. This investigation aimed to assess the effcacy of green tea and green tea plus lotus vs. placebo multiple emulsions in healthy adults for controlling casual sebum secretions. Participants and Methods: After signing informed consents, twenty-two participants were registered in a single-blinded, placebo-controlled, split-face comparative study. Group 1 participants applied a multiple emulsion formulation with green tea extract while group 2 applied a multiple emulsion with green tea plus lotus extract in a 60 days treatment course. A non-invasive photometric device (Sebumeter®) has been used for the measurement of casual sebum secretions on both sides of the face. Results: Steady and statistically signifcant reductions in sebum secretions were noted for mono (green tea) and combined treatments (green tea plus lotus) compared to placebo treatment. However, irrespective of the concentration of extracts in active formulations, green tea plus lotus combined treatment produced statistically more sound results (twotailed p value = 0.0002) than green tea alone (two-tailed p value = 0.0060) in a 60-days treatment course. Conclusions: Results suggest that synergistic compounds in green tea and lotus could be a promising choice for cutaneous disorders where elevated sebum levels are involved in the pathophysiology of these disorders.

A. Wójcik, M. Kubiak, H. Rotsztejn, **Influence of azelaic and mandelic acid peels on sebum secretion in ageing women**, Postep Derm Alergol 2013; XXX, 3: p. 140–145

Introduction: Azelaic acid and mandelic acid are superficial peels commonly applied in people of various age groups. As they are mild and do not cause any side effects, they are also often used in elderly people. Aim: To compare the influence of azelaic and mandelic acid peels on facial sebum secretion in mature women aged 49-71 years. Material and methods: The level of secreted sebum was measured in 28 women. Eleven women were treated with azelaic acid peel and 17 with mandelic acid peel. Each of the peels was applied five times with 2-week intervals. The measurements were made on the cheeks and chin with the use of Sebumeter SM 15 (Courage & Khazaka, Germany). The last measurement, i.e. the sixth one, was made 2 weeks after the treatment. Results: We observed a significant increase in sebum secretion in the U-zone after the application of 20% azelaic peel and 40% mandelic peel. Neither peel significantly affected sebum secretion in the T-zone. Conclusions: Peels with 20% azelaic acid and 40% mandelic acid might be considered treatments which contribute to an increase in sebum secretion in ageing women.

J. Kurpiewska, J. Liwkowicz, K. Padlewska, **Prevention of hand dermatoses in small catering enterprises**, Med Pr 2013;64(4): p. 521-525, (Abstract – Article in Polish)

Background: Work in catering and food processing is mostly performed by hands. Mechanical, thermal and chemical agents, as well as damp working conditions and frequent hand washing aggravate

skin irritation. The aim of the study was to test the efficacy of hydrophobic skin protection measure at these workplaces. Materials and Methods: We recommended the prevention of contact skin disorders by using hydrophobic skin protection measure. The study was conducted in a group of 20 food service sector workers. They were interviewed about skin problems and skin protection measures. To assess the effect of the protective preparation on the skin dermatological test procedures, corneometry and sebumetry, were applied, as well as the level of transepidermal water loss (TEWL) was measured. The same survey was performed in the control group composed of 10 workers who used and 10 who did not use barrier preparation. Results: The respondents declared dryness, roughness, peeling, burning, redness, erythema of the skin. All who had applied barrier cream observed a significant improvement of the skin - hydration increased by about 30%, and lubrication of the skin - by 11 times on average. Also the level of TEWL decreased by about 25%. Conclusions: The improvement of skin conditions and reduction of skin disorders were observed confirming the effectiveness of the protection of the skin from exposure to harmful factors. Knowledge about prevention of skin diseases should be promoted among employees of catering enterprises.

G. Munvalli, **A single-center, prospective study on the efficacy and safety of microfocused ultrasound for the noninvasive treatment of moderate to severe facial acne,** JAAD, April 2013, Volume 68, Issue 4, Supplement 1, p. AB12

Acne is a very prevalent skin order affecting ≥ 85 % of adolescents and often continuing into adulthood.

C. Uhl, D. Khazaka, **Techniques for globally approved skin testing,** Personal Care April 2013

In efficacy testing and claim support for cosmetic products, objective measurement systems became indispensable long ago, especially since subjective clinical assessments are often prone to bias and inter-observer variation. Without suitable instrumentation it is close to impossible to determine what a product is really doing for the skin. Those objective measurement methods and subjective evaluations are mutually dependent. No measurement can be performed without the subjective evaluation of the results by the user of such instrumentation. However, a pure subjective evaluation of the skin without appropriate measurement techniques is not able to achieve accurate results either. This relationship becomes clearer when looking for example at skin colour measurements. Subjectively, the human brain cannot process slight changes in colour, especially when the colours are not viewed side by side, but at different points in time. Instrumental measurement however will clearly detect such slight changes. The achieved result must then be interpreted in context with the expected outcome or the hypothesis. For this, you will always need a knowledgeable and experienced person because 'a fool with a tool is still a fool', as the late Albert Kligman used to say. This relationship between objective measurement and subjective evaluation is not only true for the determination of differences in skin colour, but also for all other skin measurement parameters important for the cosmetic industry.

C.W. Choi, J.W. Choi, K.C. Park, S.W. Youn, **Facial sebum affects the development of acne, especially the distribution of inflammatory acne**, J Eur Acad Dermatol Venereol. 2013 Mar; 27 (3): p. 301-6

Background: The increased sebum secretion has been considered as one of the pathogenic factors of acne. Objective: The goal of this study was to assess the correlation between the casual sebum level and the severity of acne using objective measuring methods in a large acne patients group. We also investigated the influence of age or gender on the correlation. Methods: A total number of 914 acne patients were recruited. The standard digital photographs were taken, and the acne lesions were counted as comedones or inflammatory lesions. The casual sebum level was measured using the Sebumeter SM 815(®). The correlation analysis was performed. Results: The casual sebum level showed positive correlation with the number of acne lesions. The casual sebum level markedly influenced the number of inflammatory lesions and the acne lesions located in the U-zone. In the young acne patients, the casual sebum level showed significant correlations in the U-zone, whereas in the old acne patients, there were significant correlations in the T-zone. The male acne patients were more influenced by the casual sebum level. Conclusion: This was the first study to report the significant correlations between the casual sebum level and the number, proportion and location of acne lesions in a large acne patients group, using an objective, bioengineering method. Moreover, we also found that the influence of sebum was prominent on the inflammatory lesions. In addition, both age and gender influenced the correlation between the casual sebum level and the acne.

B.Y. Kim, J.W. Choi, K.C. Park, S.W. Youn, **Sebum, acne, skin elasticity, and gender difference - which is the major influencing factor for facial pores?**, Skin Res Technol. 2013 Feb;19(1): e45-53

Background: Enlarged facial pores have been esthetic problems and have become a matter of cosmetic concern. Several factors are supposed to be related to the enlargement of facial pores, although scientific evaluations were not performed yet. Objective: To assess the correlation between facial pores and possible relating factors such as age, gender, sebum secretion, skin elasticity, and the presence of acne, using objective bioengineering instruments. Methods: Sixty volunteers, 30 males and 30 females, participated in this study. Various parameters of facial pores were assessed using the Robo Skin Analyzer. The facial sebum secretion and skin elasticity were measured using the Sebumeter and the Cutometer, respectively. These data were compared and correlated to examine the possible relationship between facial pores and age, sebum secretion and skin elasticity, according to gender and the presence of acne. Male gender and the existence of acne were correlated with higher number of facial pores. Sebum secretion levels showed positive correlation with facial pores. Results: The R7 parameter of skin elasticity was negatively correlated with facial pores, suggesting increased facial pores with decreased skin elasticity. However, the age and the severity of acne did not show a definite relationship with facial pores. Male, increased sebum and decreased skin elasticity were mostly correlated with facial pore development. Conclusion: Further studies on population with various demographic profiles and more severe acne may be helpful to elucidate the potential effect of aging and acne severity on facial pores.

M. Estanqueiro, G. Bossolani, M.H. Amaral, J. Conceicao, D. Santos, J.M. Sousa Lobo, J.B. Silva, C.S.F. Gomes, **Characterizing and Evaluating the Effectiveness of Volcanic Pumice Exfoliants,** Cosmetics & Toiletries magazine Vol. 127, No. 11 November 2012

Human skin, more specifically facial skin, periodically needs a deep cleansing to remove not only the oily particles resulting from secretions, but also dead skin caused by desquamation of the epidermis. Cleansers are designed to remove dirt, sweat, sebum and oils from the skin, which helps to promote normal exfoliation and thereby rejuvenates the skin. However, the use of cleansers can lead to a reduction in the level of the natural moisturizing factor (NMF) of skin. Factors that reduce the water content can lead to changes in skin's viscoelasticity. Further, harsh cleansers such as soaps can induce dryness, leading to scaly and rough skin. These effects may be much more severe during winter months when the air is cold and dry.

A.-E. Craciun, M. Moldovan, A. Rusu, C. Nita, C. Craciun, A. Tataru, **Predictors of changes in physical properties of skin in patients with diabetes mellitus,** Rom J Diabetes Nutr Metab Dis. 19(1):33-40; 2012

Introduction: The skin, the largest human organ, is often affected by diabetes mellitus (DM). We know that DM affects the hydration of stratum corneum (SC), the sebum content of the skin and to some extent, the barrier function of the epidermis and elasticity, but we do not know the factors leading to these changes. Objectives: The objectives of this study were to determine the factors associated with changes in physical properties of the skin (skin hydration degree, sebumetry, transepidermal water loss and skin elasticity) in patients with diabetes. Materials and methods: The physical properties of the skin were assessed using the Multi Probe Adapter Systems MPA (Courage-Khazaka, Germany) in 57 patients with diabetes and 46 non-diabetic.

T.H. Sakuma, H.I. Maibach, **Oily Skin: An overview,** Skin Pharmacology and Physiology 2012; 25: p. 227-235

Oily skin (seborrhea) is a common cosmetic problem that occurs when oversized sebaceous glands produce excessive amounts of sebum giving the appearance shiny and greasy skin. This paper overviews the main concepts of sebaceous gland anatomy and physiology, including the biosynthesis, storage and release of sebum, as well as its relationship to skin hydration and water barrier function. We also address how skin oiliness may vary according to diet, age, gender, ethnicity and hot humid climates. The deeper understanding of this skin type provides the opportunity to better guide patients regaring skin care and also assist in the development of sebosuppressive agents.

S. Mac-Mary, A. Elkhyat, J.M. Sainthillier, A. Jeudy, K. Perrot, S. Lafond, O. Predine, P. Mermet, C. Tarrit, P. Humbert, **Specific cosmetic for children: an in vivo randomized single-blind study of efficacy in 7- to 12-year-old children**, IFSCC 2012, 15-18 Oct. 2012, Sandton, South Africa

Few cosmetics are dedicated to the skin of children: most of them have been developed for babies or the acneic skin of adolescents. However, literature seems to indicate that the children's sebum levels are very low. The aim of this study was to assess the acceptability and efficacy of a cosmetic specifically formulated for the skin of prepubertal children.

S. Hitzel, R. Graf, M. Lefort, G. Witte, S. Daehnhardt-Pfeiffer, H. Tronnier, U. Heinrich, **Acne prevention based on a specific antioxidant,** IFSCC 2012, 15-18 Oct. 2012, Sandton, South Africa

The sun as the center of our solar system is essential for all life on earth. Yet, excessive exposure to the sun's rays can have negative effects, among which are many potentially damaging consequences to the human body which have been attributed to free radicals. There is also evidence that radical induced peroxidation of squalene in the sebum is one of the conditions for the occurrence of impure skin or acne. Skin tending to acne is a frequent appearance especially in juveniles and young adults and often results from oily skin. It is understood as a complex condition with skin subject to an increased formation of sebum lipids, a bacterial population and an inflammatory alteration.

W. Voss, I. Bunge, **Dermatological Reports on Cosmetics: Intensions and Possibilities**, IFSCC 2012, 15-18 Oct. 2012, Sandton, South Africa

Dermatological reports and claims in accordance with scientific criteria are of decisive value for the safety and efficacy of cosmetics. Whether a cosmetic product is well tolerated or causes irritations or allergic reactions must be proven by dermatological tests. The value of dermatological reports directly depends on the respectability of the commissioned dermatologists. Pitfalls occur, whenever non qualified scientific results are generously used for advertising campains like "dermatologically tested", "allergy tested", "hypo-allergen" etc. Additionally a lot of reports are scientifically insufficient. Dermatological reports on cosmetics therefore must be valid in methodology and practical execution. With Dermatest you benefit from more than 30 years of testing experience and dermatological expertise.

A. Barel, R. Divisova, P. Clarys, **Determination of the sebum capitation factor of the sebumeter method: effect of application pressure**, ISBS Copenhagen 2012

The determination of the sebum casual level can be carried out using the photometric method (Sebumeter). The Sebumeter measuring probe (cassette) is applied with a constant pressure on the skin surface using a spring system. In the literature values ranging from 6.6 to 10N are reported. The measured quantity of sebum is only a fraction of the real quantity of sebum present (captation factor). Reported captation factor vary from 0.40 to 0.60. It is the purpose of this work to evaluate the captation factor as a function of the applied probe pressure.

N. Muizzuddin, M. Matsui, D. Yarosh, R. Sparacio, T. Mammone, **Topical 5-alpha reductase inhibitors may effectively reduce skin surface sebum production,** ISBS Copenhagen 2012

Many individuals are distressed about having excessively oily skin and seek topical remedies for this condition. Skin having a high water content and low sebum secretion is considered to be highly desirable (moisturized and hydrated but without visible sheen). Sebum lipids are primarily a product of follicular sebocytes, and synthesis is believed to be positively modulated by androgens. The transformation of precursors to androgens such as testosterone is dependent on the enzyme 5-alpha reductase.

S.Y Huh, J-I Na, C-H Huh, K-C Park, **The Effect of Photodynamic Therapy Using Indole-3-Acetic Acid and Green Light on Acne Vulgaris,** Ann Dermatol 24(1) p. 56-60, 2012

Background: Photodynamic therapy (PDT) using topical aminolevulinic acid (ALA) has increasingly been used for the treatment of acne vulgaris and several studies have shown its clinical efficacy. However, ALA-PDT needs a relatively long incubation period and is frequently associated with adverse effects. Indole-3-acetic acid (IAA) has been introduced as a new photosensitizer for the treatment of acne in recent study. IAA-PDT requires only a short incubation period and the procedure is relatively painless in contrast to ALA-PDT. Objective: To investigate the efficacy and safety of IAA- PDT in the treatment of acne. Methods: Twenty-five patients with facial acne lesions were enrolled in this study. IAA-PDT was performed for five sessions at 1-week intervals (week 0~4). IAA was treated with 15 minute occlusion, and green light was given for 15 minutes. Clinical efficacy was determined by evaluating acne lesion counts, severity grading, and the Dermatology Life Quality Index (DLQI) at week 0, 2, 4, and 5. Sebum secretion and erythema index was measured by Sebumeter and Mexameter, respectively, at baseline and one week after each treatment session (week 1~5). Histopathological examination was performed at baseline and week 5. Adverse effects were recorded throughout the study. Results: All the patients completed the study. Numbers of both inflammatory and non-inflammatory acne lesions were sig nificantly decreased. Acne severity grade and the DLQI showed significant reduction. Sebum secretion and erythema were also reduced. Histopathological examination showed a reduction in inflammatory reactions. No adverse effects were observed except for transient pruritus in one patient. Conclusion: PDT using IAA and green light was an effective, simple and safe treatment for acne.

A. Firooz, B. Sadr, S. Babakoohi, M. Sarraf-Yazdy, F. Fanian, A. Kazerouni-Timsar, M. Nassiri-Kashani, M.M. Naghizadeh, Y. Dowlati, **Variation of Biophysical Parameters of the Skin with Age, Gender, and Body Region,** The Scientific World Journal, Volume 2012

Background: Understanding the physiological, chemical, and biophysical characteristics of the skin helps us to arrange a proper approach to the management of skin diseases. Objective: The aim of this study was to measure 6 biophysical characteristics of normal skin (sebum content, hydration, transepidermal water loss (TEWL), erythema index, melanin index, and elasticity) in a normal population and assess the effect of sex, age, and body location on them. Methods: Fifty healthy volunteers in 5 age groups (5 males and females in each) were enrolled in this study. A multifunctional skin physiology monitor (Courage & Khazaka electronic GmbH, Germany) was used to measure skin sebum content, hydration, TEWL, erythema index, melanin index, and elasticity in 8 different locations of the body. Results: There were significant differences between the hydration, melanin index, and elasticity of different age groups. Regarding the locations, forehead had the highest melanin index, where as palm had the lowest value. The mean values of erythema index and melanin index and TEWL were significantly higher in males and anatomic location was a significant independent factor for all of 6 measured parameters. Conclusion: Several biophysical properties of the skin vary among different gender, age groups, and body locations.

K. Fritz, **Skin physiologic changes before and after laser treatment**, IMCAS, Congress of Plastic Surgery and Dermatoloy, Lecture number: 5462

The aim of the study was to compare the changes of the biophysical properties and to objectify the effects of treatments with various lasers on skin phsiology. Few studies have been reported to compare the effects of various lasers on the skin physiology wich could result in a customized skin care post treatment recommendation. The recent development of various biophysical devices has made it possible to have more accurate and objective assessment methods .The functional properties of the skin are measured by utilizing non invasive techniques, including the assessments for, skin color, trans-epidermal water loss (TEWL) and skin hydration and ph (Courage and Khazaka).

A. Costa, L. Lindmark, L.H. Fávaro Arruda, E. Cancio Assumpção, F. Sayuri Ota, M. de Oliveira Pereira, S.S. Barros Langen, **Clinical, biometric and ultrasound assessment of the effects of daily use of a nutraceutical composed of lycopene, acerola extract, grape seed extract and Biomarine Complex in photoaged human skin,** An Bras Dermatol. 2012; 87(1): p. 52-61

Background: The use of nutraceuticals has become frequent in the cutaneous approach to photoaging. Objectives: To assess the clinical efficacy of a nutraceutical product composed of lycopene, acerola extract, grape seed extract and Biomarine ComplexT in photoaged human skin. Methods: 50 women, from 35 to 60 years of age, phototypes I to III, were assessed. For 120 days, they associated the nutraceutical product with the use of a sunscreen FPS15. On days 0 (D0), 30 (D30), 60 (D60), 90 (D90) and 120 (D120) they were evaluated and underwent Medical Assessments and Self-Assessment and cutaneous biometric analyses (corneometry, sebumetry and pH-metry) in the skin of the left zygomatic region and the upper medial side region of the left arm; on days 0 (D0), 30 (D30) and 120 (D120) the skin of the same regions was analyzed by ultrasound. On days 0 (D0) and 120 (D120) skin biopsies were performed in the areas where instrumental evaluation was performed (to evaluate collagen and elastic fibers). Results: There was an improvement of the general status of the skin of all volunteers by the Medical and Volunteer Self- Assessments; increased parameters of cutaneous hydration, reduction of pH, increasing of ultrasound density and a histological increment of collagen and elastic fibers (both on the face and arm); there was a reduction of seborrhea (only on the face) .Conclusions: The daily use of a nutraceutical product containing lycopene, acerola extract, grape seed extract and Biomarine ComplexT showed an important adjuvant effect to counteract skin photoaging.

H.J. Park, Y.W. Lee, Y.B. Choe, K.J. Ahn, **Skin Characteristics in Patients with Pityriasis Versicolor Using Non-Invasive Method, MPA5**, Ann Dermatol Vol. 24, No. 4, 2012

Background: Skin pigmentary changes of pityriasis versicolor may occur as either hyperpigmented or hypopigmented lesions, depending on the outcome of interactions between *Malassezia* yeasts and the skin, such as lipoperoxidation process, stimulus of inflammatory cell to melanocytes, and increased thickness of keratin layer. Objective: To investigate skin characteristic factors that enhance the susceptibility to *Malassezia* yeasts and provoke different color changes of pityriasis versicolor patients. Methods: To clarify these factors, we investigated the skin characteristics of pityriasis versicolor patients, using a non-invasive method known as MPA 5® (Courage and Khazaka, Germany). A total of 90 normal healthy subjects and 30 pityriasis versicolor patients were included in this study. Results: Both hyperpigmented and hypopigmented pityriasis versicolor skin lesions showed higher humidity, increased sebum excretion rate and increased transepidermal water loss (TEWL)

values than normal healthy subjects. But no significant difference of specific *Malassezia* yeasts species between hyperpigmented and hypopigmented skin lesions was evident. Conclusion: These results indicate that higher humidity and increased sebum level provide a better growing environment of *Malassezia* yeasts in the skin, leading to the assumption that interaction between *Malassezia* yeasts and skin barrier materials makes disruption of skin barrier causing increased TEWL.

M. Borlu, Z. Karaca, H. Yildiz, F. Tanriverdi, B. Demirel, G. Elbuken, I. Cakir, H.S. Dokmetas, R. Colak, K. Unluhizarci, F. Kelestimur, **Acromegaly is associated with decreased skin transepidermal water loss and temperature, and increased skin pH and sebum secretion partially reversible after treatment,** Growth Horm IGF Res. 2012 Apr;22(2): p. 82-6

Background: Acromegaly is characterized by an acquired progressive somatic disfigurement, mainly involving the face and extremities, besides many other organ involvement. Wet and oily skin was described in acromegaly patients and it was attributed to hyperhidrosis and increased sebum production but this suggestion has not been evaluated with reliable methods. Objective: The aim of this study was to examine the skin parameters of patients with acromegaly using measurements of skin hydration, sebum content, transepidermal water loss, pH and temperature and particularly the effects of 12 months of treatment on these parameters. Methods: 52 patients with acromegaly and 24 healthy control subjects were included in this two blinded prospective study. Skin properties were measured on forehead and forearm by Corneometer CM825, Sebumeter SM810, Tewameter TM210 and Phmeter PH900 as non-invasive reliable measuring methods. Serum GH, IGF-1 and all measurements of skin properties on forehead and forearm were repeated at the end of the 3, and 6 months of therapy in 20 cases. Patients were treated with appropriate replacement therapy for deficient pituitary hormones. Results: The sebum content and pH of the skin of acromegalic patients were significantly higher and transepidermal water loss and skin temperature were found to be significantly lower in acromegalic patients when compared to the control group both on forehead and forearm. GH and IGF-1 levels were positively correlated with sebum levels and negatively correlated with skin temperature on both forehead and forearm. The sebum levels of the patients were significantly decreased both on forehead and forearm at 3rd and 6th months of treatment. Conclusion: The present study demonstrated increased sebum secretion, decreased transepidermal water loss, alkali and hypothermic skin surface in patients with acromegaly by reliable methods for the first time. These data suggest that GH and/or IGF-I may have a modulatory role on several skin characteristics which can be at least partially reversible with treatment.

S. Hyodo, S. Yamana, **Fullerene: topical application for acne treatment,** Personal Care, March 2012, p. 30-33

Acne vulgaris is one of the most common diseases of the skin and has increased in frequency over the last 50 years. Skin diseases, such as acne, may not be life threatening but have been associated with depression, anxiety, and serious psychological damage in sufferers. Acne is characterised by the formation of non-inflammatory comedos and inflammatory papules, pustules, nodules, and cysts. Generally, the major pathogenic factors involved in acne are sebum overproduction, follicular hyperkeratinisation, and bacterial hypercolonisation, as well as immune reactions and inflammation. Androgens, microbes, and other pathogenic influences may also lead to acne, this the disease has a complex pathogenesis. Sebum produced by sebaceous glands, altered follicular contents, and reactive oxygen species (ROS) may release fom serious damaged follicular walls.

S. uz Zaman, N. Akhtar, B. A. Khan, T. Mahmood, A. Rasul, A. Mahmood, M.N. Aamir, A. Ali, **Development of a sebum control cream from a local desert plant Capparis decidua**, Journal of Medicinal Plants Research Vol. 6(5), p. 744-748, 9 February, 2012

The aim of this study was to develop a stable cream from a local desert plant capable of producing Antisebum effects. Two creams (emulsions) were prepared, both of which were of w/o type. One was the formulation in which 5% extract obtained from the plant Capparis decidua was added during the preparation of the cream and the other was the base or control in which the extract was not added while other ingredients were the same as that of the formulation. Thirteen healthy male volunteers were selected and their initial sebum readings of both the cheeks were noted with the help of Sebumeter. The volunteers were given both the creams and asked to apply the creams on the face daily two times, the base on the right side and the formulation on the left side. The readings were taken every fifteen days for a period of three months. At the end of the study period, it was found that the formulation significantly decreased the sebum values on the left side. On the other hand, an increase in the sebum values was observed on the right side where the base was applied, although the increase was not significant statistically. The results showed that the cream prepared from the local desert plant C. decidua had the ability to produce Antisebum effects in the human volunteers.

S.H. Bailey, G. Oni, S.A. Brown, N. Kashefi, S. Cheriyan, M. Max-ted, C. Stewart, C. Jones, P. Maluso, A.M. Kenkel, M.M. Kenkel, J. Hoopman, F. Barton Jr, J. M. Kenkel, **The use of non-invasive instruments in characterizing human facial and abdominal skin**, Lasers Surg Med. 2012 Feb;44(2): p. 131-142

Background and objective: The skin is highly variable. This variation, although helpful for function, causes inconsistencies when assessed using subjective scales. The purpose of this study is to measure differences in skin on the face and abdomen using non-invasive, objective devices as a method to eliminate subjective error and help reduce intra- and inter-observer variability in clinical analysis. Study design/materials and methods: Eighty-eight subjects between the ages of 18 and 61 were enrolled in this study. These subjects varied in age, ethnicity, and Fitzpatrick score. Facial analysis was performed by clinical evaluation and utilizing non-invasive objective devices which included the DermaScan C 20 MHz HFUS (Cyberderm, Broomall, PA), Tru Vu (Johnson and Johnson), BTC 2000 (SRLI Technologies, Nashville, TN), Derma Unit SSC3 (CK Electronic, Köln, Germany), and the Chromometer. Results: Non-invasive devices were shown to be consistent and accurate through repeated measurement at each of the anatomical points with error rates of less than 5%. Chromometer measurements were able to categorize patients into Fitzpatrick level. DermaScan measurements demonstrated decreasing skin thicknesses associated with increasing age, smoking, and female gender. Derma Unit SSC 3 showed gender and sun exposure related differences in sebum concentration, pH, and moisture content. The Derma Unit SSC 3 sebum concentration also showed correlation with Tru Vu readings for clogged pores and bacterial activity.Conclusion: The skin assessment scales that are in use today are often prone to variability and inaccuracy due to their subjectivity. Use of the described objective non-invasive facial analysis method provides an accurate, objective analysis of human skin which can be used to measure changes preand post-operatively, or even screen patients prior to procedure to identify non-responders or those prone to adverse events. Utilization of these devices introduces a foundation on which a strong evidence-based approach to aesthetic medicine can be built.

H. Dobrev, **Products for Impure, Acne-Like Skin,** J. Fluhr (ed.), Practical Aspects of Cosmetic Testing, Springer-Verlag Berlin Heidelberg 2011

Many people suffer from impure, acne-like skin. This type of skin looks greasy and glossy, rough with enlarged pores, and has a tendency to develop comedones, pimples, and pustules. It feels unpleasant and may be a serious cosmetic problem. The effective control over the impure skin requires daily application of multifunctional cosmetic products for cleansing and intensive care of the skin. Market products should have a proven effect. Testing on human volunteers using sensorial self- and expert evaluation, instrumental skin bioengineering techniques, and questionnaires for quality of life assessment are the preferred ways to prove products claims.

