Courage + Khazaka electronic GmbH
Mathias-Brüggen-Str. 91 * 50829 Köln, Germany
Phone: +49-221-956499-0 * Fax: +49-221-956499-1

Literature List
Mexameter®

J. Jain, **Combatting ageing with Ayurvedic science**, PERSONAL CARE MAGAZINE, Volume 24, Issue 4, April 2025, p. 101-104

Ageing is an inevitable part of life, but that does not mean your skin has to surrender to time. Fine lines, wrinkles, and loss of elasticity are common signs of ageing, yet the quest for youthful, radiant skin has never been more innovative, or more rooted in nature. While countless skin care solutions promise to turn back the clock, few combine the ancient wisdom of Ayurveda with cutting-edge scientific research to deliver real, lasting results.

Y. Xiong, X.H. Huang, J. Yun, S. Liu, Y. Wang, M. He, L. He, H. Zhao, **Comparison study of safety and activity of collagen components via zebrafish and clinical repair testing**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

There are currently many types of collagen available on the market, including extraction (from animal tissues), recombinant microbial fermentation, and so on. Different sources and molecular weight sizes may have an impact on the activity and safety of collagen, but these differences have not yet been elucidated. This study collected collagen samples from 5 different processes. Their protein content and molecular weight distribution were measured using BCA and GPC. In addition, the safety and activity of these samples were evaluated using a zebrafish model, and based on these activity results, two samples were selected for clinical trials through skin barrier repair trials. The research results indicate that all collagen samples have significant anti-inflammatory activity, and most collagen samples have the function of repairing the skin barrier. In addition, these activities are related to their molecular weight, with the best active sample having the smallest molecular distribution. Among them, the effect of recombinant I/III collagen is the most significant, specifically manifested as the skin barrier repair effect. This study systematically screened and compared the safety and activity of different types of collagen, providing an important foundation and theoretical basis for the selection of collagen in applications.

R*. Ribon de Melo, A.P. Fonseca, P.M.B.G Maia Campos*, **Evaluation of a Fluid Emulsion Formulation for Sensitive Skin in Tropical Climates: Efficacy, Tolerance, and Clinical Properties**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

This study evaluated a cosmetic formulation with 5% panthenol, bisabolol, and vegetable oils for its safety and efficacy on sensitive skin, particularly in tropical climates like Brazil. Ethical committee-approved ex-vivo and clinical trials measured filaggrin synthesis, TEWL, erythema, and hydration. After tape-stripping, the formulation significantly reduced TEWL by 6.2% and erythema by 43% within 30 minutes. Hydration increased by 30.1%, with all participants noting the effect. TEWL significantly decreased after 7 days of use. Clinical assessment showed marked improvements in dryness, peeling, and erythema after 7 and 21 days, respectively. The formulation was well-tolerated, with over 85% of participants appreciating its texture, calming effect, and quick relief after shaving. The results suggest that this formulation enhances skin barrier function and hydration, making it suitable for sensitive skin in hot climates, offering a pleasant sensory experience without the heaviness of traditional emulsions.

N.T. Nurkhairunnisa, Y.K. Cho, W. Annajiah, R.D. Putri, J.H. Choi, J.H. Yang, M. Insanu, D. Rizaldy, Y.H. Nho, K.E. Lee, M.K. Cheong, **In Vitro and In Vivo Studies of Melaleuca cajuputi Leaf Extract for Skin Barrier Improvement**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

The skin has many functions, one of them is to act as a barrier to protect our skin from exposomes. The disruption of skin barrier caused by exposome will lead to various skin problems, such as acne, redness, hyperpigmentation and dry skin. With the emergence of natural ingredients with clean beauty, we studied a potential plant to use for skin barrier improvement which natives to

Indonesia, Melaleuca cajuputi from Buru Island. As one of the countries who holds the title of Megabiodiversity, we believe the studies of the plant would be beneficial as natural cosmetics ingredient. We performed preliminary assays using in vitro methods, screening its antioxidant, antimicrobial, brightening, and anti-inflammatory activity. The in vivo study was performed to evaluate the skin barrier improvement and soothing efficacy of Melaleuca cajuputi. The test results revealed Melaleuca cajuputi could be an effective improvement with additional functions such as antimicrobial, soothing, calming and brightening.

C. Blanchard, G. Tousch, S. Darly M. Reynier, G. Percoco, C. Malhaire, O. Pierre, A. Ruex, L. Misery, N. Lebonvallet, L. Peno-Mazzarino, F. Yvergnaux, **Harnessing the Neuro-Immuno-Cutaneous system in the treatment of sensitive skin**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Sensitive skin becomes a prevalent concern in today's beauty landscape. By targeting the latest innovation of sensitive skin, the Neuro-Immuno-Cutaneous System (NICS) [1], as a cellular tryptic between the skin's nerve cells, immune response, and overall skin aspect, we proposed to evaluate the biological efficacy of one of our active ingredients, a rhamnose-richpolysaccharide, obtained by biotechnology, due to its global approach towards neurocosmetics. Firstly, we used a co-culture model of keratinocytes and dendritic cells under inflammatory condition with Phorbol 12-Myristate 13-Acetate (PMA) induction to study the release of proresolving lipid mediators. In a correlated way, we used Sodium Lauryl Sulfate (SLS), a detergent known to induce irritation and erythema in volunteers to study the restoration of skin barrier function and the redness reduction. Then, we evaluated the soothing effect on human re-innervated skin explants (using adult stem cells) stressed with lactic acid, but also on the face of volunteers having dry sensitive skin and prone to scratching in winter, by measuring electrodermal response reflecting skin sensitivity by using a polygraph. By understanding the fundamental intercellular communication of the NICS, this work aimed to highlight the modulating effect of a rhamnose-rich polysaccharide to bring relief and immediate comfort to hypersensitive skin.

H. Kubo, M. Moriyama, S. Goto, Y. Miyake, Y. Ozeki, Y. Nakamura, H. Moriyama, **Sage extract and an ascorbic acid derivative inhibit melanogenesis via negatively regulating keratinocyte-derived granulocyte-macrophage colony-stimulating factor**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Salvia officinalis (Sage) has been used as a cosmetic. However, the effect and mechanism of action of Sage for solar lentigo remain largely unclear. To confirm whether SGE is involved in inhibiting melanin production, degradation, and excreting melanosomes, SGE was added to a threedimensional epidermal culture model containing melanocytes (3D-skin). SGE treatment enhanced the brightening effect on the 3D-skin, but it did not directly suppress melanin production by melanocytes. Therefore, the mechanism of inhibiting solar lentigo mediated by keratinocytes was investigated. We focused on autophagy, which is known to be involved in the control of skin color and melanosome degradation in keratinocytes. As a result of adding SGE, the expression of LC3, an autophagy marker, was increased. However, no melanin degradation related to autophagy was observed, so SGE may control melanin production through cytokines released from keratinocytes. qPCR analysis indicated that SGE inhibited melanogenesis by suppressing the expression of granulocyte-macrophage colony-stimulating factor (GM-CSF). Interestingly, a similar effect was observed with ascorbic acid 2-glucoside (AG) previously known that inhibitor of tyrosinase. The present study showed that SGE and AG have a new brightening effect mediated by keratinocytederived GM-CSF and that they are useful for cosmetic applications.

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. Wang, F. Yang, M. Guo, J. Ye, D. Liu, Y. Huang, Y. Mohammed, **Evaluation of a Novel Skin Whitening Product: A Volunteer Study**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

This study aims to evaluate the whitening potential of a newly developed cosmetic product, the yeast essence balance lotion containing saccharomyces/rice ferment filtrate, using advanced multiphoton fluorescence lifetime imaging microscopy. A randomized, controlled trial was conducted with five participants over a two-month period. Three areas of 2 × 2 cm were designated on the participants' forearms as the control, placebo, and treatment groups. Each group was imaged using multiphoton fluorescence lifetime imaging microscopy every five days in the first half month and every 15 days for the rest of the experimental period to quantify changes in melanin intensity. In addition, other skin biophysical parameters, including skin pigmentation, friction and hydration were measured on days when imaging was performed. Significant reductions in melanin levels were observed on days 10 and 15 in the treatment group, with improved skin hydration noted across several of the tested intervals. MPM-FLIM provided a more sensitive and detailed analysis of melanin content changes compared to conventional methods, underscoring its advantage in skin product assessments. The fermented rice based over the counter product demonstrated notable efficacy in reducing melanin content and improving skin hydration, affirming its potential as a safe and effective ingredient for skin whitening products. The use of MPM-FLIM enhanced the understanding of the product's impact, suggesting that this imaging technique should be considered for future cosmetic evaluations.

T. Zhang, Y. Liu, Y. Xu, Y. Ma, **4-n-butylresorcinol, licochalcone A and glabridin combination and formulation for the enhancement of whitening efficacy on both cellular and consumer panel test**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Nowadays, consumers are more and more eager to require the skin whitening products to be effectively improve the skin darkness while have less tendency of skin irritation. To develop such a product, the active skin whitening ingredients and their combinations are highly required to be selected and further investigated. Herein we have developed an active combination with 4-n-butylresorcino together with licochalcone A and glabridin targeting for an effective skin whitening with better skin tolerance. 4-n-butylresorcinol is recognized as an effective skin whitening agent for inhibition of the tyrosinase activity. licochalcone A were well-known for its skin inflammation inhibition property while glabridin has both skin whitening and good skin tolerance. The in-vitro experiments allowed us to find out the optimum ratio of 4-n-butylrescorcinol, licochalcone A and glabridin to be a molar ratio of 5:1:1 which has the best inhibition effect for both tyrosinase activity and melanin content. The skin whitening formula containing 5:1:1 molar ratio of 4-n-butylrescorcinol, licochalcone A and glabridin can inhibit the melanin distribution caused by UVB in 3D skin model and suppressing pigmentation based on the zebrafish test. In addition, a new clinical model with panelists from China with skin Fitzpatrick type Ⅲ-Ⅳ was constructed by exposing to both UV and blue light to introduce skin tanning. The clinical efficacy of the skin whitening formulation containing the 5:1:1 molar ratio of 4-n-butylresorcinol, licochalocone A and glabridin combination was further evaluated. After 4 days of product usage, the UVA plus blue light induced skin pigmentation can be prevented significantly. In addition, via the senstive skin patch test, all the 33 panelists showed in negative reaction which proved that the skin whitening formulation containing the combination is safe to use even on the sensitive skin. What's more, the skin whitening efficacy test for the long-term product usage of 56 days for 31 panelists were also investigated. All the 31 panelists showed improvement in terms of skin whitening effect without noticing any irritation or stinging effect. In conclusion, our skin whitening composition and formulation solution have powerful whitening efficacy without any noticing of skin irritation which can be potentially applied to treat skin pigmentation.

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.

P. Kong, C. Jiang, X. Huang Y. He, Y. Bai, **Reishi, a sustainable herb medicine for skin immune barrier repairing**, Presentation at 34rd IFSCC Congress, Iguazu, Brazil, 14-17 October 2024

Naturality and sustainability has emerged as a hot topic in leading skincare products. Natural actives have been used to treat skin diseases throughout history. Nowadays, they are processed into sustainable skincare materials followed the research and development approaches of natural products. As a barrier to protect us from environment, skin also plays crucial role in immune function. It contains immune cells such as Langerhans cells, lymphocytes and macrophages, as well as immune regulatory molecules and cytokines such as IL and TNF. They jointly build skin immune barrier. However, UV and other environmental factors can weaken our skin immunity, resulting in reducing immune cells and releasing various inflammatory cytokines IL-α, TNF-α, etc., which lead to excessive sensitivity and cause even more severe skin problems. Active molecules work on immune regulation could be a good solution for repairing skin immune barrier. The development of actives for immune barrier repairing should be taken into consideration in skincare. Reishi, Ganoderma lucidum, has been used as an important tonic and anti-aging herb in Traditional Chinese Medicine (TCM), Kampo medicine and other Asian traditional medicine over 2000 years. Today, pharmacological and clinical researches showed that immune regulatory effects of Reishi could be the mechanism of its benefit. Reishi contains triterpenes, lipids, polysaccharides and steroids. Ganoderma triterpenes were confirmed by pharmacological study as immuno-modulatory actives. Ganoderma triterpene together with lipid components used in our study have been extracted efficiently by a high-pressure low temperature CO2 supercritical fluid extraction method as an oil-like form, “Reishi oil”. It has a good skin permeabilityand no organic solvent residue, which is suitable for skincare. Series of experiments were designed from in vitro to in vivo to verify skin efficacy and mechanism. By stimulating the inflammatory response of macrophages and mast cells, Reishi oil can significantly inhibit the production of inflammatory factors and mediators. An UVB-induced 3D-epidermis model was used to discover inflammatory modulation efficacy of Reishi oil. It significantly down-regulated inflammatory factors and mediators, while up-regulated the content of filaggrin, aquaporins-3 and Ki67 for barrier hydration, repairing and cell proliferating. Meanwhile, it can effectively inhibit the number of sunburn cells, improve the morphology of epidermis, providing us with physiological evidence to confirm that Reishi oil can protect skin tissue from UV-induced damage and has moisturizing, repairing and soothing effects. The clinical studies of Reishi oil with instrumental tests and consumer self-assessment was performed to evaluate direct skin benefit of this immune modulatory active. Reishi oil exhibited the effects of enhancing skin hydration, glossiness, elasticity and barrier function, together reducing skin wrinkles and sensitivity. In summary, in vitro and in vivo studies of Reishi oil have confirmed its skin benefits through a skin immune barrier repairing way. Significant skin quality improvements in sensitivity and skin aging were also observed in human clinical research. The biomass obtained from a good cultivation area; a green chemistry guided process; scientific evidence based raw material efficacy evaluation, all these provide Reishi oil a great potential as a sustainable natural skincare active.

C. Pretel-Lara, R. Sanabria-de la Torre, S. Arias-Santiago, T. Montero-Vilchez, **Skin Barrier Function and Microtopography in Patients with Atopic Dermatitis**, J. Clin. Med. 2024, 13, 5861

Background: Atopic dermatitis (AD) is a chronic inflammatory skin disease whose incidence is increasing. Skin barrier dysfunction plays an important role in this disease. It has been observed that AD patients have higher transepidermal water loss (TEWL) and lower stratum corneum hydration (SCH); however, there is little information about skin microtopography in this pathology. The objective

of this study is to evaluate skin barrier dysfunction and structural changes in patients with AD. Methods: A cross-sectional study was conducted including patients with AD. Parameters of skin barrier function were measured (TEWL, temperature, erythema, pH, skin hydration, elasticity) and also other topographical parameters (scaliness, wrinkles, smoothness, surface, contrast, variance) in both healthy skin and flexural eczematous lesions. Results: A total of 32 patients with AD were included in the study. Flexural eczematous lesions had higher erythema (369.12 arbitrary unit (AU) vs. 223.89 AU, $p < 0.001$), higher TEWL (27.24 g/h/m2 vs. 13.51 g/h/m2, $p < 0.001$), lower SCH (20.3 AU vs. 31.88 AU, $p < 0.001$) and lower elasticity (0.56% vs. 0.65%, $p = 0.05$). Regarding topographic parameters, flexural eczematous lesions presented greater scaliness (5.57 SEsc vs. 0.29 SEsc, $p = 0.02$), greater smoothness (316.98 SEsm vs. 220.95 SEsm $p < 0.001$), more wrinkles (73.33 SEw vs. 62.15 SEw $p = 0.03$), greater surface area (836.14% vs. 696.31%. $p < 0.001$), greater contrast (2.02 AU vs. 1.31 AU $p = 0.01$), greater variance (6.22 AU vs. 4.96 AU $p < 0.001$) and a lower number of cells (105.5 vs. 132.5 $p < 0.001$) compared to unaffected healthy skin, reflecting a decrease in skin quality in AD patients. Conclusions: Both skin barrier function and skin topography are damaged in patients with AD, with differences between healthy skin and flexural eczema.

B. Aral, **Testing Tactics in Skin - Evaluating Radiance and Texture**, Cosmetics & Toiletries Magazine, Vol. 139, No.9, October 2024

The K-beauty trend for flawless, “glass” skin aims to achieve a complexion so smooth, clear and luminous that it resembles a sheet of glass. The hydrated, even-toned skin with natural glow, all indicators of health, is now more desired than ever: Makeup looks of admired celebreties such as Jennifer Lopez, Hailey Bieber and bella Hadid reflect theses radiant, fresh and minimalistic qualities. As such, this article explores the meaning of skin radiance, its relationship to texture, and various ways to measure this desired attribute.

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. Nedelec, Z. Edger-Lacoursière, N. Gauthier, E. Marois-Pagé, S. Jean, **Randomized, controlled, withinpatient, single-blinded pilot study to evaluate the efficacy of 12-weeks of endermotherapy with adult burn survivors**, Burns, 2024 Sep 22:S0305-4179(24)00293-6

Background: Vacuum massage, or endermotherapy, is applied to scar tissue with the primary therapeutic goal of promoting structural or physiological changes. These changes are intended to enhance pliability, enabling the skin to possess the strength and elasticity required for normalmobility. The advantage of vacuum massage compared to therapist-generated manual massage is that it provides a standardized dosage using rollers and suction valves to mobilize the tissue. However, research documenting and supporting its impact on post-burn hypertrophic scar islacking. Thus, this tudy was designed to objectively characterize the changes in scar elasticity, erythema, melanin, thickness, and transepidermal water loss immediately after a vacuum massage session and after a 12-week course of treatment compared to intra-individual matched control scars. Methods: We conducted a prospective, randomized, controlled, within-patient, single-blinded clinical trial, initially designed as a fully-powered study but limited to a pilot study due to COVID-19 restrictions. Nineteen burn survivors consented to participate and 16 completed the study. Two homogeneous, intra-individual scars were randomized to usual care control or vacuum massage therapy plus usual care. Vacuum massage interventions were provided by a certified massage therapist three times per week for 12 weeks. Scar

characteristics were evaluated every four weeks immediately before and after mechanical massage treatment. The evaluations included measurements of elasticity (Cutometer), erythema and melanin (Mexameter), transepidermal water loss (TEWL) (Tewameter), and thickness (high-frequency ultrasound). Linear mixed-model analyses were performed to test for immediate and long-term treatment effects. Results: The ANOVA analyses revealed a non-significant time: treatment interaction for elasticity, erythema, melanin, thickness, or TEWL. There was a significant increase in elasticity and erythema and a decrease in TEWL in both the control and treatment sites over time with consistent standard care. However, there was no statistically significant immediate or long-term treatment effect for any of the skin characteristics. Nonetheless, the mean participant satisfaction was 4/5 (SD = 1.5) and the mean participant perception of effectiveness was 8/10 (SD = 1.9). Conclusions: This pilot study did not find a treatment benefit of vacuum massage therapy for elasticity, erythema, melanin, thickness or TEWL, but it did find an improvement with time in elasticity, erythema and TEWL. Despite the lack of objective improvement of the treated scar site, participants were satisfied with the results and believed vacuum massage was very effective. Further high-quality research is required to better inform clinicians patient education and treatment decisions for this costly, burdensome treatment approach that has high participant satisfaction.

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.

M. Roohaninasab, A. Jafarzadeh, A. Sadeghzadeh-Bazargan, S. Zare, M. Nouri, M.A. Nilforoushzadeh, E. Behrangi, **Evaluation of the efficacy, safety and satisfaction rates of platelet-rich plasma, non-cross-linked hyaluronic acid and the combination of platelet-rich plasma and**

noncross-linked hyaluronic acid in patients with burn scars treated with fractional CO2 laser: A randomized controlled clinical trial, Int Wound J. 2024;21:e70065, September 2024

Skin scarring can result from burns, injuries, stretch marks and acne, leading to cosmetic and functional difficulties. Treatments for burn scars encompass a range of options, such as lasers, corticosteroid injections, surgery and regenerative techniques such as platelet-rich plasma (PRP). Hyaluronic acid-based products offer skin hydration and shield against aging effects. A study is being conducted to evaluate how effective PRP injection, hyaluronic acid and their combination improve burn scars and their effects on quality of life and potential disabilities. In our study, PRP and non-cross-linked hyaluronic acid treatments were compared in 10 individuals with burn scars between 2022 and 2023. Patients received CO2 fractional laser treatment followed by injections in scar areas. Evaluations included the Vancouver scar scale (VSS), biometric assessments, ultrasounds and satisfaction ratings. Two therapy sessions were conducted at 1-month interval, and assessments were done before treatment, 1 month after the first session, and 3 months after the first session. Biometric assessments showed significant improvements in various parameters (tewametry, corneometry, erythema index, melanin index, cutometry, thickness and density) in the intervention groups compared to the placebo group ($p < 0.05$). PRP-non-cross-linked hyaluronic acid, PRP and non-cross-linked hyaluronic acid treatments exhibited the best clinical responses with significant differences between groups ($p < 0.05$). Dermal thickness did not show significant improvement during treatment sessions, and changes among subjects were not significantly different. The colorimetry parameter improved in all groups except the placebo group, with no significant difference between intervention groups. The VSS significantly decreased in all treatment groups except the placebo group. PRP, non-cross-linked hyaluronic acid and especially the combination of these two treatment options are very effective in treating burn scars.

M. Pelizzari, A. Mesfin Asrat, G. Bifulco, F. Rastrelli, G. Rastrelli, **Olive oil upcycled 'surf-active'for skin and hair**, PERSONAL CARE MAGAZINE, Volume 28, Issue 8, September 2024, p. 25-28

The use of common surfactants exposes well-known environmental issues such as low biodegradability and possible toxicological effects for human, animal and aquatic life, and adverse effects for skin and eye. Studies have shown the ecological impacts of commercially available surfactants, including anionic and cationic ones (quaternary ammonium compounds) due to their bioaccumulative properties and toxicity behaviour. The widespread and daily use of skin care and cleansing products has led over the years to concerns about water contamination by surfactants contained in cosmetic products.