R. Darlenski, T. Callaghan, J.W. Fluhr, **Antiaging and Antiwrinkle Products,** J.W. Fluhr (ed.), Practical Aspects of Cosmetic Testing; Springer-Verlag Berlin Heidelberg 2011

The chronological (intrinsic) and extrinsic aging demonstrate typical macroscopic, histological and functional characteristics. The relative improvement in different parameters characterizing aging skin cann be used in efficacy proof of antiaging and antiwrinkle cosmetic products. Different approaches to investigate the efficacy of antiaging products exist such as clinical evaluation and objective assessment with non-invasive methods and invasive procedures. A multiparametric approach is useful in the assessment of antiaging products efficacy. There is no uniform consensus on the protocol and the design of studies aiming efficacy proof of antiaging cosmetics.

M. Minguet, R. Barcelona, E. Casas, M. Beltrán, J. Seguer, **Ethyl Lauroyl Arginate HCL for Natural Preservation,** Cosmetics & Toiletries magazine, Vol. 126, N0.12/December 2011, p. 876-883

In recent years, several preservatives either have been banned or their use strongly limitd, which is the case for formaldehyde, its releasers and isothiazolinones. In addition, some studies have misleadingly related parabens with a higher risk of cancer; so although parabens are the most commonly used preservatives in skin care due to their low sensitizing potential and good efficacy, with continued scrutiny from the market, many manufacturers are omitting them and promoting their cosmetics as “paraben- free”. Currently, the ideal antimicrobial must show high antibacterial activity yet remain safe for human use and for the environment – and if possible, be based on naturally occurring substances

M. Mateu, **Aknehaut – Ein Tripeptid für die Abwehrkräfte der Haut,** COSSMA 12/2011; p. 14-15

Die Haut ist ständig Verletzungsrisiken und Mikroorganismen der Umwelt ausgesetzt und das Stratum Corneum (SC) stellt die erste Schutzbarriere der Haut gegen externe Aggressionen dar. Normale Humanhaut ist von einer grossen Zahl von Mikroorganismen besiedelt, von denen die meisten

harmlose Kommensalen sind, die keine Krankheiten verursachen. Physiologische, biochemische, mechanische, immunologische und Umweltvariablen tragen zu einer gesunden Balance zwischen der Haut und ihrer normalen Flora bei. Die Haut ist ständig pathogenen Keimen ausgesetzt. Die physikalische Barriere der Epidermis ist essenziell, aber viele Mikroben haben effektive Strategien entwickelt, die Epidermis zu überwinden. Dennoch wird gesunde Haut nur selten infiziert.

D.S. Bernardi, T.A. Pereira, N.R. Maciel, J. Bortoloto, G.S. Viera, G.C. Oliveira, P.A. Rocha-Filho, **Formation and stability of oil-in-water nanoemulsions containing rice bran oil: in vitro and in vivo assessments**, Journal of Nanobiotechnology 2011, 9:44

Background: Nanoemulsions have practical application in a multitude of commercial areas, such as the chemical, pharmaceutical and cosmetic industries. Cosmetic industries use rice bran oil in sunscreen formulations, anti ageing products and in treatments for skin diseases. The aim of this study was to create rice bran oil nanoemulsions using low energy emulsification methods and to evaluate their physical stability, irritation potential and moisturizing activity on volunteers with normal and diseased skin types. Results: The nanoemulsion developed by this phase diagram method was composed of 10% rice bran oil, 10% surfactants sorbitan oleate/PEG-30 castor oil, 0.05% antioxidant and 0.50% preservatives formulated in distilled water. The nanoemulsion was stable over the time course of this study. In vitro assays showed that this formulation has a low irritation potential, and when applied to human skin during in vivo studies, the nanoemulsion improved the skin's moisture and maintained normal skin pH values. Conclusion: The results of irritation potential studies and in vivo assessments indicate that this nanoemulsion has potential to be a useful tool to treat skin diseases, such as atopic dermatitis and psoriasis.

J. Herfs, **Sinn und Zweck der kosmetischen Hautanalyse; Manuell oder apparativ?,** Beauty Forum 09/2011 p. 68-70

Was ist Diagnose? Aus dem Griechischen übersetzt, bedeutet das Wort „Beurteilung". Der ebenfalls griechische Begriff Analyse bedeutet: Bestimmung, Untersuchung, Zergliederung und Auflösung – man möchte also den Dingen auf den Grund gehen. Der sich daraus ergebende Befund ist die Arbeitsgrundlage für die Kosmetikerin. Doch was ist für eine erfolgreiche und nutzbringende Hautanalyse wichtig? Sind es die vielen kostspieligen Geräte, die notwendig sind, um eine professionelle Beurteilung durchzuführen? Oder ist es das geschulte Auge oder gar die feinfühlige Hand der Kosmetikerin, die vieles über das Hautgeschehen wahrnimmt? Auf keinen Fall fehlen dürfen Erfahrung und kompetentes Wissen, um negative Hautveränderungen detektivisch aufzuspüren.

C. Schrammek-Drusio, **Fachfrau in Sachen Haut – die Kosmetikerin als Hautpflegetherapeutin,** natur & kosmetik, service, S. 39

Die Kosmetikerin von heute muss sich in Theorie und Praxis rund um das Thema Haut auskennen. Dafür spielt die fundierte und theorie- sowie fachorientierte Ausbildung und eine stetige Weiterbildung die größte Rolle. Ohne berufliche Fortbildung ist es auf Dauer unmöglich, zeitgerecht und marktorientiert zu arbeiten. Um die Haut der Kundinnen und Kunden für die kosmetische Kabinenbehandlung spezifisch zu bestimmen, liegt ein Schwerpunkt im richtigen erkennen der Hautgrundbilder und Hautzustände – die so genannte Profi-Hautanalyse. Noch immer werden Hauttypen und Hautgrundbilder häufig verwechselt.

C. Schrammek-Drusio, **Haut- und Gesichtsdiagnosen – eine Kernkompetenz jeder Kosmetikerin,** dermatologie S. 32-33

Neben dem Dermatologen ist eine kompetente Kosmetikerin die Expertin in Sachen Hautpflege. Doch wodurch zeichnet sie sich aus? Selbstverständlich ist ein umfassendes theoretisches und praktisches Fachwissen erforderlich, komplettiert durch stetige Weiterbildung. Doch wenn Kunden ins Institut kommen, möchten sie auch schnelle Analyseergebnisse und Behandlungspläne erfahren. Grundlage hierfür ist die professionelle Hautdiagnose. Denn alle sich anschließenden Fragen, etwa welche Produkte und Behandlungen in der Kabine angewendet werden, wie das individuelle Pflegekonzept aussehen soll und welche Präparate sich für die Heimpflege empfehlen, hängen von dem Ergebnis der Hautanalyse ab. Für die kosmetische Praxis bedeutet dies das Erkennen und Einordnen des Hautgrundbildes, des Hautzustandes und der Anomalien bzw. unerwünschten Hautveränderungen.

A. Wojcik, E. Budzisz, H. Rotsztejn, **Skin surface lipids and their measurements**, Post Dermatol Alergol 2011; XXVIII, 6: 498-505,

On the surface of the corneal layer there is a skin lipid coat, which is a mixture of sebum secreted by sebaceous glands and epidermal lipids synthesized by keratinocytes. The mixture of these substances mixed with the secretion of sweat glands makes up water in oil (W/O) emulsion, called a

hydrolipid coat. It acts as a barrier and regulates processes of absorption and skin penetration of substances soluble in water and fats [1, 2].

C. Deep Kaur, S. Sasraf, **Skin care assessment on the basis of skin hydration, melanin, erythema and sebum at various body sites**, Academic Science, International Journal of Pharmacy and Pharmaceutical Sciences, Vol 3, Suppl 4, 2011

The aim of this work was to study skin parameters like melanin, erythema, skin hydration, and sebum score of six body sites namely volar forearm, cheek, chin, forehead, neck and post auricular skin of Asian (Indian) population with different skin colour and types to depict the formulation to be used for taking care. Initially skin colour of various volunteers was assessed by the reference of colour chart numbers and three groups each of 80 human volunteers were made. Group I was named fair which corresponded with Colour chart number 19, 20, 21; group II (medium) (22, 23, 24); group III (dark) (25, 26, 27). The measurements were taken using Mexameter (erythema and melanin), Corneometer (skin hydration) and Sebumeter (sebum score). Results depicted that facial skin had more melanin content than volar forearm; the sebum score was highest in the forehead and lowest at volar forearm, skin hydration was more in periauricular space and forehead and lowest in cheek. The volunteers of group I had high sebum and skin hydration values than group II and III. In the face, cheeks need more care and are more prone to dryness. People with darker skin, require formulations having more humectants, while people with fairer skin need to protect more from tanning and redness. Hence these studies will be helpful for deciding the criteria for type of skin and selection of formulation to people of various skin types at various body sites.

B.H. Oh, Y.J. Hwang, Y.W. Lee, Y.B. Choe, K.J. Ahn, **Skin Characteristics after Fractional Photothermolysis,** Ann Dermatol Vol. 23, No. 4, 2011, p. 448-454

Background: Fractional photothermolysis makes thousands of minute areas called microthermal treatment zones on the skin surface and transmits thermal injury to facilitate heat shock protein formation around the dermis. Potential side effects include acneiform eruption, herpes simplex virus outbreak, erythema, and post-inflammatory hyperpigmentation. Objective: To investigate and compare the changes in the skin of Asian patients after two different fractional photothermolysis systems (FPS) on a split face. Methods: A half-split face study was performed with 10,600 nm carbon dioxide FPS on the left and 1,550 nm erbium-doped FPS on the right side of the face. Only one session of laser irradiation and several biophysical measurements were done. Results: Although both FPS proved to be effective in treating acne scar and wrinkle patients, a slightly higher satisfaction rating was seen with the 10,600 nm FPS treatment. Both types of FPS showed a significant increase in transepidermal water loss which decreased gradually after treatment and returned to pre-treatment level after 1 week. A decreased reviscometer score was sustained for a longer period in wrinkle areas treated with 10,600 nm FPS. Conclusion: Even though the changes in skin varied according to different FPS wavelength, adverse outcomes, such as increased erythema and TEWL were entirely subdued within 3 months of treatment.

T. Knor, A. Meholjić-Fetahović, A. Mehmedagić, **Stratum corneum hydration and skin surface pH in patients with atopic dermatitis,** Acta Dermatovenerol Croat. 2011;19(4): p. 242-247

Atopic dermatitis (AD) is a chronically relapsing skin disease with genetic predisposition, which occurs most frequently in preschool children. It is considered that dryness and pruritus, which are always present in AD, are in correlation with degradation of the skin barrier function. Measurement of hydration and pH value of the stratum corneum is one of the noninvasive methods for evaluation of skin barrier function. The aim of the study was to assess skin barrier function by measuring stratum corneum hydration and skin surface pH of the skin with lesions, perilesional skin and uninvolved skin in AD patients, and skin in a healthy control group. Forty-two patients were included in the study: 21 young and adult AD patients and 21 age-matched healthy controls. Capacitance, which is correlated with hydration of stratum corneum and skin surface pH were measured on the forearm in the above areas by SM810/CM820/pH900 combined units (Courage AND Khazaka, Germany). The mean value of water capacitance measured in AD patients was 44.1 ± 11.6 AU (arbitrary units) on the lesions, 60.2 ± 12.4 AU on perilesional skin and 67.2 ± 8.8 AU on uninvolved skin. In healthy controls, the mean value was 74.1 ± 9.2 AU. The mean pH value measured in AD patients was 6.13 ± 0.52 on the lesions, 5.80 ± 0.41 on perilesional skin, and 5.54 ± 0.49 on uninvolved skin. In control group, the mean pH of the skin surface was 5.24 ± 0.40. The values of both parameters measured on lesional skin were significantly different (capacitance decreased and pH increased) from the values recorded on perilesional skin and uninvolved skin. The same held for the relation between perilesional and uninvolved skin. According to study results, the uninvolved skin of AD patients had significantly worse values of the measured parameters as compared with control group. The results of this study suggested the skin barrier function to be degraded in AD patients, which is specifically expressed in lesional skin.

V. Brazzelli, V. Calcaterra, F. Muzio, C. Klersy, D. Larizza, G. Borroni, **Reduced Sebum Production in Turner Syndrome: A Study of Twenty-Two Patients**, International Journal of Immunopathology and Pharmacology,Vol. 24, No. 3, 789-792 (2011)

Turner's syndrome (TS) is a genetic disorder caused by numeric and/or structural abnormalities of the X chromosome. In a previous study it was observed that acne is less frequent in TS than in the general population. Since the onset of acne in pre-pubertal or pubertal age is related to sebum production, this study evaluates sebum secretion in TS patients, comparing the results with those of a control group of age-matched healthy female subjects. A total of 22 patients affected by TS (mean age 26.56±7.89 years) and a control group of 23 age-matched healthy females were studied. Sebum production was measured using a Sebumeter SM810. Mean sebum secretion in TS subjects was significantly lower than in the control group (81.35±66.44 *VA vs* 147.09±33.62 *VA,* p<O.OOl) and this significant difference was found in every facial zone. The reduction of sebum secretion may explain, using a simple and non-invasive method, the absence or the low incidence of acne in TS patients.

J.W. Shin, D.H. Lee, S.Y. Choi, J.I. Na, K.C. Park, S.W. Youn, C.H. Huh, **Objective and non-invasive evaluation of photorejuvenation effect with intense pulsed light treatment in Asian skin**, J Eur Acad Dermatol Venereol. 2011 May;25(5): p. 516-22

Background: Intense pulsed light (IPL) has been widely used for photorejuvenation. Although previous literature has shown clinical effectiveness of IPL treatments on cutaneous photoaging, the associated changes in the biophysical properties of the skin following IPL treatments have not been fully elucidated. Objective: The aim of this study was to evaluate changes in skin biophysical properties in patients with photoaging after IPL treatments, using non-invasive, objective skin measuring devices. Patients and Methods: A total of 26 Korean women with facial dyschromias underwent three sessions of IPL treatment at 4-week intervals. Outcome assessments included standardized photography, global evaluation by blinded investigators, patients' self-assessment and objective measurements of colour (Mexameter MX18, Chromatometer), elasticity (Cutometer), roughness (Visiometer), sebum (Sebumeter) and skin hydration (Corneometer). Results Intense pulsed light treatments produced a 15% decrease in the size of representative pigmented lesions ($P < 0.05$). Conclusions: Patients' self-assessment revealed that 84% and 58% of subjects considered their pigmented lesions and wrinkles were improved respectively. Objective colorimetric measurement demonstrated significant improvements following IPL treatments that were most remarkable after one session of IPL. Moreover, skin elasticity showed significant improvements at the end of the study. Skin wrinkles as measured using Visiometer showed a mild improvement without statistical significance. Sebum secretion and water content of skin remained unchanged. Intense pulsed light provided significant improvement in the appearance of facial pigmented lesions in Korean patients. These effects appeared to be more remarkable in improving pigmentation, skin tone and elasticity.

N. Arnejo, O. Carballo, F. Svarc, A. Branca, **A renewable, biodegradable substitute for petrolatum,** Personal Care, March 2011, p. 120-122

The usage of petrolatum in cosmetics has been under scrutiny recently, particularly within the EC, due to the potential carcinogen and mutagenic effects attributed to traces of impurities generated during its manufacturing process. Even though these questions have been around for a while, its unsurpassable properties as an occlusive have made difficult its replacement in hydrating and moisturising products. But the enforcement of REACH in Europa has accelerated the process, which is the reason why we have focused on searching for (and finding) a viable substitute. The objective of this study was to test a possible substitute to solid Vaseline (petrolatum) to replace it advantageously in treatment creams with a natural, renewable non-toxic and ecologically sound product.

L. Rigano, C. Andolfatto, L. Stucchi, M. Bosco, **Hyaluronic Acid Butyric Esters for the Improvement of Skin Functionality,** Cosmetic & Toiletries Vol. 126, No. 2/February 2011, p. 104-111

The word hyaluronic is derived from the Greek hyalos meaning “glass” or “transparent” and refers to the vitreous humor, the ocular tissue from which it was first isolated by Karl Meyer and colleagues in 1934. It was later located in many other animal tissues, i.e. synovial fluid, cartilage and the umbilical cord, where it has the same structure and biological activities, described in this article. Hyaluronic acid (HA) is a linear polysaccharide of thigh molecular weight that belongs to the fmily of mucopolysaccharides or glycosaminoglycans (GAGs), the physiological constituents of the dermal connective tissue in the extracellular matrix. In adult humans, the total amount of HA is equal to approximately 15g, half of which is found in the skin.

T. Ilknur, M.Ü. Biçak, P. Eker, H. Ellidokuz, S. Özkan, **Effects of the 810-nm diode laser on hair and on the biophysical properties of skin,** Journal of Cosmetic and Laser Therapy, 2010; 12: 269–275

Introduction: Laser therapy is clinically effective in hair removal; however, despite the development of various strategies, laser procedures still present a risk of adverse effects due to the overheating of the skin. *Objective* : To investigate the effects of 810-nm diode laser treatment on hair and on the biophysical properties of skin by using various non-invasive techniques on various parameters, including hair analysis, surface color changes, integrity of skin barrier, sebum production rate and pH level. Methods: In this randomized, right – left comparison study, 35 women with axillary hair received single-session diode laser therapy. Hair analysis and biophysical properties of the skin were assessed before treatment and at weeks 2, 4 and 6 after the therapy. Results: Hair density and thicknesses statistically signifi cantly decreased after the fi rst post-treatment evaluation. Regarding comparison of the biophysical properties of the skin, there was no statistically signifi cant difference in the assessments, except for the increase determined during the second week in the erythema index in the laser-treated areas. Conclusion: The fi ndings of this study showed that the diode laser can perform a signifi cant reduction in the hair amount without signifi cant epidermal damage, at least for a short period.

F. Morizot, J. Latreille, S. Gardinier, L. Staner, C. Guinot, A. Porcheron, E. Tschachler, **Effects of partial sleep deprivation on face appearance and skin properties,** ISBS Besancon, 2009 and Skin Research and Technology 2010; 16; p. 473-474

A reduction of sleep time on a chronic basis is a hallmark of life in modern society (“modern 24h-society”). Sleep has important homeostatic functions and sleep deprivation has effects on brain plasticity, energy conservation, tissue restoration, immune response and thermoregulatory function.Our objective was to investigate the effect of partial sleep deprivation on facial appearance and on skin functions (skin barrier, skin hydration, skin temperature, sebaceous secretions and skin sensitivity).

S. Masoud Davoudi, B. Sadr, M.R. Hayatbaksh, S. Keshavarz, M. Shohrati, M.M. Naghizadeh, S. Babakoohi, M. Rashighi-Firouzabadi, A. Firooz, **Comparative study of skin sebum and elasticity level in patients with sulfur mustard-induced dermatitis and healthy controls,** Skin Research and Technology 2010; 16: p. 237-242

Sulfur Mustard is the protagonist of vesicant (blistering) agents that was widely used durin the World War I and in the Iran-Iraq war between 1983 and 1988. Although the exact mechanism of SM damage is not clearly understood, this cytotoxic agent is able to alkylate nucleic acids and proteins, degrades cell structure and adducts DNA – its most critical lesion. SM has a predilection for eyes, skin and respiratory tract to induce its local toxic effects. After several hours of intracellular interactions, acute phase symptoms including erythema, itching, burning sensation and vesicles appear.

H. Dobrev, **Flourescence diagnostic imaging in patients with acne,** Photodermatology, Photoimmunology & Photomedicine 2010; p. 1-5

Acne is a chronic inflammatory disorder of the pilosebaceous follicles with a multifactorial etiology and pathogenesis.It typically begins in adolescence when androgen hormones stimulate the production of sebum and proliferation of follicular epidermins. In consequence, the openings of hair follicles become plugged with oil secretion and corneocytes. The follicular impactions develop into initially invisible lesions (microcomedones) and then into clinically evident comedones. Microcomedones and comedones are a suitable microenvironment for colonization by cutaneous bacteria, especially Propionibacterium acnes.

Y. Gozu, M. Moriyama, K. Sakai, S.-I. Haze, **Elucidation of Menstrual Cycle-Related Discomfort in Everyday Life and Efficacy of a “Rescue Fragrance”,** IFSCC Magazine 2/2010

The body maintains homeostasis in the face of environmental changes through its endocrine system and autonomic nervous system. The autonomic nervous system can operate at a subconscious level and controls many functions of the internal organs. The endocrine system includes eight major endocrine glands that secrete hormones. After delivery through the bloodstream, hormones reach different parts of the body and help to regulate cellular function. Therefore hormones are though to be a regulatory system that complements the nervous system. In women, the secretion of sex hormones fluctuates dramatically over the course of the menstrual cycle, causing psychosomatic changes.

A. Mieczko, **Investigation of skin physiological parameters in term neonates and evaluation of the influence of bathing on skin barrier function in newborns during the first four weeks of life,** 2010 Universitätsbibliothek der Freien Universität Berlin

Ultrastructural studies have shown that the epidermis of full-term infants born after 40 weeks of gestation is morphologically indistinguishable from that of adults. It was therefore assumed that the biophysical properties are similar as well. The present study investigated skin physiology in neonates, especially the barrier function during the first 4 weeks of life and the influence of bathing and washing.

G. Fahrgruber, **Biophysical Characterization of Lesions of Acute and Subchronic Allergic Contact Dermatitis in Domestic Pigs**, Dissertation at the University of Veterinary Medicine of Vienna, Austria, May, 2010

Allergic contact dermatitis (ACD) or contact hypersensitivity is a common eczematous skin reaction in sensitized individuals (WEEDON and STRUTTON, 2002; BAKER(a),2006; NOSBAUM et al., 2009). Very familiar are contact allergic reactions to nickel sulfate containing jewelry or occupational diseases of hair dressers, health care persons or construction workers who experience cutaneous hypersensitivity reactions after repeated contact with particular ingredients of hair dyes or chemicals in latex gloves or in building materials (MOWARD and MARKS, 2003; GERAUT et al., 2009). Urushiol is a very potent allergen in leaves of genus Toxicodendron, a plant native in North America. Farmers, workers in forestry or hikers suffer from ACD after incidental repeated contacts with these plants (GLADMAN, 2006). They are, therefore, named poison ivy, poison oak or poison sumac.

T. Lihoreau, C. Vidal, A. Jeudy, A. Elkhyat, S. Mac-Mary, J.M. Sainthillier, J. Iung, H. Bourdin, P. Humbert, **Skin Sebum Excretion and Sleep Apnea**, ISBS 2010 Buenos Aires, Argentina

The sleeping apnea syndrome is a common disorder that affects 5% of the population, but its diagnosis is underestimated because physicians forget to ask key questions, and the establishment of polysomnography is cumbersome. But given the relationship between excretion of sweat and some brain dysfunctions (eg Parkinson's disease ...), we wanted to evaluate sebaceous excretion in a population suffering from sleeping troubles, particularly sleep apnea, compared to a control group. Methodology: A preliminary study was then carried out on 26 volunteers (11 women, 15 men, average age = 46.2 years +/-14.8, average Body Mass Index (BMI) = 26.4 kg/m^3+/-5.6); they were sorted in two different populations (apnea versus, n=14, and no apnea syndrom, n=12). Skin and apnea parameters were compared between both groups: a polysomnographic record was done during the night; concerning the skin parameters, the records -realized on the wakening of the patient- concerned sebum excretion (Sebumeter SM 810, Courage & Khazaka), hydration index (Corneometer CM820, Courage & Khazaka), pH (Skin-pH-meter pH900, Courage & Khazaka).

W. Siyu, L. Li, **Effect of sweating by exercise on *stratum corneum* hydration, skin surface sebum content and pH value,** Skin Research and Technology 2010, 16, p. 489

The physiological indexes of skin include stratum corneum hydration, skin surface sebum content and pH value, which could reflect physiological state of the local and systematic organism, and also could be affected by many factors from internal or external changes. Many studies have been put on these physiological indexes, but there is no report of studying on effect of sweating by exercise on sebum, hydration and pH value of face skin. To observe the effect of sweating by exercise on stratum corneum hydration, skin surface sebum content and pH value of forehead and pars zygomatica of healthy indivuduals of different ages in order to collect the numerical data as the reference for exterior use drugs and before/after sports' cosmetics.

L. Colomb, G. Francois, C. Gevrey-Renaux, F. Flament, L. Bissey, J. Senée, **Innovative combination of *in vivo* methods to assess pores characteristics in surface and volume,** Skin Research and Technology 2010; 16

Sebaceous activity, through the number off active sebaceous gland (Sebutape) or sebum excretion (Sebumeter) is known to be highly dependant from age, gender , hormonal status, diet and many other parameters. Nevertheless, pores features, which could be also linked to sebaceous activity, was not often studied. This paper attempts to characterize age differences in skin pores features (visible size, density and volume etimation) using two *in vivo* systems. The efficacy of a cosmetic product on pore characteristics will also be presented. Two *in vivo* imaging systems were used to detect and characterize skin pores

E. Kim, G. Cho, S. Yu, H. Rho, D. Min, D. Kim, H. Kim, **The elasticity, depth of wrinkles, and skin color on the neck determine your neck age and shape,** IFSCC 2010 Buenos Aires, Argentina

There are many reports on regional variations in skin properties, but few physiological studies have been performed on the neck. The neck is sun-exposed and we stretch or shrink our neck constantly, so the neck skin can be more apt to be aged. The purpose of this study was to find out the

biomechanical and physiological parameter on the neck to change age-dependently and make the photographic scale for the neck age or neck shape. The skin properties on the neck of 56 Korean female volunteers in good health (25-64 years old, 43.1±10.5yr) were assessed non-invasively with the skin measuring devices. And we analyzed the correlation of skin physiological parameters with age. The neck skin was changed age-dependently. The elasticity, skin lightness was reduced. The depth of wrinkles and TEWL were increased. Based on the correlation parameter to age, we chose the skin color, winkles and elasticity for the key parameters to determine the neck age or neck shape. As the elasticity was reduced, the sagging of the neck skin increased. The neck wrinkles increased age-dependently and changed to "U" shape because the neck skin was sagged.

M.D. Gianeti, P.M.B.G Maia Campos, **Effects in tactile sensitivity and in skin moisturizing of cosmetic formulations containing vitamins and botanical extracts,** IFSCC 2010 Buenos Aires, Argentina

Skin is a sense organ with sensory nerve endings and receptors, which behaves like a body wrap with its protection and regulation functions. Sensorial informations are originated at the sensory receptors and it makes possible body representation, mediating physical world exploration. Experimental studies have shown that many factors may affect tactile sensations. For this purpose it was measured the current perception threshold (CPT) sensory nerve fibers by using an electric current sine wave stimulator (NeurometerTM) in 20 healthy women volunteers, aged from 25 to 35 years, before and after 2 hours of a single application of a formulation containing an association of vitamins A, C, E, *Ginkgo biloba* and *Phorphyra umbilicalis* extracts. The CPT for 5Hz, 250Hz and 2000Hz frequency current are reported to enable a selective quantification of the sensory thresholds of C, Ad, and Ab fibers respectively. In parallel, the stratum corneum hydration, the sebum content and the TEWL were measured using Corneometer™ CM285, Sebumeter™ SM810 and Tewameter™ TM210, respectively. Skin water and sebum content were significantly increased after 2 hours of the formulation application. The test group showed significantly decreased in the TEWL and in the CPT of 2000Hz, while the control group did not demonstrate any change on those parameters.