M.-S. Yun, C. Kim, J.-K. Hwang, **Agastache rugosa Kuntze Attenuates UVB-Induced Photoaging in Hairless Mice through the Regulation of MAPK/AP-1 and TGF-β/Smad Pathways**, J. Microbiol. Biotechnol. (2019), 29(9), p. 1349–1360

Chronic exposure to ultraviolet (UV) radiation, regarded as a major cause of extrinsic aging or photoaging characterized by wrinkle formation and skin dehydration, exerts adverse effects on skin by causing the overproduction of reactive oxygen species. Agastache rugosa Kuntze, known as Korean mint, possesses a wide spectrum of biological properties including antioxidation, anti-inflammation, and anti-atherosclerosis. Previous studies have reported that A. rugosa protected human keratinocytes against UVB irradiation by restoring the anti-oxidant defense system. However, the anti-photoaging effect of A. rugosa extract (ARE) in animal models has not yet been evaluated. ARE was orally administered to hairless mice at doses of 100 or 250 mg/kg/day along with UVB exposure for 12 weeks. ARE histologically improvedUVB-induced wrinkle formation, epidermal thickening, erythema, and hyperpigmentation. In addition, ARE recovered skin moisture by improving skin hydration and transepidermal water loss (TEWL). Along with this, ARE increased hyaluronic acid levels by upregulating HA synthase genes. ARE markedly increased the density of collagen and the amounts of hydroxypoline via two pathways. First, ARE significantly downregulated the mRNA expression of matrix metalloproteinases responsible for collagen degradation by inactivating the mitogen-activated protein kinase/activator protein 1 pathway. Second, ARE stimulated the transforming growth factor beta/Smad signaling, consequently raising the mRNA levels of collagen-related genes. In addition, ARE not only increased the mRNA expression of antioxidant enzymes but also decreased inflammatory cytokines by blocking the protein expression of nuclear factor kappa B. Collectively, our findings suggest that A. rugosa may be a potential preventive and therapeutic agent for photoaging.

L. Ramaut, L. Moonen, M. Geeroms, G. Leemans, E. Peters, R. Forsyth, J. Gutermuth, M. Hamdi, **Improvement in Early Scar Maturation by Nanofat Infltration: Histological and Spectrophotometric Preliminary Results From a Split Scar–Controlled, Randomized, Double-Blinded Clinical Trial**, Aesthetic Surgery Journal Open Forum, August 2024

Background: The regenerative properties of stromal vascular fraction (SVF) in wound healing and scar formation are a subject of increasing clinical interest. Objectives: Although preclinical studies have confrmed the angiogenetic, proliferative, and antifbrotic properties of SVF, there is limited clinical evidence from randomized controlled clinical trials. Methods: Twelve patients who underwent abdominoplasty were included in this clinical study. Nanofat was mechanically obtained intraoperatively and infltrated intradermally in the sutured surgical wound, randomly assigned to either the left or the right side. The abdominal scar was evaluated with the Patient and Observer Scar Assessment Scale, whereas erythema and pigmentation were measured with a reflectance spectrophotometry device (Mexameter, Courage + Khazaka electronic GmbH, Köln, Germany). Histological analysis and electron scan microscopy of tissue biopsies were performed at 8 months. Results: The treated side of the scar showed signifcantly less erythema at 3- and 6-month follow-ups, but this difference reduced after 12 months. Patients reported better scar scores at the 6-month follow-up with a signifcantly better color at the treated side. Observers reported better overall scar scores at the treated side at 3-, 6-, and 12-month follow-ups, with better vascularization, pigmentation, and thickness. There was no statistically signifcant difference in terms of histological analysis between the 2 groups. There was no difference in the occurrence of adverse events between both sides. Conclusions: Infltration of nanofat exhibited promising results in surgical scar maturation characterized by less erythema and better texture. More clinical trials with a larger sample size are warranted to better elucidate the possible benefts of SVF on surgical scar formation.

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.

A. Kołodziejczak, H. Rotsztejn, **Combining Carboxytherapy and Selected Chemical Peels on Vascular and Pigmentary Components of the Dark Circles**, Clinical, Cosmetic and Investigational Dermatology 2024:17, p. 1875–1885

Objective: Particular attention is given to the enhancement of melanin-related pigmentation (dark circles, photoaging) and vascular circles, which are commonly located in the tear trough. The objective of the study is to provide an objective evaluation of the impact of carboxytherapy and the treatment regimen combining carboxytherapy with lactobionic acid (20%, pH 2.1) or ferulic acid (14%, pH 4.0–5.0) and ascorbic acid (12%) on skin defects in the eye area. Materials and Methods: A group of 39 Caucasian people were subjected to a series of fve carboxytherapy treatments (right eye area) and fve treatments combining carboxytherapy with a selected chemical peel for the skin around the eyes (left eye area). The effcacy of therapy was assessed based on parameters (MI and EI) measured with the Mexameter probe. Measurements were made in the tear trough and the middle of the lower eyelid. Results: We demonstrated that a series of carboxytherapy (right side) signifcantly statistically influenced the EI parameter (in different measurement points: $P < 0.0001$, $P = 0.015$, $P = 0.002$), which reflects the intensity of vascular circles under the eyes. Improvement of this parameter by 7.2 units was also shown in the tear trough in 82.1% of participants after the application of carboxytherapy combined with acids (left side) on the valley of tears for this parameter (EI). Lactobionic acid and carboxytherapy were associated with a statistically signifcant improvement ($P = 0.011$) in the tear

trough. In this study, a reduction in the combined pigmentation (MI plus EI) for both the right and left sides ($p = 0.001$ and $p = 0.015$, respectively) was observed. Conclusion: The study provides objective evidence for the effectiveness of sole carboxytherapy and carboxytherapy combined with acids in the reduction of dark circles, in particular vascular circles in the tear trough. Lactobionic acid, ferulic acid, and ascorbic acid can be used as safe supplements to enhance carboxytherapy.

K.-A. Lee, S. Kim, H.-Y. Song, M.K. Cho, H.-S. Kim, **A pilot study of skin barrier function in patients with systemic sclerosis and primary Sjögren's syndrome**, J Rheum Dis 2024;31(4): p. 244-252

Objective: Although the close interactions between the epidermis and dermis of the skin have been widely explored, the skin barrier functions of the stratum corneum (SC) in patients with systemic sclerosis (SSc) and primary Sjögren's syndrome (pSS) are not well known. We aimed to investigate the biophysical characteristics of the skin, including transepidermal water loss (TEWL), the SC water content, erythema, and the melanin index, in patients with SSc and pSS. Methods: This case-control study included 34 patients with SSc, 31 patients with pSS, and 25 healthy controls. All parameters were measured on the extensor surface of the forearm and compared between patients and healthy controls. In patients with SSc, we performed subgroup analyses by disease subtype (diffuse and limited cutaneous SSc), the modified Rodnan skin sclerosis score (>6 or ≤6), and comorbid secondary SS status. In patients with pSS, subgroup analyses were performed by anti-Ro/SSA antibody status and the findings of salivary gland ultrasound. Results: No statistically significant differences were observed in TEWL or skin hydration between patients with SSc and pSS and healthy controls. In the pSS group, only the erythema index was significantly increased compared to the control group. In subgroup analyses, no significant differences were observed in the extent of TEWL or skin hydration by disease subtype, severity, autoantibody profile, or comorbidities. Conclusion: Patients with SSc or pSS did not exhibit specific impairments of skin barrier function or skin hydration. Further studies with larger sample sizes and age-matched controls are required.

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.

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.

A. Guerra-Tapia, H. Martínez, C. Nieto, C. Ruiz Alonso, R. Bermejo, N. Carrón, S. Garcia-Segura, P. Gonzalez-Torres, D. Palacios-Martínez, L. Bou, M. Pérez, R. de Lucas, **A new topical biotechnological phytocomplex for truncal mild-moderate acne restores skin microbiota balance**, Skin Res Technol. May 2024

Background: The disruption of the microbial community or dysbiosis alters the functional composition, metabolic activity, and local distribution of the microbiota leading the development of acne. The aim of this study is to evaluate the effect of a lotion containing a biotechnological phytocomplex, niacinamide, and succinic acid in the bacterial diversity of subjects with truncal mild-moderate acne and its clinical benefits due to microbiota changes. Materials and Methods: Open, clinical study in 43 subjects with truncal mild-moderate acne treated with a lotion for 8 weeks. Bacterial diversity was analyzed by 16S rRNA gene sequencing of skin samples. Clinical effects were evaluated through IGA acne severity scale, biometric measurements, and safety. Results: After 56 days of product's use, an increase in richness alpha diversity was found ($p = 0.005$), with a decrease in Cutibacterium acnes relative abundance (66.43% vs. 58.11%, $p = 0.009$). The clinical results showed a decrease in IGA score (27.59% decrease; $p = 0.001$), the inflammatory lesions (52.12% decrease, $p = 0.006$) and erythema (18.33% decrease, $p = 0.007$), and desquamation index (63.83% decrease, $p = 0.02$). The responder analysis of the IGA score showed that 60.47% of patients improved by at least one point at day 56. The product was well tolerated along the study. Conclusion: The use of the lotion on acneic skin was effective on rebalancing the microbiota, inhibiting biofilm formation and other virulence factors, reducing erythema and desquamation, and improving acne's severity.

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.

E.J. Lee, J.H. Ryu, J.H. Baek, Y.C. Boo, **Skin Color Analysis of Various Body Parts (Forearm, Upper Arm, Elbow, Knee, and Shin) and Changes with Age in 53 Korean Women**, Considering Intrinsic and Extrinsic Factors, J. Clin. Med. 2024, 13, 2500

Background/Objectives: Skin color is innately determined by race and other genetic factors, and it also undergoes acquired changes due to various intrinsic and extrinsic factors. Previous studies on skin color have mainly focused on the face, and research has recently expanded to other body parts. However, there is limited information about the age-dependent changes in the skin color of these body parts. The purpose of this study is to analyze the differences in skin color between various body parts and the changes in skin color of each body part with age. Methods: This study examined

the skin color of 53 Korean women subjects evenly distributed in age from the 20s to 60s on several body parts: forearm, upper arm, elbow (extended or folded), knee (extended or folded), thigh, and shin. The lightness (L*), redness (a*), and yellowness (b*) were measured using a spectrophotometer, and the individual typology angle (ITA◦) was calculated from the L* and b* values. The melanin index and erythema index were measured using the mexameter. Results: The results showed that the elbow skin had the lowest L* and ITA◦ values and the highest a* and b* values among the examined body parts, followed by the knee. The melanin index and erythema index were also high in the skin of these body parts. In the analysis of age-dependent changes in the skin color of various body parts, the forearm skin exhibited the most notable decrease in the L* and ITA◦ values and increases in the a* and b* values, followed by upper-arm skin. The melanin and erythema indices in the forearm also increased as the subjects aged, whereas those in the elbow and knee rather decreased with age. Conclusions: This study suggests that differences in intrinsic and extrinsic skin aging in various body parts may be expressed as different changes in skin color and raises the need for cosmetic anddermatological research to identify the physiological significance of these changes.

Y. Yang, Z. Lv, Q. An, D. Xu, L. Sun, Y. Wang, X. Chen, X. Shao, T. Huo, S. Yang, J. Liu, H. Luo, Q. Quan, **Tricholoma matsutake polysaccharides suppress excessive melanogenesis via JNK-mediated pathway: Investigation in 8-methoxypsoralen induced B16–F10 melanoma cells and clinical study**, Heliyon 10 (2024) e29363

Skin hyperpigmentation is a worldwide condition associated with augmented melanogenesis. However, conventional therapies often entail various adverse effects. Here, we explore the safety range and depigmentary effects of polysaccharides extract of *Tricholoma matsutake* (PETM) in an *in vitro* model and further evaluated its efficacy at the clinical level. An induced-melanogenesis model was established by treating B16–F10 melanoma cells with 8-methoxypsoralen (8-MOP). Effects of PETM on cell viability and melanin content were examined and compared to a commonly used depigmentary agent, α-arbutin. Expressions of key melanogenic factors and upstream signaling pathway were analysed by quantitative PCR and western blot. Moreover, a placebo-controlled clinical study involving Chinese females with skin hyperpigmentation was conducted to measure the efficacy of PETM on improving facial pigmented spots, melanin index, and individual typology angle (ITA◦). Results demonstrated that PETM (up to 0.5 mg/mL) had little effect on the viability and motility of B16–F10 cells. Notably, it significantly suppressed the melanin content and expressions of key melanogenic factors induced by 8-MOP in B16–F10 melanoma cells. Western blotting results revealed that PETM inhibited melanogenesis by inactivating c-Jun N-terminal kinase (JNK), and this inhibitory role could be rescued by JNK agonist treatment. Clinical findings showed that PETM treatment resulted in a significant reduction of facial hyperpigmented spot, decreased melanin index, and improved ITA◦ value compared to the placebo-control group. In conclusion, these *in vitro* and clinical evidence demonstrated the safety and depigmentary efficacy of PETM, a novel polysaccharide agent. The distinct mechanism of action of PETM on melanogenic signaling pathway positions it as a promising agent for developing alternative therapies.

M. Bagheri, M. von Kohout, P.C. Fuchs, H. Seyhan, J.P. Stromps, R. Lefering, C. Opländer, J.L. Schiefer, **How to evaluate scar colour after burn injuries - A clinical comparison of the Mexameter® and the subjective scar assessment (POSAS/VSS)**, Burns, 2024 Apr;50(3): p. 691-701

Introduction: Scarring after burn injuries remains one of the major challenges in burn medicine and is the subject of current research. Accurate and high-quality assessment of scars is needed to enable exact outcome evaluation of different treatments. Our aim was to evaluate the most common subjective scar evaluation scores-the POSAS (Patient and Observer Scar Assessment Scale) and VSS (Vancouver Scar Scale)-in comparison with the objective device Mexameter® for colour evaluation. Methods: A prospective monocentre study was performed, which included 120 examined scar areas of 60 patients with third degree burns who had received skin grafts between 1975 and 2018 with a total burned surface area (TBSA) > 2%. Two different scar areas in comparison with one healthy skin area concerning 'colour', 'pigmentation', and 'vascularization' were evaluated by the Mexameter® MX 18, the OSAS, and the VSS by the same examiner, as well as the PSAS by the patient. Results: The mean TBSA of the 60 patients was 24.3%. In the OSAS, 61% of the scars were evaluated as 'hyper-', 19% as 'hypo-', and 19% as 'mix-pigmented'. Furthermore, 65% of the scars were estimated as highly vascularized. In the Mexameter®, the melanin index values of the scar areas compared to the healthy skin areas showed a small difference of 12 ($p < 0.05$). The mean difference of erythema between the scar and the healthy skin areas was 84 ($p < 0.001$). For the Mexameter®, moderate correlations were found when comparing 'erythema' with the OSAS category 'vascularization' ($r = 0.33$, $p < 0.05$) and 'melanin' with the OSAS parameter 'pigmentation' ($r = 0.28$, $p < 0.05$). When comparing the Mexameter® measurements to the OSAS questionnaire, 27% of the

scars were wrongly evaluated as 'hyperpigmented' by the observer and 21% as 'hypervascularized', while showing low measurements in the device. Additionally, a novel Mexameter® ordinal scare scale was calculated. Conclusion: In this study, we were able to show on a relatively large patient population that with the Mexameter®, the subjectivity of the scar colour assessment by examiner/patient can be overcome, but precise differentiation can still be ensured with subjective evaluation tools. We further introduced a novel Mexameter® Scar Scale. It is necessary to further investigate the vast range of objective devices and develop scar panels for with an incorporation of objective and subjective devices to further improve reliability with reduced bias in terms of scar assessment.

N. Vincent, A. Ravipati, J.M Reynolds, J. Kaufman, **Efficacy of Botulinum Toxin in the Treatment of Cutaneous Flushing: A Systematic Review and Meta-Analysis**, Dermatol Surg., 2024 Apr 1;50(4): p. 354-359

Background: Flushing is a common dermatologic complaint and can be resistant to many treatments. As the utility of botulinum toxin continues to expand, recent data suggest that it may also be a therapeutic option for flushing.Objective: To evaluate the efficacy of botulinum toxin for the treatment of cutaneous flushing.Materials and methods: A systematic search of Medline, Embase, Cochrane CENTRAL, CINAHL, Scopus, and Web of Science databases was conducted to identify studies evaluating the effect of botulinum toxin on flushing 1 month after treatment. Prespecified outcome measures included a clinical flushing score, dermatology life quality index (DLQI), and erythema index (EI). Meta-analysis was performed to calculate themean differences in these outcomes before and after treatment at 1-month follow-up. Results: Nine studies (132 patients) were included in the analysis of this study (2 randomized controlled trials and 7 nonrandomized studies). All studies had a low risk of bias (high quality). The most frequent outcome reported was a clinical flushing score, which significantly decreased by 1.25 points overall (95% confidence interval [CI]: -2.47; -0.04) 1 month after treatment with botulinum toxin. Mean DLQI scores decreased (i.e., improved) by 9.02 points (95% CI: -19.81; 1.77) 1 month after botulinum toxin injections. The EI (measured by Mexameter) before and after botulinum toxin was evaluated in 2 studies; however, not enough statistical information was provided to analyze with meta-analytic techniques. Conclusion: Based on this meta-analysis, botulinum toxin significantly improves clinical flushing scores 1 month after treatment.

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.

Y. Cao, X. Zhang, X. He, W. Wang, Y. Yi, Y. Ai, **Efficacy of ceramide-containing sunscreen on skin barrier**, J Cosmet Dermatol. 2024;23: p. 525–528

Background: UV rays not only cause oxidative damage to the skin, but also damage its barrier function. The use of sunscreen is crucial in preventing skin from UV radiation, but it may have an

impact on the function of the skin barrier. While much research has focused on the protective effects of sunscreen against UV oxidative damage, little is known about the impact of daily sunscreen use on the skin barrier. Objective: This study mainly investigated the changes in skin barrier function of volunteers (including those with sensitive skin) before and after using a ceramidecontaining sunscreen. Methods: A total of 60 volunteers used SPF30 sunscreen containing ceramide every morning. Using non-invasive methods to detect skin barrier changes in TEWL, hydration, facial redness based on VISIA-CR image, and Erythema index (EI) value after 4 weeks of using ceramide-containing sunscreen. Adverse reactions were also assessed. Results: After 4 weeks of using ceramide-containing sunscreen, significant reductions were observed in skin redness with both an 11.89% decrease in a* value and a 5.68% decrease in skin EI, while there was also a significant decrease in transepidermal water loss (TEWL) with a reduction of 22.96%, and a significant increase in skin hydration with a 21.96% increase in the moisture content of the stratum corneum. No adverseevents occurred during the entire testing process. Conclusion: Daily application of ceramide-containing sunscreen can increase skin hydration while enhancing the function of the skin barrier.

M. Coirier, M. Humeau, H. Muchico, E. Aymard, B. Closs, **An alfalfa quintessence to the benefit of a plural beauty**, HPC Today, Vol. 19(2), 2024

In the cosmetics industry, "plural beauty" is a concept that has been rising with the diversity equity and inclusion (DEI) movement. In line with this idea of considering all skin specificities, SILAB identified the main cutaneous characteristics of consumers in terms of ethnicity age, and gender. This approach highlighted that the three major beauty axes responding to universal expectations are all regulated by biological mechanisms taking effect in both the dermis and epidermis. The aim of the study was therefore to demonstrate how a Water & *Medicago sativa* (Alfalfa) Extract can respond to the needs of all skin types through a transversal action on both the dermis and the epidermis.

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.

C.A. Ysulat, H. Suzuki, S. Ushijima, S. Yoshimoto, **Lysolecithin ingredient to restore sensitive skin**, PERSONAL CARE MAGAZINE, Volume 25, Issue 4, April 2024, p. 60-63

The number of people suffering from sensitive skin caused by atopic dermatitis, allergies, air pollutants, temperature changes and stress is increasing, and sensitive skin cosmetics that claim low irritation and skin barrier repair have become essential products for such people. According to The prevalence of sensitive skin', 60-70% of women and 50-60% of men report having some degree of sensitive skin on surveys conducted in 20 different countries in five continents.

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.

S. Apsara, T. Opatha, R. Chutoprapat, P. Khankaew, V. Titapiwatanakun, W. Ruksiriwanich, K. Boonpisuttinant, **Asiatic acid-entrapped transfersomes for the treatment ofhypertrophic scars: In vitro appraisal, bioactivity evaluation, and clinical study**, International Journal of Pharmaceutics, Feb 2024

Non-invasive treatment options for hypertrophic scars (HTS) are limited, and treating HTS remains challenging due totheir unappealing appearance and associated social stigma. In this work, a novel transfersomal system named Asiaticacid-entrapped transfersomes (AATs) was prepared. AATs were evaluated for their skin permeability, anti-inflammatory activity, and other characteristic parameters to determine the most promising formulation. Asiatic acid-entrapped transfersomal gel (AATG), which was obtained by incorporating the lead AATs in a gel base, underwenttesting in an 8-week, double-blind, placebo-controlled, split-skin clinical study. The net skin elasticity (R5), melaninindex (MI), and skin surface hydration were analyzed employing Cutometer®, Mexameter®, and Corneometer®, respectively, in order to evaluate the effectiveness of the developed AATG. AATs exhibited vesicular sizes and zetapotential values within the range of (27.15 ± 0.95 to 63.54 ± 2.51 nm) and (-0.010 to −0.129 mV), respectively. TW80AATgave the highest %EE (90.84 ± 2.99%), deformability index (101.70 ± 11.59 mgs), permeation flux at 8 h(0.146 ± 0.005 mg/cm/h), and anti-inflammatory activity (71.65 ± 1.83%). The clinical study results of AATG indicated noadverse skin reactions. Furthermore, product efficacy tests demonstrated a significant reduction in MI and an increasein net skin elasticity at 2, 4, and 8 weeks. These pilot study outcomes support the effectiveness of the AATG.

W.N. Kuek, Y.R. Tiang, H.Y. Yow, L.K.S. Tan, C.W. How, Q.H.D. Looi, J.B. Foo, **Skin lightening properties of zerumbone cream: A placebo-controlled study**, J Cosmet Dermatol. Feb 2024

Objective: Despite the demonstrated anti-melanogenic and UV protective effects of Zerumbone (ZER) in vitro, there is a lack of clinical trials that have been doneto assess these properties. The primary objective of this study was to assess theeffectiveness of ZER in lightening the skin tone of human participants with a singleblind approach.Methods: Twenty-six participants were randomly assigned to two groups to investigate the application location (left or right volar forearm) for the placebo and ZER creams. Bothcreams were topically administered to the volar forearms twice daily over a duration of 4 weeks. Initial skin irritation was assessed before and 30 min after applying creams. The melanin and erythema levels were quantified with Mexameter MX 18. Results: Twenty participants were included in the analysis. The cream formulation had excellent physical properties and was well-received by the participants. The initial skin irritation study results indicated that neither of the creams elicited an allergic reaction. The administration of ZER cream resulted in a statistically significant reduction in melanin levels ($p < 0.05$) after 1 week compared to the initial baseline. Furthermore, after 2 weeks of application, ZER cream demonstrated significant differences in melanin levels compared to placebo ($p < 0.05$). No adverse effects were observed in the group using ZER cream. Conclusion: ZER demonstrated significant potential as a skin-lightening agent.

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.

M.A. Nilforoushzadeh, M. Heidari-Kharaji, N. Najar Nobari, E. Torkamaniha, S. Rafiee, M. Shahverdi, S. Tehrani, T. Fakhim, **Treatment of horizontal neck wrinkles by Endolift laser: Biometric measurement**, Skin Research & Technology, February 2024

Background: One of the common esthetic complaints of patients is horizontal neck wrinkles that have limited treatment modality. Aim: In the present study, we evaluated the efficacy of the Endolift laser on the horizontal neck wrinkles. Methods: Totally, 10 healthy female and male patients suffering horizontal neck wrinkles were joined in this study. All patients are treated with Endolift laser. The effectof the Endolift methods on the horizontal neck wrinkles was evaluated by biometric parameter changed resultswith Cutometer, Visioface, and the Skin Ultrasound Imaging system. Also, three blinded dermatologists and patients' satisfaction were evaluated. Results: The Visoface results showed that the Endolift laser treatment significantly decline the depth and area of horizontal neck wrinkle. The skin ultrasonography results reported the epidermis and dermis density and thickness were significantly increased. Also, the cutometer outcomes displayed that the Endolift laser treatment can increase skin elasticity. Also, significantly a greater number of patients were well satisfied with the technique. Conclusion: In conclusion, Endolift laser is a safe and effective method for decreasing the horizontal neck wrinkles and improving the appearance of the neck. This proceduredoes not require general anesthesia and recovery time.

S.H. Seong, Y.I. Lee, J. Lee, S. Choi, I.A. Kim, J. Suk, I. Jung, C. Baeg, J. Kim, D. Oh, J.H. Lee, **Low-molecular-weight collagen peptides supplement promotes a healthy skin: A randomized, double-blinded, placebo-controlled study**, J Cosmet Dermatol. 2024;23: p. 554–562

Background: Oral collagen peptides supplementation was reported to improve skin integrity and counteract skin aging. Aims: A randomized, double-blinded, placebo-controlled study was conducted to clinically evaluate the impact of low-molecular-weight collagen peptides on the human skin. Patients/Methods: Healthy adult participants ($n = 100$) were randomly assigned to receive a test product containing low-molecular-weight collagen peptides or a placebo. Parameters of skin wrinkles, elasticity, hydration, and whitening (melanin and erythema indexes) were measured at baseline and after 4, 8, and 12 weeks. Results: Compared with the placebo group, the average skin roughness, maximum of all peak-to-valley values, maximum peak height of the wrinkle, and average maximum height of the wrinkle were significantly improved in the test group. Parameters of skin elasticity, including overall elasticity, net elasticity, and biological elasticity, were also significantly improved in the test group at Week 12 as compared with the placebo group. Moreover, skin hydration and whitening parameters changed more significantly in the test group than in the placebo group. None of the participants experienced adverse events related to the test product. Conclusions: Taken together, these findings suggest that low-molecular-weight collagen peptides supplementation can safely ehance human skin wrinkling, hydration, elasticity, and whitening properties.

*P. Charipoor, M.A. Nilforoushzadeh, M. Khani, M. Nour, E. Ghasemi, M.A. Amirkhani, M. Eftekhari, B. Shokr*i, **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.

M. Furmanczyk, A. Brown, J. Bustos, A.R. Fernández de Henestrosa, C. Trullas, C. Granger, E. Jourdan, **Efficacy and tolerability of a depigmenting gel serum comprising tranexamic acid, niacinamide, 4-butylresorcinol, phytic acid, and a mixture of hydroxy acids that targets the biological processes regulating skin melanogenesis**, J Cosmet Dermatol. 2024

Background: The diverse causes of hyperpigmentation and complex nature of melanogenesis make it a challenge to manage. Current approaches either fail to deliver effective pigmentation control or have undesirable safety profiles that preclude their long-term use. Aims: To evaluate the capacity of a cosmetic gel serum comprising tranexamic acid,niacinamide, 4-butylresorcinol, phytic acid, and a mixture of hydroxy acids that was designed to target the biological processes regulating skin melanogenesis to attenuate melanin production in vitro and reduce hyperpigmentation clinically. Methods: Capacity to reduce melanin production in vitro was determined in melanocyte-containing reconstructed human epidermis (RHEm). Clinical efficacy and skin tolerability following twice daily application were assessed in 35 subjectswith slight to moderate facial hyperpigmentation by instrumental (VISIA®-CR, Mexameter®) and clinical (mMASI, clinical score, IGA for hyperpigmentation) evaluation on D14, D28, D56, and D84. Maintenance of pigmentation control was followed up 1 month after cessation of treatment on D112. Results: In RHEm in vitro, melanin production was reduced by 50.0% from baseline (D0) on D14 ($p < 0.001$) and by 67.0% on D21 ($p < 0.001$). Clinical reductions from baseline in brown spots count (-9.0%; $p < 0.05$), brown spots area (-16.7%; $p < 0.001$), and the melanin index (-11.4%; $p < 0.001$) were observed within 14 days of use. Statisticallysignificant improvements in all clinical parameters were achieved by D28. By the end of treatment on D84, the number and surface area of brown spots were reduced by28.4% and 40.3% compared to D0, respectively ($p < 0.001$, both), the melanin index was reduced by 31.1% ($p < 0.001$), mMASI was reduced by 63.0% ($p < 0.001$), and skin luminosity was increased by 79.0% ($p < 0.001$). IGA was reduced from 2.3 on D0 to 1.3 on D84 ($p < 0.001$). Improvements to all these parameters were maintained until D112, 1 month after termination of treatment. The product also demonstrated very good skin tolerability. Conclusion: A gel serum comprising tranexamic acid, niacinamide, 4-butylresorcinol, and hydroxy acids, designed to target the biological processes regulating skin melanogenesis, demonstrates rapid, robust, and sustained pigmentation control in this cohort.

S. Park, H. Jang, S.H. Seong, J.Y. Kim, E.J. Lee, Y.J. Bae, Y.J. Ahn, J. Kim, S.H. Oh, **The effects of long-pulsed alexandrite laser therapy on facial redness and skin microbiota compositions in rosacea: A prospective, multicentre, singlearm clinical tria**l, Photodermatol Photoimmunol Photomed, 2024 Jan;40(1)

Background: Rosacea is a chronic skin disorder characterised by abnormal neurovasculature and inflammation in the central region of the face. The efficacy of pulsed-dye laser and intense pulsed light treatments for rosacea have been demonstrated in several clinical trials. However, there is currently no research on the efficacy of long-pulsed alexandrite laser (LPAL) therapy alone for rosacea-related facial redness and its effect on skin microbiota. Aim: To evaluate the efficacy of LPAL therapy on facial redness in rosacea and assess changes in skin microbiota composition. Methods: Subjects with rosacea (n = 21, mean age: 39.2 ± 11.3 years) were recruited from two medical institutions and received monthly LPAL treatments (Clarity II™, Lutronic Corp.) for 3 months. At each visit, clinical photographs were taken, and erythema was measured using a spectrometer. At the initial and final visits, the Dermatology Life Quality Index (DLQI) and Skin Sensitivity Questionnaire (SSQ) were evaluated. Skin swabs were obtained at the initial and final visit, and facial microbiome composition was analysed using 16S rRNA amplicon sequencing. Results: After three LPAL treatment sessions, the average facial erythema index, measured using Mexameter® decreased significantly from 360.0 ± 96.7 at baseline to 312.0 ± 94.5 at the final visit ($p < .05$). The DLQI and SSQ showed significant improvement of symptoms. Skin microbiome diversity and relative abundance were altered significantly, particularly in the genera Clostridium, Lawsonella, Bacteroides, and Lactobacillus. Conclusions: LPAL therapy alone showed favourable efficacy for the treatment of facial redness in rosacea, with some impacts on the skin microbiota composition.

N. Akhtar, F. Menaa, N. Akhtar, N. Javed, A. Seth, M. Shahzad Khan, **Tocopherol succinate-loaded ethosomal gel synthesized by cold method technique: Deeper biophysical characterizations for translational application on human skin**, 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.

H.K. Sung, T.J. Kim, H.M. Kim, S.J. Youn, Y. Choi, N.Y. Lee, H.J. Oh, H.S. Kwon, S.M. Shin, **Anti-Wrinkle and Skin Moisture Effcacy of 7-MEGA™: A Randomized, Double-Blind, Placebo Comparative Clinical Trial**, Nutrients 2024, 16, 212

7-MEGA™ is a food product made from purifed Alaska pollack fsh oil containing palmitoleic acid (16:1), commonly referred to as omega-7. We sought to quantitatively evaluate whether this substance inhibits skin aging. A total of 101 middle-aged females were randomly allocated to the intervention (N = 50) or placebo group (N = 51). Each participant was advised to takeeither 500 mg of 7-MEGA™ or a placebo twice daily for 12 weeks. The primary outcomes were the degree of improvement in wrinkles and the degree of moisture flling after consumption for 12 weeks compared to baseline. The secondary outcomes were improvement in skin wrinkles; moisture changes at 4 and 8 weeks from baseline; changes in transdermal water loss, skin elasticity, the melanin index, the erythema index, and the Global Photo Damage Score. We found a signifcant improvement in skin wrinkles and elasticity at 12 weeks in the 7-MEGA™-consuming group compared to that in the placebo group; skin moisture, elasticity, and the melanin index were also improved. No supplementrelated adverse reactions were observed and 7-MEGA™ was identifed as safe. 7-MEGA™ was effective for human skin function in terms of wrinkles, moisture, elasticity, and melanin production and may be useful as a skin nutritional supplement.

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.

A. Jaros-Sajda, E. Budzisz, A. Erkiert-Polguj, **Ascorbic Acid Treatments as Effective and Safe Anti-Aging Therapies for Sensitive Skin**, Antioxidants 2024, 13, 174

The most common signs of aging skin include a decrease in firmness and density, uneven skin tone, and a tendency to erythema. There is an ever-increasing interest in aesthetic treatments that maintain the skin's favorable appearance. However, such therapies are difficult in the case of

sensitive skin, defined as a set of stimuli-triggered symptoms (stinging, erythema, burning, and itching) that would not appear in healthy skin. Sensitive skin is common and affects, to varying degrees, about half of the European population. This study was aimed at evaluating the effects of ascorbic acid—a known antioxidant—applied with sonophoresis and microneedling on the signs of photoaging in reactive and erythematous skin. A significant improvement in skin elasticity was observed after a series of tests. A significant reduction in erythema was observed after both therapies. The greatest reduction was observed on the cheeks after applying vitamin C combined with microneedling. At the same time, the results showed an excellent tolerance of both treatments, which proved them to be safe and effective.

S.H. Seong, Y.I. Lee, J. Lee, J. Suk, I.A. Kim, C. Baeg, J. Kim, J.H. Lee, **Oral consumption of Bonito fish-derived elastin peptide (VGPG Elastin®) improves biophysical properties in aging skin: A randomized, double-blinded, placebo-controlled study**, Skin Research & Technology, January 2024

Background: Recent in vitro and in vivo studies have suggested that the elastin peptide improves the skin's biophysical properties, enhancing the proliferation of fibroblasts and elastin synthesis, resulting in anti-aging properties. Therefore, we conducted a randomized, double-blinded, placebo-controlled study to clinically evaluate the effect of elastin peptide intake on human skin. Materials and Methods: Healthy adult participants (N = 100) were randomly assignedto receive a test product containing 100 mg of Bonito elastin peptide (VGPG Elastin®) or placebo. In this study, all participants were Asian from Korea. The parameters of skin wrinkles, hydration, and brightening (melanin index) were measured at baseline and 4, 8, and 12 weeks after intervention. Results: The average skin roughness, maximum peak-to-valley values, maximum peak height of thewrinkle, maximum valley depth of thewrinkle, average maximum height ofthe wrinkle, and eye wrinkle volume improved considerably in the test group compared with the placebo after 12 weeks of intervention. Skin hydration was enhanced, and the melanin index was significantly lower in the test group than in the placebo group. Noparticipant experienced adverse events related to the test product.Conclusion: Oral consumption of Bonito elastin peptide (VGPG Elastin®) reduced fine wrinkles, enhanced skin moisture, and decreased melanin index without significant adverse effects and may be a promising anti-wrinkle, anti-dryness, and anti-pigmentation treatment.

X. Zhang, D. Kerob, Z. Zhang, H. Tao, X. He, Y. Yi, X. Fang, W. Wang, A. Steel, **Efficacy and safety of a cream containing panthenol, prebiotics, and probiotic lysate for improving sensitive skin symptoms**, Skin Research & Technology, January 2024

Background: Sensitive skin is a common condition affecting a significant proportion of the population, and there is a growing demand for effective and safe management. Aim: To evaluate the efficacy and safety of a cream containing panthenol, prebiotics, and probiotic lysate as an optimal care for facial sensitive skin. Methods: A total of 110 participants (64 in group A and 46 in group B) with facial sensitive skin applied the cream twice daily for 28 days. Group A evaluated their sensitive skin, product efficacy, and product use experience at D0 (15min), D1, D14, andD28. In group B, skin barrier function-related indicators were measured at baseline and on D1, D7, D14, and D28. Dermatologists evaluated tolerance for all participants. Results: After 28 days of use, in group A, 100% of participants reported mildness and comfort with product use. Participants demonstrated significant improvements in skin barrier function-related indicators, including increased stratum corneum moisture content, reduced erythema index, elevated sebum content, decreased trans-epidermal water loss, and diminished skin redness parameter a* value (all $p<0.05$). Dermatologist evaluations revealed excellent tolerance among all participants. Conclusion: The panthenol-enriched cream with prebiotics and probiotic lysate exhibited substantial clinical efficacy in ameliorating facial sensitive skin conditions, coupled with a high safety profile.

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.

H. Cui, C. Feng, T. Zhang, V. Martínez-Ríos, P. Martorell, M. Tortajada, S. Cheng, S. Cheng, Z. Duan, **Effects of a lotion containing probiotic ferment lysate as the main functional ingredient on enhancing skin barrier: a randomized, self-control study**, Scientifc Reports, (2023) 13: 16879

There is an emergent need to develop functional cosmetic ingredients for the topical management of skin barrier function. This study aimed to investigate the efficacy of a lotion containing fermented lysates VHProbi® Mix R for enhancing the skin barrier. In vitro studies demonstrated that fermented cultures of both Lacticaseibacillus rhamnosus VHProbi® E06 (E06) and L. paracasei VHProbi® E12 (E12) had antioxidant capacity, showing promising scavenging capability for 2,2-diphenyl-1-picryl-hydrazyl. The antioxidant capacity of these strains was also demonstrated in the model of Caenorhabditis elegans. In addition, the fermented lysates of both E06 and E12 enhanced the proliferation of HaCaT cells and ameliorated the toxicity induced by Staphylococcus aureus ATCC 25923, hydrogen peroxide, and ultraviolet B radiation in the HaCaT cell models, which simulated the irritants that facial sensitive skin is exposed to. Subsequently, the ingredient VHProbi® Mix R was formulated using four kinds of fermented lysates: E06, E12, Lactiplantibacillus plantarum VHProbi® E15, and Lactobacillus helveticus VHProbi® Y21. A clinical study was conducted to investigate whether a lotion containing VHProbi® Mix R would be beneficial for people to enhance skin barrier. The participants were asked to use the investigational product for 30 days. Several indicators, including transepidermal water loss (TEWL), skin moisturization, and redness were measured at day 0 and day 30 using VISIA®-CR and CK®-MPA systems. Meanwhile, the burden of sensitive skin (BoSS) and self-assessment questionnaires were performed at baseline and endpoint of this study. The study data showed that at day 30, there was a significant decrease in TEWL ($P < 0.01$), redness measured by CK®-MPA ($P < 0.01$), and redness profile measured by VISIA®-CR compared with the baseline measurements. Skin moisturization had significantly increased after treatment with the lotion for 30 days. BoSS and self-assessment questionnaires also substantiated that the participants felt a markedly positive change in their sensitive skin. Hence, we hypothesize that applying the topical functional VHProbi® Mix R could confer effective benefits for people with sensitive skin and this represents a promising intervention for enhancing skin barrier.

A. Soto-Moreno, T. Montero-Vilchez, P. Diaz-Calvillo, A. Molina-Leyva, S. Arias-Santiago, **The impact of photodynamic therapy on skin homeostasis in patients with actinic keratosis: A prospective observational study**, Skin, Research & Technology, Volume 29, Issue 12, December 2023

Background: Photodynamic therapy (PDT) is an effective treatment for actinic keratosis (AKs), but there is little information on how PDT affects skin barrier function. The objectives of this study are: To compare skin barrier function between skin with AKs and healthy skin and to evaluate the impact of PDT on skin homeostasis in patients with AKs. Methods: A prospective observational study was conducted in patients with AKs to evaluate epidermal barrier function and skin homeostasis before and 1 ek after receiving PDT. Results: A total of 21 subjects were included in the study, male/female ratio was 17:4, mean age was 75.86 years. The number of AKS observed before starting treatment was reduced with respect to those diagnosed 1 month after starting PDT (14.83 vs. 1.91, $p < 0.0001$). Application of PDT for treating AKs modifies epidermal barrier function. Immediately after the first session temperature, transepidermal water loss (TEWL), stratum corneum hydration (SCH) and total antioxidant capacity (TAC) increased while pH decreased on lesional skin. After 1-month follow-up, the only remained change was the increased in SCH. Higher increases in temperature were observed when using occlusive PDT compared to mixed modality. 5-ALA and M-ALA seem to have a similar impact on skin barrier. Conclusions: PDT can improve skin barrier function in patients with AKs. Skin homeostasis parameters can be used to assess efficacy and optimize dosing.

J.-H. Wang, S.-J. Hwang , S.-K. Lee, Y. Choi, C.K. Byun, C.-G. Son, **Anti-Melanogenic Effects of Fractioned Cynanchum atratum by Regulation of cAMP/MITF Pathway in a UVB-Stimulated Mice Model**, Cells 2023, 12

Abstract: Based on traditional pharmacological applications and partial in vitro data, Cynanchum atratum (CA) is proposed to act on skin whitening. However, its functional evaluation and

underlying mechanisms have yet to be identified. This study aimed to examine the anti-melanogenesis activity ofCA fraction B (CAFB) on UVB-induced skin hyperpigmentation. Forty C57BL/6j mice were exposed to UVB (100 mJ/cm2, five times/week) for eight weeks. After irradiation, CAFB was applied to the left ear once a day for 8 weeks (the right ear served as an internal control). The results showed that CAFB significantly reduced melanin production in the ear skin, as indicated by the gray value and Mexameter melanin index. In addition, CAFB treatment notably decreased melanin production in α-MSH-stimulated B16F10 melanocytes, along with a significant reduction in tyrosinase activity. Cellular cAMP (cyclic adenosine monophosphate), MITF (microphthalmia-associated transcription factor), and tyrosinase-related protein 1 (TRP1) were also noticeably downregulated by CAFB. In conclusion, CAFB is a promising ingredient for treating skin disorders caused by the overproduction of melanin and its underlying mechanisms involving the modulation of tyrosinase, mainly mediated by the regulation of the cAMP cascade and MITF pathway.