H.-U. Jabs, **Aquaporation – ein neues Verfahren zur Verbesserung der Elastizität und Feuchtigkeit der Haut,** Ästhet. Dermatologie 5/2010; p. 6-12

Als Aquaporine (AQP) werden Proteine bezeichnet, die Kanäle in der Zellmembran – auch in der Haut – bilden, um den Durchtritt von Wasser und einigen weiteren Molekülen zu erleichtern (Membrantransport). Sie werden daher auch Wasserkanäle genannt. Bei der Aquaporation gelingt der Transport von dermato-kosmetischen Substanzen, z.B. Natürlicher Feuchtigkeitsfaktor (NMF) und Hyaluronsäure in liposomaler Formulierung (Koko GmbH & Co.KG, Leichlingen) durch die Barriere der Haut mit Hilfe von hochfrequenten Strömen (radioSURG 2200, Fa. Meyer-Haake GmbH), wodurch die Feuchtigkeit und Elastizität der Haut erhöht wird. Es wird angenommen, dass die Radiowellen die Transportkapazität der Aquaporine für Wasser durch Konformationsänderungen der Proteine im Kanal und durch Lockerung der Wasserstoffbrückenbindungen vergrössern.

S. Hibino, U. Hamada,, H. Takahashi, M. Watanabe, N. Nozato, Y. Yonei, **Effects of Dried Brewer's Yeast on Skin and QOL: A Single-Blind Placebo-Controlled Clinical Study of 8-Week Treatment**, Anti-Aging Medicine 2010

Objective: Brewer's yeast contains vitamins, minerals, amino acids and other nutrients, and has been reported to control intestinal function as well as to exert anti-ulceration, anti-tumor and anti-allergy effects. The present study evaluated the effects of oral treatment with dried brewer's yeast tablets (study product) on skin in a single-blind placebo-controlled design in humans. Methods: Thirty-two healthy volunteer women (37.0±4.8 years) were allocated as follows: Group E-30 (n=11) were treated with 30 tablets/day of the study product (containing 7,125mg/day of dried brewer's yeast), Group E-9 (n=10) were given 9 tablets/day of the study product, and the control group (n=11) were given 30 placebo tablets/day. The treatment period was 8 weeks. Two patients prematurely discontinued the study (discontinuation rate: 5.9%) and were excluded from the analyses. The study product (Ebios Tablet®) was provided by Asahi Food & Healthcare Co., Ltd. Before and at 4 and 8 weeks after the study, subjective symptoms were evaluated using the Anti-Aging QOL Common Questionnaire (AAQol) and checking skin symptoms, skin images were analyzed with SK Info (SKI, Integral Co.) and Aphrodite-III (PSI), and skin color (CM-700d, Konica Minolta Sensing, Inc.) and elasticity (Cutometer MPA580, Courage & Khazaka electronic GmbH) were measured. Results: In Group E-30, the AAQol physical symptom "cold skin" score was significantly improved at 8 weeks (p<0.05). The skin symptoms "make-up runs easily" and "desiccated and gritty skin," as well as the physical symptom "menstruation-related troubles" were improved in a significant and dose-dependent way from the control group (p<0.01). On skin analysis, SKI demonstrated an increase in moisture content (15.4%, p=0.010), decrease in

erythema (– 18.3%, $p<0.001$) and increase in elasticity (13.3%, $p=0.003$), while PSI revealed an increase in hydration (Total: 14.5%, T zone: 13.7%, U zone: 18.2%, $p<0.01$) and decrease in pores (–32.7%, $p=0.022$). Cutometer analysis showed a dose-dependent increase in skin elasticity, while analysis of skin color showed a decrease in hemoglobin (–9.5%, $p=0.016$), improved lightness (–0.7%, $p=0.045$) and decrease in redness (–8.3%, $p=0.013$). During the study period, no serious adverse events were noted. Conclusion: These results suggest that treatment with dried brewer's yeast is useful in improving skin condition, *e.g.* moisture content and elasticity, and also QOL.

H. Dobrev, **Clinical and instrumental study of the efficacy of a new sebum control cream,** Journal of Cosmetic Dermatology, 6; 113-118;

Some botanical compounds are considered useful to reduce sebum production. To evaluate the efficacy of a sebum control cream containing polyphenol-rich extract from saw palmetto, sesame seeds, and argan oil in subjects with oily facial skin. The study was carried out during the winter months (January and February).

H. Dobrev, **Treatment of acne with a new topical product. A clinical and instrumental study,** Journal Household and Personal Care Today

We studied the efficacy of a new topical product containing a combination of lipoaminoacid capryloyl glycine, sarcosinde, and Cinnamon zeylanicum bark extract in 19 subjects with mild to moderate acne after twice daily application for a 7-week treatment period. Determination of efficacy included clinical assessment using acne lesion counting and desease severity scoring, bioengineering measurements of sebum on the facial skin using a photometric device and sebum collector foils.

S. Gong, C. Lv, K.R. Feingold, X. Zhang, S. Xin, C. Tu, L. Dui, P.M. Elias, M. Man, **Variation of skin surface pH, sebum content and stratum corneum hydration with age and gender in Chinese population,** Journal of Investigative Dermatology (2009), Volume 129

Evidence suggests the importance of skin biophysical properties in predicting diseases and in developing appropriate skin care. The results to date of studies on skin surface pH, stratum corneum (SC) hydration, and sebum content in various gender and ages have been inconclusive in part due to small sample size. Additionally, little is known about skin physical properties of Asian, especially Chinese, subjects.

M. Yamaguchi, Y. Tahare, T. Makino, T. Shimizu, A. Date, **Comparison of Cathepsin L activity in cheek and forearm stratum corneum in young female adults,** Skin Research and Technology 2009; 15; 370-375

Noninvasive determination of skin surface proteolytic anctivity may be useful for the diagnosis of human disease and the potential of skin. The cathepsin family is one of the metabolizing enzymes of the skin cell and it includes aspartic protease cathepsin D and cysteine proteases cathepsin B, H, and L. Cathepsin L is a lysosomal cysteine protease with a major role in intercellular protein catabolism.

N. Ismaili, Y. Afifi, B. Hassam, T. Lihoreau, A. Elkhyat, A. Jeudy, P. Humbert, **Typology of maghreb skins,** ISBS Besancon, 2009

To study the biometric characteristics of maghreb skin using common cutaneous exploration techniques and by comparing the results by age bracket and by sex. This prospective, randomised monocentre study was carried out on the forehead, the cheeks and the forearm of healthy volunteers giving informed written consent. Healthy volunteers were included of both sexes and of maghreb origin who agreed to apply nothing to the face and arms 24 hours before the study and not to participate in any other test during the study period.

A. Bigouret, F. de Oliveira, C. Gehin, **Objectivation of the individual sensory state by the assessment of specific biophysical properties of the skin in different climatic conditions,** ISBS Besancon, 2009

The CSTB in Nantes is specialized in the study on the climate effects on buildings and on human comfort. To improve human comfort in different climatic conditions, the CSTB must understand the interactions between the environment, the human body and individual perception. As the skin is a sensory organ and the first barrier between the environment and the human interior, some CSTB researchers have choice to study the biophysical properties of the skin to objectify human perception.

A. Elkhyat, Y. Afifi, B. Hassam, P. Humbert, **Human skin wettability cartography,** ISBS Besancon, 2009

For decades the surface hydrophobicity has been reported to play an important role in many

biological processes, such as cellular adhesion, contact inhibition, elasticity, functionality of tissue membranes, functioning of intracellular structures, and adhesion of infectious microorganisms. The skin affinity with water is estimated by measuring of its water contact angle. To establish a cartography of skin's wettablility by Ow measuring at nine sites. The hydration and lipidic index (HI, LI) and the skin pH are measured.

W. Siyu, L. Li, **Effect of sweating by exercise on stratum corneum hydration, skin surface sebum content and pH value,** ISBS Besancon, 2009

The physiological indexes of skin include stratum corneum hydration, skin surface sebum content and pH value, which could reflect physiological state of the local and systematic organism, and also could be affected by many factors from internal or external changes. Many studies have ben put on these physiological indexes, but there is no report of studying on effect of sweating by exercise on sebum, hydration and pH value of face skin. To observe the effect of sweating by exercise on stratum corneum hydration, skin surface sebum content and pH value of forehead and pars zygomatica of healthy individuals of different ages in order to collect the numerical data as the reference for exterior use drugs and before / after sports' cosmetics.

P.M. Campos, G.M. Goncalves, L.R. Gaspar, **In vitro antioxidants activity and in vivo efficacy of topical formulations containing vitamin C and its derivatives studied by non-invasive methods,** NCBI 2009

Vitamins C and its derivatives, mainly due to their antioxidant properties, are being used in cosmetic producs to protect and to reduce the signs off ageing. However, there are no studies comparing the effects of vitamin C and its derivatives, magnesium ascorby phosphate (MAP) and ascorbyl tetra-isopalmitate (ATIP), when vehiculated in topical formulations, mainly using objective measurements, which are an important tool in clinical efficacy studies. Thus, the objective of this study was to determine the in vitro antioxidant activity of AA and its derivatives, MAP and ATIP, as well as their in vivo efficacy on human skin, when vehiculated in topical formulations.

L.R. Gaspar, F.B. Camargo Jr., M.D. Gianeti, P.M. Maia Campos, **Evaluation of dermatological effects of cosmetic formulations containing Saccharomyces cerevisiae extract and vitamins,** NCBI 2009,

Saccharomyces cerevisiae extract (SCE) is used in cosmetics since it can act in oxidative stress and improve skin conditions. This study investigated dermatological effects of cosmetic formulations containing SCE and/or vitamins A, C and E. The formulation studied was supplemented or not (F1: vehicle) with vitamins A, C and E esters (F2) or with SCE (F3) or with the combination of vitamins and SCE (F4). Formulations were patch tested on back skin of volunteers. For efficacy studies, formulations were applied on volunteers and transepidermal water loss (TEWL), skin moisture (SM), skin microrelief (SMR) and free radicals protection wre analysed after 3h, 15 and 30 days of application.

S. Gardinier, S. Guéhenneux, J. Latreille, C. Guinot, E. Tschachler, **Variations of skin biophysical properties after recreational swimming,** Skin Research and Technology 2009; 15; pp. 427-432

Sensations of itching and skin tightness are frequently reported after recreational swimming in pool water. Our objective was to measure the potential changes occurring at the skin surface under such conditions. Nine women participated in this study, which consisted of two periods. During a 4-day control period, basal biophysical skin parameters were assessed every morning. On the first day, measurements were also performed in the afternoon. The second study period followed the same study design as for the control period, except that, on the first day, women swam for 1 h in a public pool, between the measurements performed in the morning and the afternoon.

S.W. Youn, J.H. Kim, J.E. Lee, S.O. Kim, K.C. Park, **The facial red fluorescence of ultraviolet photography: is this color due to Propionibacterium acnes or the unknown content of secreted sebum?,** Skin Research and Technology 2009; 15; p.230-236

Red fluorescence of the face induced by ultraviolet light is thought to be due to Propionibacterium acnes. However, recently there are reports correlating this red fluorescence with the amount of facial sebum secretion. This study was performed to investigate the relationship between the areas of facial red fluorescence with culture results of P. acnes and the amount of sebum secretion. Nineteen patients with acne were included. P. acnes cultures were done on speciments obtained from areas with red fluorescence.

L.-C. Gerhardt, A. Lenz, N.D. Spencer, T. Münzer, S. Derler, **Skin-textile friction and skin elasticity in young and aged persons,** Skin Research and Technology 2009; 15, p. 288-298

The mechanical properties of human skin are known to change with ageing, rendering skin less resistant to friction and shear forces, as well as more vulnerable to wounds. Until now, only few and contradictory results on the age-dependent friction properties of skin have been reported. This study has investigated in detail the influence of age on the friction of human skin against textiles. In vivo skin-friction measurements on a force plate were combined with skin analyses concerning elasticity, hydration, pH value and sebum content.

V. Delvigne, E. Segot, D. Compan-Zaouati,P.Wolkenstein, S. Consoli, C. Rodary, V. Guillou, F. Poll, **Development and Validation of a Questionnaire to Evaluate How a Cosmetic Product for Oily Skin is Able to Improve Well Being in Women,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2008

Purpose of the study: To develop and validate a questionnaire to assess the psychological and psychosocial effects of oily skin condition in women and the outcome of a targeted cosmetic skin care treatment. Methods: We developed a concise 18-item questionnaire (OSSIQ), including 2 dimensional scales (emotional state and social behaviour), to assess the impact on self image and conficence of oily skin condition.

C. Orlandi, R. Loubies, S. Baeza, C. Reyes, X. Worstman, **Clinical Experience of the Treatment with Pro-Xylane TM, Isobioline TM and Phytocomplex TM on Chilean Women with Hormonal Aging,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2008

An open and prospective study was performed in order to evaluate the action of a formulation with pro-xylane, isobioline and phyto-Complex in 59 patients with hormonal aging during a period of twelve weeks. An open and prospective study was peformed in 59 patients, between 50 and 65 years of age (average 55 years old), with hormonal aging in order to evaluate the action of a formulation with –xylane, isobioline and phyto-complex.

N. Garcia Bartels, A. Mieczko, H. Proquitté, R. Wauer, T. Schink, U. Blume-Peytavi, **Influence of Bathing in Newborns: A Prospective, Randomized Clinical Study on Skin Barrier During the First Four Weeks of Life,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2008

Background: The adapting process of skin barrier to extra-uterine life and the influence of bathing on term neonates's skin is not completely understood. Thus, we investigated the effect of bathing on skin barrier during the first four weeks of life. Methods: Monocenter, prospective, randomised study with 57 healthy full-term newborns (32 boys and 25 girls).

J.W. Fluhr, M. Miteva, G. Primavera, M. Ziemer, P. Elsner, E. Berardesca, **Functional Assessment of an Acidic Skin Care System in Patients under Chemotherapy,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2008

Background: Cancer patients undergoing chemotherapy frequently experience skin problems e.g. xerosis. The aim of this study was to verify whether a concomitant treatment with an acidic washing and emollient products (pH 5.5) can significantly improve the quality of the skin in such patients

J. Zoldan, **Botulinum Toxin for Treatment of Seborrhic Dermatitis in Parkinsonian Patients,** Rabin Medical Center, October 2008

There's high incidence of seborrhic dermatitis among patients suffering from Parkinson's disease. Seborrhic dermatitis is caused by increased exertion of sebaceous glands. Previous studies have shown an increase of sebum excretion rate in parkinsonian pateints. Other studies demonstrated improvement in seborrhic dermatitis after anticholinergic treatment. From these studies we concluded that there might be hyperactivity of the parasympathetic system among PD patients that cause increased exertion of sebum, therefore local injection of botulinium toxin, which inhibitis acetyl choline realese, might improve the rash of seborrhic dermatitis. 40 patients suffering from Parkinson disease or other parkinsonian disorders will participate in this study. Before treating the patients with botulinium toxin, we will measure the sebum exertion with the sebumeter device and make clinical evaluation of the rash. We will also take a picture of the rash. Then Botulinium toxin (60- 100 units) will be locally injected to the rash area. Two weeks after the injection the patients will be called and evaluated clinicly and by the sebumeter. Then they will be checked again after 3 weeks, after a month and after two, three and four month's.

*M.O. Ferreira, M.H. Amaral, P.C. Costa, M.F. Bahia***, Assessment of Age-Related Differences in Skin Surface, Hydration, Sebum and pH,** IFSCC Barcelona 2008

Skin is the body's largest organ and constitutes a formidable physical barrier that protects us from the environment [1]. It is composed of two main layers: the epidermis and the dermis. The stratum

corneum is the outermost layer of the epidermis and is the most important in terms of protection against damage and aesthetic appearance of the skin. The hydrolipidic film of the stratum corneum, which consists mainly of sebum excreted by the sebaceous glands and moisture components excreted with sweat, protects the skin from drying out, keeps it supple and due to the natural acid protection barrier it prevents the penetration of harmful external substances.

M.O. Ferreira, M.H. Amaral, P.C. Costa, M.F. Bahia, **Study of the Inter-Relations between Skin Surface Parameters, Hydration, Sebum and pH***,* IFSCC Barcelona 2008

Skin is the body's largest organ and constitutes a formidable physical barrier that protects us from the environment [1]. Several biophysical techniques are commonly used to study the skin properties and to measure the in vivo skin effects of cosmetics, topical medicaments and chemical irritants [2,3]. The Corneometer® (a capacitance method) measures skin hydration, the Sebumeter® (a photometric method) measures the sebum of the skin and the Skin-pH Meter® (a potenciometric method) measures the pH of the skin [4]. The Visioscan® VC98 connected to the software SELS (Surface Evaluation of the Living Skin) can measure several skin surface parameters [5]. This apparatus consists of a special b/w video sensor chip with very high resolution, an objective and an UVA-light source.

*S. Sisalli, N. Voisin, A. Adao, M. Lebel, D. Mougin***, Effect of an acute psychological stress on sebum assessed by SKINSPACE Sorbent Tape method,** IFSCC Barcelona 2008

Responsible for skin shininess and enlarged pores, the excess of sebum could cause inconveniences at all ages of a woman life. Among other biological and environmental factors, the stress is often mentionned as a parameter influencing the sebum hyperproduction. As the data available in litterature are mainly related to young people suffering from acne, the objective of the present study is to evaluate the impact of an acute psychological stress on sebum secretion of 18 female volunteers, with healthy and normal skin, from 18 to 65 years old.

*C. Heusèle, C Derome, D. Kanchankoti, R. Mohile, A. Bernois, S. Schnebert***, Clinical and Instrumental Evaluation of the Facial Photoageing on Indian Women,** IFSCC Barcelona 2008

Daily exposure to the sun leads to skin photodamage. Clinical signs of photoageing due to biological and structural alteration of the epidermis and dermis will be function of level of UV exposure and individual protection capacities. The influence of ethnic origin on skin structure and function is more and more investigated but few instrumental or clinical studies describe the characteristics of healthy skin and their evolution with age on Indian women living in India [1]. Previous clinical, instrumental or biological studies were carried on Indian subjects living in South Africa or England.

J.-H. Hyun, H.-C. Gyu, J.-K. Young, J.-S. Kim, B.-J. Park, **Anti-acne activity of Thyme oil and its applications for cosmeceutical acne care: An innovative Anti-acne challenger***,* IFSCC Barcelona 2008

The skin disease which acne occurs in papule, pustule, cystoma and tuber for teenagers and young generation. The origin of acne takes part in various factors. The main factors are 1) increased Sebum 2) cornification of sebaceous glands 3) Propionibacterium 4) inflammation.

P. Davari, F. Gorouhi, S. Jafarian, Y. Dowlati, A. Firooz, **A randomized investigator-blind trial of different passes of microdermabrasion therapy and their effects on skin biophysical characteristics,** International Journal of Dermatology 2008, 47, p. 508-513

Microdermabrasion (MDA) was developed in 1980s, and rapidly became a popular modality in superficial skin resurfacing. Its safety, simplicity, no need for anesthesia, prompt recovery and modest equipment costs hold a wide appeal for both physicians and patients. This non-invasive mechanical technique is used in management of fine rhytides, mottled pigmentation, clogged pores, acne, acne scars, and stretch marks.

S*. Davoudi, B. Sadr, A. Firooz, S. Keshavarz, M. Naghizadeh***, Comparative study of skin sebum and elasticity levels in patients with sulfur mustard-induced dermatitis and healthy controls,** Abstract, EADV Paris 09/2008

Background: Sulfur mustard –a chemical agent- has numerous proven acute and chronic effects on skin. Xerosis which might be due to damage of hydrolipidic barrier of skin is the most common complaint of veterans. Objective: This study was designed to evaluate skin sebum and elasticity in veterans with a history of sulfur mustard contact.

J. An, K. Kim, H. Eun, **The efficacy of liposome encapsulated 0.5% 5-ALA for the treatment of acne in Asian skin,** Abstract, EADV Paris 09/2008;

Background and objectives Photodynamic therapy using topical 5 aminolevulinic acid (5-ALA) has been proposed as a treatment option in acne vulgaris, but at least 48-hour sun avoidance after treatment was strongly recommended due to the risk of post-treatment photosensitivity. Recently, lower concentration form of 5-ALA was introduced to minimize the risk. The aim of this study was to evaluate the efficacy and safety of liposome encapsulated 0.5% of 5-ALA (PhotoSpray®, DDD, Denmark) in photodynamic therapy of inflammatory acne and its effects on sebum secretion in Asian skin

J. Nasarre, G. de la Cruz, M. León, M. Espadas, C. Trullás, **Effectiveness of a cleansing gel and a cream gel containing ZINCAMIDA® as adjuvant treatment and as single treatment for inflammatory acne,** Abstract, EADV Paris 09/2008

Background: The appearance of bacterial resistance to antibiotic treatment for acne presents a serious problem. Using combined therapies, or alternating treatment with other anti-bacterial and anti-inflammatory products that do not induce bacteria resistance, such as Zincamida® may offer a solution. Objectives: To assess the effectiveness of a cleansing gel and a gel cream containing Zincamida® as adjuvant treatment and as an alternative treatment to antibiotics in the resolution of inflammatory acne.

T. Chen, T.J. Stephens, J.H. Herndon, F. Forster, Y. Appa, **Skin clearing benefits of a clay-based cleanser mask containing salicylic acid and a novel microgel complex,** Abstract, EADV Paris 09/2008

The ease and simplicity of being able to use an acne cleanser on a daily basis to treat and control acne is highly desirable for many acne sufferers. A daily acne cleanser with salicylic acid that can also be used as a mask further provides the additional benefits of softness, freshness and deep pore cleanliness that are much sought by people with acne prone skin. This dual purpose cleanser mask is now upgraded with a novel microgel complex that contains an antimicrobial, sebum dissolvers and skin conditioning agents.

H. Seirafi, K. Farsinejad, A. Firooz, S.M. Davoudi, R.M. Robati, M.S. Hoseini, A.H. Ehsani, B Sadr, **Biophysical characteristics of skin in diabetes: a controlled study,** JEADV 2008, 23, p. 146-149

Cutaneous complications are common in diabetes, with approcimately 30% of patients experiencing some skin involvement during the course of their illness; these may also be the first presenting sign of diabetes or even herald the diagnosis by many years. The skin involvement in diabetes encompasses various clinical entities such as acanthosis nigricans, necrobiosis lipoidica, diabetic dermopathy and neuropathy, sclerodema and granuloma annulare.

N. Akhtar, G. Ahmed, M. Ahmed, N. Ranjha, A. Mahmood, **Grapefruit Extract Cream: Effects on Melanin and Skin**, Cosmetics and Toiletries Magazine, Vol. 123, No. 1/January 2008, p. 55-68

Emulsions are thermodynmically unstable systems defined as microscopic dispersions of liquid droplets contained within another liquid, with a diameter ranging from 0.5 to 100 um. Emulsions usually consist of mixtures of an aqueous phase with various oils or waxes.

L.C. Robosky, K. Wade, D. Woolson, J.D. Baker, M.L. Manning, D.A. Gage, M.D. Reily, **Quantitative evaluation of sebum lipid components with nuclear magnetic resonance**, Journal of Lipid Research Volume 49, 2008, p. 686-692

A NMR spectroscopic method is described that enables the quantitation of specific lipid classes and components, independent of fatty acid composition. We demonstrate thismethod formeasuring cholesterol, squalene, and pools of sterol esters, wax esters (WEs), and triglyceride (TG) components in sebum and meibum. When 600 MHz NMR equipment is used in conjunction with highly sensitive cryogenically cooled probes, this method has adequate sensitivity, and for some applications, advantages over commonly used HPLC-evaporative light-scattering detection and mass spectrometry-based approaches. This method is shown to be useful for preclinical and clinicalmonitoring of the efficacy of sebum-reducing agents in animals and humans. In Syrian hamsters, 3% topical flutamide and 20 mg/kg oral isotretinoin reduced sterol esters by 18.7% and 30.0%, respectively, and reduced WEs by 32.9% and 31.8%, respectively, as measured in a punch biopsy of the ear. In a 72 patient clinical methodology study, the assay delivered reproducible and noninvasive measurements of WEs, cholesteryl esters, TGs, and squalene from Sebutape: skin blots. The quantitative results of sebum analysis obtained by the NMR method correlate well with those obtained with HPLC-based approaches. This approach may be broadly applicable to cases in which fatty acid-independent quantification of lipid classes is desired evaluation of sebum lipid components with nuclear magnetic resonance.

M. Fox, **It's true – Stress Makes Teens Break Out**, 2007 ABC News Internet Ventures

Teen-Agers who claim that stress makes them break out are telling the truth: The stress of taking an exam can make pimples worse, researchers reported on Tuesday. And surprisingly, inflammation may be to blame and not greasy skin, said Dr. Gil Yosipovitch, a professor of dermatology at Wake Forest University School of Medicine.

G. Yosipovitch, M. Tang, A.G. Dawn, M. Chen, C.L. Goh, Y.H. Chang, L.F. Seng, **Study of Psychological Stress, Sebum Production and Acne Vulgaris in Adolescents,** Acta Dermato-Venereologica, Volume 87, Issue 2, March 2007, p. 135-139

Sebum production is though to play a major role in acne vulgaris in adolescents. Psychological stress may exacerbate acne; however, it is not known whether the perceived association between stress and acne exacerbation is due to increased sebum production.

A. Firooz, F. Gorouhi, P. Davari, M. Atarod, S. Hekmat, M. Rashighi-Firoozabadi, A. Solhpour, **Comparison of hydration, sebum and pH values in clinically normal skin of patients with atopic dermatitis and healthy controls,** 2007, Clincal and Experimental Dermatology 32, Journal compilation, p. 320-334

The water content of the stratum corneum and skin surface lipids forms a balance that is important for the appearance and function of the skin. An impaired balance may lead to the clinical manifestations known as “dry skin”, which is particularly seen in patients with atopic dermatitis (AD).

L. Ambroisine, K. Ezzedine, A. Elfakir, S. Gardinier, J. Latreille, E. Mauger, Mi. Tenenhaus, C. Guinot, **Relationships between visual and tactile features and biophysical parameters in human facial skin,** Skin Research and Technology 2007; 13: p. 176 – 183

Skin properties, such as colour, hydration and texture, can be studied on a qualitative basis by a clinical assessment or on a quantitative basis using techniques thaqt measure biophysical properties of the skin. The aim of this study was to explore the links between facial skin features and a range of skin biophysical parameters using multivariate methods.

W. Pratchyapruit, K. Kikuchi, P. Gritiyarangasan, S. Aiba, H. Tagami, **Functional analyses of the eyelid skin constituting the most soft and smooth area on the face: contribution of ist remarkably large superficial corneocytes to effective water-holding capacity of the stratum corneum**, Skin Research and Technology 2007, 13, pp. 169 – 175

The eyelid constitutes a unique area on the face because of its soft, smooth and thin skin distinct from that of other facial portions. Its softness facilitates their easy compliance to blinking movement, which is indispensable to protect the wet surface of the eyeball. Moreover, the skin of the eyelid does not show any prominent follicular orifices of an oily appearance even in adults.

M. Kerscher, T. Reuther, G. Schramm, **Chlormadinonacetat enthaltende Mikropille verbessert unreine Haut**, Frauenarzt 48 (2007), Nr. 4, S. 373-378

Moderne Mikropillen zeichnen sich besonders durch eine Reihe von Zusatznutzen aus. Den wichtigsten stellt die Verbesserung des Hautbildes dar. Für die Chlormadinonacetat-haltige Mikropille Belara wurde in klinischen, kontrollierten Studien bei leichter bis mittelschwerer Akne die Überlegenheit im Vergleich zu einer Levonorgestrel-haltigen Mikropille und zu Plazebo nachgewiesen

S. Marrakchi, H.I. Maibach, **Biophysical parameters of skin: map of human face, regional, and age-related differences,** Contact Dermatitis 2007; 57, p. 28-34

The face showed anatomical variation on reaction to chemicals, which could be related to differences in biophysical parameters. 10 young human volunteers (24-34 years) and 10 old volunteers (66-83 years) were studied to prepare a map of the human face based on regional variations and age-related differences by measuring various biophysical parameters.