M. Roohaninasab, F. Khodadad, A. Sadeghzadeh-Bazargan, N. Atef, S. Zare, A. Jafarzadeh, S.T. Rahimi, M. Nouri, M. Ali Nilforoushzadeh, E. Behrangi, A. Goodarzi, **Efficacy of fractional CO2 laser in combination with stromal vascular fraction (SVF) compared with fractional CO2 laser alone in the treatment of burn scars: a randomized controlled clinical trial**, Stem Cell Research & Therapy (2023) 14

Background: The appearance of skin scars is known as one of the main side effects of skin burns. Stromal vascular fraction (SVF), as a rich source of cell populations with tissue regeneration properties, plays an important role in the healing of skin lesions. Fractional CO2 lasers have occupied a special place in treating skin lesions, particularly skin scars, since their introduction. Our study aimed to compare the combination of SVF and fractional CO2 laser with fractional CO2 laser alone in the treatment of burn scars. Method: This double-blind clinical trial study was conducted on ten patients with burn scars that were treated three times with a fractional CO2 laser at site of burn lesions, and one of the two areas studied was randomly injected with SVF. Two months after completion of the procedure, patients' scars were assessed using the Vancouver scar scale (VSS), biometric criteria, and physician and patient satisfaction ratings. Results: The results confirmed a significant improvement in VSS, cutometry, R7 criteria, complete density sonography, and skin density sonography in the fractional CO2 laser-treated group. The VSS criteria, epidermal thickness sonography, complete density sonography, and skin density sonography in the group treated with the combination of fractional CO2 laser and SVF also showed significant improvement. The VSS criteria and melanin index of Mexameter in the group treated with SVF in combination with fractional CO2 laser were significantly better than the group treated with fractional CO2 laser alone. Also, physician and patient satisfaction in the group treated with SVF injection in combination with fractional CO2 laser was significantly higher than the other group. Conclusion: The results confirm the efficacy of SVF injection in combination with fractional CO2 laser in the treatment of burn scars and can be considered as a treatment option for better management of these lesions.

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.

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.

J. Kaufman-Janette, A. Cazzaniga, A. Jacobson, L.L. Eaton Jankov, K. Copeland, A. Behfar, S. Wyles, **Effect of Topical Platelet Extract Daily Serum as a Cosmetic Product to Reduce Facial Redness**, J Clin Aesthet Dermatol. 2023;16(10): p.48–51

Objective: The primary objective of this pilot study was to demonstrate the benefits of topical human platelet extract (plated)™ serum for the improvement of persistent facial redness. Methods: This single-center, open-label pilot study evaluated six subjects using (plated)™ serum containing human platelet extract (HPE) with Renewosome™ technology twice daily for six weeks. The primary efficacy endpoint was a reduction in the Clinical Erythema Assessment (CEA) grade, and a reduction in Patient Subjective Assessment grade at six weeks. Secondary endpoints included an improvement in quality of life related to facial redness, and a reduction in redness by Mexameter™ spectrometry measurement. Safety dataincluded monitoring for adverse events. Results: Topical HPE serum

demonstrated a statistically significant improvement in facial redness at Week 9 when averaging the Mexameter™ spectrometry results across nine regions of the face (p=0.0052). The primary and secondary endpoints were achieved. CEA grade at Week 6 demonstrated that all subjects improved by at least one grade, while one subject improved by two grades. One patient reported dryness. No other adverse effects were observed. Limitations: Study limitations included a small sample size and lack of darker skin types (Fitzpatrick IV-VI). Conclusions: This study demonstrates that topical HPE with Renewosome™ technology provides statistically significant reduction in facial redness and is safe and well-tolerated.

S. Varothai, P. Chaweekulrat, C. Pruksaeakanan, S. Wongdama, W. Boonchai, **Efficacy of panthenol- and bisabolol-containing lip care as monotherapy for mild-to-moderate cheilitis**, Int J Dent Hyg, 2023 Oct 24

Background: Cheilitis is a chronic inflammatory condition of the lips, and frequent or prolonged use of topical corticosteroids may lead to various adverse events. Therefore, alternative therapies with fewer side effects are beneficial for the treatment of this condition. Aim: To evaluate the efficacy of a lip care formulation containing both panthenol and bisabolol as a monotherapy for mild-to-moderate cheilitis. Methods: This single-centre prospective pilot open-label study included 20 patients with mild-to-moderate cheilitis who were treated with the tested lip care for 8 weeks and evaluated by physician and patient assessments before the final efficacy was determined using the Visioscan score.Results: Of the 20 patients, 13 (65.0%) presented with moderate cheilitis with dry and chapped lips. All parameters, including physician and patient clinical scores and bioengineering measurements, showed significant improvements as early as week 2 and sustained until week 8 following the application of the tested lip care. The frequency of cheilitis flareups also decreased significantly. The tested product was well tolerated without any adverse effects. Conclusions: Lip care with panthenol and bisabolol was safe and effective. It can be used as monotherapy for the treatment of mild-to-moderate cheilitis.

Z. Li, H.C. Wang, J. Chen, Y. Li, N. Yu, Y. Xiao, F. Du, X. Wang, J. Huang, X. Long, **Fat Grafting Reduces Skin Hyperpigmentation of Localized Scleroderma Patients: A Prospective Self-controlled Study,** Aesthetic Plast Surg., 2023 Oct;47(5): p. 2084-2092

Background: Localized scleroderma (LS) is characterized by skin fibrosis, hyperpigmentation and soft tissue atrophy. Fat grafting has been widely used to correct LS deformity. Objective: To investigate the effect of fat grafting on the skin pigmentation of LS lesions. Methods: A prospective self-controlled study was conducted. Skin melanin and erythema indexes were measured by Mexameter® MX 18 before and 3 months after surgery. Differences between lesions and contralateral normal sites were compared to evaluate changes induced by fat grafting. Localized Scleroderma Cutaneous Assessment Tool and PUMC Localized Scleroderma Facial Aesthetic Index were used for clinical evaluation. Results: Fourteen frontal linear LS patients participated in the study. Before surgery, the melanin index of the lesions was significantly higher than the contralateral sites (p = 0.023), while the erythema indexes were not significantly different (p = 0.426). Three months post-operation, the melanin index of the lesions significantly decreased (p = 0.008). There was no significant change in the erythema index of the lesions before and after fat grafting (p = 0.322). The LoSCAT and PUMC LSFAI scores demonstrated improved disease condition and facial esthetics after surgery. Conclusion: Fat grafting could alleviate skin hyperpigmentation and skin damage of LS lesions while having little effect on skin erythema and disease activity.

J.-O. Shin, D. Roh, K. Shin, H.-S. Kim, B.-S. Kim, M.-B. Kim, H.-C. Ko, **High-fluence 1064nm Q-switched Nd:YAG laser treatment for ectopic Mongolian spot,** Journal of Dermatological Treatment, 34:1, Oct 2023

Q-switched neodymium-yttrium aluminum-garnet (Q-switched Nd:YAG) laser has been reported as an effective treatment for nevus of Ota and acquired bilateral nevus of Ota-like macules (ABNOM). Dataon ectopic Mongolian spots have rarely been reported. The present study was performed to investigate the treatment efficacy of a high-fluence 1064nm Q-switched Nd:YAG laser without tissue whitening in ectopic Mongolian spots. We included 61 patients with ectopic Mongolian spots, and 70 lesions were examined. Thirty-three lesions were treated with a high-fluence 1064 nm Q-switched Nd:YAG laser, and 38 lesions were observed without treatment. The results were assessed using a 5-quantile grading scale and melanin index using a Mexameter®. Mean follow-up duration was 14.1±6.8months for the treatment group and 17.8±10.0months for the observation group. Mean 5-quintile grading scale at final follow-up was statistically different (p<0.001) between the two groups (treatment: 2.85±1.00, observation: 0.49±0.73). There was a significant difference (p<0.001) in the Δ melanin index (initial melanin index – final melanin index) between theobservation (7.1±62.7) and

treatment (156.7±78.4) groups.High-fluence Q-switched Nd:YAG laser without tissue whitening showed good results and waswell-tolerated in treating ectopic Mongolian spots.

L. Tamez Pedroza, E. Marquez, G. Cuartero, **Skin Biomechanical Characteristics Differences in Ultrasonic Liposuction Devices Used in Liposuction**, Plast Reconstr Surg Glob Open. 2023 Oct; 11(10 Suppl): 151

Introduction: New plastic surgery devices have been development to improve results in liposuction procedures like Vibration Amplification of Sound Energy at Resonance (VASER) is one of those devices that revolutionized liposuction surgery. Liposuction developed in 1977, with many changes over the years on cannulas, aspirating devices, assist with external devices on fat emulsification, tumescent infiltration, in late 1980s Zocchi described the use of ultrasonic lipoplasty in which fat was liquefied with ultrasonic energy and then evacuated from subcutaneous space reducing trauma and blood loss in patients. Vibration amplification of sound energy at resonance (VASER) is a third-generation ultrasound-assisted modality of liposuction. Which was introduced to the United States in the early 90s and now stands as the most popular of its kind. This system uses ultrasound energy at a 36 kHz frequency to separate the adipose cells from its tissue matrix through stable cavitation and acoustic streaming. By this mechanism it facilitates fat emulsification and extraction, preserving vascularization and improving the long-term aesthetic results4. In 2009 Nagy and Vanek published a multicenter, prospective, randomized, single-blind, clinical trial comparing VASER-assisted lipoplasty and Suction-Assisted lipoplasty finding improved skin retraction and reduction in blood loss compared to suction-assisted lipoplasty. Methods: This prospective study compared two different devices (VASER, Solta Medical Inc. Hayward Calif.) and the new HEUS (Inomedica, México) for liposuction procedures. Thirteen patients (2 males and 11 females) between the ages of 21 and 46 years received Ultrasound-Assisted liposuction with both devices, one side with HEUS-assisted liposuction and the contralateral side treated with VASER-assisted liposuction; the side of the patients treated with HEUS and VASER were randomized. We used the devices in the same conditions, same anatomical areas, time applied in each area, device power parameters (%), fat aspirated volume and surgeon, the assigned side was randomly assigned to VASER and HEUS. We measured bio-mechanical skin parameters: distensibility, Net-elasticity, Biological-Elasticity, Skin Hydration, Erythema and Melanin with cutometer MPA 580. 2 sides were compared. In the statistical analysis, no statistically significant differences were observed in any of the functional or biomechanical parameters. Conclusion: According to cutometer there was no difference between HEUS ultrasonic liposuction device and VASER, HEUS is a safe option to archive good results in liposuction surgery, this device is currently use over Mexico and Latin America.

M.A. Nilforoushzadeh, M. Heidari-Kharaji, T.F. Seyedeh, T. Hosseini, S. Rafiee, M. Shahverdi, N.N. Nobari, **Efficacy evaluation of endolift laser for treatment of nasolabial folds and marionette lines**, Skin Research & Technology, September 2023

Background: The nasolabial folds are the most marked sign of aging. Endolift laser was used for the treatment of nasolabial folds andmarionette lines (one of the facial danger zones). Methods: Ten female subjects were engaged in this study. Patients underwent Endolift laser for nasolabial folds and marionette lines treatment. The efficacy of the Endolift technique on the nasolabial folds and marionette lines was evaluated by biometric assessment with Cutometer, Visioface, and the Skin Ultrasound Imaging system. Also, patient's satisfaction and blinded dermatologists' assessment were assessed. Results: The Visoface results displayed that the Endolift laser treatment significantly declined the depth and area of the nasolabial wrinkles. The skin ultrasonography results reported that the epidermis and dermis density and thickness were significantly increased. Also, the cutometer outcomes showed that the Endolift laser treatment can increase skin elasticity. The results showed that a large number of patients were very satisfied with the technique. Conclusion: In conclusion, Endolift laser has an effective technique for decreasing the nasolabial folds, marionette lines, and improve the appearance of the face without any sever side effect. This technique does not need general anesthesia and recovery time.

M.A. Nilforoushzadeh, M. Heidari-Kharaji, T. Fakhim, E. Torkamaniha, S. Tehrani, S. Delavar, S. Rafiee, M. Nouri, N. Najar Nobari, M. Shahverdi, **Treatment of periorbital hyperpigmentation using sublative fractional radiofrequency (SFR)**, Skin Research & Technology, Volume 29, Issue 9, September 2023

Background: Periorbital hyperpigmentation (POH) is a common cosmetic concern. Numerous techniques of treatment have been assessed with variable results. Aim: The purpose of this research is to assess the efficacy of non-ablative radiofrequency, Sublative fractional Radiofrequency (SFR) on POH treatment. Methods: In this research study, nine patients with POH and the age range of 25–57

years, were enrolled. The patients were treated by non-ablative radiofrequency SRF. The outcomes were assessed by biometric assessment. The skin lightness and melanin content of the periorbital skin were assessed by colorimeter and Mexameter. Skin elasticity was assessed by Cutometer. The skin ultrasound imaging system was used to evaluate the diameter and density of the epidermis and dermis. Visioface was used to evaluate the skin color and wrinkles. Also, patient's satisfaction and physician's assessment were assessed. Results: The results showed that the lightness and elasticity of the periorbital skin were significantly increased after treatment. Also, the melanin content of the skin was decreased. The denser skin layers were seen in both dermis and epidermis. The Visioface results displayed the reduction in the percent change of the skin color and wrinkle ($p < 0.05$). Similarly, the physician and patients' assessment confirmed the outcomes. No serious adverse effect was reported. Conclusion: In conclusion, the SFR technique is an effective and satisfactory therapeutic choice for treatment of POH.

A. Jeanneau, C. Lubrano, ***Padina pavonica*** **thallus extract, the ultimate cosmetic active to preserve the skin from aggression**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Skin is constantly exposed to environmental aggressions which disturb its homeostasis by accelerating ageing and the development of dermatological diseases. There are many ways to evaluate the effects of exposomal factors on the skin. This study was designed to assess the efficacy of a natural extract developed from *Padina pavonica* alga to protect the skin from deleterious consequence of pollution. Our research was first carried out *in vitro* on keratinocytes and fibroblasts after an exposure to particles matter PM10 pollutant with or without PPTE at 0.4%. Biological markers of the skin barrier and cell's defenses mechanism (antioxidant, DNA repairing and cell's division), as well as impact on the dermis structure (extracellular matrix components) were investigated. Then, the clinical effects of PPTE extract at 3% in a basic cosmetic formula versus placebo on adult skin regarding exposome factors were evaluated by using the tapestripping aggression that elicit an acute stress response. Measure of the TEWL (TransEpidermal Water Loss) and skin erythema has highlighted that PPTE extract has a global protective effect to improve the skin defense against external aggression.

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.

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.

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.

L. Du, P. Ma, Y. Zhou, X. Cai, L. Shen, G. Huo, **Insights into the inhibition performance of glabridin against melanin via a clinical and in vitro study**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Melasma is a common skin disorder characterized by alterations in normal skin pigmentation. Glabridin has been confirmed to have anti-melanogenesis activity in skins. However, the clinical whitening effects of glabridin still remain to be investigated. The present work aimed to elucidate the clinical whitening performance in melasma and non-melasma areas by the whitening serum containing glabridin. Furthermore, the inhibitory mechanisms on melanogenesis of the whitening serum containing glabridin was also evaluated by 3D skin model. The whitening serum effectively improved apparent chromaticity of the melanin model, increased the L* value and regulated the content and distribution of melanin. A 56 day clinical experiment showed that glabridin effectively improved the skin glossiness and ITA value in both melasma and non-melasma areas. Meanwhile, a remarkable reduced melasma area proportion and the melanin content was observed in melasma area and non-melasma area, respectively. This work suggested that a formula containing glabridin could effectively improve pigmentation by 3D skin model and clinical results.

Y. Yu, S. Li, S. Ding, K. Yang, C. Liu, **Study on the effect of facial mask preparation of sulfated fucan combined with sodium hyaluronate on sensitive skin**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Objective: To study the efficacy of the mask prepared by sulfated fucan and sodium hyaluronate on sensitive skin. Methods: In vitro experiments, L929 Mouse Fibroblasts Cells scratch method, HaCaT cell viability assay and inhibition of inflammatory factors release induced by LPS from RAW264.7 cell. In humans, a single-center open, 4-week continuous before and after control experiment was conducted. 32 sensitive skin subjects used the facial mask three times a week. After 4 weeks , the repair efficacy can be verified by means of instrument test and before and after control. Results: After 24h of cell scratch culture, 0.1% and 1% sample groups all had a certain effect on promoting the healing of the scratch area. The 0.01%, 0.1% and 0.5% sample showed no toxicity to HaCaT cell, and 0.5% concentration had the best effect on cell proliferation. 0.001% of the samples

had a better effect on inhibiting the release of inflammatory cytokines IL-β and IL-6. After 4 weeks, compared with before use, the increase rate of skin moisture content in the test area was 13.87% *(P*<0.001) , the reduction rate of TEWL value was 16.21% (*P*=0.001), the reduction rate of a* value was 10.20% (*P*<0.001) and the reduction rate of EI value was 8.13% (*P*<0.001). More than 90% of the subjects were satisfied with improvement of skin redness, itchiness, tightness, stinging, hot and dry, agreed that the test samples were mild and non-irritating. Conclusion: The facial mask has a good effect of anti-inflammatory, moisturizing, promoting skin barrier repair and relieving facial redness.

Y. Zhou, P. Ma, X. Cai, L. Du, L., Shen, G. Huo, **A Clinical Study on the Efficacy of a Cosmetic Serum Containing Five Active Whitening Ingredients**, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Facial pigmentation disorders and dull, dark skin tone are common complaints of women. Various whitening cosmetic products are developed to treat these problems. This study was conducted to evaluate the efficacy of a cosmetic serum containing five active whitening ingredients: glabridin, Cystoseira tamariscifolia extract, hydrolyzed conchiolin protein, phenylethyl resorcinol and niacinamide. Thirty-five healthy Chinese females, aged 25-55 years old, with mild-to-moderate pigmentation were enrolled in the 12-week, double-blind, single centre clinical study. Instrumental assessments, clinical evaluation and self-assessment were obtained at baseline, 2 weeks, 4 weeks, 8 weeks and 12weeks. Thirty-three subjects completed the entire study. After 12-week treatment, Mexameter MX18 results demonstrated a statistically significant decrease in melanin index (MI) value($p < 0.001$), and Colorimeter CL400 results demonstrated a statistically significant increase in L* value and ITA°value($p < 0.001$). VISIA-CR photographs demonstrated a statistically significant decrease in spots area ratio ($p < 0.001$). Clinical evaluation results showed a statistically significant decrease in brightness score($p < 0.001$) after 2 weeks and the score continued to decrease throughout the 12-week treatment. In addition, self-assessment showed a good satisfaction of the whitening efficacy. All these results proved the cosmetic serum has a good whitening efficacy in lightening skin tone and improving facial pigmentation.

N. Saewan, A. Jimtaisong, N. Panyachariwat, P. Chaiwut, **In Vitro and In Vivo Anti-Aging Effect of Coffee Berry Nanoliposomes**, Molecules 2023, 28, 6830

Encapsulation of bioactive compounds in the liposome system provides several advantages, such as enhancing the stability and lowering the toxicity of active compounds. Coffee berry extract (CBE) has previously been established to have in vitro anti-aging properties and to retard the aging of human skin. The purposes of this study were to encapsulate CBE in nanoliposomes and to assess its stability and in vitro anti-aging potential in human dermal fibroblasts (HDF), as well as in healthy human skin. In the HDF model, anti-aging potential was determined by nitric oxide (NO) and collagenase inhibition assays and a superoxide dismutase (SOD) activity assay, whereas in healthy human skin (in vivo), the skin elasticity and brightness were examined. First, liposomal CBE (L-CBE) was created with a particle size of 117.33 ± 2.91 nm, a polydispersity index (PDI) of 0.36 ± 0.03, and a zeta potential of -56.13 ± 1.87 mV. The percentages of encapsulation efficacy (%EE) and loading efficacy (%LE) were 71.26 ± 3.12% and 2.18 ± 0.18%, respectively. After undergoing a 12-week stability test, the L-CBE retained more phenolic content than the free CBE when stored at 4 °C, room temperature, and 45 °C. Compared to free CBE, the L-CBE demonstrated a more consistent, elevated, and prolonged release of phenolics from the lipid system. In human dermal fibroblasts, L-CBE showed lower toxicity, and at its maximum nontoxic concentration (10 mg/mL), it exhibited slightly higher anti-aging effects than CBE, including NO inhibition, enhanced SOD activity, and anti-collagenase activities. In clinical trials (30 volunteer subjects), none of the participants' skin was irritated when the L-CBE, the CBE, or base creams were applied. After 2 weeks of application, the L-CBE and CBE creams both demonstrated an improvement in skin elasticity and a reduction in melanin levels, and after 4 weeks, L-CBE cream showed a significantly greater improvement in skin elasticity and lightening. The results demonstrate that the encapsulation of the CBE in liposomal systems could increase its stability and skin penetration, reduce its toxicity, and maintain its anti-aging effect, which is powerful enough to be exploited in anti-aging and whitening agents for application in cosmetics and cosmeceuticals.

J.V. Gruber, N. Terpak, J. McCormack, S. Massard, A. Schwartz, C. Lyon, **Jojoba Oil Esters – Ease inflammation, sensitivity and water loss,** Cosmetics & Toiletries September 2023

Recent climate change has triggered significant heat-related events including water shortages and even severe droughts throughout the world. This has brought profound attention among other

concerns, the need to focus carefully on pragmatic use and careful management of precious water resources.