S. An, E. Lee, S. Kim, G. Nam, H. Lee, S. Moon, I. Chang, **Comparison and correlation between stinging responses to lactic acid and bioengineering parameters**, Contact Dermatitis 2007; 57; p. 158-162

Sensitive skin has been described as a skin type showing higher reactivity than normal skin. By our consumer surveys, approximately 30% of the subjects believe that they have sensitive skin. However, consumer-perceived cutaneous reactions are usually scientifically unconfirmed.

A. Firooz, F. Gorouhi, P. Davari, S. Hekmat, M. Atarod, M. Rashighi Firoozabadi, A. Solhpour, **Comparison of hydration, sebum and pH values in clinically normal skin of patients with atopic dermatitis and healthy controls,** Clinical and Experimental Dermatology 2007; 32, p. 321-322;

The water content of the stratum corneum and skin surface lipids forms a balance that is important for the appearance and function of the skin. An impaired balance may lead to the clinical manifestations known as “dry skin”, which is particularly seen in patients with atopic dermatitis (AD).

S. Soost, I. Graupner, A. Morch-Röder, U. Pohrt, M. Worm, **7-step consultation plan for health care workers and hairdressers,** J Dtsch Dermatol Ges, 2007 Sep;5(9): p. 756-760

Background: Skin diseases are among the most common occupational disorders in health care workers and hairdressers. Optimal prevention methods make it possible for more individuals to remain active in their profession. We devised a 7-step consultation plan which was employed in a standard fashion and then evaluated. Patients and Methods: 264 employees were evaluated in the Education and Support Center of the German Accident Prevention and Insurance Association in the Health and Welfare Services (BGW schu.ber.z Berlin) from 2003 to 2005 in a standardized manner. Included were detailed history, physical examination, skin physiology measurements (transepidermal water loss, corneometry, sebumetry) and then making a diagnosis and therapeutic recommendations. Results: Within the study group of 264 employees the most frequent diagnosis were toxic-irritant hand eczema (28.4%), allergic contact eczema (19.7%), atopic eczema (15.5%) and irritant contact eczema with atopic diathesis (13.6%). The frequency of contact sensitivity was high in the study group (80.7%). The skin physiological parameters were not remarkably altered and did not differ between individuals with an atopic diathesis versus without an atopic diathesis. Conslusions: This standardized protocol for a "7-step consultation plan"when applied in a standardized manner offers quality-controlled but also individually-adapted support considering dermatological, educational and occupational aspects. Skin physiology parameters did not provide any further information indicating the need of the development of novel techniques to measure skin barrier function.

G. Maaß, **Anwendungsstudie der sebamed TROCKENE HAUT Produkte bei Kindern mit atopischem Ekzem**, Kosmetische Medizin 6/2007, S. 288-290

Es erfolgte in einer vierwöchigen Anwendungsuntersuchung eine klinische Überprüfung der sebamed TROCKENE HAUT Pflegeprodukte – Waschlotion, Pflegelotion, Tagescreme und Nachtcreme – bei Kindern mit atopischem Ekzem anhand von quantitativen Meßgrößen, von klinischen Befundurteilen sowie von qualitativen Beurteilungen der Pflegewirkungen.

K. Völkening, **Hautpflege für Diabetiker,** www.wohlundwehe.de

Täglich sieben Einstiche in die Hautoberfläche für Blutzuckermessungen und Injektionen sind bei insulinabhängigen Diabetikern für eine gute Zuckereinstellung mindestens notwenidig.

G. Feller-Heppt, C. Wagner, S. Ugurel, **Wirksamkeit und Patientenzufriedenheit verschiedener Pflegecremes bei Atopikern und Neurodermitispatienten im erscheinungsfreien Intervall**, Kosmetische Medizin 5/2007, S. 28-34

Bei Neurodermitispatienten stehen vor allem die Symptome trockene Haut und ausgeprägter Juckreiz im Vordergrund. Hierdurch kommt es zu vermehrtem Kratzen und nachfolgend möglicherweise zum Eintritt infektiöser Erreger bei gestörter Hautbarrierefunktion und gestörter zellulärer Immunität. Ein neuer Ekzemschub kann entstehen und den Juckreiz noch verstärken.

R. Debowska, C. Vincent, K. Bazela, M. Kruszewski, B. Winkler-Spytkowska, A. Maciejczyk, K. Rogiewicz, I. Eris, **The repair effect of Folacin on skin damage due to radiotherapy,** Kosmetische Medizin 2/2007

Zusammenfassung Obwohl medizinische und pharmakologische Fortschritte unübersehbar sind, ist die Behandlung bösartiger Tumore nach wie vor mit einem hohen Risiko unerwünschter Nebenwirkungen verbunden. Insbesondere bei der Strahlentherapie sind allgemeine Nebenwirkungen (Krankheitsgefühl und Unwohlsein) und lokale Nebenwirkungen wie kutane Strahlenschäden zu beobachten. Kutane Strahlenschäden bedürfen einer entsprechenden Behandlung und Pflege sowohl während der Radiatio als auch nach Beendigung der Strahlentherapie. Viele Patienten greifen dabei nach kosmetischen Produkten, die die vorher geschädigte wieder in eine eine gesunde Haut zurückführen sollen. Ziel dieser Studie war es, Wirksamkeit, Tolerabilität und kosmetische Qualität einer Folacin-haltigen Creme während und nach trahlentherapie zu untersuchen. In vitro wurden Experimente an primären Fibroblastenkulturen vorgenommen: Der Alkalincomet-Assay wurde verwendet, um die Reparaturwirkungen von Folacin auf Röntgenstrahlen- induzierte DNA-Schaden zu erfassen. Bei 41 Patienten mit Strahlentherapie führten wir in vivo Untersuchungen durch. Über nichtinvasive Verfahren wurden die Parameter Erythrem, Feuchtigkeit der Haut und Talgbildung an den bestrahlten Körperregionen (Wangen, Hals oder Brust) jeweils 2, 4 und 8 Wochen nach Behandlung mit der Creme erfasst. Die Repairrate von DANN Schäden war nach 15–30 min post radiationem höher bei Folat-

behandelten primären Fibroblastenkulturen als bei Kontrollen. Unsere Daten sprechen für eine Folsäure-modulierte Reparatur der DANN mit einer rascheren Verknüpfung der Strangbrüche. Wir stellten eine wirksame Verbesserung der Hautparameter durch Folin-haltige Creme unter Radiotherapie fest. Die Anwendung des Verums verminderte i. Vgl. zu Kontrollen Rötung und Couperose, verbesserte aber auch Hautfeuchte und Sebumgehalt. Die Creme wurde sehr gut durch die Patienten toleriert und ihre kosmetischen Eigenschaften waren überzeugend.

H. Fujita, T. Hirao, M. Takahashi, **A Simple and non-invasive visualization for assessment of carbonylated protein in the stratum corneum,** Skin Research and Technology 2007, p. 84-90

Stratum corneum (SC) is the interface of body and environment and is continuously exposed to oxidative stress, resulting in oxidative modification of proteins. Consequent carbonylated proteins (CPs) have so far been labelled with 2,4-dinitrophenyl (DNP) hydrazine and subsequently detected with anti-DNP antibody.

S. Nouveau-Richard, W. Zhu, Y.H. Li, Y.Z. Zhang, F.Z. Yang, Z.L Yang, S. Lian, B.Y. Qian, Y.P. Ran, C. Bouillon, H.D. Chen, O. de Lacharrière, **Oily skin: specific features in Chinese women**, Skin Res Technol, 2007 Feb;13(1): p. 43-48

Background/purpose: Inconsistent data are available on the various types of skin, their prevalence and characterization, particularly regarding Asian skins. This observation prompted to conduct a large study in China to assess the prevalence of oily skin and identify the specific factors related to that type of skin. Methods: The multicentre trial involved 1787 Chinese women in Shenyang, Harbin, Beijing, Chengdu and Suzhou, between 18 and 65 years of age. Data on history of acne, the presence of environmental factors and a detailed self-evaluation of the skin were collected using a standardized questionnaire. A clinical evaluation of facial skin oiliness was carried-out by a dermatologist at each centre. Sebum secretion was measured on the forehead using Sebumeter SM810. Statistical analysis (multiple correspondence analysis) of typology was conducted based on self-evaluation data. Results: According to self-evaluation data, oily skin prevalence in the overall Chinese population of the study was 25.6%. Self-evaluation results were quite consistent with sebum measurements and with clinical assessment by dermatologist. Parameters associated with oily skin were (i) shiny skin and a past history of acne, (ii) irregular menstruation, and (iii) highly reactive or sensitive skin. Moreover, a clear and significant link was noted between oily skin and the ingestion of spicy or sweet food. Lastly, sebum levels were found to be twice as high in Beijing as in the other cities and were correlated to higher oily skin prevalence. Conclusion: The study demonstrated the capacity of women for proper self-evaluation of their skin type. It also suggests a potential link between nutritional factors such as spicy and/or sweet diets and oily skin as well as between sensitive and oily skin in this population.

F. Tokumura, Y. Yoshihura, T. Homma, H. Nukatsuka, **Regional differences in adhesive tape stripping of human skin,** Skin Research and Technology 2006, 12, p. 178-182

Medical pressure-sensitive adhesive tapes are applied to various regions of the human body for many purposes. Although some adhesive tapes are designed for a specific purpose and applied to a single region, such as first-aid bandages for the fingers and a variety of adhesive pads for foot-care, a large number of adhesive tapes are applied to various regions.

U. Wollina, J. Kubicki, **Dexpanthenol supports healing of superficial wounds and injuries**, Kosmetische Medizin 5+6/2006, p. 240-249

Oberflächliche Hautverletzungen und Wunden sind häufig. Unter Einsatz eines Spektrums verschiedener In-vivo-Modelle der epidermalen Barrierestörung und der Wundsetzung untersuchten wir das Potential der topischen Dexpanthenol-Anwendung in der Förderung der epidermalen Regeneration und der Wundheilung.

B.-I. Bettzüge-Pfaff, H. Prieur, **Nutzen einer adjuvanten Basiscreme bei trockener, atopischer Haut,** Kosmetische Medizin 5+6/2006, p. 261-263

Im Rahmen eines dermatologisch kontrollierten Anwendungstests und hautphysiologischer Messungen an Patienten mit atopischem Ekzem hat sich eine lipidreiche Basiscreme auch bei Kindern als effektive und gut verträgliche Formulierung erwiesen. Nach Anwendung der Creme wurde eine Steigerung der Hautfeuchtigkeit und Hautfettung sowie eine Verbesserung der Hautbarrierefunktionen erreicht.

C. Lenaers, D. Brunet, K. Ladegaillerie, M. Pinel, B. Closs, **Influencing the Equilibrium of the Cutaneous Ecosystem to Improve the Properties of Skin Prone to Acne,** IFSCC Magazine, Vol. 9, No. 4/2006, p. 305-310

The skin is colonized by a variety of microorganisms such as *Propionibacterium acnes, Staphylococcus epidermidis* and *Malassezia furfur* that are in a stable balance and form the resident skin flora. The homeostasis of this ecosystem is of fundamental importance since it plays a barrier role by limiting the invasion and growth of pathogenic bacteria on the skin surface.

M. Roh, M. Han, D. Kim, K. Chung, **Sebum output as a factor contributing to the size of facial pores**, Br J Dermatol. 2006 Nov; 155(5): p. 890-4

Background: Many endogenous and exogenous factors are known to cause enlarged pilosebaceous pores. Such factors include sex, genetic predisposition, ageing, chronic ultraviolet light exposure, comedogenic xenobiotics, acne and seborrhoea. This study was an attempt to determine the factors related to enlarged pores. Objectives: To assess the relationship of sebum output, age, sex, hormonal factors and severity of acne with pore size. Methods: A prospective, randomized, controlled study was designed. A total of 60 volunteers, 30 males and 30 females, were recruited for this study. Magnified images of pores were taken using a dermoscopic video camera and measured using an image analysis program. The sebum output level was measured with a Sebumeter. Results: Using multiple linear regression analysis, increased pore size was significantly associated with increased sebum output level, sex and age. Among the variables, sebum output level correlated most with the pore size followed by male sex. In comparing male and female participants, males had higher correlation between the sebum output level and the pore size (male: r = 0.47, female: r = 0.38). Thus, additional factors seem to influence pore size in females. Pore size was significantly increased during the ovulation phase (P = 0.008), but severity of acne was not significantly associated with the pore size. Conclusions: Enlarged pore sizes are associated with increased sebum output level, age and male sex. In female patients, additional hormonal factors, such as those of the menstrual cycle, affect the pore size.

H. Dobrev, **Treatment of Acne with a new topical preparation. A clinical and instrumental study**, EADV, October 2006, Rhodes, Greece (abstract).

Background: Sepicontrol A5 is a cosmetic active ingredient designated to improve the appearance of oily, acne prone facial skin. Aim: To evaluate the sebum regulation activity, clinical efficacy and safety of a 3% and 4% Sepicontrol A5 containing cream and gel in subjects with mild to moderate acne.

S.H. Lee, C.H. Huh, K.C. Park, S.W. Youn, **Effects of repetitive superficial chemical peels on facial sebum secretion in acne patients**, J Eur Acad Dermatol Venereol, 2006 Sep;20(8): p. 964-968

Background: Glycolic acid and Jessner's solution are popular superficial chemical peel agents for the treatment of facial acne, and increased sebum secretion is one of the major aetiological factors of acne. Objective: To compare the effects of 30% glycolic acid peels and Jessner's solution peels on sebum secretion in facial acne patients. Methods: Thirty-eight patients with mild to moderate facial acne were included. Twenty-seven patients were treated with 30% glycolic acid peels and 11 patients with Jessner's solution peels. Each peel was performed twice with an interval of 2 weeks. Before and 2 weeks after each peel, sebum levels of forehead, nose, chin and cheeks were measured by using a Sebumeter (SM810 Courage & Khazaka, Cologne, Germany). Results: The sebum levels were not significantly changed by two peels treatments of 30% glycolic acid peels or Jessner's solution peels on the facial skins of patients with facial acne. Conclusions: The two types of peels, 30% glycolic acid peels and Jessner's solution peels, did not affect sebum secretion of the facial skins of patients with facial acne after the two peels treatments. The accumulative effects of more than two peels treatments using these modalities need further evaluation.

D. Khazaka, **Objective Measurement at all Stages of the treatment**, 5th Asia Pacific Conference on Antiaging Medicine, Bali, September 2006

The days are over when a dermatologist only looked at the skin to make a diagnosis and to decide about the following treatments and to recommend skin care products to use. For almost 20 years now there is scientific equipment available to measure different parameters on the skin, such as hydration and sebum level, pH, elasticity, pigmentation skin texture and wrinkles and many more.

M.K. Kim, S.Y. Choi, H.J. Byun, C.H. Huh, K.C. Park, R.A. Patel, A.H. Shinn, S.W. Youn, **Comparison of sebum secretion, skin type, pH in humans with and without acne**, Arch Dermatol Res. 2006 Aug; 298(3): p. 113-9

Differences of skin type and pH between subjects with and without acne have not been investigated. In addition, the relationship between sebum secretion and pH in these populations has not been determined. This study assessed the differences in objective and subjective skin types between these two groups. Secondly, this study evaluated the difference in pH on five facial areas (forehead, nose, chin, right and left cheeks) between the two populations. Lastly, the relationship between pH and sebum secretion was analyzed in each population. Sebum casual levels (CL) of the five facial areas in 36 Koreans with acne and 47 Koreans without acne were measured by using a Sebumeter SM 815 and subjects were classified into objective skin types by CL. Subjects reported the type of skin they believed they had, which determined the subjective skin type. The pH levels of the five facial areas were measured by the Skin-pH-Meter PH 905. Data were assessed with adequate statistical tests depending on data type and distribution. Among the five areas, the nose of the subjects with acne showed a significantly higher CL, compared to the subjects without acne. This difference in CL on the nose resulted in the difference in CL on the T-zone and mean facial sebum excretions (MFSE). Although CL differed, objective skin types did not differ between the two groups ($P > 0.05$), but the subjective skin types differed significantly ($P = 0.001$). In addition, the objective skin types were significantly different than the subjective skin types in subjects with acne ($P = 0.001$), whereas the two skin types did not differ in subjects without acne. Subjects with acne actually overestimated their skin types and stated their skin types were "oilier" than they were. In respect to pH, none of the five areas differed significantly between the two groups. Among the five sites in subjects with acne, CL showed a significant negative correlation with pH on the left ($r(2)=0.12$) and right ($r(2)=0.15$) cheeks, which resulted in a significant negative correlation on the U-zone ($r(2)=0.14$). In contrast, in subjects without acne, there was a significant negative correlation between CL and pH on the forehead ($r(2)=0.10$) and chin ($r(2)=0.16$), which led to a significant negative correlation on the T-zone ($r(2)=0.14$).

R. Rizer, N. Trookman, J. Herndon, T. Stephens, **A 4-week, randomized, double-blind, parallel group trial evaluating the efficacy and tolerability of sebum control,** AB14 J. Am. Acad. Dermatol.

Excessive production of sebum on acne prone individuals often leaves skin with an undesirable appearance that emphasizes facial shine, acne lesions, and enlarged pores. The factors that often contribute to this appearance include family history, hormonal activity changes, stress and the use of certain types of birth control pills.

M. Wahlen, N. Buhles, **Beruflich bedingtes allergisches Handekzem durch Euro-Münzen bei vorbestehender Hyperhidrosis manuum**, Akt Dermatol 2006; 32: p. 260-264

Nickel ist das meist verbreitete Allergen in Europa und weltweit, so auch in Euro-Münzen. Münzen werden allerdings nicht zu den Gebrauchsgegenständen, die direkten und langen Kontakt zur Haut haben, gerechnet. Die 1-Euro-Münzen und die 2-Euro-Münzen weisen eine Bimetallstruktur auf. In Kombination mit Schweiß entsteht aus diesem Grunde ein sog. ¹Galvanisches Element“. Durch einen messbaren Stromfluss werden vermehrt Nickelionen freigesetzt. Wir berichten über den Fall eines 55-jährigen Bankkaufmannes in einer Sparkasse, der arbeitskongruent im September 2001 ein dyshidrotisches Handekzem entwickelte. Der Patient wies zudem eine Hyperhidrosis manuum auf. Zuvor hatte der Patient nie an Ekzemen gelitten. Ab Herbst 2001 kam der Patient im Rahmen der Einführung erstmals mit Euro-Münzen in Kontakt. Ein Epikutantest zeigte eine Typ-IV-Sensibilisierung gegenüber Nickel und den Inhaltsstoffen von 1-Euro- und 2-Euro-Münzen.

G. Varju, G. Garay, **Surface Evaluation of Living Skin (SELS) during Microdermabrasion Treatment Course**, Poster Presentation, Dr. Derm Laser Center of Dermatology, Budapest Hungary, 2005

Microdermabrasion has become a popular method of skin rejuvenation for treating photodamage, fine rhytides, age spots, dyschromia, enlarged pores and mild ache. This procedure is one of the newest skin rejuvenating techniques employed to help improve the texture and appearance of the skin.

C. Vincent, M. Szubert, K. Rugiewicz, I. Eris, **The assessment of efficacy, tolerability and cosmetic features of Diosperin K 1% PROLONGATUM cream containing complex of diosmine, hesperidine and vitamin K**, Poster Presentation, Centre for Science and Research Dr. Irena Eris, 2005

Face redness and couperoses can cause very negative visual effect and influent on patients´quality of life. Such type of skin requires special regime. Application of very gentle cleaners, sun protective products and appropriate cosmetic creams can improve the skin condition and minimize the red face effect.

Dermokosmetik, Beratung in der Apotheke, PTA Nr. 11, Oktober 2005

Eine gute Unterstützung bei Promotionaktionen zum Thema „Hautpflege“ sind Hautanalysegeräte. Sie erleichtern den Einstieg in die Beratung, individuell auf den Hauttyp und Hautzustand der Kundin oder des Kunden abegestimmt.

D. Kowatzki, C. Machold, K. Krull, P. Elsner, J.W. Fluhr, **Regeneration kinetic of sweating, Stratum Corneum hydration, Surface pH, Sebum production and mechanical properties is not altered by regular sauna bathing,** Presentation on the ISBS Meeting 2005 in Philadelphia and Skin Research and Technology 2005, 11 (abstracts)

Wellness and especially sauna bathing are of growing interest in modern health care. The positive effect of sauna for general health is well documented. However, to our knowledge no controlled studies have been published on the effect of sauna on skin physiology.

Y. Sunwoo, C. Chou, J. Takeshita, M. Murakami, Y. Tochihara, **Physiological and Subjective Responses to Low Relative Humidity,** Journal of Physiological Anthropology 2005; p. 7-14

In order to investigate the influence of low relative humidity, we measured saccharin clearance time (SCT), frequency of blinking, heart rate (HR), blood pressure, hydration state of skin, transepidermal water loss (TEWL), recovery sebum level and skin temperature as physiological responses. We asked subjects to judge thermal dryness and comfort sensations as subjective responses using a rating scale. Sixteen non-smoking healthy male students were selected. The pre-room conditions were maintained at an air temperature (Ta) of 25°C and a relative humidity (RH) of 50%. The test room conditions were adjusted to provide a Ta of 25°C and RH levels of 10%, 30% and 50%.

H. Dobrev, **Clinical and instrumental study of the sebum regulation efficacy of REGU®-SEB**, Poster Presentation at the EADV in London, October 2005

Excessively oily facial skin is due to overactive sebaceous glands and can occur in both males and females. The skin is greasy and shiny, with large open pores, feels unpleasant and may be a serious cosmetic problem. Moreover, this type of skin is sensitive and much more prone to acne and seborrhoeic dermatitis. That is why the control over the excessive oiliness is very important.

J.W. Fluhr, C. Uhl, **Hautphysiologische Messungen in der täglichen Praxis: Corneometrie und Sebumetrie bei physiologischen und krankhaften Hautveränderungen**, Diagnostische Verfahren, Kap. Nr. 37, 2005, p. 321-345

Grundlagen der Methoden: Bei der Corneometrie handelt es sich um eine nicht-invasive Messung der Hautoberfläche zur Bestimmung des Feuchtigkeitsgehalts im Stratum corneum. Die Messung erfolgt auf kapazitivem Weg und beruht auf der Tatsache, dass Wasser eine von anderen Stoffen sehr unterschiedliche Dielektrizitätskonstante besitzt.

N. Muizzuddin, K.D. Marenus, S.F. Schnittger, M. Sullivan, D.H. Maes, **Effect of systemic hormonal cyclicity on skin,** J. Cosmet. Sci., 56, p. 311-321 (September/October 2005)

Fluctuations in estrogen and progesterone during the menstrual cycle can cause changes in bodysystems other than the reproductive system. We conducted several studies to determine a possible correlation between phases of the menstrual cycle and specific skin properties. Healthy Caucasian women (ages 21-48), who had a typical 26-29 day menstrual cycle, participated in the studies. Measurements of skin barrier strength, dryness, response to lactic acid stinging, skin surface lipids, and microflora were obtained every week for two to three months. Ultraviolet B susceptibility in terms of minimal erythemal dose was also studied. The skin barrierwas the weakest between days 22 and 26 of the cycle .Elevated neuronal response (lactic acid sting) was not observed to vary much with the cycle. Skin was driest between day 1 and day 6, while skin surface lipid secretion appeared to be highest on days 16-20 of the hormonal cycle. The highest microbial count was around days 16-22, and there was a high UV-B susceptibility between days 20 and 28 of the menstrual cycle.

S.W. Youn, J.I. Na, S.Y. Choi, C.H. Huh, K.C. Park, **Regional and seasonal variations in facial sebum secretions: a proposal for the definition of combination skin type**, Skin Res Technol. 2005 Aug;11(3): p. 189-95

Background/Aims: Facial sebum secretions are known to change under various circumstances. Facial skin types have been categorized as oily, normal, dry, and combination types. However, these have been evaluated subjectively by individuals to date, and no objective accepted standard measurement method exists. The combination skin type is most common, but its definition is vaguer than the definitions of the other skin types. Methods: We measured facial sebum secretions with Sebumeter. Sebum secretions were measured at five sites of the face seasonally for a year, in the same

volunteers. Using the data obtained we developed a set of rules to define the combination skin type. Results: Regional differences in sebum secretion were confirmed. Sebum secretions on forehead, nose, and chin were higher than on both cheeks. Summer was found to be the highest sebum-secreting season, and seasonal variations were found in the T- and U-zones. A mismatch of skin type in the Tand U-zones in more than two seasons appears to be close to subjective ratings of what is described as the 'combination' skin type. Conclusion: We showed that the face shows definitive regional and seasonal variations in sebum secretion. To define the combination skin type, seasonal variations in sebum secretion should be considered in addition to regional variations.

C. Uhl, **Neue Wege in der Hautdiagnostik,** Kosmetische Praxis, Juni 2005

Der Einstieg in die professionelle Hautberatung ist stets das persönliche Gespräch mit dem Kunden. Dabei ist es entscheidend, neben der Beurteilung des optischen Eindrucks der Haut herauszufinden, welche individuellen Lebensgewohnheiten vorliegen. Genetische Disposition, Ernährung, Risikofaktoren wie Rauchen, Stress oder hoher Alkoholkonsum, sportliche Aktivitäten, Schlafverhalten und Alter beeinflussen entscheidend den Hautzustand und müssen daher in die Beratung mit einbezogen werden. Basis einer qualitativen und auf die Bedürfnisse des Kunden zugeschnittenen Körperkosmetik ist die Bestimmung des individuellen Hautzustands.
Diese Information ist unentbehrlich, um eine fundierte Hautberatung durchzuführen. Auf dieser Diagnose soll der gesamte Pflegeplan aufgebaut werden, der essentiell für den Erfolg der Behandlung und damit für die Zufriedenheit der Kunden ist. Lesen Sie, welche Methoden es gibt und wie man vorgeht.

*R. Osborne, A. Matsubara, K. Biedermann, G.G. Hillebrand, B. Schnell, K. Miyamoto***, Improvement in Facial Surface Sebum and Pore Appearance with Niacinamide,** (Poster)

Introduction: One of the signs of aging facial skin is the appearance of enlarged pores. Previous studies have suggested a link between excessive sebum secretion and enlarged pores. To explore this link further, two types of studies were conducted: surveys comparing surface sebum and pores in Asian and Caucasian women, and studies evaluating the effects of use of a 2% niacinamide-containing facial moisturizer. Niacinamide has been shown to reduce sebum production in an *in vitro* human skin model, and the appearance of surface sebum *in vivo.* In the present studies, the effects of a niacinamide-containing facial moisturizer on both surface sebum and pore appearance are established.

M.R. Pena Ferreira, P. Costa, M.F. Bahia, **Study of Efficacy Comparison of 20 Anti-Oily Hair Shampoos Using Sebumeter SM 810,** Presenatation at the IFSCC in Florence 2005

Summary: There are many different types of shampoos available to the consumer to control greasy hair. In our study we compare the efficacy of 20 shampoos in the treatment of oiliness using a non-invasive method (Sebumeter SM 810). A sample of 400 male and female volunteers with greasy hair or tendency to oily (ages 18 - 65) was tested. All products reduced the sebum excretion rate after the 10 application of the tested shampoo. No significant differences were found between the results of the shampoos.