A. Płatkowska, S. Korzekwa, B. Łukasik, N. Zerbinati, **Combined Bipolar Radiofrequency and Non-Crosslinked Hyaluronic Acid Mesotherapy Protocol to Improve Skin Appearance and Epidermal Barrier Function: A Pilot Study**, Pharmaceuticals 2023, 16, 1145

Background: Age-associated changes in epidermal hydration, pigmentation, thicknessand cell renewal influence skin appearance and can lead to laxity, dryness and poor skin tone. The aim of this pilot study was to assess the synergistic effects of a new bipolar radiofrequency plus non-crosslinked hyaluronic acid (HA) mesotherapy protocol compared with radiofrequency alone on skin appearance and markers of epidermal function. Methods: This prospective, singlecenter, split-face pilot study recruited women aged 25–65 years with dryness and laxity of the facial skin defined by a trans-epidermal water loss (TEWL) value of ≥26 g/m2/h. Subjects were treatedwith a bipolar radiofrequency device on both sides of the face. This was immediately followed byneedle hyaluronic acid (HA) treatment on one side of the face with 2.5 mL of a non-crosslinked HA. Photographic documentation, analysis of epidermal barrier function parameters, and highfrequency (HF) ultrasound analysis were performed prior to treatment and at 28 days. Results:Twenty female subjects with a mean age of 46 (range 29 to 54) years and dry and lax facial skin were included. TEWL was reduced and skin hydration improved to a greater extent with the combinedradiofrequency plus mesotherapy protocol compared with radiofrequency alone (-5.8% vs. +3.9%and +23.1% vs. +1.0%, respectively). The combined protocol was also associated with greaterimprovements in melanin (-7.5% vs. -1.5%) and erythema values (-7.2% vs. +3.0%), respectively. Ultrasound measures of epidermal thickness and epidermal density were greater after the combinedprotocol compared with radiofrequency alone (12.0% vs. 5.6% and 57.7% vs. 7.1%, respectively). Both treatments were well-tolerated. Conclusions: The combined bipolar radiofrequency and HA mesotherapy protocol provided greater improvements in skin hydration, firmness and tone compared with radiofrequency alone. The combination treatment was also associated with greater epidermal thickness and density and increased keratinocyte differentiation suggesting a synergistic effect of both treatments on epidermal homeostasis and barrier function. Both treatments were well-tolerated and led to improvements in facial appearance.

A. Treesirichod, C. Kritsanaviparkporn, P. Sangaphunchai, S. Chansakulporn, **Correlation between Acanthosis Nigricans Scoring Chart (ANSC) and narrowband reflectance spectrophotometer in assessing severity of acanthosis nigricans**, Skin Res Technol. 2023;29

Introduction: There is a lack of standardized tool to monitor treatment outcome of acanthosis nigricans. To meet this end, we developed the Acanthosis Nigricans Scoring Chart (ANSC) that evaluates skin color (score range of 1–8) and skin texture (score range of 1–6), which adds up to a total ANSC score (score range of 2–14). We aimedto determine the correlation of ANSC to narrowband reflectance spectrophotometry and to evaluate its reliability.Methods: A cross-sectional studywas conducted in adult acanthosis nigricans patients.Two raters independently graded participants using ANSC twice, in which scores were correlated to readings from Mexameter MX18. Intra- and interrater reliability were also evaluated via intraclass correlation coefficient (ICC). Results: Participants had mean (sd) melanin and erythema indices of 615.8 (176.2) and 451.4 (53.4), respectively. Mean (sd) total ANSC score was 9.43 (2.43). The totalANSC score and skin color subdomain demonstrated strong correlations ($r > 0.6$) with spectrophotometric results, whereas skin texture showed a moderate correlation ($r = 0.4–0.6$). Total ANSC score generally had excellent intra- and interrater reliabilities (ICC > 0.85). Conclusion: The total ANSC score and its subdomains strongly correlate with spectrophotometer and demonstrate excellent reliability in assessing acanthosis nigricans.

M.A. Nilforoushzadeh, M. Heidari-Kharaji, M. Shahverdi, M. Nouri, R. Enamzadeh, N. Najar Nobari, T. Fakhim, S. Rafiee, **Microneedle fractional radiofrequency in the treatment of periorbital dark circles**, J Cosmet Dermatol. 2023;22: p. 2218–2224

Background: Periorbital hyperpigmentation (POH) is a common disorder in the patients. Women are more upset with POH in compare to males. Several methods have been used to the POH, with different efficacy and adverse reactions. Aim: The aim of the present study is to evaluate the efficacy of microneedle fractional radiofrequency (MRF) in treating POH. Methods: So, nine patients with POH and the age range of 25–57 years, were treated by microneedle fractional radiofrequency (MRF). The outcome was evaluated via biometric assessment. The colorimeter was used to assess the skin lightness. Mexameter was used for evaluated the amount of Melanin in the periorbital skin. Cutometer was used for skin elasticity assessment. The skin ultrasound imaging system was utilized to estimate the epidermis and dermis diameter and density. Furthermore, Visioface was applied to

assessed the skin color and wrinkles. Also patient's satisfaction and physician's assessment were evaluated. Results: The results displayed that the periorbital skin lightness 32.38% ± 5.67 and elasticity of the R2: 40.29% ± 8.18, R5: 39.03 ± 5.38 and R7: 42.03% ± 14.16 were significantly improved after treatment ($p < 0.05$). Also the melanin content of the skin was decreased (49.41% ± 9.12). The skin layers were denser in the dermis and also in the epidermis (skin density: 30.21% ± 10.16 and skin thickness: 41.12% ± 13.21) ($p < 0.05$). The results revealed the decrease in the percent change of the skin color (30.34% ± 9.30) and wrinkle (area: 25.84% ± 6.43 and volume: 30.66% ± 8.12)($p < 0.05$). Similarly, the physician and patient's assessment were confirmed the obtained outcomes. Conclusion: In conclusion, the microneedle RF technique is practicable, effective and safe method for periorbital dark circles treatment.

H.M. Shoaib Khan, N. Tanveer, T. Arshad, F. Rasool, M.N. Uddin, M. Kazi, **Encapsulation of alpha arbutin, a depigmenting agent, in nanosized ethosomes: Invitro and invivo human studies**, Heliyon 9 (2023) e19326

Alpha arbutin is a skin-whitening agent in cosmetics. Structurally, it is 4-hydroxyphenyl-α-glucopyranoside. Ethosomes encourage the formation of lamellar-shaped vesicles with improved solubility and entrapment of whitening agents. The objective of this study was to fabricate an optimized nanostructured ethosomal gel loaded with alpha arbutin for the treatment of skin pigmentation. Different ethosomal suspensions of alpha arbutin were prepared by the cold method. *Invitro* evaluation included zeta potential, droplet size analysis, polydispersity index, entrapment efficiency (EE), scanning electron microscopy (SEM) and Fourier transform infrared (FTIR) spectroscopy. Stability studies of the optimized ethosomal and control gels were performed for three months under different temperature conditions. The optimized ethosomal gel loaded with alpha arbutin was further analyzed on human volunteers for skin benefits by measuring melanin level, moisture content and elasticity. It was concluded that the optimized formulation had a size, zeta potential, polydispersity index and entrapment efficiency of 196.87 nm, - 45.140 mV, 0.217 and 93.458343%, respectively. Scanning electron microscopy (SEM) depicted spherical ethosomal vesicles. Stability data was obtained in terms of pH and conductivity. Rheological analysis revealed non-Newtonian flow. The cumulative drug permeated for ethosomal gel was 78.4%. Moreover, encapsulation of alpha arbutin causes significant improvement in skin melanin, moisture content and elasticity. The overall findings suggested that the arbutin-loaded ethosomal formulation was stable and could be a better approach than conventional formulation for cosmeceutical purposes such as for depigmentation and moisturizing effects.

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.

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%).

G. Gentili, P. Perugini, S. Bugliaro, C. D'Antonio, **Efficacy and safety of a new peeling formulated with a pool of PHAs for the treatment of all skin types, even sensitive**, J Cosmet Dermatol. 2023; p. 22: p. 517–528

Background: Actually, the use of chemical peels in cosmetics and dermatology continues to grow due to their versatility, clinical endpoint–directed predictability, and favorable risk profile in comparison to lasers. The chemical peel is a generally safe method for treatment of some skin disorders and to refresh and rejuvenate the skin. The major challenge of chemical peels is the tolerability, that is because of sensitive skin which is one of the most common skin disorders. Aim: The aim of this study was to evaluate the effectiveness of the new Miamo Renewal Peel Serum formulated with a pool of new generation acids (ELPA25™) on sensitive skin with respect to mandelic acid serum only and with respect to placebo comparison. Materials and Methods: The “in vivo” study following the half-face experimental protocol active versus placebo involved 30 healthy Caucasian female volunteers between 25 and 64 years, with sensitive skin, who were divided into two different groups. ELPA25™ serum was applied in one group three times a week for 8 weeks. The other group, with the same protocol, applied an active serum containing mandelic acid, as control, versus placebo. In particular, skin moisturizing, skin viscoelastic properties, skin surface smoothness, wrinkle reduction, and stratum corneum renewal were evaluated. Results: Renewal Peel Serum was very well tolerated from sensitive skin. A significant decrease in skin roughness and wrinkle breadth, and an improvement in firmness and in skin elasticity, was observed after 2 months of treatment with respect both to mandelic acid serum and to placebo comparison. Conclusions: Scientific protocol using self-controlled study methodology and noninvasive skin bioengineering techniques with adequate statistical methods were able to evaluate both the safety and the efficacy of the new Miamo Renewal Peel Serum. This study highlighted that the Miamo Renewal Peel Serum formulated with a patent-pending mixture of new generation acids (ELPA25™) exerts many beneficial effects and it can be successfully employed for sensitive skin.

K.C. Kwon, J.G. Won, M.S. Kim, Y.W. Shin, S.-W. Park, Y.-S. Song, **Anti-acne activity of carnitine salicylate and magnolol through the regulation of exfoliation, lipogenesis, bacterial growth and inflammation**, Skin Research & Technology, June 2023

Background: Salicylic acid has been used as an anti-acne agent with its comedolytic property and antimicrobial activity. However, there is a limit to use for leave-on cosmetics because of the transient skin irritation and low efficacy at neutral pH condition. We prepared a salicylic acid-based ionic pair with L-carnitine (we named, IP-BHA) overcoming the limitation of salicylic acid. We examined the effect of IP-BHA as well as the combination effect with magnolol, a bioactive organic lignan, in order to clarify their efficacy as anti-acne agents. Methods: After verifying the structure of IP-BHA, we confirmed anti-acne activities including the regulation of exfoliation, lipogenesis, bacterial growth, and inflammation with IP-BHA and/or magnolol. Results: The antibacterial activity of IP-BHA and magnolol was evaluated by determining the minimum antibacterial inhibitory concentration. Magnolol showed strong activity against *Cutibacterium acnes*, which was better than a medical antibiotic acne drug, clindamycin. The combined application with IP-BHA was more effective in antibacterial activity by 2.5 times. It was confirmed that testosterone-induced lipogenesis was significantly inhibited by treatment with IP-BHA and magnolol, while single treatment had no significant inhibitory effect. Interestingly, MMP-1 and VEGF were induced by *C. acnes* lysate in human keratinocytes. We found that these inflammatory molecules were completely inhibited by combined application of IP-BHA and magnolol. Through ex vivo test, the dose-dependent exfoliation effect of IP-BHA was confirmed at pH 5.5, and the synergic exfoliation effect was shown in the combined application of IP-BHA and magnolol. When topically applied, the emulsion containing IP-BHA and magnolol relieved the sodium dodecyl sulfate-induced erythema and improved inflamed acne with papule and pustule.

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.

J. Kim, S. Park, J.Y. Kim, E.J. Lee, Y.J. Bae, S.H. Oh, **Effects of Long-pulsed Alexandrite Laser Treatment on the Microbiome in Rosacea Patients,** Poster Presentation at the 1st Congress of Investigative Dermatology, Tokyo, May 2023

Facial flushing and telangiectasia are the common and treatment-resistant symptoms of rosacea. Lasers targeting skin vasculature with wavelengths selectively absorbed by oxyhemoglobin such as the pulsed-dye laser (PDL, 595 nm) and long-pulsed Nd:YAG (1,064 nm) are used for treatment of rosacea. The efficacy for rosacea is supported by previous clinical trials. The 755-nm long-pulsed Alexandrite laser (LPAL) have shown efficacy in skin vascular lesion by penetrating deeper into the dermis than PDL. In previous study, we have demonstrated that long-pulsed alexandrite laser (LPAL) showed comparable efficacy with PDL in a split-face study. However, the effect of LPAL on the facial redness and subjective symptoms in regards to facial microbiome has not been studied.

A. Lubczyńska, A. Garncarczyk, D. Wcisło-Dziadecka, **Effectiveness of various methods of manual scar therapy,** Skin Research & Technology, Volume 29, Issue 3, March 2023

Background: The skin is a protective barrier of the body against external factors, and its damage leads to a loss of integrity. Normal wound healing results in a correct, flat, bright, and flexible scar. Initial skin damage and patient specific factors in wound healing contribute that many of these scars may progress into widespread or pathologic hypertrophic and keloid scars. The changes in cosmetic appearance, continuing pain, and loss of movement due to contracture or adhesion and persistent pruritis can significantly affect an individual's quality of life and psychological recovery post injury. Many different treatment methods can reduce the trauma and surgical scars. Manual scar treatment includes various techniques of therapy. The most effectiveness is a combined therapy, which has a multidirectional impact. Clinical observations show an effectiveness of manual scar therapy. Material and methods: The aim of this work was to evaluate effectiveness of the scar manual therapy combined with complementary methods on the postoperative scars. Treatment protocol included two therapies during 30 min per week for 8 weeks. Therapy included manual scar manipulation, massage, cupping, dry needling, and taping. Results: Treatment had a significant positive effect to influence pain, pigmentation, pliability, pruritus, surface area, and scar stiffness. Improvement of skin parameters (scar elasticity, thickness, regularity, color) was also noticed. Conclusion: To investigate the most effective manual therapy strategy, further studies are needed, evaluating comparisons of different individual and combined scar therapymodalities.

A. Khelife, A. Diouf, A. Diop, F.D. Gueye, H. Mansouri, P. Diousse, A. Soumare, M. Ndiaye, F. Ly, **Reliability assessment and validation of the post-acne hyperpigmentation index (PAHPI) in a population from Sub-Saharan Africa in Senegal,** Ann Dermatol Venereol. 2023 Mar;150(1): p. 24-

27
Background: A post-acne hyperpigmentation index (PAHPI) has been developed in the United States to better compare therapeutic modalities. Our aim in this study was to validate the PAHPI score in patients with skin type VI from sub-Saharan Africa. Patients and methods: The study was conducted in Dakar, Senegal. Twenty-one patients with Fitzpatrick skin type VI, aged 17 to 55 years, presenting hyperpigmentation secondary to acne were included. Ongoing use of skin bleaching products or acne treatments was allowed. Four trained dermatologists rated the patients using the PAHPI. A narrow-band reflectance spectrophotometer (Mexameter MX-18, Cologne, Germany) was used to measure the degree of pigmentation of involved and adjacent skin on 6 representative facial lesions. Results: The average inter-rater reliability (weighted Kappa) showed substantial agreement for intensity (0.67), moderate agreement for number (0.53) and fair agreement for lesion size (0.28). Inter-rater reliability for the total PAHPI was excellent for both day 1 and day 2 (interclass correlation coefficient of 0.87 and 0.85, respectively; P<0.0001). Intra-rater reliability for total PAHPI ranged from 0.83 to 0.93 (P<0.0001). PAHPI scoring thus demonstrated excellent reliability both between and within raters. The association was moderate to substantial for all raters on both days (range for rho on day 1: 0.531 to 0.815; range for rho on day 2: 0.448 0.762). The correlations between the Mexameter (Courage and Khazaka) measurements and PAHPI scores showed moderate to substantial agreement. Conclusion: Although tested primarily in African American women to date, PAHPI is also valid for patients from sub-Saharan Africa.

K. Narra, S.K. Naik, A.S. Ghatge, **A Study of Efficacy and Safety of Ashwagandha (Withania somnifera) Lotion on Facial Skin in Photoaged Healthy Adults**, Cureus 15(3), 2023

Background: Facial skin has an essential cosmetic function in both men and women, and photoaged skin can affect the quality of life in healthy people. Ashwagandha (*Withania somnifera*) which is also called Indian ginsenghas adaptogenic properties and is used in traditional Indian medicine to maintain balance, energize, and rejuvenate. Objective: This randomized, double-blind, and placebo-controlled study assessed the efficacy and safety of topical application of lotion containing 8% standardized Ashwagandha root extract on improvement of skin parameters in the photoaged facial skin of healthy subjects. Methods. Fifty-six healthy men and women aged between 18 and 60 years with Fitzpatrick phototype III-VI skin gradewere randomized to receive the topical application (lotion on facial skin) of either Ashwagandha 8% (AG,n=28), or an identical placebo (PL, n=28) for 60 days. The primary outcome was the change from baseline on day 60 in the scores for global physician assessment scoring for the five dermatological signs (skin wrinkles, pores, hydration/moisture, skin brightness/tone, and pigmentation) on facial skin. Secondary outcomes were changes from baseline in the transepidermal water loss (TEWL), melanin index, hydration, and skinelasticity (R2 ratio). Another efficacy outcome was quality of life using the health-specific Short Form Health Survey-12 (SF-12). Safety was assessed using local reactions and adverse events. Three (1 AG, 2 PL) patients were lost to follow-up and per-protocol (PP) data included 53 patients (27 AG, 26 PL). For measurement data, repeated measures analysis of variance (ANOVA) was used to assess treatment effect at different time periods in the PP dataset (n=53). Two groups were compared for differences using a t-test for continuous data or a Mann-Whitney 'U' test for ordinal data. Adverse events were compared between two groups using the chi-square test. Results: Greater reduction (p<0.0001) in total physician assessment scores from baseline to day 60 was observed with AG (-74.69%) compared to PL (-48.68%). There was a greater improvement in TEWL, skin hydration, and skin elasticity (R2 ratio) with AG as compared to placebo (p<0.0001). However, the change in melanin index was similar in the two groups at the end of day 60 (p=0.969). The percentage increase in melanin index from baseline to day 60 in the PP dataset was by -2.82% with AG and -1.78% with PL, whereas the percentage reduction in TEWL from baseline to day 60 in the PP dataset was by -15.12% with AG and -8.34% with PL. Similarly, greater percentage improvements were seen with AG as compared to PL for skin hydration (20.66% with AG and 9.5% with PL) and elasticity was assessed by the R2 ratio (16.34% with AG and 3.73% with PL). Adverse events were comparable in the two groups. Conclusions: Topical application of a lotion containing Ashwagandha standardized root extract improves the skin condition and quality of life in photoaged healthy individuals. Further studies with different skin types and standard comparators are warranted to substantiate these claims of benefit.

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.

J. Kim, Y.I. Lee, S. Mun, J. Jeong, D.-G. Lee, M. Kim, H.W. Jo, S. Lee, K. Han, J.H. Lee, **Efficacy and Safety of Epidermidibacterium Keratini EPI-7 Derived Postbiotics in Skin Aging: A Prospective Clinical Study**, Int. J. Mol. Sci. 2023, 24, 4634

The present study investigated the effect of topical application of Epidermidibacterium Keratini (EPI-7) ferment filtrate, which is a postbiotic product of a novel actinobacteria, on skin aging, by performing a prospective randomized split-face clinical study on Asian woman participants. The investigators measured skin biophysical parameters, including skin barrier function, elasticity, and dermal density, and revealed that the application of the EPI-7 ferment filtrate-including test product resulted in significantly higher improvements in barrier function, skin elasticity, and dermal density compared to the placebo group. This study also investigated the influence of EPI-7 ferment filtrate on skin microbiome diversity to access its potential beneficial effects and safety. EPI-7 ferment filtrate increased the abundance of commensal microbes belonging to Cutibacterium, Staphylococcus, Corynebacterium, Streptococcus, Lawsonella, Clostridium, Rothia, Lactobacillus, and Prevotella. The abundance of Cutibacterium was significantly increased along with significant changes in Clostridium and Prevotella abundance. Therefore, EPI-7 postbiotics, which contain the metabolite called orotic acid, ameliorate the skin microbiota linked with the aging phenotype of the skin. This study provides preliminary evidence that postbiotic therapy may affect the signs of skin aging and microbial diversity. To confirm the positive effect of EPI-7 postbiotics and microbial interaction, additional clinical investigations and functional analyses are required.

A. Markiewicz-Tomczyk, E. Budzisz, A. Erkiert-Polguj, **A Subjective and Objective Assessment of Combined Methods of Applying Chemical Peels and Microneedling in Antiaging Treatments**, J. Clin. Med. 2023, 12, 1869

Combined methods of applying chemical peels and antioxidants could be an option for skin rejuvenation with no down-time. The penetration of active substances can be enhanced by microneedle mesotherapy. The study was conducted on a group of 20 female volunteers, aged 40–65 years. All volunteers received a series of eight treatments performed every seven days. The whole face was first treated with azelaic acid; following this, the right side received a 40% solution of vitamin C and the left side 10% vitamin C with microneedling. Hydration and skin elasticity were markedly improved, with better results observed on the microneedling side. Melanin and erythema index decreased. No significant side effects were seen. The combination of active ingredients and delivery techniques have great potential to enhance the effectiveness of cosmetic preparations, probably by multidirectional ways of action. In our study, we demonstrated that both 20% azelaic acid + 40% vitamin C treatment and 20% azelaic acid + 10% vitamin C + microneedle mesotherapy efficiently improved the assessed parameters of aging skin. However, the use of microneedling mesotherapy as

a means of direct delivery of active compound to the dermis enhanced the effectiveness of the studied preparation.

D. Erdil, V. Manav, C.B. Türk, A.K. Polat, A.E. Koku Aksu, **The clinical effect of botulinum toxin on pigmentation**, Int J Dermatol, 2023 Feb;62(2): p. 250-256

Background: Botulinum toxin injection is a common cosmetic procedure often used to treat dynamic wrinkles, but it has also been observed to have a lightening effect on the skin. It is thought that this lightening effect develops due to muscle innervation blockage; however, the change in the amount of melanin levels has not been quantified. Method: Thirty-one patients who presented to the dermatology clinic of a tertiary hospital for botulinum toxin injection for wrinkle treatment were included in the study. A standard dose of botulinum toxin was injected to each patient's forehead, glabellar, and crow's feet region, and then the melanin index (MI) was measured with the Mexameter® MX 18 (Courage + Khazaka Electronic, Köln). Results: After botulinum toxin treatment, a statistically significant decrease was found in the forehead and upper face MI. The upper face total baseline MI was significantly lower in the Glogau 1 group than in the Glogau 2 group (P = 0.033). The forehead 15th day MI was significantly lower in the Glogau 1 group than in the Glogau 2, 3, and 4 groups (P = 0.030). Discussion: Botulinum toxin application to healthy skin for wrinkle treatment can cause facial skin lightening by reducing MI. It was also remarkable that this decrease was more pronounced in the forehead, which is a region that is particularly vulnerable to sun exposure, compared to other regions. Younger people, who are included in the Glogau type 1 group, may benefit more from this lightening effect.

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.

A.J.U.K. John, F. Del Galdo, R. Gush, P.R..Worsley, **An evaluation of mechanical and biophysical skin parameters at different body locations**, Skin Research & Technology, January 2023

Background: Skin is the largest organ in the body, representing an important interface to monitor health and disease. However, there is significant variation in skin properties for different ages, genders and body regions due to the differences in the structure and morphology of the skin tissues. This study aimed to evaluate the use of noninvasive tools to discriminate a range of mechanical and functional skin parameters from different skin sites. Materials and methods: A cohort of 15 healthy volunteers was recruited following appropriate informed consent. Four well-established CE-marked non-invasive techniques were used to measure four anatomical regions: palm, forearm, sole and lower lumbar L3, using a repeated measures design. Skin parameters included transepidermal water loss (TEWL), pH (acidity), erythema, stratum corneum hydration and stiffness and elasticity usingMyoton Pro (skin and muscle probe). Differences between body locations for each parameter and the intra-rater reliability between days were evaluated by the same operator. Results: The results indicate that parameters differed significantly between skin sites. For the Myoton skin probe, the sole recorded the highest stiffness value of 1006 N/m (SD±179), while the lower lumbar recorded the least value of 484 N/m(SD±160). The muscle indenter Myoton probe revealed the palm's highest value of 754 N/m (± 108), and the lower lumbar recorded the least value of 208 N/m (SD ± 44). TEWL values were lowest on the forearm, averaging 11 g/m2/h, and highest on the palm, averaging 41 g/m2/h. Similar skin hydration levels were recorded in three of the four sites, with the main difference being observed in the sole averaging 13 arbitrary units. Erythema values were characterised by a high degree of inter-subject variation, and no significant differences between sites or sides were observed. The Myoton Pro Skin showed excellent reliability (intra-class correlation coefficients > 0.70) for all sites with exception of one site right lower back; the Myoton pro muscle probes showed good to poor reliability (0.90–017), the corneometer showed excellent reliability (>0.75) among all the sites tested, and the TEWL showed Good to poor reliability (0.74–0.4) among sites. Conclusion: The study revealed that using non-invasive methods, the biophysical properties of skin can be mapped, and significant differences in the mechanical and functional properties of skin were observed. These parameters were

reliably recorded between days, providing a basis for their use in assessing and monitoring changes in the skin during health and disease.

D. Martinovic, D. Tokic, M. Usljebrka, S. Lupi-Ferandin, L. Cigic, L.V. Rogosic, S. Ercegovic, M. Kontic, M. Kumric, D. Rusic, M. Vilovic, M. Leskur, J. Bozic, **The Association between the Level of Advanced Glycation End Products and Objective Skin Quality Parameters**, Life 2023, 13

Advanced glycation end products (AGEs) represent an endogenously produced or exogenously derived group of compounds derived from nonenzymatic glycation. Recent experimentalstudies are suggesting that AGEs could play an important role in the skin's quality and its aging process. Hence, the aim of this study was to clinically evaluate the AGEs and skin quality parameters across different age groups in the general population. The study included 237 participants. Melanin, erythema, hydration, friction and transepidermal water loss (TEWL) were evaluated using noninvasive probes, while AGEs were evaluated using a skin autofluorescence reader. There was a significant positive correlation between AGEs and the amount of melanin ($p < 0.001$), erythema ($p < 0.001$) and TEWL ($p < 0.001$), while there was a significant negative correlation between AGEs and hydration ($p < 0.001$) and friction ($p < 0.001$). After dividing the sample into three groups depending on their age, in all three groups, there was a significant positive correlation between AGEs and the melanin count ($p < 0.001$) and TEWL ($p < 0.001$), while there was a significant negative correlation between AGEs and skin hydration ($p < 0.001$). Multiple linear regression analysis showed that the level of AGEs as a dependent variable retained a significant association with age ($p < 0.001$), melanin ($p < 0.001$), erythema ($p = 0.005$) and TEWL ($p < 0.001$) as positive predictors. Moreover, AGEs retained a significant association with skin hydration ($p < 0.001$) and friction ($p = 0.017$) as negative predictors. These outcomes imply that AGEs could be linked with the complex physiology of the skin and its aging process.

V.H. Pacagnelli Infante, P.M.B. Gonçalves Maia Campos, **Applying sunscreen SPF 50 with high antioxidant capacity during fifteen days improves the dermis echogenicity and reduces the reddish skin undertone**, J Cosmet Dermatol. 2023;22: p. 872–879

Background: Of the many effects induced by UV radiation on the skin, erythema is one of the most well-known features, which is a cutaneous inflammatory reaction correlated with acute photodamage. The utilization of sunscreen may reduce this process. Aims: To evaluate the utilization of a sunscreen SPF50 with high antioxidant capacity during 15 days by young men without photoprotection habits. Methods: For this, we evaluated erythema, skin hydration properties, and dermis echogenicity using skin imaging techniques. Forty male participants (aged between 18 and 28 years old), 36 without previous photoprotection habits, were recruited, and the erythema was evaluated using a visual score and skin colorimeter. Macroscopic images (VivaCam®) were also obtained. Dermis echogenicity was evaluated using high-frequency ultrasonography. All the participants received a sunscreen SPF 50 touse for 15 days. Results: The visual score presented a strong correlation ($r = 0.8657$) with the colorimeter results. Visually and using the biophysical methodologies was possible to observe the reduction of the visual erythema. The dermis echogenicity also improved, probably correlated with the acute inflammation reduction. No alterations were observed in the skin hydration and skin barrier parameters. Conclusions: The utilization of complementary and correlated different skin biophysical and imaging techniques in this study allows a better comprehension regarding the skin early photoaging process due the direct sun exposure. The utilization with a SPF 50 sunscreen with high antioxidant potential allows for a reduction in the erythema after 15 days of usage, a quick result, however, did not improved the skin barrier or SC hydration.

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.

C. Zappelli, A. Tito, M. Bimonte, A. Colantuono, **Scalp soothing properties of *Portulaca oleracea*,** PERSONAL CARE MAGAZINE, January 2023, p. 39-43

Sensitive scalp is an extension of the concept of sensitive facial skin, and is associated with dry skin, reactivity to climatic/environmental factors, and topical agents. Vitalab's scientists have harnessed the power of the medicinal plant *Portulaca oleracea,* developing an ingredient clinically tested for its efficacy to soothe the skin, reduce the perception of itch intensity for both skin and scalp, and restore the skin barrier function. The multifunctional ingredient improved cellular ability to scavenge free radicals, while reducing the release of pro-inflammatory messengers, helping to relieve sensitive-prone skin and scalp.

H. Hamdi, L. Shirbeigi, M. Rahimzadeh, A. Firooz, G. Amin, K. Mousavizadeh, A. Zargaran, **Evaluation of the Effect of *Artemisia Absinthium L.* Eye-Cream on Infra-Orbital Dark Circle: A Randomized, Double-Blind, Placebo-Controlled Clinical Trial**, GMJ.2023;12:e2413

Background: The relative darkening of the lower eyelid skin, often linked with dark circles, may make one seem tired and older than the actual age. Considering the recommendations in the sources of Persian medicine regarding Artemisia absinthium L., this clinical trial aimed to investigate the effectiveness of cream prepared from the aqueous extraction of *A.absinthium* for infra-orbital dark circles removal. Materials and Methods: In this double-blind controlled clinical trial, an eye cream is made with 20% of the aqueous extract of *A.absinthium* in the base of the cream. For standardization based on Artemisinin, the high-performance liquid chromatography (HPLC) method was used. In two drug and placebo groups, 60 patients were equally enrolled in the trial. Erythema and pigmentation were evaluated via Mexameter®. Results: The cream was standardized, including 1.29±0.02 µg/mg Artemisinin in the product. Finally, 21 and 24 patients in the drug and placebo groups completed the study, respectively. In these groups, the difference in the mean ± standard deviation (SD) delta erythema (DE), delta luminance (DL), erythema, and melanin factors before and after the research were significant ($P<0.05$). However, the rate of reduction of DE, Erythema, and Melanin and the rise of DL are more significant in the treatment group than in the placebo group. Furthermore, the mean values of DE and DL factors before the research were significantly different in the two groups ($P<0.001$), but after the investigation did not show a significant difference. The mean value of the Erythema factor in the two groups before ($P=0.25$) and after ($P=0.5$) did not show a significant difference. The mean value of Melanin after the research between the two groups showed a significant difference ($P=0.01$). Conclusion: The results show that the cream prepared from the herbal composition of Persian medicine improves the infra orbital dark circle around the eyes.

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.

C.-K. Hsu, N.-Y. Cheng, C.-C. Yang, Y.-Y. Yen, S.-H. Tseng, **Investigating the clinical implication of Corneometer and Mexameter readings towards objective, efficient evaluation of psoriasis vulgaris severity**, Scientifc Reports, (2022) 12:7469

In clinical settings, although Psoriasis Area and Severity Index (PASI) scoring system can provide a quick visual assessment of the severity of psoriasis vulgaris, there is still a strong demand for higher efficiency and accuracy in quantifying the infammation status of psoriatic lesions. Currently, there are already commercial systems, such as the Courage + Khazaka Corneometer and Mexameter that measure skin capacitance and optical refectance, for conveniently quantifying the status of skin barrier function and erythema of skin. Despite numerous comparisons of the Courage + Khazaka system with the PASI scoring system, they are rarely compared on parity with difuse reflectance spectroscopy (DRS) based systems. In this study, we employed a custom-built DRS system shown to be able to determine the skin water-protein binding status and the hemoglobin concentration, and we performed cross-validation of the DRS measurement results with the readings derived from the Corneometer and Mexameter as well as a portion of the PASI scores. Our results revealed that the erythema readings from the Mexameter were a good representation of skin oxygenated hemoglobin but not the deoxygenated hemoglobin. On the other hand, the dermatologists recruited in this study were inclined to rate higher scores on the “erythema” category as skin’s deoxygenated hemoglobin level was higher. Thus, the Mexameter derived erythema readings may not be coherent with the PASI erythema scores. Further, the Corneometer derived skin capacitance readings were well correlated to the PASI “desquamation” and “thickness” scores, while the PASI “desquamation” evaluation was a dominating factor contributing to the DRS deduced water-protein binding status. We conclude that the DRS method could be a valuable addition to existing skin capacitance/refectance measurement systems and the PASI scoring system toward achieving a more efcient and objective clinical psoriasis vulgaris severity evaluation.

I. Ertam Sagduyu, O. Marakli, G. Oraloglu, E. Bulut Okut, I. Unal, **Comparison of 1064 nm Q-switched Nd:YAG laser and Jessner peeling in melasma treatment**, Dermatol Ther., 2022 Dec;35(12)

Melasma is an acquired hyperpigmentation disease characterized by hyperpigmented patches in sun-exposed areas that significantly impairs life quality. Topical treatments such as hydroquinone, retinoic acid, azelaic acid, chemical peels and laser treatments are among the main treatment options. In our study, we aimed to compare the effectiveness of Jessner peeling and 1064 nm Q-switched Nd:YAG laser in melasma treatment. For this purpose, Jessner peeling was applied to 20 patients and 1064 nm Q-switched Nd: YAG laser wasapplied to 19 patients of 39 melasma patients who applied to the cosmetology unit of Ege Universitydepartment of dermatology and venereal diseases between November 2018-March 2020. Thirty sevenpatients completed the study. Changes in MASI, pigment and erythema scores measured by mexameterbefore and after treatment were compared for two groups. A statistically significant decrease in MASI scores, pigment and erythema scores was observed in both groups with no significant difference between two groups. In conclusion, in our study, it has been shown that Jessner peeling and 1064 nm Q-switched Nd:YAG laser are equally effective in treatment of melasma.

M. Tai, C. Zhang, Y. Ma, J. Yang, Z. Mai, C. Li, G. Leng, **Acne and its post-inflammatory hyperpigmentation treatment by applying anti-acne dissolving microneedle patches**, J Cosmet Dermatol 2022 Dec;21(12): p. 6913-6919

Objective: Acne is a significant problem in young people. At present, most acne treatment products are topically applied cosmetics, whose efficacy is limited by the stratum corneum. The dissolving microneedle technique can effectively deliver drug molecules into the body. In this study, dissolving microneedles containing anti-acne ingredients were tested for human efficacy and safety. Methods: We conducted a 28-day clinical efficacy and safety trial on 30 individuals with visible facial acne. During the trial, anti-acne microneedle (AA-DMN) patches were applied to designated skin areas once daily for 28 consecutive days. Skin pigmentation was measured using a Courage + Khazaka skin melanin and hemoglobin test probe Mexameter MX18. Acne volume was measured using a Canfieldsci skin rapid optical imaging system PRIMOS. In addition, skin irritation was evaluated via self-report and dermatologist's examination. Results: The AA-DMN patches showed good efficacy including improvement of skin pigmentation and reduced acne volume. Acne volume was reduced by 12.34% after 3 days of patch use and further reduced by 10.01% after 7 continuous days of use. After 28 days of treatment, skin melanin decreased by 5.88% and heme decreased by 7.83%. No adverse reactions were observed in any of the participants. Conclusions: Anti-acne microneedle patches showed an excellent effect in reducing acne and postinflammatory hyperpigmentation (PIH), without adverse skin reactions. The novel AA-DMN patch is a safe and effective anti-acne treatment.

S.Y. Joo, Y.S. Cho, J.W. Yoo, Y.H. Kim, R.I. Sabangan, S.Y. Lee, C.H. Seo, **Clinical Utility of the Portable Pressure-Measuring Device for Compression Garment Pressure Measurement on Hypertrophic Scars by Burn Injury during Compression Therapy**, J. Clin. Med. 2022, 11, 6743

Compression therapy for burn scars can accelerate scar maturation and improve clinical symptoms (pruritus and pain). This study objectively verified the effect of pressure garment therapy in maintaining a therapeutic pressure range for hypertrophic scars. Sixty-five participants (aged 20~70 years) with partial- or full-thickness burns, Vancouver scar scale score of ≥4, and a hypertrophic scar of ≥4 cm x 4 cm were enrolled. Compression pressure was measured weekly using a portable pressure-monitoring device to regulate this pressure at 15~25 mmHg for 2 months. In the control group, the compression garment use duration and all other burn rehabilitation measures were identical except for compression monitoring. No significant difference was noted in the initial evaluations between the two groups ($p > 0.05$). The improvements in the amount of change in scar thickness ($p = 0.03$), erythema ($p = 0.03$), and sebum ($p = 0.02$) were significantly more in the pressure monitoring group than in the control group. No significant differences were noted in melanin levels, trans-epidermal water loss, or changes measured using the Cutometer® between the two groups. The efficacy of compression garment therapy for burn-related hypertrophic scars can be improved using a pressure-monitoring device to maintain the therapeutic range.

M.A. Nilforoushzadeh, M. Heidari-Kharaji, T. Fakhim, E. Torkamaniha, M. Nouri, S. Rafiee, M. Roohaninasab, E. Behrangi, F. Jaffary, **Endo-Radiofrequency subcision for acne scars treatment: A case series study**, Journal of Cosmetic Dermatology, 2022 Nov;21(11): p. 5651-5656

Background: Acne scars have important psychosocial suffering for patients. Several interventions have been utilized to treat acne scars that have different degrees of efficacy and side effect. Multimodal method can attain better results to improving the physical appearance of the patients that can significantly increase thequality of life. Subcision is a recognized treatment procedure particularly for rolling acne scars, but it needs modification to increase the effect of procedure. Aims: The aim of the study was to assess the efficacy and safety of Endo-Radiofrequency (Endo-RF) subcisionin acne scars treatment. Methods: In this study, 9 adult patients with atrophic acne scars were enrolled. The patients receive Endo-RF subcision one time and followed up for 6 months. Outcome was measured using biometric assessment by Visioface 1000 D, Mexameter and skin ultrasound imaging system, post-treatment photographs and patient's satisfaction. Results: The results showed that patients had significant improvement from baseline according to the reduction of the number of skin fine and large pore ($p < 0.05$) and spots ($p < 0.05$). Also, the density and thickness of the dermis and epidermis were significantly increased ($p < 0.05$). Conclusions: Endo-RF subcision modality can consider as a safe and effective method for acne scar treatment.

A.R Young, S. Schalka, R.C Temple, E. Simeone, M. Sohn, C. Kohlmann, M. Morelli, **Innovative digital solution supporting sun protection and vitamin D synthesis by using satellite-based monitoring of solar radiation,** Photochem Photobio Sci, 2022 Nov;21(11): p. 1853-1868

Public health campaigns advise minimising UV radiation (UVR) exposure to prevent skin cancer and precancer, e.g. actinic keratosis (AK). A 3-day clinical field study, in Brazil, was performed to evaluate the mobile app Sun4Health® by siHealth Ltd. The app performs real-time monitoring of both erythemal and vitamin Deffective solar radiation doses using satellite data, enabling personalised recommendations on optimal sun exposure time and sunscreen use. When coupled to a wearable device, the app also provides body-site specific recommendations ("3D" version). 59 healthy volunteers were randomised into 3 groups, each given a different app providing: (1) ultraviolet index only (control app), (2) personalised recommendations and sun overexposure alerts (Sun4Health® app), (3) as (2) but connected via Bluetooth to a wearable device to monitor sun exposure in 3D (Sun4Health®-3D app). Participants were offered sunscreens (SPF 30 and 50) to use at their discretion. Erythema, quantified by reflectance spectroscopy, was assessed daily in the mornings and evenings on six body sites. Serum vitamin D (25(OH)D) was measured before and after the study. Mean increase of erythema (Mexameter® units ± SD) of all exposed body sites combined over 3 days showed 55.76 ± 47.47 for group 1, 40.27 ± 37.91 for group 2 and 37.12 ± 30.69 for group 3 ($p < 0.05$ for all groups). Mean increase of serum 25(OH)D (nmol/l ± SD) showed 1.32 ± 36.49 for group 1, 6.38 ± 21.19 for group 2 and 18.68 ± 35.45 for group 3 ($p > 0.05$ for all groups). The results show that the Sun4Health® app is safe to use and can modify behaviour to reduce skin erythema (sunburn) yet not decreasing vitamin D status.

D.P Friedmann, A. Timmerman, Z. Cahana, **Prospective Study of 532-nm Picosecond Laser for the Treatment of Pigmented Lesions of the Face and Dorsal Hands**, Dermatol Surg, 2022 Nov

1;48(11): p. 1215-1219

Background: Pigmented lesions from chronic UV photoaging are extremely common on the face and hands. Objective: To evaluate the safety and efficacy of a 532-nm picosecond laser for these types of pigmented lesions.Methods: This was a single-center, prospective, open-label clinical trial. Eligible subjects with pigmentation on the face and hands received 3 monthly treatments, with 1 month (1M) and 3 months (3M) follow-up. Changein investigator-graded overall facial and per lesion pigmentation and subject-graded satisfaction and pigmentation improvement was evaluated by a 5-point scale. Immediate skin response and adverse events (AEs) were evaluated post-treatment. The melanin index was measured using a mexameter. Randomized before and after photographs were graded by 3 blinded physicians for degree of pigmentation improvement.Results: Twenty-five subjects (22F/3M) with Fitzpatrick skin types I-III were enrolled, with 23 subjectscompleting. Treatments used a 532 nm wavelength, 800 ps pulse duration, 4-6mm spot size, and 0.1 to 0.6J/cm2 fluence. Good-to-excellent clearance at 1M/3M was demonstrated in ≥95% of lesions (n = 116). Only mild treatment-related pain was reported, with transient post-treatment AEs (mean downtime of 2.1 ± 2.0days) and no serious treatment-related AEs. Subject satisfaction (satisfied or very satisfied) was 95% at 1M and 91% at 3M. Conclusion: Treatment with a 532-nm picosecond laser is safe and highly effective for the treatment of the pigmented lesions of the face and dorsal hands.