T. Tsuchiya, S. Haze, T. Hirao, J. Hosoi, A. Kikuchi, K. Shoji, M. Tanida, T. Tsuda, **Odorant Inhalation Lowered Stress Levels Systemically, Subsequently Resulting in the Improvement of Cutaneous Functions: Linkage Between Olfactory Sensation and Skin,** Presentation at the IFSCC Florence 2005

Our research conducted over several years has demonstrated that odorant inhalation produces an effect on cutaneous functions by inducing changes in the neuroendocrinological system. For example, inhalation of the natural sedative component of the rose flower, DMMB (1,3-dimethoxy-5-methylbenzene), inhibited an increase in plasma cortisol levels and barrier recovery delay or an increase in forehead sebum, which was induced by stress. These findings were obtained using authentic experimental patterned stress and short-period odorant inhalation.

S.Y. Pande, R. Misri, **Sebumeter**, Indian J Dermatol Venereol Leprol 2005; 71: p. 444-6

Excess oiliness or excess dryness affects cosmetic appearance of the skin. Hence, estimation of oiliness is important to decide on the correct regimen to achieve cosmesis. Besides, sebum affects the permeability of skin and absorptivity of water, protects against bacteria and fungi, limits evaporation and affects permeation of pharmaceutical preparations and other active or non-active substances. Hence measurement of natural presence of sebum on human skin particularly facial skin is a matter of current interest amongst dermatologists and pharmaceutical and cosmetic manufacturers. Heterogenous components of sebum are produced from secretion of sebaceous glands, fat of

keratinous layer and remnants of perspiration. Sebum is a complex and variable mixture of lipids like glycerides, free fatty acids, wax esters, squalene, cholesterol esters, and cholesterol.

R. Debowska, K. Rogiewicz, T. Iwanenko, M. Kruszewski, I. Eris, **Folic Acid (Folacin) – New Application of a Cosmetic Ingredient**, Kosmetische Medizin 3/2005, p. 16-22

Many years of trials and research tests proved that a lot of well-known vitamins could be successfully used in cosmetology. The available data indicate that one of them – folic acid plays an important role in life process of mitotically active tissues and its deficiency increases background level of DNA damage.

H. Dobrev, R. Iankova, L. Zissova, **Study of therapeutic effectiveness of four antidandruff shampoos,** 12th Congress of the European Academy of Dermatology & Venereology, Oct. 15-18 , 2003, Barcelona, Spain and Dermatol Venerol (Bulgaria), 2004

Dandruff and scalp seborrhoeic can be successfully treated with shampoos containing different active substances. In patients with dry seborrhoea an increase in scalp lipid level occurs due to the elimination of follicular occlusion and improvement of sebum delivery.

J. J. Wille, **Corneotherapy: skin hydration and occlusivity of some commercial skin moisturizers and skin protectants**, Skin Research and Technology 10, Abstracts, 2004.

Corneotherapy is defined here as a topical treatment that improves the condition of the stratum corneum. In this respect, cosmetic and dermatological vehicles play an important role independent of their capacity to deliver drugs or cosmetic actives, in formulating an optimal topical treatment for skin diseases such as atopic dermatitis.

S. Savic, S. Tamburic, M. Savic, N. Cekic, J. Milic, G. Valuta, **Vehicle-controlled effect of urea on normal and SLS-irritated skin**, International Journal of Pharmaceutics, Oct. 2004.

It is known that, depending on the concentration, treatment with urea could improve skin barrier function, despite its penetration-enhancing properties. This controversial skin effect of urea has been explored systematically in this study in terms of the effect of vehicle on the performance of urea. In the first part, a series of four semi-solid emulsions with 5% (w/w) urea, varying in the type of emulsion, nature of emulsifier and polarity of oil ingredients, have been evaluated with regard to their skin hydrating and transepidermal water loss (TEWL)-modifying properties.

K. Wanatabe, M. Masuda, K. Nakamura, T. Inaba, T. Yanagida, T. Yanaki, A. Noda, **A new makeup remover prepared with a system comprising dual continuous channels (bicontinuous phase) of silicone oil and water**, IFSCC Magazine, Vol. 7, No. 4, Oct.-Dec. 2004

Removing makeup is considered to be the first step in the skincare process. Makeup that has served its purpose is a kind of impurity that should ideally be removed completely to maximize the effects of skincare products applied afterwards. However, the use of silicone resins has significantly improved the long-lasting property of makeup with the result that makeup can hardly be removed efficiently either with surfactant-type cleansers like soaps or with oil-based cleansers like liquid crystalline cleansers.

M. Fröschle, R. Plüss, A. Peter, F. Etzweiler, **Phytosteroids for skin care**, Personal Care, Vol. Sept. 2004

Healthy skin is a largely self-regulating system. In order to keep metabolic processes functioning efficiently, the relevant biological precursors and activators must be available to the skin cells for metabolism. If, due to age-related changes, the body no longer provides a sufficient amount of certain substances, an additional external supplement can proactively support the biological processes and thus counteract the advance of the ageing process.

R. Rudolph, E. Kownatzki, **Corneometric, sebumetric and TEWL measurements following the cleaning of atopic skin with a urea emulsion versus a detergent cleanser,** Contact Dermatitis, 2004 Jun;50(6): p. 354-358

A non-detergent urea emulsion cleanser and a detergent cleanser with added moisturizers were compared for their effects on stratum corneum moisture, surface lipids and transepidermal water loss (TEWL) of atopic skin. Following a single wash with either cleanser, low corneometry and sebumetry values increased and elevated TEWL values decreased. Over the course of more than 6 h, all induced changes gradually returned to their starting points. In all instances, the changes induced by the urea emulsion lasted significantly longer than those caused by the detergent cleanser. The sebumetry increase after a wash with the lipid-free detergent cleanser indicated that this method recognized not only true lipids but also the lipid-derived and skin lipid-depleting detergents. The transient TEWL

normalization with either cleanser could not be attributed to a passing barrier restoration nor to an occlusion. It is speculated that the TEWL changes were related to stratum corneum water binding capacity.

E. Camel, L. Arnaud-Boissel, L. Basset, S.K. Tan, J.-P. Guillot, **Do Skin Moisturization, pH Colour, Water Loss, Lipids or Age, Phototype and Racial Origin (Asian/Caucasian) Affect S.P.F.?**, Personal Care Ingredients Asia, Guangzhou, March 2004

The aim of these studies was first to investigate the possible reasons inducing S.P.F. variations during clinical testing, as regards specific cutaneous parameters (skin colour, hydration, barrier function, pH, surface lipids …), and secondly to assess the effect of racial origin (Asian/Caucasian) in a large range of sunscreen products (S.P.F. 4 to 30).

F. Rou, Y.-S. Park, **Comparison of determined skin types by different factors of facial skin hydration, sebum content and surface pH levels** (study in Korean), Korean Journal of Skin Beauty Education

Objective: We studied to find suitable spots to measure facial oil and water status for identifying the skin-type. This study was performed with 131 female students in juniors and seniors in collage at a city from 23th May to 3rd June 2003. Their age averaged 19.9±3.1 years. Design: We measured the sebum content and the hydration status of 4 facial spots as the brow, the chin, the eye rims, and the cheek, after 1 hour, 2 hours and 12 hours after washing their faces by Sebum-meter and Corneo-meter, and also measured the pH of their cheek by Skin-pH-meter after 12 hours after washing. We assumed the whole face skin, as the average of 4 facial spots. The questionnaires for skin type classification were also performed as well as a single question of self-perceived skin types. The statistical analysis were done by using SPSS11.0 for Win like average, t-test, ANOVA, X2, and Pearson's correlation coefficient. Results: We observed that the skin types based on the sebum content of whole face skin(4 spots) showed significant low correlations with the self-perceived skin types(r=0.287, p=0.016) or the skin types based on the questionnaires(r=0.393, p=0.000). The self-perceived skin types and questionnaires skin types were very highly related(r=0.709, p=0.000). There were remarkably the positive correlations between skin types by the sebum contents of whole face skin and T-Zone(r=0.812, p=0.000). Especially skin types by T-zone sebum showed significant low correlations with the self-perceived skin types(r=0.373, p=0.001) or with the skin types based on the questionnaires(r=0.403, p=0.000). Sebum creation rate is very important element for skin condition (type), so measuring sebum content of the whole face skin seemed to be very much reasonable for identifying skin type. Especially only T-Zone measurement could be compatible. This results can be used for skin type identification before cosmetic material selections or facial makeups.

E. Camel, L. Arnaud-Boissel, L. Basset, S.K. Tan, J.-P. Guillot, **Do Skin Moisturization, pH Colour, Water Loss, Lipids or Age, Phototype and Racial Origin (Asian/Caucasian) Affect S.P.F.?**, Personal Care Ingredients Asia, Guangzhou, March 2004

The aim of these studies was first to investigate the possible reasons inducing S.P.F. variations during clinical testing, as regards specific cutaneous parameters (skin colour, hydration, barrier function, pH, surface lipids …), and secondly to assess the effect of racial origin (Asian/Caucasian) in a large range of sunscreen products (S.P.F. 4 to 30).

A. Kramer, *V. Mersch-Sundermann*, *H. Gerdes, E.-A. Pitten, H. Tronnier,* **Toxikologische Bewertung für die Händedesinfektion relevanter antimikrobieller Wirkstoffe**, in Günter Kampf (Ed.): Hände-Hygiene im Gesundheitswesen, Springer Verlag, 2003, Kapitel 5

In zahlreichen Ländern (z.B. Belgien, Dänemark, Deutschland, Finnland, Schweden, Schweiz und allen osteuropäischen Ländern) sind Hände-Desinfektionsmittel Arzneimitteln gleichgestellt und zulassungspflichtig.

G. Gasic-Vukovljak, I. Li, A. Vagt, **Beyond superior feel in skin care**, Personal Care 2003, p. 45

Silicones have a long history in personal care products where they are recognized for their smooth, silky and nonoilyfeel, spreadability, lubrication properties, substantitivity, and lack of harm to the environment.

A. Castro, **Evaluation of the moisturizing effectivity of different materials** (ES), Colamiq Congress in Cartagena, 2003

La resequedad de la piel tiene diversos origenes: disminucion de lipidos, perdida de agua transepidermal, factores hormonales, geneticos, medicamentosos, ambientales. Durante muchos anos se han buscado medicamento o procedimientos que puedan revertir o detener los danos de la piel que

se presntan a traves del curso de la vida, inducidos por factores externos o internos. La condicion de piel seca que afecta a un amplio universo de la poblacion, viendose mas marcada en la poblacion adulta, aunque tambien se presenta en la poblacion joven, juega un papel determinante en el proceso de envejecimiento de la piel.

L.C. de Ramayo, A. Castro, L. A. Castro Sader, **Medida de la efectividad de reguladores de grasa de origen natural,** Colamiq Congress in Cartagena, 2003

En la actualidad existe un numero considerable de consumidores que presentan una piel con una apariencia aceitosa, grasosa, brillante, untuosa al tacto que desde todo punto de vista resulta desagradable. Hoy en dia, se habla mas de un problema de calidad de sebo en la superficie de la piel que de aumento de la oleosidad y la piel grasosa se ha convertido en un problema serio de la piel.

B.A. Green, B.L. Edison, R.H. Wildnauer, R. Hwu, **Cosmetic uses of benzilic acid – a lipophilic Alpha-Hydroxyacid (AHA),** 12th European Academy of Dermatology and Venereology, Barcelona 2003 October 15.-18.

The alpha-hydroxyacids (AHAs) are used extensively to enhance skin smoothness and clarity, while promoting overall skin health and normalcy. They are also used adjunctively with topical medications for the treatment of skin conditions including acne and hyperpigmentation. Commonly used AHAs, including glycolic acid and lactic acid, are highly hydrophilic and less lipophilic.

M. I. Nogueira de Camargo Harris, **Propriedades biomecânicas da pele,** Pele: estrutura, propriedades e envelhecimento, Editora Senac, Sao Paulo, 2003

A biometrologia cutânea, ramo da ciência que avalia quantitativamente as propriedades biomecânicas da pele, tem encontrado na cosmetologia um importante aliado, pois o apelo mercadologico dos produtos destinados aos cuidados com a pele e com os cabelos tem-se baseado cada vez mais em evidências cientificas e tecnicas sensiveis, precisas e validadas, ao inves de serem fundamentadas em especulacoes.

E. Hernandez, **Bioengineering in Dermatology and Cosmetology: Methods, Studies and Prospects**, SÖFW-Journal, 129. Jahrgang, 11-2003

One of the trends in modern dermatology and its perspectives for the near future are skin bioengineering and imaging. The 1st joint meeting of two scientific societies focusing on measurements and visualisation of skin function, structure and physiology – the International Society for Skin Imaging (ISSI) – took place in Hamburg, May 21-24, 2003. Before that, the meetings and conferences organised by these societies had been held separately.

H. Dobrev, R. Iankova, L. Zissova, **Study of therapeutic effectiveness of four antidandruff shampoos,** 12th Congress of the European Academy of Dermatology & Venereology, Oct. 15-18 , 2003, Barcelona, Spain and Dermatol Venerol (Bulgaria), 2004

Dandruff and scalp seborrhoeic can be successfully treated with shampoos containing different active substances. In patients with dry seborrhoea an increase in scalp lipid level occurs due to the elimination of follicular occlusion and omprovement of sebum delivery.

P-A. Wendling, G. Dell'Acqua, **Skin biophysical properties of a population living in Valais, Switzerland,** Skin Research and Technology 2003, 9, 306-311

On average we observed low values of skin capacitance that identify subjects with dry skin. Measures of skin visco-elasticity ratios were also particulary low, while skin pH and sebum content were in the normal range. Age was correlated with a decrease of skin elasticity and sebum content, but there was no correlation with hydration or pH.

L.P.L. van de Vijver, E. Boelsma, R.A. Bausch-Goldbohm, L. Roza, **Subjective skin condition and its association with objective skin measurements**, Cosmetics & Toiletries, Vol. 118, No. 7, July 2003

From a group of 302 volunteers, the authors obtained both selfreported subjective evaluations of skin condition and objective measurements of skin conditions, and then looked for correlations between the subjective and objective kin measures.

P.-G. Sator, J.B. Schmidt, H. Hönigsmann, **Clinical Evidence of the Endocrinological Influence of a Triphasic Oral Contraceptive Containing norgestimate and Ethinyl Estradiol in Treating Women with Acne vulgaris,** Dermatology 2003;206: 241-248

Acne vulgaris is a multifactorial inflammatory follicular skin disorder occuring in pilosebaceus units, espacially on the face and the trunk. The major etiological factors are increased sebum production,

hypercornification of the pilosebaaceous duct, abnormal microbial flora and inflammation. There are many different faces of acne. Acne and acneiform eruptions affect persons of all ages, beginning with neonatal acne and progressing to include rosacea in older persons. Acne vulgaris is the most common skin disorder, affecting close to 80% of people at least once between 11 and 30 years of age.

H. Ranc, A. Elkhyat, C. Servais, B. Launay, P. Humbert, **Coefficient de friction et mouillabilité de la muqueuse linguale: influence d'une couche de mucus salivaire**, Nestlé Research Center, Nestec Ltd., Lausanne, Suisse

Les aliments, une fois en bouche, sont cisaillés et comprimés entre la langue et des surfaces telles que les dents et le palais. La tribologie appliquée aux surfaces interagissant en bouche devrait permettre d`expliquer certains phénomènes physio-chimique qui régissent la perception orale de la structure des aliments.

M. Setaro, A. Sparavigna, **It is possible to define a "biological age"of the skin?**, Skin Research and Technology, Vol. 9, No. 2, May 2003

The evaluation of global skin performance as compared to anagraphical age of the subject is until today dependent on clinical evaluation. By doing so, "pre-clinic" alterations of skin aging, are often missed, loosing the possibility to set up adequate strategies of prevention and treatment. Non-invasiev evaluations based on the measurements of skin parameters allow to monitor functional alterations of the skin with age in objective, sensitive specific and reproducible way.

H.K. Lee, S.Y. Bae, S.J. Moon, I.S. Chang, **Comparisons of skin characteristics between men and women using non-invasive methods in young healthy Asians**, Skin Research and Technology, Vol. 9, No. 2, May 2003

Skin has different properties depending on intrinsic effects such as inherent factors, race, gender and so on. Besides, it has been known that skin may change because of the environmental stress such as UV, climate and life style. We would like to know the differences of skin characteristics between male and female. The results of this study might be applicate the depart of dermatology and cosmetology.

D. Lautenschläger, **Hautanalyse – Moderne Geräte helfen**, Ki-Magazin 3/2003

Die Hautanalyse ist ein zentraler Bestandteil der kosmetischen Behandlung. Sie schafft die Grundlage für für erfolgreiche hautspezifische Konzepte. Ein großes Angebot an Geräten kann die Hautbestimmung erleichertern. Was können diese Instrumente genau.

J.S. Dosik, T. Plott, R.D. Gilbert, **Efficacy and Tolerability of Sodium Sulfacetamide 10% and Sulfur 5% Short-Contact Therapy for the Treatment of Acne Vulgaris**, 61st Annual Meeting, San Francisco, March 2003

A short-contact acne therapy containing sodium sulfacetamide 10% and suffer 5% was investigated for its efficacy and tolerability in the treatment of acne vulgaris. Poster at the American Academy of Dermatology,

P.-G. Sator, J.B. Schmidt, H. Hönigsmann, **Comparison of epidermal hydration and skin surface lipids in healthy individuals and in patients with atopic dermatitis,** J Am Acad Dermatol, March 2003

The water content of the stratum corneum and the skin surface lipids form a balance that is important for the appearance and function of the skin. Nevertheless, the water content of the stratum corneum and the skin lipids, the water-binding substances from the hydro-lipid film of the skin, act together as a barrier to the environment.

E. Boelsma, L.P.L van de Vijver, R.A. Goldbohm, I.A.A. Klöpping-Ketelaars, H.F.J. Hendriks, .L. Roza, **Human skin condition and its associations with nutrient concentrations in serum and diet**, Am J Clin Nutr 2003;77: p. 348–355

Background: Nutritional factors exert promising actions on the skin, but only scant information is available on the modulating effects of physiologic concentrations of nutrients on the skin condition of humans. Objective: The objective was to evaluate whether nutrient concentrations in serum and diet are associated with the skin condition of humans. Design: A cross-sectional study was conducted in which data on serum concentrations of nutrients, dietary intake of nutrients, and the hydration, sebum content, and surface pH of skin were obtained from 302 healthy men and women. Skin condition was measured with the use of noninvasive techniques. Dietary intake was assessed with 2 complementary food-frequency questionnaires. Multiple regression analysis was used to evaluate associations of serum

vitamins and carotenoids and of dietary micro- and macronutrients with skin condition. Results: After adjustment for potential confounders, including sex, age, and smoking, statistically significant associations were shown in the total population between serum vitamin A and skin sebum content and surface pH and between the dietary intake of total fat, saturated fat, monounsaturated fat, and skin hydration. Monounsaturated fat intake was also associated with surface pH. Associations between serum -cryptoxanthin and skin hydrationm and between surface pH and fluid and calcium intakes were observed in men only. Conclusion: Several associations between nutrients in serum and diet and skin condition were observed, indicating that changes in baseline nutritional status may affect skin condition.

R. Huei Chen, W. Yuu Chen, **Skin hydration effects, film formation time, and physicochemical properties of a moisture mask containing Monostroma nitidium water-soluble mucilage,** Journal of Cosmetic Science, Vol. 54, No. 1, Jan./Feb. 2003

The objectives of the study were to explore the effects of using the water-soluble mucilage of Monostroma nitidium to replace the humectant and half of the thickening agent on the rheological properties, color, storage stability, water-holding capacity, and film formation time of moisture masks thus prepared. Results showed that moisture masks containing water-soluble mucilage were pseudoplaxtic fluids.

I. Le Fur, F. Morizot, S. Lopez, C. Guinot, J. Latreille, E. Tschachler, **Seasonal changes in skin biophysical properties in healthy Caucasian women,** Congress Stratum Corneum III, Basel, September 2001 and The Essential Stratum Corneum, chapter 60, edited by R. Marks, J.-L. Lévêque, R. Voegeli, Martin Danitz Ltd., London, 2002

The human skin surface has to adapt constantly to changing environmental conditions, such as temperature and relative humidity. Several studies have demonstrated the detrimental effects of winter weather in our countries on the skin and seasonal changes in certain biophysical parameters. The work presented here examines seasonal variations of biophysical parameters on facial skin in Caucasian women in France.

I. Le Fur, S. Lopez, F. Morizot, J. Latreille, C. Guinot, E. Tschachler, **Age-Related Reference Ranges for Skin Biophysical Parameters in Healthy Women,** 20th World Congress of Dermatology, Paris 2002

Purpose: The aim of this study was to establish age-related reference ranges in healthy Caucasian women for some widely used skin biophysical parameters.

I. Le Fur, A. Reinberg, S. Lopez, F. Morizot, E. Tschachler, **Facial Skin Circadian Rhythms of Healthy Women Investigated Using Non-Invasive Methods,** 20th World Congress of Dermatology, Paris 2002

Purpose: The aim of this study was to document around the clock changes in a set of skin biophysical parameters.

U. Uksal, C. Atasavun, B. Özcelik, S. Utas, A. Ferahbas, **The effects of hormone replacement therapy on the skin of postmenopausal women (abstract),** 11th Congress of the European Academy of Dermatology and Venereology, Prag 2002

The study was performed to compare skin pH, transepidermal water loss (TEWL), skin surface lipids and hydration in postmenopausal women receiving hormone replacement therapy (HRT) and those who not. Two parallel age-matched groups (each 24) of 48 postmenopausal women evaluated by tewameter, sebumeter, pHmeter and corneometer.

R. Korichi, **Video Imaging in the Measurement of Makeup Efficacy and Performance,** Cosmetics & Toiletries October 2002, Vol. 117 No. 10

Video imaging techniques add quantitative data about the visual effects of makeup when evaluating efficacy and performance of products such as mascaras, lip colorants, facial foundations and nail enamels.

S. Haug, **Feuchtigkeit, Fettgehalt und pH-Wert der Haut im Gesicht – Eine Untersuchung zur Festlegung von Normalwerten an definierten Punkten im Gesicht und am Hals,** Dissertation an der Technischen Universität München 2002

Das größte Organ des menschlichen Körpers, die Haut, besitzt eine Gesamtfläche von 1,5-2,0 m², die von Körpergröße und Gewicht abhängig ist [1]. Die Haut ist in mehreren Schichten aufgebaut. Das 6-20µm, an Handinnenfläche und Fußsohle zwischen 200-600 µm [54,86], dicke kernlose Stratum corneum (Hornhaut) ist die oberste Schicht der Haut. Es besteht aus 13 Zellschichten [76]. Der Aufbau

des Stratum corneum ist dabei ähnlich einer Mauer aus Ziegelsteinen und Mörtel (bricks and motar-Modell). Die Ziegelsteine entsprechen in dieser Modellvorstellung proteinreichen Korneozyten, die hauptsächlich au seiner starren Zellhülle [6], Keratinfilamenten [107] und dem interfilamentären Matrixprotein [28] bestehen.

P.G. Sator, J.B. Schmidt, M.O. Sator, J.C. Huber, H. Hönigsmann, **Parameters of skin aging during hormone replacement therapy,** EADV 7th Congress, 2002, Abstract

All patients with HRT showed an increase in skin hydration, elasticity and thickness, as well as subjective and clinical improvement.

M.M. Jiménez Soriano, M.J. Fresno Contreras, E. Sellés Flores, **Pharmacotechnical characterization and effectiveness testing of a proposed emulsion for the treatment of dry skin,** Boll Chim Farm. 2002 Sep-Oct; 141(5): p. 333-342

One of the most important objectives of the Pharmaceutical Industry is the development of new excipients as well as the optimization of other more traditional ones. Also, the investigation of new active substances able to prevent, palliate or treat the cutaneous dehydration is another of the most important of their objectives. Both tendencies are implanted in this experimental work: we propose an emulsion formulated with the base--Neo PCL' (25%), NMF (Lactil', 5%) and a peculiar active--Honey of Rosemary (15%). The working scheme is as follows: 1) Pharmacotechnical Characterization--organoleptic characteristics, Photomicrograph Study, Type of Emulsion, pH, Rheology; 2) Stability Study by means of accelerated tests based on temperature and centrifugation; 3) Effectiveness Study by applying of non-invasive assessment techniques. An emulsified dermopharmaceutical form is obtained (O/W) with a satisfactory organoleptic characteristics and eudermic pH (5.2), attributable to the acid character of Honey. From the rheological study, a very good results are obtained: viscosity (T = 408.8.D0.549), structural recuperation (30%) and thixotropy (AD1/AD2 = 1.36). On the other hand, from the effectiveness results (corneometric--P.I.120 = 43.2%- and sebumetric--E.I. = 33-144 mg/cm2-), a high level of moisturizing is deduced, which is attributable to the synergic action of both Lactil' and Honey. Finally, the proposed emulsion would serve as a treatment for all type of dry skin.

J. Willms, S. Dolphin, S. Albiston, L. Parmar, P. Westgate, G.J. Harrap, **Free internal lipids in hair from pre- and post-menopausal women**, Posters of the 22nd IFSCC Congress, Edinburgh 23.-26. Sep. 2002

Little is known about changes in hair lipids during life and their effects on hair properties.

N. Muizzuddin, K. Marenus, M. Sullivan, S. Schnittger, D. Maes, **Effects on normal female monthly hormonal cycles on skin functions**, Posters of the 22nd IFSCC Congress, Edinburgh 23.-26. Sep. 2002

Menstrual cyclicity is a major biological process for women during their reproductive years and is associated with significant changes in hormonal status and behaviour.

L. Ambroisine, C. Guinot, J. Latreille, E. Mauger, M. Tenenhaus, I. Le Fur, S. Lopez, F. Morizot, E. Tschachler, **Relationship between visual and tactile skin characteristics and skin biophysical parameters**, Posters of the 22nd IFSCC Congress, Edinburgh 23.-26. Sep. 2002

The skin does more than simply encase the human body.

I. Uhoda, N. Faska, C. Robert, G. Cauwenbergh, G.E. Pierard, **Split face study on the cutaneous tensile effect of 2-dimethylaminoethanol (deanol) gel,** Skin Research and Technology, Vol. 8, No. 3, August 2002

Large interindividual variations precluded any significant finding in the first study. The DMAE formulation showed, however, a significant effect characterized by increased shear wave velocity in the direction where the mechanical anisotropy of skin showed looseness. The DMAE formulation under investigation increased skin firmness.

S.W. Youn, S.J. Kim, I.A. Hwang, K.C. Park, **Evaluation of facial skin type by sebum secretion: Discrepancies between subjective description and sebum secretion,** Skin Research and Technology, Vol. 8, No. 3, August 2002

People secrete varying amounts of sebum at different skin sites. Reclassification of skin type based on sebum secretion revealed that most participants underestimated the amount of facial sebum excretion. When sebum secretion amounts were compared, a statistically significant difference was apparent between the oily and dry skin types. However, there were no statistical differences between oily and normal, and normal and dry skin.

C. Piérard-Franchimont, G.E. Piérard, **Postmenopausal Aging of the Sebaceous Follicle: A Comparison between Women Receiving Hormone Replacement Therapy or Not**, Dermatology 07/2002

The endocrine control of sebaceous follicles is complex in women. During aging, a decline in sebum output is often experienced. However, some women report increased seborrhoea after the menopause.

T. Gambichler, P. Altmeyer, S. Rotterdam, M. Herde, M. Stücker, K. Hoffmann, **Bioengineering der Haut,** Kosmetische Medizin, 4/2002, 23. Jahrgang

Nicht-invasive Untersuchungstechniken (Bioengineering) am Hautorgan werden in der Dermatologie und Kosmetologie zunehmend eingesetzt. Gegenüber der bloßen klinischen Untersuchung bietet der Einsatz von Bioengineering-Methoden viele Vorteile. Es lassen sich morphologische und funktionelle Parameter der Haut objektiv darstellen und standardisiert messen, die der bloßen klinischen Untersuchung bzw. sensorischen Wahrnehmung oft unzugänglich sind.

MegaSun beauty & care, **Sonnen ohne Risiko,** Kosmetische Medizin, 4/2002, 23. Jahrgang

Sonne gilt für große Bevölkerungsteile als die Universal-Arznei aus der „Himmelsapotheke". Doch der Dermatologe rät: Was für die Risiken und Wirkungen von Arzneimitteln gilt, gilt auch für die Solarien-Besonnung: Die Dosis ist entscheidend. Auf der Pressekonferenz am 16.10.2002 in Hamburg präsentierte die KBL-Solarien AG den Medien sowie dem Fachhandel ein auf streng wissenschaftlicher Basis entwickeltes Gerät zur individuellen Hauttypbestimmung, um Solarstrahlen für gesunde und natürliche Bräune optimal zu dosieren – das megaSun care Terminal.

J. Djordjevic, G. Vuleta, J. Milic, H. Zhai, H. Maibach, **O/W Emulsions Enriched with Vitamin E,** Cosmetics & Toiletries 2002 April, Vol. 117, Nr. 4

Vitamin E has an important protective function for the entire organism. It is believed that the broad biological activities of vitamin E are due to its ability to inhibit lipid peroxidation and stabilize biological membranes.

G. Maramldi, M. A. Esposito, **Potassium Azeloyl Diglycinate: A Multifunctional Skin Lightener,** Cosmetics & Toiletries, March 2002, Vol. 117, Nr. 3

Skin lightening and sebum normalization are among the useful cosmetic functions of potassium azeloyl diglycinate, a soluble derivative of azelaic acid.

A. Kramer, T. Bernig, G. Kampf, **Clinical double-blind trial on the dermal tolerance and user acceptability of six alcohol-based hand disinfectants for hygienic hand disinfection**, Journal of Hospital Infection, 2002, 51: 114-120

Six commercially available available alcohol-based hand rubs (AHD 2000, Desderma, Muscasept A, Manorapid (Poly-Alkohol, Spitacid, and Sterillium)) were investigated in a clinical double-blind trial involving 10 participants who had no previous experience of using hand rubs (Group 1) and seven who had substancial professional experience of using hand rubs (Group 2, viro laboratory staff).

D. Swatschek, W. Schatton, J. Kellermann, W.E. Müller, J. Kreuter, **Marine sponge collagen: isolation, characterization and effects on the skin parameters surface-pH, moisture and sebum**, Eur J Pharm Biopharm, 2002 Jan;53(1): p. 107-113

A previously described isolation procedure for collagen of the marine sponge Chondrosia reniformis Nardo was modified for scaling-up reasons yielding 30% of collagen (freeze-dried collagen in relation to freeze-dried sponge). Light microscope observations showed fibrous structures. Transmission electron microscopy studies proved the collagenous nature of this material: high magnifications showed the typical periodic banding-pattern of collagen fibres. However, the results of the amino acid analysis differed from most publications, presumably due to impurities that still were present. In agreement with earlier studies, sponge collagen was insoluble in dilute acid mediums and all solvents investigated. Dispersion of collagen was facilitated when dilute basic mediums were employed. The acid-base properties of the material were investigated by titration. Furthermore, a sponge extract was incorporated in two different formulations and compared with their extract-free analogues and a commercially available collagen containing product with respect to their effects on biophysical skin parameters. None of the preparations had a noticeable influence on the physiological skin surface pH. Skin hydration increased only slightly. However, all tested formulations showed a significant increase of lipids measured by sebumetry.

L.A. Young, J.C. Dodge, K.J. Guest, J.L. Cline, W.W. Kerr, **Age, Breed, Sex and Period Effects on Skin Biophysical Parameters for Dogs Fed Canned Dog Food**, American Society for Nutritional Sciences, J. Nutr. 132: 1695S–1697S, 2002

Noninvasive skin biophysical methods have been used in clinical and experimental dermatology for humans (1). The application of some of these methods has also been investigated for companion animals (2–9). Skin biophysical measurements have been reported to be affected by age, breed, sex, site of measurement, animal excitement, evaluation (time) period or season, gonadal status and even coat color (9). The objective of this study was to look at the effect of age, breed, sex and time period on skin biophysical parameters for dogs fed a nutritionally complete and balanced canned food for adult dogs.

D. Djukanovic, E.G. Jung, C. Bayerl, **Körperreinigung für sensible und trockene Haut - Anwendungsbeobachtung eines Dusch-Balsams**, Akt Dermatol 2001; 27: p. 109– 115

In einer offenen kontrollierten Anwendungsbeobachtung über 3 Wochen wurde an 30 Probanden ein pflegendes Duschbad am linken Unterarm im Vergleich zu Wasser am rechten Unterarm auf Hautverträglichkeit und Wirksamkeit getestet. Dazu wurden die hautphysiologischen Parameter pH-Wert, Hautfeuchtigkeit, Fettgehalt des Stratum corneums, transepidermaler Wasserverlust, Hauttemperatur und Hautrauigkeit bzw. Faltentiefe gemessen. Bei subjektiver Verträglichkeit konnten im Beobachtungszeitraum durch regelmäßige Anwendung der Testsubstanz keine irritativen Hautveränderungen oder Störungen der Barrierefunktion des Stratum corneums festgestellt werden, sondern ein statistisch signifikanter Rückgang des transepidermalen Wasserverlustes. Weiterhin stiegen die Hautfeuchtigkeit nach corneometrischer Messung und der sebumetrisch bestimmte Fettgehalt statistisch signifikant unter Gebrauch der Testsubstanz im Vergleich zur mit Wasser behandelten Kontrollseite an. Die Hautrauigkeit nahm unter Verwendung des Duschmittels signifikant ab. Der pH-Wert und die Hauttemperatur lagen an beiden Unterarmen im physiologischen Normbereich. Aufgrund dieser Ergebnisse zur Wirksamkeit und Verträglichkeit ist die tägliche Pflege mit dem untersuchten Produkt für trockene, aber auch für sensible Haut zu empfehlen.

A. Castro, A. Vargas, **Formulacao de Sabonete Liquido com Productos Naturais: Medida de sua Efectividade,** Cosmetics & Toiletries (Portugese), Vol. 13 No 6, p. 93, 2001

G.G. Hillebrand, M. J. Levine, K. Miyamoto, **The Age-Dependent Changes in Skin Condition in African Americans, Asian Indians, Caucasians, East Asians, and Latinos,** IFSCC Magazine, October/December 2001, Vol. 4, No. 4

Understanding the similarities and differences in skin characteristics as a function of age, race and geography should aid in the development of skin care products that better meet consumers' skin care needs around the world.

K.-D. Neander, F. Hesse, **The role of cream mousses in the treatment of dry skin in patients with diabetes mellitus,** Podology, LII, Issue 10/2001, p. 19-21

Diabetics are well known for their frequent struggles with the problem of "dry skin". The diverse and unpleasant effects to which these patients are exposed range from pruritus to skin inflammations, particularly in the interdigital spaces of the feet. As has been demonstrated in a variety of studies, lack of moisture is at the heart of this problem.

*H. Lambers, H. Pronk***, Biophysical Methods for Stratum Corneum Characterization**, in T. Förster (Editor): Cosmetic Lipids and the Skin Barrier, 2001 by Marcel Dekker

There is no doubt that the application of cosmetic lipids has many positive effects on the structure and function of the skin. These effects are pleiotropic, caused either by direct interaction with the epidermis, particularly the stratum corneum, or indirectly, by influencing the physiologic, homeostatic condition of the skin.

P.-G. Sator, J.B. Schmidt, M.O. Sator, J.C. Huber, H. Hönigsmann, **The influence of hormone replacement therapy on skin ageing. A pilot study,** Maturitas 39 (2001) 43-55

We studied the effect of hormonal treatment on skin ageing in menopausal women. Twenty-four patients without hormone treatment for at least 6 months were included. Patients were assigned to three therapy groups: 1, oestrogen only 2. transdermal oestrogen and progesterone.One group without therapy was included as a control group. Treatment was continued for 6 months. Three patients, one from group 2 and two from group 3, discontinued therapy before the study endpoint. The following skin parameters were measured at monthly intervals during treatment.

G. Neufang, **Ein transgenes Tiermodell zur Untersuchung der Funktion von Cyclooxygenase-2 in normaler und neoplastischer Epidermis,** Dissertation im Fachbereich Chemie der Universität Hannover, Germany, Juli 2001

Expression und Aktivierung von Cyclooxygenasen 2 (COX-2) in basalen Keratinozyten sind charakteristisch für die hyperplastische Transformation der Haut und die Entstehung epithelialer Hauttumore der Maus und des Menschen. Zur funktionellen Charakterisierung von COX-2 in der Epidermis wurden hetero- und homozygote transgene Mauslinien hergestellt, die dieses Enzym unter der Kontrolle des bovinen Keratin 5-Promotors in den basalen Zellen der interfollikulären Epidermis, der äußeren Wurzelscheide des Haarfollikels und des peripheren Talgdrüsenepithels konstitutiv exprimierten. Transgene Expression von COX-2 (Nachweis über PCR und durch Immunhistochemie und Immunblot) korrelierte mit einem erhöhten Prostaglandinspiegel in Epidermis und Blutplasma sowie mit ausgeprägten phänotypischen Veränderungen. Die heterozygoten Tierewaren fertil. Bei einigen transgenen Mäusen war die Lebensdauer durch das Auftreten von Pankreatitis im Alter von 10 Monaten eingeschränkt.

G.G. Hillebrand, B. Schnell, K. Miyamoto, M. Ichihashi, R. Shinkura, S. Akiba, **The Age-Dependent Changes in Skin Condition in Japanese Females Living in Northern Versus Southern Japan**, IFSCC Magazine, Vol. 4, No. 2, April/June 2001

Image analysis and biophysical methods used to compare skin conditions of a group of females ranging in age from 5-65 years who have lived all of their life in either Kagoshima prefecture (n=300) located in southern Japan or Akita prefecture (n=302), located in Nothern Japan.

F. di Pierro, G. Gugliemini, **Cosmetic evaluation of Cucurbita pepo and Zanthoxylum alatum supercritical CO_2 extract**, 5th ASCS March 2001

Cucurbita pepo L. (English name: pumpkin) is an herbaceous annual plant of the Curcubitaceae family.

H. Song, **The Effects of Inositol Extracted from Rice on the Skin**. Personal Care Ingredients Asia, March 2001

K. Mijyajmoto, **Quantitative comparison of the differences in facial skin aging and Skin Biophysical Properties in Japanese femals living in south and north part of Japan, and global research expansion on Caucasians, East Asians, Indian Asian and Latinos**, 5th ASCS, March 2001

Avoidance of sun exposure has been clearly recognized as the best way to prevent premature skin aging (e.g. wrinkling and age spots) and more severe neoplastic disease (squamous and basal cell carcinoma and malignant melanoma).

D. Iliev, U. Hinnen, P. Elsner, **Skin Bioengineering Methods in Occupational Dermatology**, Skin Bioengineering Vol. 26, March 2001

Measruing biophysical properties of the skin is not only useful to study cutaneous physiology and pathology but may also be of value for the prediction of eczema risk, for the detection of subclinical eczema and for therapy control in occupational dermatology.

N. Ota, T. Horiguchi, N. Fujiwara, N. Kashibuchi, Y. Hirai, H. Mori, **Identification of Skin Sensitivity through corneocytes Measurements,** XXIst IFSCC Congress 2000, Berlin

Surveys conducted in many nations suggest that up to 50% of cosmetic users beleive they have sensitive skin and products specifically designed for this skin type have become an important cosmetic category. In developing such products, objective assessment of the degree and the type of sensitivity is desirable.

W. van Es-Spiekman, G.W. Lucassen, **Skin Characterization: Human Skin Water Content Versus Lipid Content Measured by Corneometer, Sebumeter and ATR-FTIR Spectroscopy,** XXIst IFSCC Congress 2000, Berlin

Skin characterization methods are important for the cosmetic industry, personal care industry, in pharmacology and dermatology. Water content and lipid content are of special importance because of their crucial role in the barrier function of the skin.

S.M. John, W. Uter, H.J. Schwanitz, **Relevance of Multiparametric Skin Bioengineering in a Prospectively-followed Cohort of Junior Hairdressers**, Contact Dermatitis, Vol. 43, No. 3, September 2000

There is conflicting evidence concerning predictors of individual susceptibility to develop irritant contact dermatitis in wet work. A cohort of initially 92 hairdresser apprentices was prospectively followed for 3 years.

A. Zlotogorski, S. Dikstein, **Skin Surface Sebum on the Forehead and Cheek of Adults**, Skin Research and Technology, Vol. 6, No. 3, August 2000

The casual level of skin surface sebum and the rate of replacement after 30 min. was measured by the SM-401 Sebumeter on the forehead (of 270 men and 382 women) and the cheek (of 183 men and 196 women) aged 20-95.

V. Lambert, I. Le Fur, C. Guinot, F. Morizot, S. Lopez, E. Tschachler, **Comparaison des Parametres Biophysiques Cutanés en Hiver et en Été chez des Femmes Caucasiennes,** Ilième Congrès de la Société D'Ingénierie Cutanée, Juin 2000

Les modifications environmentales au cour des saisons fávorisant la survenue de pathologies cutanée mais sont aussi citées par les femmes comme fávorisant l'apparition des signes de sensinilité cutanée.

B. Rode, U. Ivens, J. Serup, **Degreasing method for the seborrheic areas with respect to regaining sebum excretion rate to casual level,** Skin Research and Technology, Vol. 6, No. 2, May 2000

Insulin resistance and increased levels of serum steroids have been hypothesized to be relevant etiological factors for breast cancer. The present study analyzed the association of breast cancer with markers of insulin resistance and elevated serum sex steroids, abdominal adiposity, increase in sebum production and hirsutism in a case-control study nested in a prospective cohort study.

G. Gacic-Vukavljak, **Sebum Control Performance with Powdered Silicone Elastomers**, Personal Care Ingredient Asia Conference, Bangkok, March 2000

E-powders (Treffil®) are elastomeric silicone powders comprised of spherical particles which show good characteristics of elastomers in general.

I. Le Fur, C. Guinot, S. Lopez, F. Morizot, V. Lambert, E. Tschachler, **Age-Related Reference Ranges for Skin Biophysical Parameters in Healthy Caucasian Women**, 13th ISBS Jerusalem, March 2000 and 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000

Knowledge about the variations of skin biophysical parameters is a prerequisite for the interpretation of results of the skin bioengineering studies.

S. Lopez, I. Le Fur, F.Morizot, G. Heuvin, C. Guinot, E. Tschachler, **Transepidermal Water Loss, Temperature and Sebum Levels on Women's Facial Skin Follow Characteristic Patters,** Skin Research and Technology, Vol. 6 No. 1, February 2000.

The aim of this study was to compare the biophysical properties of different facial zones.

K. O'goshi, M. Iguchi, H. Tagami, **Functional analysis of the stratum corneum of scalp skin: studies in patients with alopecia areata and androgenetic alopecia,** Arch. Dermatol. Res. (2000), Springer-Verlag

Because of the presence of thick long hairs on the scalp, little information is available concerning the functional characteristics of the stratum corneum (SC) of scalp skin. We therefore conducted a functional study of the SC of lesional scalp skin of patients with alopecia areata and of patients with androgenetic alopecia.We compared the scalp with the cheek and the flexor surface of the forearm (volar forearm). The water barrier function of the scalp SC of both patient groups, in terms of transepidermal water loss (TEWL), was almost comparable to that of the volar forearm, and was far better than that of facial skin.

I. Gemende, M. Fisher, **Begleitende Hauterkrankungen bei Morbus Parkinson - Besonderheiten in der Hautpflege** (nur Anfang des Kapitels), in Horst Przuntek & Thomas Müller (Editors), Adjuvante nichtmedikamentöse Therapieansätze bei Morbus Parkinson, Springer, 2000, P. 21-27

Das Erscheinungsbild der vegetativen Storungen bei der Parkinsonerkrankung ist vielgestaltig. Als Zeichen der Hautbeteiligung sind Hyperhidrose und Seborrhoe regelmaBig angefiihrt, die Frage der veranderten Sebumproduktion wird jedoch sehr selten untersucht. Bei der Beschreibung der Parkinsonerkrankung ist das Salbengesicht ein pragnantes Zeichen.

M.M. Jiménez Soriano, M.J. Fresno Contreras, E. Sellés Flores, **Pharmacotechnical caracterization and effectiveness study of a dermopharmaceutical form: Rosemary honey contributions as a**

moisturizing active, Bollettino chimico farmaceutico 138(8): p. 401-417, October 1999

We have designed, elaborated and studied a dermopharmaceutical form formulated on the basis of a modern self-emulsifying excipient and rosemary honey (known as Miel de La Alcarria--Spain--according to the Governing Council), in order to obtain a hight degree of cutaneous hydratation. The formulation is typified and characterized from a pharmacotechnical and rheological points of view. In this sense, the experimental protocol has emphasized rheological essays which give relevant practical information. Also, we have performed a complete study of it physical and structural stability, and, lastly, we evaluated the dermopharmaceutical effectiveness. The work plan included the following tests: 1) Pharmacotechnical Essays--organoleptic characteristics, photomicrograh study, type of interposition, pH-determination, rheological and thixotropic study and physical stability tests; 2) Dermopharmaceutical Effectiveness Assays--Corneometric and Sebumetric measurements. From the results, we have deduced that the emulsified binary system that is proposed, stable from a physical and structural points of view, presents confirmed properties and a very good cosmetological adequation. In this sense, our emulsion presents a high degree of moisturizing/emollient power that qualifies it not only as a magnificent eudermic dermopharmaceutical form, but also as a very appropriate vehicle for Dermopharmaceutical and/or Dermatological Formulation.

C. Piérard-Franchimont, O. Martalo, A. Richard, A. Rougier, G.E. Piérard, **Sebum rheology evaluated by two methods in vivo. Split-face study of the effect of a cosmetic formulation,** European Journal of Dermatology. Volume 9, Number 6, 455-7, September 1999

Modulation of the rheological characteristics of sebum at the surface of the skin might represent a valuable strategy for the treatment of seborrhea. In this field, only a small number of studies have addressed sebum diffusion within the stratum corneum. In an open, split-face study conducted on 20 men, we measured the sebosuppressive effect of Effidrate® cream which is based on a glycerol alkyl-ether. Measurements were made in the morning at three-week intervals for a total period of 3 months. Sebum casual levels and sebum excretion rates were measured using a SM810® Sebumeter. Lipid-absorbent Sebutape® was also used to collect all the sebum released from infundibular reservoirs over a four-hour period. Clinical assessments were relatively uninformative but the photometric measurements showed that Effidrate® cream had a sebosuppressive action. The underlying biological mechanism remains unclear but a hypothesis based on enhanced sebum absorption by the stratum corneum is discussed

I. Le Fur, S. Lopez, F. Morizot, C. Guinot, E. Tschachler, **Comparison of cheek and forehead regions by bioengineering methods in women with different self-reported "cosmetic skin types",** Skin Research and Technology, Vol. 5, No. 4, August 1999

Understanding structural and functional differences beteween facial areas is necessary for the formulation of cosmetics and dermatological preparations well tailored to the skin's biophysical characteristics.

K. Lanzerath, **Eine Notwendigkeit für die dermatolische Praxis? Die apparative Bestimmung von Hautparametern,** H+G Band 74, Heft 6, 1999

Transepidermaler Wasserverlust (TEWL), Corneometrie, Sebumetrie, Melanin- und Erythembestimmung – Schlagworte, die in der dermatologischen Forschung und Praxis immer mehr an Bedeutung gewinnen.

W.D. Becker, S. Hillmer, M.A. Presser, **A Clinical Model for Surface Sebum Measurement**, Poster Arbois 1999

Accurate and reproducible measurements of skin surface sebum level is important to establish the efficacy of compounds which could play a role in controlling oily skin.

M. Maruno, F.C. Facco, P.A. Rocha Filho, **Hydration, Oily and PH of Skin In Vivo Evaluation After Application of Both Simple and Complex Emulsions Containing Hydrolyzed Proteins**, IFSCC Chile May 1999

Cosmetic industry considers skin treatment as a market which is increasing and spreading throughcosmteic products as well.

R.G. Azzini, L. Licursi, P.A. Rocha-Filho, **Colour Evaluation „In Vitro" Method of Facial Powders,** IFSCC Chile May 1999

The work speaks about the evaluation of the colouration of facial powders inside the own packing and the resulting colour that is obtained when the same is put to the skin.

S.H. Perez Damonte, G.M. Cuomo, R.L. Galimberti, **Evaluacion Instrumental de la Piel Sensible**, IFSCC Chile May 1999

Numerosos patientes se haceran a la consulta cosmética…

P. Muti, M. Stanulla, A. Micheli, V. Krogh, J.L. Freudenheim, J. Yang, H.J. Schünemann, M. Trevisan, F. Berrino, **Markers of Insulin Resistance and Sex Steroid Hormone Activity in Relation to Breast Cancer Risk: A Prospective Analysis of Abdominal Adiposity, sebum production, and hirsutism (Italy).** Pediatric Research April 1999

*W. Voss, G. Schlippe, M. Breuer***, Tests on Cosmetics Scientific Standards,** SÖFW-Journal 4/99

In general, body care articles and cosmetics have only a low allergy potential. The probability that toxic-irritative reactions will arise after proper use is even lower.But especially with patients with sensitive skin, unclear skin reactions, which can frequently be confused with allergies, can arise. The cosmetics manufacturers, however, would like to produce safer products and naturally want to avoid that type of problem from the start.

B. Chadoutaud, L. Curtil, C. Veret, F. Alais-Gallou, **Evaluation objective en double avuegle de la performance hydratante et de la rémanence de duex émollients corporels E/H et H/E dans le traitement des peaux sèches et très sèches.** Les Nouvelles Dermatologiques, Vol. 18 No. 2 – Feb.99

Cette étude en double aveugle randomisée chez 20 volontaires à peau sèche et très sèche, concerne l'analyse controlatérale de l'activité hydratante de deux émulsions

A. Fendl, **Einzelheiten der Hautdiagnose**. Natürlich schön/Grundlagen der Ganzheitskosmetik, Handwerk und Technik – 1999

Wie ein Mantel schützt der eigene fettige Film die Haut gegen negative Einflüsse von aussen und Wasserverluste von innen.

H. Knaggs, J. Bajor, W. Becker, **The Sebumeter® and Its Use**, Mediscript 12/98

The Sebumeter is a quick and easy tool to use in measuring skin surface lipids. The type of lipids sampled largely depends on the body site at which the measurement is taken. The Sebumeter has most commonly been used to measure skin lipids on the forehead which consist predominantly of sebaceous gland-derived lipids or sebum.

U. Bornschein, **Der Schuß ins Waschwasser...** Die Schwester/Der Pfleger 12/98

Die Ganzkörperwaschung der Patienten durch Pflegende ist im Krankenhaus eine täglich wiederkehrende Verrichtung. In vielen Einrichtungen ist dafür ein Pflegestandard geschaffen worden. Dabei kommt es oft zu einer Diskussion um en Waschwasserwechsel, und dies nicht nur aus hygienischen Gesichtspunkten.

F. Morizot, I. Le Fur, E. Tschachler, **Sensitive Skin,** Cosmetics & Toiletries Vol. 113, November 1998

Studies on skin reactions to irritant substances and topical preparations have a long history. Clinical signs and symptoms of irritant reactions in the dermatological sense are well defined and are synonymous with skin inflammatory reactions.

J.S. Koh, K.S. Chae, H.O. Kim, **Skin Characteristics of Normal Korean Subjects According to Sex and Site using Non-Invasive Bioengineering Methods**, Korean J Dermatol., 1998 Oct; 36(5): p. 855-864

Background: During the last few years, the in vivo study of the physiological parameters of the skin by non-invasive methods has been considerably developed. So far, there have been some reports on the skin characteristics only in parts, but there has not been any criteria to classify those of normal subjects. Objective: The aim of the present study was to investigate the skin characteristics of healthy Korean subjects according to sex and sites using non-invasive methods. Methods: To determine normal levels of sebum, skin hydration, transepidermal water loss (TEWL), skin elasticity and skin color according to sex, 163 subjects (male; 124, female; 39) were used to investigate 5 different anatomical sites. 6 different instruments were used: The Sebummeter SM 410, Corneometer CM 820, Evaporimeter EP1, Cutometer SEM 474, Chromameter CR-121, and Mexameter MX 16, for evaluating sebum excretion rate, capacitance, TEWL, mechanical property and skin color respectively. Results: Differences were noticed depending on the anatomical sites and sex. Most of the measuring parameters were significantly different according to sites and sex. The values of sebum levels, capacitance and TEWL were higher in the males on the cheek, forehead and crows foot, whereas in the females, higher values were observed on the dorsum of the hand. The skin elasticity varied considerably among the

nine-parameters but, for the elastic ratio (R2, R5), the females showed significantly higher values than the males in all sites except the forehead. Skin lightness (L* value) was higher in the females, whereas the males showed lugher values in the category of redness (a* value) and yellowness (b* value). The values of the eqrthema index (EI) and melanin index (MI) were also higher in the males on all sites. Correlations between the skin parameters mentioned above were calculated. A negative, correlation between capacitance and TEWL was observed only on the cheek (male/female, r =-0.2/ r =-0.4, p<0.05). The L* value correlated negatively with MI. Mioreover the values between a* and EI also showed sipificant correlations in the male (cheek and dorsum of hand, y =0.2, forehead and crows foot, r =0.3, p<0.05). There were considerably significant correlations between the visual pigmentation score and instrumental skin parameters in the males (visual pigmentation score vs. L* value measured by Chromameter ; cheek/crows foot, r = -0.3/y =-0.4, visual pigmentation score vs. MI by Mexameter ; cheek/crows foot, r =0.2/ r =0.4, viisual winkle score vs. sebum excretion rate measured by Sebumeter ; cheek, r=0.2, visual winkle score vs. elasticity parameters measured by Cutometer ; cheek, R2/R5/R7, r =-0.3/ r =-0.2/ r =-0.3, p<0.05). Conclusion: Skin physiological parameters can be evaluated by non-invasive skin bioengineering methods which show quantitative modifications in physiological conditions in relation to sites and sex.

I. Le Fur, S. Lopez, F. Morizot, M. Dubourgeat, C. Guinot, E. Tschachler, **Comparison of Malar and Frontal Zones by Bioengineering Methods for Different Cosmetic Skin Type Groups of Women,** Poster - 20th IFSCC Congress Cannes, 09/1998

During the past decades the in vivo study of physiological parameters of the skin by non invasive methods has considerately developed.

Y. Yazan, M. Seiller, S. Avcier, M. Demirel, **Comparison of Glycolic, Lactic and Glycolic + Lactic Acids in Multiple Emulsion Systems,** 20th IFSCC Congress Cannes, 09/1998

T. Fischer, C. Greif, W. Wigger-Alberti, P. Elsner, **Instrumentelle Methoden zur Bewerbung der Sicherheit und Wirksamkeit von Kosmetika**, Kursprogramm Sicherheitsaspekte in der Kosmetik, Basel, Mai 1998

Durch die Erfordernisse eines Wirksamkeits- und Sicherheitsnachweises für Kosmetika gewinnen nichtinvasive biophysikalische Meßmethoden zunehmend an Bedeutung. Neben der Bestimmung des transepidermalen Wasserverlustes und der Messung der Hautfeuchtigkeit, des Oberflächenfettes, des pH-Werts, und der Elastizität kommen der Bestimmung des Oberflächenreliefs, der Farbe und der Hautdurchblutung große Bedeutung zu. Mit diesen Methoden können u.a. die hautfeuchtigkeitsfördernden, glättenden und straffenden Wirkungen von Topika sowie der Grad der Irritation durch Externa valuiert werden. Zur Messung der Vergleichbarkeit dieser unterschiedlichen Funktionsparameter sind standardisierte Meßbedingungen erforderlich.