S. Falloni Andrade, C. Rocha, E.J. Pinheiro, A.C. Figueiredo, C. Pereira Leite, M. do Ceu Costa, L.M. Rodrigues, **About the Cymbopogon Citratus Essential Oil Anti-Inflammatory Potential - Data from the Human in vivo Methylnicotinate Model,** SPFisiologia Confrence, Coimbra, November 2022

Cymbopogon citratus leaves preparations are used in traditional medicine to mitigate inflammatory processes but a strong science demonstration to support these properties is still missing. Methylnicotinate (MN) is often used to imitate an inflammatory process in human skin. Here we investigate the antioxidant and anti-inflammatory properties of a formulation containing C. *citratus* essential oil (EOCC) using this MNmodel. The study involved 14 healthy participants (9 women and 5 men; mean age 32.9 ± 17.6 years old). All procedures respected the principles of good clinical practice previously approved by the Ethics Committee (P. 04/13). Three areas were drawn on both forearms (3cm x 3cm). One randomly chosen areawas treated for 14 days, 2 times/day with polyacrylic acid gel containing 5% EOCC (0.1 mL of the formulation). The other were used as controls. The study was carried out in a single-blind manner. By the end of the application period the MN model was applied (0.5% methylnicotinate for 1 minute) and skin reaction measured in terms of blood perfusion, erythema, transepidermal water loss, and edema. Highresolution sonography images were also obtained. Results revealed a significant decrease in TEWL, blood perfusion, erythema, and edema in the areas treated with EOCC, suggesting that formulations containing EOCC could prevent and mitigate skin inflammatory disorders. Besides, the methodology here developed is also an innovative safe approach to study the clinical impact of some topical substances of natural origin in human skin.

A. Chioreanu, I.C. Mot, D.I. Horhat, N.C. Balica, C.A. Sarau, R. Morar, E.M. Domuta, C. Dumitru, R.A. Negrean, B.A. Bumbu, M. Ravulapalli, S. Alambaram, R. Akshay, M. Pricop, **Development and Preliminary Characterization of Polyester-Urethane Microparticles Used in Curcumin Drug Delivery System for Oropharyngeal Cancer**, Medicina 2022, 58, 1689

Background and Objectives: Curcumin (Cc) as an active substance is known for its antiinflammatory, anticoagulant, antioxidant, and anti-carcinogenic effects, together with its role in cholesterol regulation, and its use in different gastrointestinal derangements. On the other hand, curcumin can be used for its properties as an inactive substance, with Cc particles being more often tested in pharmaceutical formulations for drug delivery, with promising safety records and kinetics. The aim of this research was to obtain and characterize polyurethane microparticles that can be used as a carrier with a controlled Cc release. Materials and Methods: The in vitro samples were characterized by the Zetasizer procedure, and UV–Vis spectroscopy, while the in-vivo measurements on human subjects were performed by non-invasive skin assays (trans-epidermal water loss, erythema, and skin hydration). A total of 16 patients with oropharyngeal cancer stages II and III in equal proportions were recruited for participation. Results: The experimental values of sample characteristics using the Zetasizer identified a mean structural size of 215 nm in the polyester-urethane preparate (PU), compared to 271 nm in the curcumin-based PU. Although the size was statistically significantly different, the IPDI and Zeta potential did not differ significantly (22.91 mV vs. 23.74 mV). The average age during the study period was 57.6 years for patients in the PU group, respectively, and 55.1 years in those who received the curcumin preparations. The majority of oropharyngeal cancers were of HPV-related etiology. There were no significant side effects; 75.0% of patients in the PU group reporting no

side effects, compared to 87.5% in the Cc group. The 48 h TEWL measurement at the end of the experiment found a statistically significant difference between the PU and the Cc group (2.2 g/h/m2 vs. 2.6 g/h/m2). The erythema assessment showed a starting measurement point for both research groups with a 5.1-unit difference. After 48 h, the difference between PU and PU_Cc was just 1.7 units (p-value = 0.576). The overall difference compared to the reference group with sodium lauryl sulfate (SLS) was statistically significant at a 95% significance level. Conclusions: Our findings indicate the obtaining of almost homogeneous particles with a medium tendency to form agglomerations, with a good capacity of encapsulation (around 60%), a medium release rate, and a non-irritative potential. Therefore, this polyester-urethane with Cc microparticles can be tested in other clinical evaluations.

J.L. Schiefer, F.G. Aretz, P.C. Fuchs, R. Lefering, P. Yary, C. Opländer, A Schulz, M. Daniels, **Comparison of Long-Term Skin Quality and Scar Formation in Partial-Thickness Burn Wounds Treated with Suprathel® and epicite$^{hydro®}$ Wound Dressings**, Medicina 2022, 58, 1550

Background and Objectives: Scar formation after burn trauma has a significant impact on the quality of life of burn patients. Hypertrophic scars or keloids can be very distressing to patients due to potential pain, functional limitations, or hyper- or hypopigmentation. In a previous study comparing Suprathel® and the new and cheaper dressing epicite$^{hydro®}$, we were able to show that pain reduction, exudation, and time until wound-healing of partial-thickness burn wounds were similar, without any documented infections. No study exists that objectively measures and compares skin and scar quality after treatment with Suprathel® and epicitehydro® at present. Materials and Methods: In this study, the scar quality of 20 patients who had been treated with Suprathel® and epicite$^{hydro®}$ was objectively assessed using the Cutometer®, Mexameter®, and Tewameter®, as well as subjectively with the Patient and Observer Scar Assessment Scale, 3, 6, and 12 months after burn injury. Results: In all performed measurements, no significant differences were detected in scar formation after treatment of partial-thickness burn wounds with the two dressings. Conclusions: Both the newer and less expensive wound-dressing epicite$^{hydro®}$ and the well-known wound-dressing Suprathel® resulted in stable wound closure and showed good cosmetic results in the follow-up examinations.

N. Abiakam, H. Jayabal, K. Mitchell, D. Bader, P. Worsley, **Biophysical and biochemical changes in skin health of healthcare professionals using respirators during COVID-19 pandemic**, Skin Research & Technology, October 2022

Background: Personal protective equipment, including respirator devices, has been used to protect healthcare workers (HCWs) during the COVID-19 pandemic. These are fitted to skin sites on the face to prevent airborne transmission but have resulted in reports of discomfort and adverse skin reactions from their continued usage. The present study addresses the objective changes in both the structural integrity and biological response of the skin following prolonged and consecutive use of respirators. Materials and methods: A longitudinal cohort study, involving 17 HCWs who wear respirators daily, was designed. Changes in the barrier properties and biological response of the skin were assessed at three facial anatomical sites, namely, the nasal bridge, left cheek and at a location outside the perimeter of respirator. Assessments were made on three different sessions corresponding to the first, second and third consecutive days of mask usage. Skin parameters included transepidermal water loss (TEWL), stratum corneum (SC) hydration and erythema, as well as cytokine biomarkers sampled from sebum using a commercial tape. Results: The cheek and the site outside the perimeter covered by the respirator presented minimal changes in skin parameters. By contrast, significant increases in both the TEWL (up to 4.8 fold) and SC hydration (up to 2.7 fold) were detected at the nasal bridge on the second consecutive day of respirator-wearing. Therewas a high degree of variation in the individual expression of pro-and anti-inflammatory cytokines. Increasing trends in nasal bridge TEWL values were associated with the body mass index ($p < 0.05$). Conclusions: The most sensitive objective parameter in detecting changes in the skin barrier proved to be the increase in TEWL at the nasal bridge, particularly on the second day of consecutive respirator usage. By contrast, other measures of skin were less able to detect remarkable variations in the barrier integrity. Consideration for protecting skin health is required for frontline workers, who continue to wear respirators for prolonged periods over consecutive days during the pandemic.

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.

C. Zappelli, A. Tito, A. de Lucia, A. Carola, D. Falanga, G. Carotenuto, A. Colantuono, V. Fogliano, **Rose Geranium Rebalances IR-, Blue Light- and UV-Altered Skin Biomarkers**, Cosmetics & Toiletries, September 2022, p. 70-81

Skin is the outermost organ, acting as a protective barrier against constant and cumulative exposure to damaging environmental factors (extrinsic aging), which magnify the effects of biological (intrinsic) skin aging. Among the extrinsic factors, chronic solar exposure, in addition to being vital for many biochemical processes, is known as a major trigger for photoaging.

L. Williams, G. Dell'Acqua, **Quillaja saponaria saponin-rich extract shows anti-inflammatory activity, protecting and repairing against UV-induced skin damage**, 32nd IFSCC Congress London, September 2022

The saponin-rich extract from Quillaja saponaria's tree has been used in the cosmetic industry as a natural surfactant to create natural derived emulsions. We have tested the extract for its antiinflammatory properties both in vitro and clinically. Experiments in PMA induced keratinocytes showed the extract (either at 9% or 15% saponin content) being able to reduce PMA stimulated proinflammatory markers CXCL5, CCL3, IL23A, IL17C, IL6ST. The reduction of the interleukins (but not of the chemokines) was dose dependent on the saponin concentration. To further confirm the antiinflammatory action of the extract and explore its clinical significance, a clinical study was run. Twenty healthy volunteers were UV irradiated and changes in skin redness and TEWL were measured. The Quillaja extract (15% saponin) at 0.5% or 1% in a gel formulation was tested as prevention (before irradiation) or as treatment (after irradiation). When redness was measured, both Quillaja formulations at 0.5% and 1% were significantly effective ($p<0.05$) as prevention (reduction of 10% and 12% respectively) and even more effective as treatment (reduction of 20% and 25% respectively). When TEWL was evaluated, the highest dose Quillaja formulation (1%) as a pre-treatment was significantly effective in reducing TEWL (-27.5%, $p<0.05$) and both formulations significantly more effective as a posttreatment (-37%, -39.2% for 0.5% and 1% Quillaja respectively, $p<0.01$). Our in vitro and clinical data show the ability of Quillaja extract to reduce the damaging effects of pro-inflammatory inducers. The extract can be considered a powerful and natural adjuvant in topical formulations designed for before and after sun exposure.

S. Kojima, G. Shiota, D. Okuda, R. Ogi, R. Tsuruoka, K. Hanada, **Ozonized glycerin (OG)-based cosmetic products lighten age spots on human facial skin**, 32nd IFSCC Congress London, September 2022

Background: Few cosmetic ingredients are shown to be able to safely remove or lighten facial dark spots once they have formed. OG has been reported to possess oxidation power and exhibitvarious biological activities such as antibacterial, antiviral and wound healing promotion. Aims: This study is aimed to clarify the effects of OG on human skin, especially on age spots in the face. Methods: OG serums (80 and 800 ppm) were mixed with melanin reagent *in vitro* for 4 weeks and then assessed for its ability to degrade the melanin. OG was also investigated its effect on gene expression of keratinocyte differentiation markers *in vitro* to explore the cell maturation. In clinical study for evaluation of effects of OG serums on melanin content in facial skin, 48 women were enrolled and measured for melanin content of age spots by a Mexameter at 4 and 8 weeks after daily twice application of them. Adverse events were monitored during the study. Results: Both OG serums showed direct melanin degradation in a time-dependent manner, withm significant effects observed as early as 6 hours. OG serum at 800 ppm showed higher activity than OG serum at 80 ppm, and the amount of melanin was decreased by about 40% on the day 14 of the mixing reaction. Differentiation marker studies using human keratinocytes showed that gene expression of involucrin and serine

palmitoyltransferase was upregulated by OG, which was almost equivalent concentration to OG serum 80 ppm, suggesting that OG can enhance turnover of the skin epidermis. In clinical study, OG serums 80 and 800 ppm showed larger decreases in melanin contents at 8 weeks compared to those at 4 weeks and their mean values of △melanin index were -16.7 and -15.2, respectively. Statistically significant differences were detected against respective controls. Number of subjects with a decrease in melanin index from baseline to 4 or 8 weeks increased in both OG serums 80 and 800 ppm, especially prominent at 8 weeks.There were no adverse events related to treatments of OG 80 and 800 ppm during the study. Conclusion: The result indicated that applications of OG serums are safe and effective in lightening age spots on the facial skin.

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.

H. Cheng, R. Zhang, F. Zhuo, **Synergistic effect of microneedle-delivered extracellular matrix compound and radiofrequency on rejuvenation of periorbital wrinkles**, Frontiers in Medicine, July 2022

Background: A combination of minimally invasive modalities can induce collagen regeneration more quickly and promote the penetration of topical agents, thus promoting skin rejuvenation. In this study, we aimed to investigate the synergistic e_cacy of extracellular matrix compound (ECM-C) *via* microneedle (MN) and radiofrequency (RF) on periorbital wrinkles. Method: A total of 25 participants with periorbital wrinkles were selected for this study. The left and right side of the periorbital area was randomly given ECM-C *via* MN or ECM-C *via* MN combined with RF. MN combined with ECM-C treatment was given 5 times at 2 weeks intervals, whereas RF treatment was given 3 times at 4-week intervals. The following items were assessed: wrinkles by VISIA® system; biophysical parameters such as skin hydration, transepidermal water loss (TEWL), erythema index, and melanin index by CK multiple probe adapter; and skin elasticity and skin thickness by DermaLab Combo®; photographs were taken at the baseline and 2 weeks after the last treatment. Subjective assessments, such as Crow's Feet Grading Scale (CFGS) and Global Aesthetic International Scale (GAIS), were also recorded. Result: A total of 25 participants with an average age of 43 years participated in this trial. Periorbital wrinkles on both sides decreased after the treatment, and the side treated with ECM *via* MN and RF showed better improvement than the other side with ECM-C *via* MN alone. Skin hydration increased after the treatment on both sides. TEWL, skin erythema, and skin melanin indexes were not changed. Skin elasticity and skin thickness increased more on the side of ECM-C *via* MN and RF than on the other side of ECM-C *via* MN alone. The evaluation scores for CFGS improved on either side; however, no di□erence was found for CFGS and GAIS between intergroup comparisons after the treatment. Conclusion: The objective assessment of wrinkles, elasticity, and thickness of periorbital skin improved more on the side with ECM-C treatment *via* MN combined with RF than on the other side of ECM-C treatment *via* MN only. However, no statistically significant di□erence was found between the subjective CFGS and GAIS evaluation of the two sides.

D. Sobkowska, J. Gornowicz-Porowska, A. Seraszek-Jaros, D. Słomińska, Z. Adamski, M. Pawlaczyk, **Evaluation of Skin Biophysical Parameters and Angiogenesis Using CD34 as a Biomarker in**

Older Diabetic Women Treated with Radiofrequency, Clin Cosmet Investig Dermatol, 2022 Jul 14:15: p. 1347-1355

Background: The prevalence of type 2 diabetes mellitus (t2DM) has been steadily increasing. Patients with t2DM need to slow down the skin ageing processes and to obtain a rejuvenating effect. Treatments that do not damage the superficial layers of the epidermis could be a promising solution for those patients. Purpose: The aim of this study was to evaluate the effects of radiofrequency therapy on the biophysical parameters and angiogenesis of facial skin, using CD34 as a biomarker in older diabetic women treated with metformin. Patients and methods: A total of 45 subjects with phototype 2 or 3 (Fitzpatrick scale) were investigated (25 t2DM - study group, 20 - healthy controls). A series of 6 treatments (once a week) with a Radio Frequency Skin Rejuvenation System device was used on facial skin. Measurements of skin hydration, transepidermal water loss (TEWL), melanin and erythema index, temperature, and pH, at baseline and after radiofrequency therapy were performed with the Courage + Khazaka MPA-9 device. Immunohistochemistry on paraffin-embedded sections was used to evaluate the intensity of CD34 expression. Results: Radiofrequency treatment significantly improved facial skin hydration ($p < 0.0001$). Enhancement of the epidermal barrier observed, by reduced TEWL as a result of a series of treatments with radiofrequency on the facial skin ($p < 0.0001$), was observed. CD34 was more abundantly expressed after radiofrequency treatment. No side effects were observed. Conclusion: Treatment with radiofrequency is an effective and non-invasive method of facial skin rejuvenation in older women with t2DM, with a relatively short post-procedure recovery time and low potential for severe adverse effects.

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.

C.-K. Hsu, N.-Y. Cheng, C.-C. Yang, Y.-Y. Yen, S.-H. Tseng, **Investigating the clinical implication of Corneometer and mexameter readings towards objective, efficient evaluation of psoriasis vulgaris severity**, Scientifc Reports, (2022) 12:7469

In clinical settings, although Psoriasis Area and Severity Index (PASI) scoring system can provide a quick visual assessment of the severity of psoriasis vulgaris, there is still a strong demand for higher efciency and accuracy in quantifying the infammation status of psoriatic lesions. Currently, there are already commercial systems, such as the Courage + Khazaka Corneometer and Mexameter that measure skin capacitance and optical refectance, for conveniently quantifying the status of skin barrier function and erythema of skin. Despite numerous comparisons of the Courage + Khazaka system with the PASI scoring system, they are rarely compared on parity with difuse reflectance spectroscopy (DRS) based systems. In this study, we employed a custom-built DRS system shown to be able to determine the skin water-protein binding status and the hemoglobin concentration, and we performed cross-validation of the DRS measurement results with the readings derived from the Corneometer and Mexameter as well as a portion of the PASI scores. Our results revealed that the erythema readings from the Mexameter were a good representation of skin oxygenated hemoglobin but not the deoxygenated hemoglobin. On the other hand, the dermatologists recruited in this study were inclined to rate higher scores on the “erythema” category as skin’s deoxygenated hemoglobin level was higher. Thus, the Mexameter derived erythema readings may not be coherent with the PASI erythema scores. Further, the Corneometer derived skin capacitance readings were well correlated to

the PASI “desquamation” and “thickness” scores, while the PASI “desquamation” evaluation was andominating factor contributing to the DRS deduced water-protein binding status. We conclude that the DRS method could be a valuable addition to existing skin capacitance/refectance measurement systems and the PASI scoring system toward achieving a more efcient and objective clinical psoriasis vulgaris severity evaluation.

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.

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.

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.

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. Sangthong, P. Pintathong, P. Pongsua, A. Jirarat, P. Chaiwut, **Polysaccharides from *Volvariella volvacea* Mushroom: Extraction, Biological Activities and Cosmetic Efficacy**, J. Fungi 2022, 8, 572

Abstract: Polysaccharides from Volvariella volvacea (VVP) were investigated for their cosmetic-related activities and in vivo efficacy for use as a multifunctional active cosmetic ingredient. Three different polysaccharide extraction methods, including hot water shaking (HS), microwave-assisted (MA) and ultrasonic-assisted (UA), were used. Extractable yield, polysaccharide contents and biological activities, including antioxidant, anti-tyrosinase and anti-elastase activities, were compared. The polysaccharides from HS provided the highest extraction yield (15.58 0.96% w/w) and the highest beta-glucan content (18.80 0.81% w/w). The HS polysaccharides also possessed the highest inhibitory effects toward lipid peroxidation (IC50 of 0.0378 mg/mL), tyrosinase (51.46 mg KAE/g), and elastase (604.21 73.66 mg EGCG/g). The cytotoxicity of the VVP was determined for safe use. A cosmetic gel cream containing VVP was developed and 0.2% VVP formulation was observed to be the most stable in color. UV protection factors, skin irritation by single patch test, and in vivo efficacy, including skin moisturization, anti-wrinkle and whitening, were measured. The VVP showed no cytotoxicity against human dermal skin fibroblast. The gel cream containing VVP provided less sun protection factor; however, it significantly exhibited the skin benefits of increasing moisture, gross elasticity, net elasticity, and skin firmness. Improvements to skin roughness, scaliness, wrinkles and in melanin content were also depicted gradually along 8 weeks. V. volvacea, therefore, could be a good source for polysaccharides being used as a moisturizing, anti-wrinkle, and whitening agent in cosmetic preparations.

R. de Dormael, A. Gueniche, P. Bastien, M. Verschoore, **Combining the use of two noninvasive instruments to confirm that a formula can improve skin luminance while respecting constitutive melanogenesis**, J Cosmet Dermatol, May 2022

Introduction: Skin radiance products achieve perceivable benefits with different sort of mechanism of action. Aims: To use two non-invasive instrumental devices to evaluate the effectiveness of a cosmetic formula designed to improve skin reflectance while respecting skin integrity. Patients and methods: Subjects (N = 43) aged 18-50 years old had healthy skin of phototype V-VI and Individual Typology Angle between -10° and -50°. The treatment was applied twice weekly

for 4 weeks on a delineated area of the back, and an adjacent area was left untreated. Instrumental and clinical scoring assessments of treated and untreated skin were performed at baseline and Day 26. Results: Between baseline and Day 26, reflectance (Delta L*) increased by 1.27 points and was considered as clinically relevant. Dermatologist clinical scoring of radiance significantly improved from 2.6 to 3.6 after 4 weeks of treatment and the Skin Color Chart Clarity level significantly decreased from a score of 15.5 to 14.3, representing a skin reflectance improvement. Conversely, the change between baseline and Day 26 in Mexameter Melanin Density was not clinically different for treated skin versus untreated skin (difference of 2.54). At Day 26, changes from baseline for Mexameter Melanin Density and Delta L* parameters appeared to be uncorrelated (r = -0.036). Conclusions: This combination of two non-invasive devices can be useful to confirm that a product can modulate skin reflectance without modifying constitutive pigmentation. The formula tested in this study did not interfere with constitutive melanogenesis.