W.D. Becker, J.S. Bajor, K. Hoyberg, S. Hillmer, D. Thiboutot, H. Knaggs, **Measurement Of Human Surface Sebum Levels,** The Journal of Investigative Dermatology, Vol. 110, No. 4, April 1998

High facial levels of sebum haven been shown to be cosmetically undesirable.

J. Gottfreund, T. Meyer, **Die Bedeutung des pH-Wertes 5,5 in Emulsionen,** Kosmetische Medizin Nr. 3, 1998.

Es wird die Bedeutung des pH-Wertes 5.5 in Emulsionen dargestellt. In einer W/O-Emulsion wurde der pH-Wert der Wasserphase auf einen Wert von 5,5 eingestellt. Es ließ sich zeigen, daß der durch Umwelteinflüsse tiefe pH-Wert der Haut sich an 5,5 anpaßt. Bei der Auswahl der Rohsteoffe für den Fettkörper einer Emulsion müssen die speziellen Bedingungen, die durch den pH-Wert bedingt sind, berücksichtigt werden.

R. Ward, **The Human Factor,** SPC March 1998

With the proposed ban on animal testing on the horizon, Dr. Rachel Ward looks at the ethical aspects of human volunteer testing.

H. Gerny, **IV Medizinische und Kosmetische Behandlungen,** Kosmetik und Dermatologie, Krause & Pachernegg Verlag GmbH, Wien.

Die Langzeitwirkung einer Pflege kann nur dann einigermaßen beurteilt werden, wenn ein klar definierter Ausgangspunkt bezüglich des aktuellen Hautzustandes und Hauttypes gegeben ist. Die Bestimmung des Hauttypes ist ein sehr komplexer Vorgang, da viele äusserliche Einflüße auf unser Hautbild einwirken. Auch ist die Haut hormonell empfindlich und stellt ein Bild unseres Innenlebens dar. Da der Zustand der inneren Schichten ohne chirurgische Maßnahmen nicht definitiv beurteilbar ist, kann

nur die Summe aller Beobachtungen durch Auge, Lupe, und Woodlampe sowie Apparativer Hilfsmittel einen approximativen Anhaltspunkt über den Zustand der Haut geben. Es ist empfehlenswert, nach dem 35. Altersjahr von Zeit zu Zeit eine Hautbeurteilung durchführen zu lassen, um die Pflege nach dem aktuellen Hautbedürfnis anzupassen.

J.W. Wiechers, **A Supplier's contribution to performance testing of personal care ingredients.** SÖFW-Journal, 123. Jahrgang 14/97

Current cosmetic formulations address a wide variety of customer needs. This variety requires a plethora of personal care ingredients. In order to create excellent new products, it is essential that the formulator not only knows the physical properties of the components (s)he chooses, but also the skin performance that these products may have. In order to facilitate the selection process for the formulator, we have investigated the effect of our products against some of the most prominent claim areas of cosmetic products: skin moisturisation, elasticity, substantivity, and mildness.

J.W. Wiechers, **Relative preformance testing: Introducing a tool to facilitate cosmetic ingredient selection,** Cosmetics and Toiletries, 112 (9) 1997, p. 79-84.

H. Dobrev, L. Zissova, **Effect of Ketoconazole 2% Shampoo on Scalp Sebum Level in Patients with Seborrhoeic Dermatitis,** Acta Derm Venereal, Stockholm 1997

Twenty patients with scalp seborrhoeic dermatitis were treated twice weekly with ketoconazole 2% shampoo for 4 weeks. Clinical assessment, culture for P. ovale on Dixon broth and lipid measurement at two places were made before treatment and after 2 and 4 weeks. Significant improvement of the severity of seborrhoeic dermatitis ($p<0.001$) and negative mycological tests by 19 (95%) of patients were observed. The scalp lipid content remained unaltered in 11 patients with an initial lipid value over 220 µg/cm² but increased those with lower initial values.

D.A. Comes, M.J. Dolan, E.J. Fender, R.A. Williams, **Treatment of contact dermatitis in the health care and automotive occupations**, Australian Journal of Dermatology: Abstracts 19th World Congress of Dermatology, Sydney, June 1997

Irritant and allergic contact dermatitis is a serious problem in many occupations. Among those with the most severe problems are automotive and body shop technicians and health care professionals. However, there is a dearth of studies which objectively characterize the extent of contact dermatitis in these occupations.

H.-P. Nissen, S. Sustmann, **EUBOS Sensitive DUSCHÖL F – Körperpflege für sensible und besonders trockene Haut,** Gutachten 1997

Alkaliseifen-freie Syndets, d.h. Waschpräparate mit neutralem oder einem sogenannten hautneutralen pH-Wert, haben sich als milde Reinigungsmittel für den generellen Gebrauch bewährt. Speziell für Personen mit erhöhter Hautirritabilität, mit Hautproblemen angeborener oder erworbener Art, bietet diese Entwicklung die Möglichkeit einer schonenden Hautreinigung: Durch den neutralen bis leicht sauer eingestellten pH-Wert wird eine alkalische Quellung der Haut, mit all ihren möglichen Folgen, vermieden. Deshalb werden Syndets auch von Dermatologen als Adjuvans therapeutischer Maßnahmen empfohlen (z.B. EUBOS flüssig). Trotz der Vorteile der modernen seifenfreien Körperreinigungsprodukte kann es bei trockener und sehr trockener Haut, jedoch insbesondere auch bei vorgeschädigter Haut, zu einer weiteren Exsiccation kommen. In Verbindung mit den Waschgewohnheiten (z.B. tägliches Duschen) ist eine Austrocknung der Haut, Schuppung und Jucken vor allem bei Personen mit Hautproblemen, welche den Dermatologen aufsuchen, ein belastendes Problem.

M. Arens-Corell, J. Welzel, H.H. Wolff, **Beurteilung von Hautreinigungsmitteln für trockene und empfindliche Haut**. Kosmetische Medizin 1/1998.

Die zunehmende Problematik trockener und empfindlicher Haut in der Bevölkerung macht die Entwicklung geeigneter Reinigungsmittel notwendig. Ihre Hautverträglichkeit und minimierte Austrocknungwirkung kann in dermatologisch kontrollierten Anwendungsbeobachtungen unter Einbeziehung der Messung hautphysiologischer Parameter objektiv geprüft werden. Das Beispiel eines Duschöls und einer Waschemulsion für trockene und empfindliche Haut zeigt, daß durch einen hohen Ölanteil ebenso wie durch die Auswahl milder Syndetsubstanzen bei Anpassung des pH-Wertes im Hautphysiologischen, leicht sauren Bereich die Hautreinigung unter Praxisbedingungen ohne Austrocknung und Irritationen möglich ist.

K.P. Wilhelm, **Client-Server based On-Line Data Acquisition for Skin Bioinstrumentation Devices**, proDERM Institut for applied Dermatological Research GmbH. Schenfeld, Germany

During dermatological safety and efficacy studies, huge amounts of data- both instrumental data as well as evaluator scores may accumulate. We have developed an integrational data with on-line data acquisition capability. The program runs in a Macintosh network. A graphical interface facilitates data entry. A multilevel password system secures unauthorised use. In order to comply with GCP/GLP requirements all data entries and any possible changes relating to experimental studies- both scores and instrumental values - are secured in a log file together with date, time, and initials of the person entering the data. The program can at present acquire data from: Chromameter (Minolta), Tewameter, Corneometer, pH-Meter, Sebumeter, Mexameter, (all Courage and Khazaka). However, the open architecture would easily allow to incorporate more instruments with a serial interface. Data can be exported in DOS, windows or Macintosh format for easy import into any spreadsheet or statistics programs. The program has been completely validated and successfully used in a contract research organisation for over 12 months. Automatic data acquisition has proven to be very useful tool to facilitate and speed up data analysis and to enhance the quality and reliability of test results.

D.R. Black, J.M. Lagarde, C.M. Auzoux, Y. Gall, **An Improved Method for the Measurement of Scalp Sebum,** Skin Research and Technology, Vol.2, No.4, Nov 1996.

An improved photometric technique for scalp sebum measurement is presented based on a previously reported method (Saint Leger et al. 1979 Arch Dermatol Res 265).

D.A. Comes, E.J. Fendler, M.J. Dolan, R.A. Williams, **Bioengineering Instrumentation: Automation and Use,** Skin Research and Technology, Vol. 2, No. 4, Nov. 1996

Objective: The increasing complexity and use of bioengineering skin test instrumentation has created a critical need for unified software that controls the instruments, collects and stores data, performs analysis, and generates reports. In this study, user-friendly software programs were developed and applied to perform panel testing on a large number of test subjects utilising bioengineering skin test instrumentation. Methods/Results: Generic software programs were developed to integrate and automate operation, data storage, and data analysis of multiple bioengineering skin instruments. The software was applied to the following instruments:- Courage and Khazaka - Sebumeter SM810, Corneometer CM 820, skin pH-meter 900, Tewameter TM210; Minolta Chromameter CR300, and NOVA DPM 9003. Conclusions: Automation of skin bioengineering instrumentation allows evaluation studies to be performed using a large number of test subjects (with multiple variables). This greatly increases the statistical validity of data and overall efficiency, whilst negating the historical constraints which required a large commitment of resources.

P.M. Clarys, A.O. Barel, **Sebumetry: A comparison between Lipid Collection Techniques,** Skin Research and Technology, Vol.2, No.4, Nov.1996

Recently, several methods have been developed for the collection of skin surface lipids. We compared 3 of those measurement techniques: the Sebutape, the Sebufix, and the Sebumeter. Lipid sampling with the Sebufix and with the Sebumeter takes only 30 seconds while lipid sampling with the Sebutape takes 1 hour. As demonstrated by several authors application of a film on the skin surface may interfere with several skin properties such as skin temperature, skin hydration, and skin surface water loss. Our experimental set was designed in order to make a comparison between the 3 measurement techniquesand in order to evaluate the effect of Sebutape application on the above skin parameters. Comparison of the lipid quantification with the 3 techniques delivered a good correlation. The Sebutape seems to have no or only a minor influence on skin temperature and TEWL. The hydration state of the statum corneum increased significantly during the Sebutape application.

M.A. Francomano, K. Mantovani, P. Pepe, A. Di Nardo and S. Seidenari, **Baseline Biophysical Skin Parameters in Subjects with Sensitive Skin,** Skin Research and Technology, Vol. 2, No. 4, Nov 1996.

Aim of the study: to assess the baseline biophysical parameters in subjects with sensitive skin.

*A. Lassus***, The effect of silicol gel compared with placebo on papulopustularacne and sebum production. A double-blind study**, J Int Med Res, 1996 Jul-Aug;24(4): p. 340-344

Altogether 30 patients (19 females and 11 males), mean age 19 years, were divided randomly into two groups. All patients had chronic papulopustular acne of the face. A total of 15 patients were treated topically with Silicol gel for 20 min twice daily for 6 weeks and the remaining 15 patientwere treated with a placebo gel in a similar fashion. A clinical evaluation was carried out at baseline, and after 2, 4 and 6 weeks of treatment. The clinical variables evaluated were as follows: number of comedones, papules, pustules and cysts on a standard area of the left cheek (area 5 x 5 cm) and measurement of

sebum production on the same area by the use of Sebumeter SM 810 PC (Courage and Khazaka, Ltd, Germany). No concomitant treatment was allowed during the study period. One patient using Silicol gel withdrew after 2 weeks of treatment because of severe irritation of the facial skin, leaving 29 patients who could be evaluated. In the active group, the number of comedones decreased from a mean of 48.5 to 15.1 after 6 weeks of treatment. The corresponding figures for papules were 10.7 and 1.0, for pustules 6.8 and 0, and for cysts 0.6 and 0. In the placebo group no improvement could be observed. There was a highly significant difference in efficacy between the two groups ($P < 0.001$) in favour of the actively treated group. The mean sebum index was 193 at baseline and 88 after 6 weeks. Correspondingly in the placebo group the mean sebum index at baseline was 187 and after 6 weeks 179. This difference between the two groups was also statistically significant ($P < 0.001$). After a short follow-up period (3 months) no deterioration was observed in the 14 'active' patients, showing either complete cure or improvement.

R. Wolf, M. Friedman, **Measurement of the skin-cleaning effects of soaps**, Int J Dermatol. 1996 Aug; 35(8): p. 598-600

Background: In the past 30 years, many tests for assessing the irritancy of soaps have been introduced, but only very few tests for evaluating their cleaning properties. The urgent need for such a method is obvious. Method: The method is based on the principles developed by Schrader, with substantial modifications. As in Schrader's method, we used a fat-based ointment to emulate "dirt." The washing process was performed by placing the examined hand in a rotating soap solution for 5 minutes. The capacity of various soaps to remove the "dirt" was assessed by comparing the sebumeter readings before and after the washing process. The difference between the two readings provided a quantitative estimate of the percentage of "dirt" (ointment) that was washed off during the process. Results: The cleansing capacity of two soaps was compared to that of water. Soap 1 showed a cleansing of 81.7 +/- 2.4%, soap 2 a cleansing of 75.3 +/- 2.9%, as compared to water of 29.7 +/- 3.4%. The curve representing the distribution of the data was very smooth, bell-shaped and symmetric about its mean. The difference between the cleaning activity of the two soaps tested was statistically significant ($P < 0.0001$). We have presented a new method for testing the cleansing capacity of soaps. Conclusions: We believe, that our method gives better results than that of Schrader; in particular, it enables us to discriminate more effectively among the various soaps. Our results indicate that the method is reliable and reproducible. It is also practical, easy to perform, does not require an expensive and complex washing machine, and can be carried out in every laboratory.

J. Woodruff, **Testing time,** Cosmetics, June 1996

In his continuing series on impending EC cosmetics-legislation, John Woodruff looks at the requirements for proof of efficacy, and takes a trawl around available testing facilities.

L. Celleno, A. Vasselli, M.V. Tolaini, A. Mastroianni, F. Macchia, **Verifica di tollerabilità ed accetabilità cosmetica di detergenti cutanei: confronto di metodiche,** Cosmesi Dermatologica 45, 1995

La detersione cutanea è un atto igienico ma reppresenta altresi un important momento cosmetologico e dermatologico. Infatti solamente se il prodotto utilizzato è cosmetologicamente ben accettato essa risulta un atto gradevole. Inoltre spesso l'uso di tensioattivi o saponi tradizionali si traduce in un'alterazione del film idrolipidico superficiale. Se a questo fa seguito l'esposizione e il danneggiamento della strato corneo, può innescarsi quel meccanismo che conduce alla comparsa della dermatite irritativa da contatto, facilitando anche l'insorgenza della dermatite allergica da contatto (1,2).

P. Elsner, **Nichtinvasive Techniken in der Hautphysiologie,** 38. Tagung der Deutschen Dermatologen Gesellschaft, Berlin, 29. April - 03. Mai 1995

Nichtinvasive Techniken (Synonyma: Bioengineering-Verfahren, biophysikalische Meßverfahren) haben in den vergangenen Jahren in verschiedenen dermatologischen Forschungsgebieten Eingang gefunden. Dazu zählen insbesondere die Hautphysiologie, die Dermatopharmakologie und Dermatotoxikologie, die Allergologie und die Berufsdermatologie, aber auch die Erforschung der Kollagenosen, der Veränderungen der Altershaut (dermatologische Gerontologie) un die Onkologie.

L. Zissova, H. Dobrev, **Quantitative Investigation of Sebum Excretion in Seborrhoeic Dermatitis of the Scalp Treated with Ketoconazole 2% Shampoo,** 2nd Congress of the ECMM, Brussels, April 27-29, 1995

The quantity of sebum excretion before, during and after treatment with Ketoconazole 2% shampoo / Nizoral®, Janssen Pharmaceutica, Belgium / in 20 patients with seborrhoeic dermatitis of the scalp, aged 16-40 years, was studied.

G.E. Piérard, **Relevance, Comparison, and Validation of Techniques,** Handbook of Non-Invasive Methods and the Skin, J. Serup G.B.E. Jemec, 1995

Measuring in an objective way is always in need of additional breakthrough. Dermometrology and bioengineering have been and remain closely associated in the search for improvements of quantitative noninvasive assessments. The pre-bioengineering times and the descriptive phase of dermometrology are behind us. Ingenious researches pioneered methods that may now look crude, time-consuming, and sometimes lacking in reproducibility.

P. Elsner, **Sebum,** Bioengineering of the Skin: Methods and Instrumentation, CRC Press 1995

While the epidermal barrier function depends largely on intercellular lipids in the stratum corneum, skin surface lipids are mainly from sebum. Sebum is an oily mixture of lipids, keratin, and cellular membrane structures excreted by the sebaceous glands.

E. Weißhaar, R. Sabel, C. Smith, M. Coißbau, E.-M. Röpke, H. Gollnick, **Does a New Relipidizing Agent in a Medical Soap Prevent Lipid Loss Induced by Repetitive Washing?,** Skin Pharmacology Society: 12th Annual Meeting 1995

Skin care eg choosing a suitable soap is an important factor in preventing skin disease. Various medical soaps claim to minimize the strain put on the skin by repetitive washing. The aim of this study was to determine wether a new relipidising agent in a medical soap which supposedly counteracts lipid loss induced by repetitive washing leads to a significant change in transepidermal waterloss, pH, sebum excretion and 8 epidermal lipids.

S. La Mendola, F. Rinaldi, M.C. Salvadori, F. Clemente, **Competence and satisfaction. A Study of the Hair and Shampoo of 1.000 Users of a Trichology Service,** 18th International IFSCC-Congress, Venice, October 1994

The awareness which 1.000 users of the medical trichology service at the San Raffaele Hospital of Milan have of the conditions of their scalps is first issue tackled in this study. The self-assessment that each person makes of their own hair conditions is compared to data measured by means of sebumetric instruments. A high degree of incompetence is recorded and correlation with some personality traits of the subjects illustrate this. Some aspects of the impact of different competence levels on behaviour are evaluated. In addition, the level of satisfaction expressed by these users about the shampoo used are examined, taking into account the relationship with some subjective variables.

C. Trullas, J. Coll, C. Pelejero, J. Vilaplana, S. Sirigu, C. Dederen, **Cosmetological Activity of Glycolic Acid Incorporated in a New Topical Delivery System (W/O/W Emulsion),** 18th International IFSCC-Congress, Venice, October 1994

The cosmetological potential of alpha hydroxyacids (AHA'S) is still evolving. The powerful research in physicochemistry has provided a promising new delivery system, the multiple emulsion W/O/W which could permit a controlled and sustained release of AHA'S, modifying their efficiency and safety. The cosmetological activity and safety of a W/O/W multiple emulsion containing 3% of glycolic acid has been assessed by bioengineering methods using several tests. A six-hour test and 30-days study for comparison of the effects of 3% glycolic acid in two delivery systems W/O/W multiple emulsion and O/W emulsion were conducted. The cutaneous biophysical variables evaluated were electrical capacitance of stratum corneum, skin surface lipids, transepidermal water loss, biomechanical properties, blood flow and skin surface topography. The safety of 3% glycolic acid in the two delivery systems was determined using patch testing and assessment of cutaneous responses by visual scoring and biophysical non-invasive methods (evaporimetry, laser doppler flowmetry, reflectance spectophotometry).

C. Münzberger, U.F. Haustein, U. Elefant, **Effects of UVA- and UVB-radiation on transepidermal water loss, water content of the horny layer and skin surface lipids**, Second International Symposium on Irritant Contact Dermatitis (ISICD), Zurich, April 14-16, 1994

In the last year many studies have provided important new knowledge concerning the benefits and risks of skin exposure to sunlight and ultraviolet radiation, among them the acute and chronic effects on damage of the skin barrier. We examined the transepidermal water loss, the water content of the horny layer and the amount of skin surface lipids in relation to low dose UV-radiation. The transepidermal water loss was measured with the TEWAMETER TM 210, the water content of the horny layer with the

CORNEOMETER CM 820 and the skin surface lipids with the SEBUMETER SM 810 PC (all from Courage and Khazaka GmbH). The ultraviolet radiation of 25 healthy adults was performed with UVA (Philips TL-K 40W/09N) and UVB (Philips TL 20W/01).

A.M. Grunewald, M. Gloor, **Value of barrier creams against skin damage due to repeated washings,** Second International Symposium on Irritant Contact Dermatitis (ISICD), Zurich, April 14-16, 1994

The aim of our study was to evaluate the protective effect of barrier creams onto irritant contact dermatitis. Therefore the following skin function parameters were evaluated: corneal lipids (sebumetry), water content of the corneal layer (corneometry), transepidermal water loss (TEWL), pH of the skin, skin reddening (colorimetry) and skin blood flow (laser doppler flow). We did standardized washings of both arms on the first and the 8th day. The subjects were asked to wash 5 times daily for one week. In a first study we evaluated the irritating effect of repeated washings with 0.01 mol/l sodium lauryl sulphate solution on 20 subjects. We were able to show that there is a more than 12 hours lasting change in skin function parameters after one week of repeated washings. Concerning corneometry, corneal lipids, tewl, pH and laser doppler flow there were highly significant differences before and after repeated washings ($p<0.01$). In a second study we evaluated the irritation reducing effect of 3 barrier creams on 15 subjects for each cream. Using the same method as in our first study, one selected arm was additionally treated with a barrier cream 5 times daily. Barrier creams had a highly significant ($p<0.01$) effect on laser doppler flow, corneometry and tewl. Nevertheless they were not able to offer complete protection. The different barrier creams showed significant differently positive effects onto skin function parameters.

J. Bettinger, M. Gloor, W. Gehring, **Influence of a pretreatment with emulsions on the dehydration of the skin by surfactants,** Int.Journal of Cosmetic Science 16, 53-50, 1994

Improving the water content of the horny layer of the skin is of great importance in dermatology (atopic dermatitis, ichthyosis etc.) and in cosmetics (to soften the skin surface [1]. It is believed that emulsion bases lead to hydration of the stratum corneum [2]. The hydration is believed to last a few minutes if an o/w-emulsion is used [3] and a few hours in the case of w/o-emulsions [4].The present study addresses whether the hydrating effect really does last for such a short time. Literature also proposes an increase in water content by using urea, which is a component of many dermatological skin-care ointments [3, 5-8].

M. Lodén, M. Lindberg, **Product Testing-Testing of Moisturizers,** Bioengineering of the Skin: Water and the Stratum Corneum, 275-288, 1994

Moisturizers are used to restore and/or to maintain a normal function of the stratum corneum (SC). Mostly they are used on the indication of so-called dry skin. When performing product testing of moisturizers, bioengineering devices are used for evaluating how these products affect the function of SC, the main diffusion barrier in the skin. Biophysical measurements of dry skin need to be carefully evaluated. A number of highly developed noninvasive methods for the study of skin physiology have appeared during recent years and a number of papers on the use of these methods are now being published.

P. Clarys, C. Eeckhout, J. Taeymans, P. Gross, A.O. Barel, **Influence of short daily exposure to thermal water on the hydration state of the skin,** Threat to the Skin, 333-337, 1994

The thermal Kurzentrum of Lenk (Switzerland) is one of the spas recognized by the Department of Health of Switzerland as a centre specialized in the treatment of rheumatic patients. Part of the typical 3-week cure in the centre consist of daily bathing in hot thermal water containing high concentrations of salts and sulphur (sulphates and hydrogen sulphide). According to recent data from balneo-therapeutic treatments, the sulphur which penetrates the skin is oxidized and provokes various physiological responses in the skin: vasodilatation in the microcirculation, an analgesic influence on the pain receptors and inhibition of the immune response.

R. Bimczok, A. Ansmann, S. Bielfeldt, D. Billek, H. Driller, G. Feistkorn, F. Heinze, R. Huttinger, B. Komp, H. Lautenschläger, M.-C. Leneveeu-Duchemin, L. Motitschke, L. Pohl, A. Reng, H.-J. Schulze, B. Thomaskamp, K. Tolkiehn, H. Tronnier, H.-U. Wekel, K.P. Wittern, **A multicenter comparison of different test methods for the assessment of the efficacy of skin care products with 368 human volunteers**, J. Soc. Cosmet. Chem., 45, 1-19 (January/February 1994)

In a mulricenter study, commonly used objective and subjective methods for the assessment of the efficacy of skin care products were compared. The study was performed with two different all-purpose skin care creams at eleven centers in Germany, with a total of 368 healthy female volunteers. Measurement of skin hydration with the comeometer demonstrates a fundamental improvement of skin condition and correlates with subjective assessment by the volunteers. Results are statistically highly

significant, and there is a fair correlation between the different centers. The methylene blue method, surfometry, and image analysis are also suitable for performance measurements, but show broader standard deviations and lower statistical significance. Under the chosen conditions, results for TEWL and skin surface lipid measurements were not significant at the $p < 0.05$ level.

V. Bousquet, D. Redoules, I. Raynal, G. Dahlem, Y. Gall, **Les principales techniques d'objectivation des effets des dermo-cosmétiques,** Cosmétologie, 1993

La mise au point de produits dermo-cosmétiques de plus en plus performants grâce aux progrès de la galénique a entraîné le développement d'un ensemble de méthodes d'évaluation visant à mesurer leurs effets directement sur la peau et de la manière la plus objective.

Quantitative evaluation of sebaceous secretion on the forehead: comparison between the Sebumeter® and a microporous film (Sebutape™), 9th international symposium "Bioengineering and the skin", Sendai / Japan, 19.-20. October 1992

The Sebutape technique seems to be a reliable and as fast procedure to obtain numerical values concerning the amount of skin surface lipids. The technique with the Sebutape is more time consuming but has the advantage to examine a greater surface of the skin, to protect the evaluated region and the Sebutape leaves the possibility for further quantitative lipid determination. Direct scanning of the Sebutape instead of scanning of an enlarged picture of the Sebutape results in a more standardised method with a greater surface that can be used for evaluation. The correlation between the Sebumeter and between the Sebutape technique increased from r=0,73 to r=0,94 when using direct scanning of the Sebutape instead of indirect scanning of the Sebutape.

J.P. Marty, C.M. Vincent, E. Fiquet, **Études des propriétés hydratante de la Crème Hydratante Visage Neutrogena,** Réalités Thérapeutiques en Dermato-Vénérologie N. 15, Feb. 1992

La créme Hydratenate Visage Neutrogena est une émulsion huile/eau dont les propriétés hydratantes peuvent être liées d'une part à un effet occlusif et d'autre part à une action humetante directe sur les cellules cornées.

E. Fiquet, C.M. Vincent, A. Cohen-Letessier, J.P. Marty, **Evaluation des propriétés de la crème hydrophile lipophile (Effadiane™),** Nouv. Dertol. 1992: 11 p. 429-431

Effadiane™ is a water/oil emulsion, its effect on the skin hydration has been investiagetd in human volunteers by non-invasive techniques: the transepidermal waterloss to verify occlusive effects, the corneometric measurement to demonstarte a a direct water uptake by the horny layer.

R. Wolf, E.Tur, D. Wolf, M. Landau, **The effect of smoking on skin moisture and on surface lipids,** International Journal of Cosmetic Science 14/92

In the present retrospective study we investigated the effect of smoking on the moisture and surface lipid levels of the skin. We analysed data from the files of 576 female clients treated in a Tel-Aviv cosmetic parlour. Measurements have been conducted by the same cosmetician, by commercially available equipment, on every client receiving cosmetic treatment, regardless of the nature of the treatment. Results demonstrated a significant difference of skin moisture in the various smoking groups: women who smoked 11-20 cigarettes per day showed significantly lower mean values than the non-smoker group, as expected. Moreover, women before or after menopause showed no significant differences in their moisture measurements. The surface lipid variables showed no significant differences in mean over the four smoking groups. We believe that the objective of the study was achieved, and that the results, indicating decreased skin moisture in smokers, will serve well in anti-smoking campaigns. We also believe that the present study will stimulate other investigators to conduct similar studies that will provide answers to many questions which still remain open.

Vittel continue d'innover: création d'un Espace Beauté et d'une Centre de Dermo-Cosmétologie, Vittel Magazine, N° 29, 1991

Sous la galene thermale à quelques pas griffon de la Grande Source dans le prolongement des Thermes dont la restructuration a été réalisée.

A. del Pozo, *C. Cosa*, **Dispensacion dermofarmaceutica: Apoyo technologico al rol del Farmaceutico**, Departemento de farmacia, Unitad docente de Farmacia Galenica, Universidad de Barcelona, 1991

El concepto "dermofarmacia" resulta en ocasiones, poco preciso, resultando a veces difficil delimitar su contenido y ámbito de actuación en relación, por un lado, al de la "dermatologia", y por estrictame el extremo opuesto, al dela "comotòlogia".

Check-up Cosmetologique et Biometrologie Cutanee, Actualités Pharmaceutiques, Jul. 1991, Special Dermo-cosmétologie, No. 289

La notion de "Check-Up" cutane a toujours exprime un souci de rigueur pour definir des besoins cutanes et des reponses performantes. Une logique, aujourd'hui scientifique, qui s'assuie sur des connaissances precises de la physiologie cutanee pour interpreter les differents etats de la peau et proposer de veritables methodes de correction; c'est l'avenement d'une cosmetologie de soins, rigoureuse.

P. Elsner, *H.I. Maibach*, **AT-based Data Aquisition and Analysis System for the Skin Bioengineering Laboratory**, Dermatosen 39, Heft 4 1991

In recent years, bioengineering instruments have found wide application for the non-invasive evaluation of functional properties of human skin. These devices measure transepidermal water loss (evaporimetry), skin hydration (methods based on conduction, impedance, and capacitance), skin blood flow (laser Doppler velocimetry, photoplethysmography), friction (friction meter), and mechanical properties (e.g. twistometer, suction devices), and allow the investigator to generate considerable data which requires documentation and analysis. Although some instruments meanwhile offer interfaces for the transfer of data into personal computers, integrated data acquisition systems supporting the whole spectrum of instruments used in the laboratory are lacking. We have developed an inexpensive data acquisition and analysis system for our skin bioengineering laboratory which allows the acquisition of data from several instruments simultaneously or in sequence. The data are fed into a spreadsheet on a personal computer and conversions and basic statistics are computed automatically. The system consists of an AT-compatible PC with two serial interfaces and an analog-digital conversion board. The software is an industry-standard spreadsheet (Lotus 1-2-3) with an instrument set (Lotus Measure). Using this system, we considerably improved the precision of our measurements and the scientific productivity in our skin bioengineering laboratory.

W.O. Seiler, **Rückfettung: Balsam für die Altershaut**, Moderne Geriatrie, 03/91

Ältere Patienten schätzen oft Wasser und Seife wenig. Sie ahnen vielleicht besser als wir Ärtzte: Wasser, Scheuern und waschaktive Substanzen (Seife, Tenside) zur Hautreinigung entfernen die physiologischen Hautoberflächentenside.

K. Klein, H.-W. Voss, M. Voss, **Untersuchungen zur Oberflächencharakteristik der menschlichen Haut – Teil 1**, Umwelt & Gesundheit aktuell

In der Kosmetik begnügt man sich häufig bei der Beurteilung des Charakters der menschlichen Haut bzw. der Zuordnung zu bestimmten Hauttypen zumeist nur mit einer (subjektiven) visuellen Begutachtung.

L. Celleno, **Valutazione dermatologica dei prodotti per la detersione della cute,** Cosmesi Dermatologica, 30/1990

The authors report the results and the methods of the dermatological and cosmetological evaluation of 16 solid products for cleaning the skin (traditional soaps, neutral soaps, syndets).There is a growing need for valid and reliable tests to evaluate the cosmetic properties and the safety of cosmetics. Data obtained in this field will contribute to the protection of both the consumer and the cosmetic industry.

G. Campagnoli, *L. Celleno*, *S. Grifeo*, *A.G. Nume*, *C. Ronchi*, **Valutazione dell´attivita sebonormalizzante di un´emulsione a base di lipoaminoacidi,** Cosmesi Dermatologica 39/1990

Aim of the present study is to investigate thoroughly a new class of compounds, the lipoamino-acids. These are molecules with sebum-normalizing and antimicrobial activity, useful in the cosmetologic treatment of seborrheic and preacneic skin. The experience is based on the instrumental measurement of sebumetry and pH-metry in 21 subjects, selected according to sebometric parameters above the physiologic limits (group A), and on the evaluation of the onset of allergic symptoms in 20 different subjects (group B) following 27 day treatment with a suitable preparation. Results show a sebum-normalizing activity also following 7-day treatment, with no case of intolerance and/or sensitization.

C. Torresani, **Utilizzo del fango termale sulfureo nel trattamento della cute seborroica,** Cosmesi Dermatologica, 1990

In the present study the efficacity of mud containing sulphurous thermal water, in the treatment of the face seborrheic skin was evaluated. The results provided evidence for effectiveness as well as

tolerability of the treatment. Mechanism by which sulfur and, in particular, sulphurous thermal mud operate in the sebaceous secretion are discussed with regard to literature data.

R. Mehl, **La cosmétologie active arrive à l´officine**, Le quotidien du Pharmacien, 08.10.1990

I.-M. Bergbrant, *J. Faergemann*, **The role of Pityrosporum ovale in Seborrheic Dermatitis**, Seminars in Dermatology, 12/90

This paper discusses the relation between the lipophilic dimorphic yeast Pityrosporum ovale and seborrheic dermatitis. A review of studies concerning the microbiology in seborrheic dermatitis and immune reactions to P ovale are given. In our own studies with quantitative cultures, no significant difference was found in the number of P ovale in patients compared with controls, or between healthy and lesional skin in the patient group. IgG serum antibodies against P ovale cells estimated with indirect immunofluorescence did not show any difference between patients and controls, but a significant difference was found when a P Ovale protein extract and ELISA were used. Immunological investigation on serum samples were done on 30 patients with seborrheic dermatitis. Defects were found in their T-cell function. The number of P Ovale is of importance in those individuals who are susceptible to seborrheic dermatitis and the development of the disease depends on the way their immune system reacts to the antigens derived from P Ovale.

J.L. Antoine, *J.L. Contreras*, *D. van Neste*, **ph Influence on surfactant-induced skin irritation,** Dermatosen in Beruf und Umwelt, Band 37, 1989, 3, 96 - 100

Even though various experimental methods have been proposed for in vitro testing of detergents such as SLS (sodium laurylsulfate) no absolutely relevant clinical information can be inferred from them as to the irritancy of a given compound. In particular the relative importance of pH needs further assessment. This study reports on in vivo evaluation of skin function changes under given experimental conditions with SLS applied at 3 different pH values. There is a dramatic increase of transepidermal water loss (TEWL), i.e. a substantial reduction in the barrier function of the skin, when SLS is applied under occlusion for 48 H. The alkaline control solution (NaOH pH 9) induced low-grade, but significant TEWL increases, as compared to the other controls (distilled water pH7; HCl pH5), which had no influence on TEWL. The changes obtained with the controls were much lower than those observed with SLS. The barrier-function changes induced by the surfactant SLS could, however, promote transepidermal passage of acid and/or alkaline molecules, hence increasing toxic damage of the skin; yet no such effects could be observed, indicating that the main effects are due to detergency. Assessment of cutaneous blood flow values (CBFV) by laser Doppler velocimetry showed increased values after SLS. When pH-adjusted SLS solutions were compared, there was neither a difference in relation to pH nor did the control solutions induce any significant CBFV change. This study reveals that TEWL and CBFV are probably the most reliable methods to investigate acute irritancy by SLS. Accordingly, pH cannot be considered as a major contributive factor of irritancy when SLS solutions are applied under occlusion (48H). The current level of sebaceous secretion and the electrical properties of the skin surface were not parameters to evaluate acute SLS-induced skin damage, but longitudinal studies are presently being conducted in order to assess their significance in monitoring epidermal repair after SLS insults.

C. Torresani, *D. Rastelli*, *M. E. Berioli*, *G.De Panfilis*, **Valutazione dell`efficacia di un 'emulsione cosmetica a base di aqua termale sulfurea,** Incontri di Cosmetologia, 07/89

Lo studio è stato condotto su un gruppo di 20 pazienti, 13 femmine e 7 maschi, di età compresa tra 21 e 43 anni. Il trattamento è consistito in due applicazioni giornaliere di una emulsione O/A contenente per il 79% acqua termale sulfureo-solfato-calcica, per un periodo di quattro settimane. Durante tale periodo è stato escluso qualsiasi altro trattamento ed i pazienti sono stati invitati ad effettuare la detersione del viso esclusivamente con acqua. I pazienti sono stati controllati prima dell'inizio del trattamento, nonché al 7°, 14°, 21° e 28° giorno del trattamento stesso. La valutazione quantitativa della seborrea è stata effettuata mediante sebometro reflettometrico Sebumeter SM 410 della ditta Schwarzhaupt. Come gruppo di controllo, è stato scelto un gruppo di 10 pazienti, omogeneo per sesso, età e patologia. Tali pazienti sono stati trattati, secondo le stesse modalità, con una emulsione placebo contenente i soli eccipienti e priva del principio attivo.

P. Morganti, *S.D. Randazzo*, **L´utilizzazione degli indici di correzione per il trattamento cosmetico della cute secca e desidratata,** Il Prodotto Chimico, April 1989

La normale funzione protettiva della cute è strettamente legata all'azione protettiva svolta dal film lipidico di superficie che la ricopre come una barriere, difendendola dalle agressioni dell'ambiente esterno, e dal suo contentunuto del acqua, indispensabile per manterla morbida elestica a hydratata.

Solaroli, **Manifestazioni seborroiche e desquamative del capillizio, trattate con un nuovo preparato a base di urea e acido salicilico,** La Medicina Estetica, 13.04.1989

Seborrhea and desquamation of the scalp treated with a new preparation based on urea and salicylic acid. The activity of salicylic acid and urea from particular lotions was studied in vivo by measuring the possible antiseborrheic effect. We used the modified photometric technique (Sebumeter SM 810) which permits measurement of casual levels (CL) or sebometric index (SI); although this is less accurate then a sebum excretion rate (SER) assessment, but there is some correlation between (SER) and (CL). In the study of 30 patients we have employed the method described to assess the bioavailability of Keratolytic and Keratoplastic agents incorporated in topical formulations; in this way we have shown the benefit of these preparations.

P. Morganti, *S.D. Randozzo*, **Gli indici di idratazione e di emolienza per la verifica dello stato cutaneo,** Incontri di Cosmetologia No. 3, 07/89

Per la misurazione sia del sebo di superficie che dell'idrazione cutanea ci si è serviti di un sistema computerizzato denominato Dermotest Hytech dato dall'unione del Sebometer SM 810 PC et del CORNEOMETER CM 820 PC, opportunamente collegati ad un PC mediante un adeguato programma di utilizzazione. Utilizzando il Dermotest Hytech è possibile ottenere direttamente sia i valori sebometrici espressi in mg/cm² che i valori della idratazione cutanea espressi in CV (corneometer values).

A.O. Barel, P. Clarys, B. Wessels, R. van Straat, **Quantitative Biophysical Measurements of the Mildness Properties of Cleaning and Detergent Products in Hand Immersion Test**, Algemene en Biologische Scheikunde, Vrije Univerteit Brussel, Belgium

H.I. Maibach, *E. Patrick*, **Sampling Multiple Skin Sites Delineated by a Template Increase the Realibity of Surface Sebum Measurement Units Using the Sebumeter,** 7th International Symposium of Bioengineering and the Skin, 1988

The variance of data collecrted by most techniques used to measure surface sebum level is large.

L. Nogueira, *D. Gabrielle*, **New techniques to assay skin care products,** D & CI 09/88

The skin is a complex organ with numerous functions, some remarkable subtle. Cosmetic products play an important role in maintaining the integrity of the skin, including restoration of the skin's slightly acidic pH (average 5 to 5.5).

P. Thune, *T. Gustavsen*, **Comparison of two photoelectric techniques for quantitative measurement of skin surface lipids**, Acta Derm. Venerol. 1987

A method for quantitative assessment of skin surface lipid by means of extraction with solvents, was first developed by Kligman & Shelley.

H. Tronnier, **Dermatologische Bewertung von Kosmetika und Körperpflegemitteln,** Ärztliche Kosmetologie, 374-398, 1987

The practitioning dermatologist is interested in body care products and cosmetics because of their potential side-effects which may be allergic or primarily toxic. In view of skin physiology also cosmetics and body care products having special effects, such as light and skin protective preparations, deodorants and antiperspirants, dandruff and hair removing products, washing products and preparations which are supposed to have an anti-wrinkle effect on the skin, are of interest to the dermatologist. These preparations claiming a certain effect are opposed to the series of cosmetics which to some extent also make this claim, but on the whole have general effects such as improvement of the hydration of the horny layer and influence on the pH-value of the skin effects which, however, are also assigned to some special products. These preparations contain a number of active substances the effects of which are at least controversial and often difficult to prove. So, it is pointed out to the fact that just in case of body care products and cosmetics the effect of the basic substances used is essentially responsible for the effects of care.

S. Dikstein, **Comparison of the Sebumeter and the Lipometer,** Bioeng. Skin, 197 - 207, 3, 1987

Die Instrumente Lipometer und Sebumeter wurden durch gleichzeitige Messungen der zufälligen Lipidwerte an nebeneinander liegenden Stellen derselben Person verglichen. Der Koeffizient der Bestimmung zwischen den Instrumenten ist 92%. Das Sebumeter ist geeigneter für die Messungen eines raschen Screenings.

P. Muti, *E. Gelentano, S. Panico, F. Berino*, **Measurement of cutaneous sebum: reproducibility at different cleansing conditions,** J. Appl. Cosmetol. 07-09/1987

Within the feasibility stage of ORDET (Prospective Study on Hormons and Diet in Breast Cancer Etiology) a representative study on the measuring of the cutaneous sebum has been carried out.

M.P. DePadova, A. Tosti, S. Veronesi, **Gelatin-Cystine in Seborrheic Alopecia,** J. Appl. Cosmetol. 04-06/1986

The gelatin-cystine spherules seem to be able to affect the regulation of sebum genesis. In the order to demonstrate the sebum normalizing property performed by this product, a study was carried out on 60 subjects affected by seborrheic alopecia. A signifiant reduction of seborrhea was observed in 30% of the subjects taking the gelatin-cystine spherules for the period established. It was also observed a significant reduction of serine, proline, glycine, alanine, 1/2 cystine, valine, leucine and methionine is always found and a parallel increase of glutamin acid, phenilalanine and argine.

S. Dikstein, W. *Courage*, **Verteilung von Talgspiegelmessungen bei gesunden erwachsenen Frauen,** Ärztliche Kosmetologie, 15, 41-44, 1985

The sebumeter measures the amount of fats on the skin by absorbing it onto a thin plastic strip and measuring its transparency. The range of values relevant to medicocosmetics was established by asking experienced cosmeticians to define and classify the skin of over 150 women according to "Dry" (insufficient sebum level),"Normal" or "Oily". The skin was then measured by Sebumeter. 70-80 % agreement is present between the cosmetician's definition of "Dry" or "Oily" skin at the extremes, but in the middle the definition is casual. Tabulating the data into histograms permits in finding the best balance between the subjective cosmetic definition and the instrumental reading. On the forehead, Sebumetric readings of less than 90, and on the cheek and neck readings of less than 60 mean "Dry" skin. Sebumetric readings of more than 200 on the forehead, more than 160 on the cheek, and more than 100 on the neck, mean "Oily"skin. The advantage of using objective instrumental readings in place of observational methods is the prevention of misdiagnoses.

H. Schaefer, *Kuhn-Bussius*, **Methodik zur quantitativen Bestimmung der menschlichen Talgsekretion,** Arch. klin. exp. Derm. 238/1970, 429-435

Bei Milchglas nimmt die Lichtdurchlässigkeit durch Aufdruck kleiner Fettmengen stark zu. Diese Transmissionszunahme kann photometrisch erfaßt und durch Wägung des abgenommenen Fettes auf der Mikrowaage geeicht werden. Sie ist daher zur quantitativen Bestimmung des Hautüberflächenfettes geeignet. Durch vergleichende Messung mit bekannten, auf die Stirn aufgetragenen Vaselinmengen sind Rückschlüsse auf den Fettfilm und damit die Talgdrüsenfunktion menschlicher Haut möglich. Eine ins Einzelne gehende Testbeschreibung wird am Schluß der Arbeit gegeben.

J.P. Pavlichko, A.M. Fleichner, A. Selner, **Improvement in critical properties of emollience and crack reduction via direct additives,** Toilet Soaps in Skin Care – Part I

The recent study by the authors sought to achieve such iimprovements by simple, direct addition of compatible chemicals.

U. Huschka, *A. Schulewsky*, **Hauttalgsekretion und Haarshampoos,** Ärztliche Kosmetologie, 1984

Mit insgesamt 1520 Messungen wurde an 20 Probanden der Einfluß von vier Haarshampoos, die unterschiedliche Antischuppenwirkstoffe enthielten, auf die Rückfettung der behaarten Kopfhaut und der Stirn sebumetrisch mit der Kunststoffbandmethode untersucht. Im Gegensatz zu anderen Berichten war bei 85% unserer Probanden der Ausgangsfettspiegel auf der behaarten Kopfhaut nach der Wäsche innerhalb von 24 Stunden wieder erreicht; die vollständige Rückfettung der Stirn erfolgte bei 90% der Probanden zwischen 2 und 5 Stunden. Die Änderung der Rückfettung war durch Fettmessungen im kinetischen Bereich nach 2, nach 5 und 24 Stunden wesentlich empfindlicher bestimmbar als im Steady-state nach 72 Stunden. Die nach den ersten Haarwäschen einsetzende Änderung der Rückfettungsgeschwindigkeit verstärkte sich über mindestens 3 Wochen und war erst nach diesem Zeitpunkt eindeutig bewertbar. 0,6% Pyrithiondisulfid führte zu leicht verstärkter Rückfettung, 0,2% Pyrithiondisulfid mit 7% Dinatriumundecylensäuremonoäthanolamidosulfosuccinat war neutral, eher sebostatisch wirksam, 0,5% Octopirox führte zur Verstärkung der Rückfettung. Am behaarten Kopf und an der Stirn war die Wirkung der Inhaltsstoffe in der Regel gleichgerichtet.

S. Dikstein, **Instrumental Analysis in Individual Cosmetic Consultation,** Cosmetics & Toiletries, Vol. 98, Nov. 1983

Satisfaction from the the medical service is a complex phenomenon involving the art of skin care (i.e., skill of the provider), assessibility (convenience), cost, the physical environment in which the care is given, availability, continuity, and last but not least, the efficacy of the care.

K. Zeller, *H. Huben*, **Sebumetrische Messungen des "Casual Level" der Hautoberflächenlipide bei einem studentischen und einem geriatrischen Kollektiv hautgesunder Probanden,** Aktuelle Dermatologie, Juni 1983

Für dermatologische Reihenuntersuchungen wäre es wünschenswert, die in der Regel makroskopische Einschätzung des "seborrhoischen" oder "sebostatischen" Hautstatus mittels eines einfachen, leicht transportablen Meßgerätes objektivieren zu können. Es wurde daher an zwei altersunterschiedlichen Probandengruppen (223 Junioren, 116 Senioren) untersucht, ob mit einem neuen reflexphotometrischen sog. Sebumeter eine quantitative Untersuchung bezüglich des Hautoberflächenfettfilmes möglich ist. Das Gerät erwies sich vor allem im Hinblick auf eine semiquantitative Objektivierung des exsikkativen oder sebostastischen Hornschichtstatus brauchbar. Darüber hinaus wurden auch Geschlechtsunterschiede ermittelt. Anwendungsmöglichkeiten bestehen bei Einstellungsuntersuchungen für ekzemgefährdete Feuchtberufe (z.W. Friseure, Maurer, Stukkateure) sowie zur Früherkennung der sog. Alterssebostase.

D. St. Léger, *J.-L. Leveque*, **Les méthodes quantitatives des lipides de surface chez l´homme,** International journal of cosmetic science, 1980

Three main methods to measure quantitatively surface lipids in man have been used. A comparison of the information they produce and their routine practicabilities are given. Adaptation and standardization of the Schaeffer and Kuhn-Bussius method, using a photoelectric absorptiometer and ground glass plates are described. This procedure, applied to thirty-two adults, demonstrated the quantitative nature of the sampling mechanism. A mathematical approach gives the precise definition of the casual-level. This procedure shows that casual-level values appear to be correlated with skin types.

H. Tronnier, **Meßmethoden zur Prüfung kosmetischer Präparate und Grundstoffe,** Parfümerie + Kosmetik 61, 1980, p. 421 - 433

Unsere Kenntnisse über Reaktionsabläufe in der menschlichen Haut, insbesondere auch über die, die Schutz- und Abwehrfunktionen des Hautorgans bedingen, sind dem Dermatologen zum Teil aus pathologischen Störungen, also dermatologischen Krankheitsbildern, geläufig.

S. Dikstein, A. Hartzshtark, R. Bercovici, A. Orgad, **Distribution of sebum measurement in normal adult women,** 4th International Symposium on Bioenginengineering and the Skin, 09/83

The Sebumeter measures the amount of fatsonthe skinby absorbingit onto a thin plastic strip and measuring its transparency. The method is not sensitive to water. The instrument is calibrated so that in the range of 20-200 the readings are equal within 10% to the concentration of the sebum on the skin in µg/cm^2.

Nur die Werbung geht glatt unter die Haut, "Test" 01/1978

Mehr als die Hälfte aller Frauen – so die Umfrage des Magazins – benutzen täglich eine Universal- oder Spezial-Hautcreme.

F. Greiter, *S. Doskoczil*, **Forschung in der Kosmetik,** Österreichische Chemie-Zeitschrift, Juni 1976

Diese Arbeit ist ein Versuch, sinnvolle Forschung in der Kosmetik zu beschreiben und zu begründen. Nur neuere Methoden werden beschrieben. Bekannte Prüfungsverfahren einschließlich Spektralphotometrie und Gaschromatographie dürfen als üblich vorausgesetzt werden. Spezieller Wert wird auf das Gebiet des Sonnenschutzes gelegt. Auch die Notwendigkeit besonderer Emulsionsformen wird behandelt. Es wird daran erinnert, daß die Kosmetik nicht nur die Aufgabe des Schmückens (Kosmein), sondern vor allem auch der Reinigung, der Pflege und des Schutzes der Haut hat. Es wird ausgeführt, daß kosmetische Präparate, die zum Teil im Grenzbereich Kosmetik-Pharmazie liegen, einen Beitrag zur Fitneßbewegung leisten können. Es wird allerdings auch unmißverständlich dargelegt, daß Irreführung in der Kosmetik abzulehnen ist und eine weit gehende Deklaration der Kosmetikpräparate notwendig erscheint.

H. Tronnier, **Methodisches zum Nachweis des Hauttalgs unter besonderer Berücksichtigung der Akne,** Vortrag anläßlich der Tagung der Gesellschaft Deutscher Kosmetik-Chemiker e.V., 14.16-03.74

Die Problematik der Hautfettbestimmung wird beschrieben, die in der uneinheitlichen Zusammensetzung, in der unterschiedlichen Lokalisation und in der verschieden vollständigen Gewinnung des Hauttalgs begründet ist. Vor - und Nachteile der verschiedenen Methoden werden,

teilweise unter Heranziehung eigener Versuche, dargestellt. Von den drei für die Seborrhoe und die Erkrankungen des seborrhoischen Formenkreises in Frage kommenden Störungen im Hauttalgsystem, nämlich in der Menge, in der Zusammensetzung und im physikalischen Verhalten des Talgfilms auf der Hautoberfläche, scheint letzterem die wesentlichste Rolle zuzukommen. Dies konnte aus zahlreichen Untersuchungen einerseits bei der Akne und anderseits bei der Seborrhoe abgeleitet werden. Auf die Bedeutung des Verhältnisses von Talgmenge zur Spreitungsfähigkeit für die Ausbildung von Comedonen bei Akne wird anhand vergleichender Talguntersuchungen mit verschiedenen Methoden und unter Glucocorticoid-Medikation hingewiesen. Die bei Akne vorliegende Störung in dieser Relation wird an weiteren experimentellen Befunden erörtert.

H. Tronnier, H. Kuhn-Bussius, **Zur Brauchbarkeit optischer Methoden für die Bestimmung des Hautoberflächenfettes,** Hautklinik Dortmund, Kosmetologie 06/1974

Im Rahmen hautphysiologischer Untersuchungen und bei der Überprüfung therapeutischer und kosmetischer Anwendungen wird mit unterschiedlichen Methoden versucht, den Lipidgehalt der Haut zu bestimmen.

H. Tronnier, *Brunn*, **Vergleichsuntersuchungen des Hautoberflächenfettes Hautgesunder und Aknekranker,** Berufsdermatosen, 79-88, 1972

Mit Hilfe einer aus Säulen-, Dünnschicht und Gaschromatographie sowie IR-Spektroskopie kombinierten Methode wurde eine Vollanalyse der Hautoberflächenlipide bei Aknekranken im Vergleich zu hautgesunden Kontrollpersonen durchgeführt. Aus den Mittelwerten von je 5 Probanden ergab sich: 1. Die Menge der Oberflächenlipide ist bei der Akne gering erhöht. 2. Bei der Auftrennung in die einzelnen Fraktionen waren in der Kontrollgruppe u.a. die Triglyzeride, bei der Akne dagegen die freien Fettsäuren vermindert. 3. Die Verteilungen im Übrigen entsprachen unter Berücksichtigung methodischer Unterschiede den Angaben in der Literatur. 4. Die möglichen Auswirkungen der gefundenen Differenzen auf die Pathogenese der Akne bezüglich der Gesamtverteilung auf die Fraktionen (z.B. Spreitung) und der Kettenlänge (z.B. Reizwirkung) werden erwähnt.

M. Gloor, *U. Schulz*, *G. Wieland*, *I. Wieland*, *H.C. Friedrich*, **Beitrag zur quantitativen Bestimmung der Hautoberflächenlipide in der Praxis,** Dermatologica 27.12.71

Es wird über Bestimmungen der Menge der Hautoberflächenlipide (casual level und replacement sum) mit Hilfe des Osmiumsäuretest nach Brun et al. an 33 Versuchspersonen und mit Hilfe des Milchglastests nach Schäfer und Kuhn-Bussius an 14 Versuchspersonen berichtet. An der symmetrischen Körperstelle wurden jeweils exakte gravimetrische Lipidbestimmungen nach der Methode von Honsig vorgenommen. Zusätzlich wurde die Zusammensetzung der Hautoberflächenlipide dünnschichtchromatographisch analysiert. Im Gegensatz zum Milchglastest erwies sich der Osmiumsäuretest als aussagekräftig. Die Zusammensetzung der Hautoberflächenlipide beeinflußt das Ergebnis beider Methoden nur wenig.