A. Kroma, M. Pawlaczyk, A. Feliczak-Guzik, M. Urbańska, D. Jenerowicz, A. Seraszek-Jaros, M. Kikowska, J. Gornowicz-Porowska, **Phytoecdysteroids from *Serratula coronata* L. for Psoriatic Skincare,** Molecules 2022, 27, 3471

Phytoecdysones from Serratula coronata seem to be promising agents for skincare in patients with psoriasis. The aim of the study was to determine the effects of creams containing the extract of S. coronata on psoriatic lesions. Creams with different formulas were prepared: 0-Lekobaza®, 1-Lekobaza®, S. coronata, 2-Lekobaza®, Salicylic acid, 3-Lekobaza®, S. coronata, Salicylic acid. After examination of skin penetration and biosafety, the designated cream was applied twice daily for 6 weeks on 72 psoriatic plaques located on elbows or knees. The lesions were assessed at baseline and follow-up of 6 weeks. The lesions area was measured, and severity of scaling, erythema, and infiltration was assessed using a 5-point scale (from 0—none to 4—very severe). Skin hydration and structure, pH, transepidermal water loss, erythema, and melanin index were analyzed instrumentally. Creams 1, 2, and 3 significantly reduced the area of psoriatic plaques. Improvement in erythema and infiltration was observed for creams 1 and 3. Creams 1–3 reduced scaling. Our study confirmed a beneficial effect of creams containing S. coronata extract on psoriatic lesions.

S. Alavi, A. Goodarzi, M.A. Nilforoushzadeh, P. Mansouri, M.A. Jafari, S. Hejazi, Z. Azizian, **Evaluation of Efficacy and Safety of Low-Fluence Q-Switched 1064-nm Laser in Infra-orbital Hyperpigmentation Based on Biometric Parameters**, J Lasers Med Sci 2022;13

Introduction: Dark circles and wrinkles under the eyes are common cosmetic problems, caused by various conditions, especially aging and overproduction of melanin in the epidermis or dermis of the skin. Iin addition to the application of topical lightening agents, different types of lasers, especially the Q-Switched ND:YAG laser, have been used for the treatment of cutaneous hyperpigmentation. Because of a high prevalence of idiopathic eye dark circles (EDCs) or periorbital melanosis and a poor response to available therapies, we decided to evaluate the efficacy and safety of the Fractional QS 1064 nm ND:YAG Laser through a before-after trial. Methods: 18-65-year-old patients with skin Fitzpatrick phototype of I-V and without any usage of a topical or systemic therapeutic regimen (2-4 weeks before the trial) were enrolled in the study. Each patient was treated with 6 sessions of the Fractional QS 1064 nm ND:YAG Laser at 2-week intervals and assessed for response and possible side effects or recurrences through 4 outcome measures, including Visoface-based color and erythema, melanin index and lightness (Before the fourth and sixth sessions of the therapy; also 1 week and 3 months after finishing the trial). Results: The changes of Visoface-based color and erythema, the melanin pigment amount by the Mexameter (melanin index) and the degree of lightness by the Colorimeter of patients after 6 months of intervention were statistically significant (P<0.001). Conclusion: The fractional QS 1,064 nm ND:YAG Laser is an effective and safe therapy in EDCs since objective outcomes like the reduction of the melanin index and improving lightness and subjective ones like the reduction of darkness and erythema were confirmed.

K. Zduńska-Pęciak, R. Dębowska, A. Kołodziejczak, H. Rotsztejn, **Ferulic acid - A novel topical agent in reducing signs of photoaging**, Dermatol Ther, April 2022

Continuous production of reactive oxygen species, induced by UV radiation, is one of the main mechanisms contributing to skin photoaging. Therefore, the use of novel superior antioxidants, which ferulic acid belongs to, is an innovative treatment option. The aim of this study was to evaluate the effect of 14% ferulic acid peel on skin hydration, topography, the level of melanin, and the severity of erythema, in people with skin photoaging symptoms. Twenty women aged 45-60, received eight treatments of chemical peeling in 1- week intervals. Efficacy was measured using The Multi Probe Adapter (MPA) Systems (Courage + Khazaka electronic GmbH, Köln, Germany). The measurements were taken before, 8, and 12 weeks after the first treatment. Additionally, the photo documentation

was made with Fotomedicus (Elfo) and VISIA® Complexion Analysis System (Canfield Scientific, Inc.). The objective evaluation showed statistically significant improvement in all measured skin parameters $p < 0.05$). The best results of skin hydration and melanin level were observed right after the end of the series ($p < 0.001$). The best improvement in erythema reduction was noted a month after the last treatment ($p < 0.0001$). At the control, untreated point none of the probes showed statistically significant changes. In conclusion, a series of treatments with 14% ferulic acid peel has a significant bleaching, erythema-reducing, and moisturizing activity. The results achieved by apparatus, are reflected by photo documentation. The effects achieved during a series persist over time.

K. Hanada, D. Okuda, R. Ogi, S. Kojima, R. Tsuruoka, G. Shiota, **Ozonized glycerin (OG)-based cosmetic products lighten age spots on human facial skin**, J Cosmet Dermatol, April 2022

Background: Few cosmetic ingredients are shown to be able to safely remove or lighten facial dark spots once they have formed. OG has been reported to possess oxidation power and exhibit various biological activities such as antibacterial, antiviral, and wound healing promotion. Aims: This study aimed to clarify the effects of OG on human skin, especially on age spots on the face. Methods: OG formulations (80 and 800 ppm) were mixed with synthetic melanin *in vitro* for 4 weeks and then assessed for its ability to degrade the melanin. OG also investigated its effect on gene expression of keratinocyte differentiation markers *in vitro* to explore the cell maturation. In clinical study for the evaluation of effects of OG formulations on age spots on facial skin, 48 women were measured for the melanin content of them by a Mexameter at 4 and 8 weeks after daily twice application of OG formulations. Adverse events were monitored during the study. Results: Both OG formulations showed direct melanin degradation in a time-dependent manner, with significant effects observed as early as 6 h. OG formulation at 800 ppm showed higher activity than OG formulation at 80 ppm, and the amount of melanin was decreased by about 40% on Day 14 of the mixing reaction. Differentiation marker studies using human keratinocytes showed that the gene expression of involucrin and serine palmitoyltransferase was upregulated by OG, which was almost equivalent concentration to OG formulation 80 ppm, suggesting that OGs can enhance turnover of the skin epidermis. In clinical study, OG formulations 80 and 800 ppm showed larger decreases in melanin contents at 8 weeks compared with those at 4 weeks and their mean values of △melanin index were −16.7 and −15.2, respectively. Statistically significant differences were detected against respective controls. Number of subjects with a decrease in melanin index from baseline to 4 or 8 weeks increased in both OG formulations 80 and 800 ppm, especially prominent at 8 weeks. There were no adverse events related to treatments of OG 80 and 800 ppm during the study. Conclusion: The result indicated that applications of OG formulations are safe and effective in lightening age spots on the facial skin.

T.-C. Hsiao, F.-W. Pan, C.-F. Hsiao, X.-L. Wang, Y.-Y. Gao, Y.-F. Zhang, Y. Chen, **Effective Components of the *Prunus Speciosa* Flower Extract on Blue Light Filtration, Whitening and Skin Repair,** IFSCC Magazine, Volume 25 (1), April 2022

Prunus speciosa of the Rosaceae family has shown promising results for skin health. In 2013, the “Guangzhou Cherry Blossom” was named after the city of Guangzhou, China. This singleleafed pink flower is the most weatherproof and heat-tolerant of all varieties of cherry blossom. Natural active ingredients extracted from Prunus speciosa flower, such as flavonoids and quercetin, had proved to be the most effective at blue light fltration, skin whitening and skin repair. Skin adaptive responses helped to increase repair of light-induced damage. Prunus speciosa flower extract (PSFE) inhibited tyrosinase activity and reduced melanin content in experiments in vitro. To study skin barrier effects, sodium lauryl sulfate was used to irritate the skin in 3D models in order to establish an alternative human patch test. At the same time, a clinical trial was conducted using PSFE facial cream twice daily for 28 days. Changes in skin moisture content, melanin content and elasticity were studied in 20 human subjects. The skincare effects of PSFE reported in human clinical trials demonstrated by changes in skin moisture content, melanin content and skin elasticity. PSFE has good blue light-fltering properties and inhibits tyrosinase activity, achieving a whitening effect. Thus PSFE shows promising performance as a functional ingredient for photoaging defense and inflammation relief in skin repair products.

M.A. Nilforoushzadeh, M. Heidari-Kharaji, S. Alavi, M. Nouri, S. Zare, M. Mahmoudbeyk, A. Peyrovan, A.S. Sadati, E. Behrangi, **Acne scar treatment using combination therapy: Subcision and human autologous fibroblast injection**, J Cosmet Dermatol, April 2022

Background: Acne scar treatment is a problem for both the dermatologist and the dermatologic surgeon. Many therapies have been advanced to improve acne scars over the past years. Nevertheless, they were often related to adverse side effects like hyperpigmentation. These combination therapy using subcision and autologous fibroblast injection can provide a better technique for the acne scar treatment. Material and methods: In this study, we describe nine patients with the

age of 25 to 48 and rolling acne scars (moderate to severe) that were treated with combination therapy using subcision (cannula, 18 gauge) and autologous fibroblast injection. Finally, before and 6 months after the final injection, the patients' biometric characteristics were evaluated by Visioface 1000D and Mexameter and a skin ultrasound imaging system. Results: The results show a significant improvement in the acne scars in the patients. The Visioface results showed that the size and number of skin pores and spots were reduced after combination therapy. Also, the results of skin ultrasonography exhibited denser skin layers both in the epidermis and dermis. Conclusion: In summary, the combination therapy of autologous fibroblast injection and subcision can be considered as a new alternative, safe, and useful method for acne scar treatment.

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.

Y. Ahn, M.G. Kim, K. Jo, K.-. Hong, H.J. Suh, **Effects of Sphingomyelin-Containing Milk Phospholipids on Skin Hydration in UVB-Exposed Hairless Mice**, Molecules 2022, 27, 2545

Reactive oxygen species (ROS) generated by ultraviolet (UV) exposure cause skin barrier dysfunction, which leads to dry skin. In this study, the skin moisturizing effect of sphingomyelincontaining milk phospholipids in UV-induced hairless mice was evaluated. Hairless mice were irradiated with UVB for eight weeks, and milk phospholipids (50, 100, and 150 mg/kg) were administered daily. Milk phospholipids suppressed UV-induced increase in erythema and skin thickness, decreased transepidermal water loss, and increased skin moisture. Milk phospholipids increased the expression of filaggrin, involucrin, and aquaporin3 (AQP3), which are skin moisturerelated factors. Additionally, hyaluronic acid (HA) content in the skin tissue was maintained by regulating the expression of HA synthesis- and degradation-related enzymes. Milk phospholipids alleviated UV-induced decrease in the expression of the antioxidant enzymes superoxidase dismutase1 and 2, catalase, and glutathione peroxidase1. Moreover, ROS levels were reduced by regulating heme oxygenase-1 (HO-1), an ROS regulator, through milk phospholipid-mediated activation of nuclear factor erythroid-2-related factor 2 (Nrf2). Collectively, sphingomyelin-containing milk phospholipids contributed to moisturizing the skin by maintaining HA content and reducing ROS levels in UVBirradiated hairless mice, thereby, minimizing damage to the skin barrier caused by photoaging.

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.

H.M. Kim, Y.M. Lee, E.H. Kim, S.W. Eun, H.K. Sung, H. Ko, S.J. Youn, Y. Choi, W. Yamada, S.M. Shin, **Anti-Wrinkle Efficacy of Edible Bird's Nest Extract: A Randomized, Double-Blind, Placebo-Controlled, Comparative Study**, Front. Pharmacol., Volume 13, March 2022

This study aimed to evaluate skin health's functional improvement, such as wrinkles, elasticity, moisture, and whitening, and safety following the consumption of "edible bird's nest extract" for 12 weeks by women. This single-center, double-blinded, parallel-group, placebo-controlled study included women aged 40–60 years. Our primary purpose was to assess improvement in skin wrinkles, elasticity, and moisture after 12 weeks using an SV700, cutometer, and corneometer, respectively, compared to baseline measurements. Our secondary purpose was to evaluate skin wrinkle, elasticity, and moisture changes at 4 and 8 weeks from baseline using the aforementioned equipment, and measure transdermal water loss and melanin and erythema indexes using a tewameter and mexameter, respectively. Experts performed the visual evaluation of skin wrinkles at 4, 8, and 12 weeks from baseline. The participants were randomly allocated in a 1:1 ratio into the edible bird's nest extract or the placebo group with 43 participants each, where they consumed 100 mg of the extract or placebo, respectively, daily for 12 weeks. The outcomes were measured at every visit. In this study, upon comparing changes in the skin elasticity value between the two intake groups at 12 weeks of ingestion, skin elasticity in the edible bird's nest extract group decreased significantly compared with that in the placebo group. Adverse reactions were absent in both groups. In the case of laboratory test results, changes before and after the ingestion of the extract were within the normal range, thus indicating no clinically significant difference. The edible bird's nest extract was effective in improving skin wrinkles. Moreover, it is beneficial for skin health and can be used as a skin nutritional supplement. Compared with the placebo, the edible bird's nest extract was identified as safe.

A. Liyanage, G. Liyanage, G. Sirimanna, N. Schürer, **Comparative Study on Depigmenting Agents in Skin of Color**, J Clin Aesthet Dermatol. 2022;15(2): p. 12–17

Objective: Skin lightening agents are popular in southern Asia, but there is dearth of evidence on their e ectiveness on Fitzpatrick IV/V skin types. This study was designed to assess the depigmenting efficacy of commercially available and specifically formulated ointments using the Mexameter® (MX 18). Methods: This single center prospective study was performed to test five commercially available preparations (Eldopaque®, Aziderm®, Garnier Dark Spot Corrector®, Ban a Tan Cream® and Neostrata Pigment Lightening Gel) on 28 healthy female volunteers in Phase 1, while five single active ingredients in lipophilic dispersion (hydroquinone 4%, ascorbyl palmitate 1%, resveratrol 1% arbutin 5% and azelaic acid 20%) were tested on a different group of 26 healthy female volunteers in Phase 2. The test agents were applied twice a day for five days per week and continued for six weeks in both study phases. Weekly Mexameter® measurements were obtained from test sites and negative controls. Results: Significant hypopigmentation when compared to untreated controls was observed with Aziderm cream ($p<0.05$, MWU) and the Neostrata Pigment Lightening Gel ($p<0.05$, MWU). All formulated preparations showed significant reduction in pigmentation; however, only the arbutin (5%) containing formulation revealed significant attenuation of pigmentation in comparison to the inactive control ($p<0.05$, MWU). Co: All applications containing active ingredients showed significant skin lightening; however, only arbutin was able to demonstrate significant diminution of pigmentation when compared to the inactive control.

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.

K. Zduńska-Pęciak, A. Kołodziejczak, H. Rotsztejn, **Two superior antioxidants: Ferulic acid and ascorbic acid in reducing signs of photoaging - A split-face comparative study**, Dermatol Ther, 2022 Feb;35(2)

The assessment of the signs of photoaging in mexametric (melanin and erythema index), corneometric (hydration level), and cutometric (elasticity) examination after the treatment with ascorbic acid and ferulic acid. This study was conducted in a group of 20 women aged 39-61 (mean age 54), with Fitzpatrick skin types II and III. The study included a series of eight treatments performed once a week. Two layers of peeling, based on 14% ferulic acid (left half of the face) and 12% l-ascorbic acid serum (right half of the face) were applied. To determine skin parameters: moisture, elasticity, melanin level, and erythema intensity, the Multi Probe Adapter Systems (Courage + Khazaka electronic GmbH, Köln, Germany) were used. Additionally, before and after the series of treatments, photographs were taken with the standardized photographic system Fotomedicus (Elfo®). The results of mexametric measurement for melanin level and erythema intensity were statistically significant ($p < 0.0001$) for both acids. Slightly greater lightening of the skin was demonstrated for ascorbic acid. The results of corneometric measurement of hydration level for ferulic acid and ascorbic acid were both statistically significant ($p < 0.0001$). First beneficial changes in improved elasticity could be observed as early as after 8 weeks but the increase in flexibility grew with time (after 12 weeks). These changes affected both acids and all measurement points. The changes in parameters were highly statistically significant ($p < 0.0001$). Based on the conducted research, it is not possible to state which of the tested acids is more effective in reducing the symptoms of photoaging. Both acids (ascorbic and ferulic), which have a high antioxidant potential, affect the measurable parameters of the skin: pigmentation (melanin index), erythema (erythema index), skin hydration, and elasticity.

M. Nagae, T. Nishio, K. Ohnuki, K. Shimizu, **Effects of oral administration of equine placental extract supplement on the facial skin of healthy adult women: A randomized, double-blind, placebo-controlled study**, Health Sci Rep., January 2022;5

Introduction: Placenta extract is used as an ingredient in ointments for treating dermatological diseases, skin dryness, and for skin beautification. However, the clinical effects of the equine placenta on humans and the underlying mechanism of action are unclear. This randomized, controlled, double-blind study aimed to clinically evaluate the effect of oral intake of equine placental extract on human skin quality. Methods: Healthy women volunteers between the ages of 30 and 59 years ($n = 29$) were randomly assigned to receive 220 mg of equine placental extract–placebo orally, once daily for 4 weeks. Skin quality parameters such as skin hydration, skin barrier function (transepidermal water loss [TEWL]), and melanin index were assessed at baseline and after 4 weeks of administration. Results: The melanin index was significantly increased in the placebo group, whereas it remained unchanged in the equine placenta group. The pattern of melanin index change was significantly different due to intake or no intake of equine placenta supplements over 4 weeks. No significant difference was found in skin hydration and TEWL between the two groups at 4 weeks of postadministration. It was shown that the intake of the equine placenta was more effective in protecting the skin condition against the change of ultraviolet (UV) sensitively than the change in temperature and humidity. Conclusions: Effect of equine placental extract intake was evident on the cheek skin of the equine placenta group where participants were protected from UV-induced pigmentation. Equine placental extract is useful for decreasing melanin synthesis and melanin content in the human skin and can be used as an effective food supplementto maintain human skin quality.

T. Wang, Y. Wang, J. Wang, H. Chen, B. Qu, Z. Li, **Efficacy and Safety of Topical Therapy With Botanical Products for Melasma: A Systematic Review and Meta-Analysis of Randomized Controlled Trials**, Froniers in Medicine, January 2022, Volume 8, Article 797890

Botanical products have been increasingly popular in topical therapies for melasma, as presumed safer and milder than fully synthetic products. Although the efficacy of different topical botanicals has recently been substantiated through randomized controlled trials (RCTs), there is a lack of sufficiently pooled evidence on their efficacy and safety for the treatment of melasma. Herein, a systematic review and meta-analysis was conducted on the efficacy and safety of topical botanical products for the treatment of melasma, following Preferred Reporting Items for Systematic Reviews and MetaAnalyses (PRISMA). All RCTs on the use of topical botanical products for the treatment of melasma in humans were included, except for trials enrolling pregnant patients. The primary outcome was Melasma Area and Severity Index (MASI) or its variation. The secondary outcomes included Mexameter® reading, melasma improvement evaluated by participants, and any reported adverse events (AEs). As a result, twelve eligible trials comprising 695 patients with melasma from 6 different countries were included. The topical botanical products contained active ingredients which varied among trials as follows: herb-derived molecule, extracts of a single herb, and extracts of compound herbs. Topical therapy with botanical products significantly improved melasma with a large effect on MASI reduction (SMD -0.79, 95% CI -1.14 to -0.44, $p < 0.00001$), and a moderate effect on Mexameter® reading reduction (SMD -0.52, 95% CI -0.81 to 0.23, $p = 0.0005$), when compared with placebo. It also showed a similar improvement of melasma with a better safety profile (RR 0.37, 95% CI 0.15–0.88, $p = 0.02$), when compared with active-comparators. Botanical products were well-tolerated across studies, with no serious AEs reported. Despite the limitations such as small sample size, short duration of follow up and varied botanical products, this work still represents the best level of evidence currently available on topical use of botanical products on melasma. Moreover, it should be noted that more well-designed studies are needed before recommending topical botanical products as a viable treatment option for melasma.

M. Herrero-Fernandez, T. Montero-Vilchez, P. Diaz-Calvillo, M. Romera-Vilchez, A. Buendia-Eisman, S. Arias-Santiago, **Impact of Water Exposure and Temperature Changes on Skin Barrier Function**, J. Clin. Med. 2022, 11, 298

The frequency of hand hygiene has increased due to the COVID-19 pandemic, but there is little evidence regarding the impact of water exposure and temperature on skin. The aim of this study is to evaluate the effect of water exposure and temperature on skin barrier function in healthy individuals. A prospective observational study was conducted. Temperature, pH, transepidermal water loss (TEWL), erythema and stratum corneum hydration (SCH) were measured objectively before and after hot- and cold-water exposure and TempTest® (Microcaya TempTest, Bilbao, Spain) contact. Fifty healthy volunteers were enrolled. Hot-water exposure increased TEWL (25.75 vs. 58.58 g·h-1·m-2), pH (6.33 vs. 6.65) and erythema (249.45 vs. 286.34 AU). Cold-water immersion increased TEWL (25.75 vs. 34.96 g·h-1·m-2) and pH (6.33 vs. 6.62). TEWL (7.99 vs. 9.98 g·h-1·m-2) and erythema (209.07 vs. 227.79 AU) increased after being in contact with the hot region (44 °C) of the TempTest. No significant differences were found after contact with the cold region (4 °C) of the TempTest. In conclusion, long and continuous water exposure damages skin barrier function, with hot water being even more harmful. It would be advisable to use cold or lukewarm water for handwashing and avoid hot water. Knowing the proper temperature for hand washing might be animportant measure to prevent flares in patients with previous inflammatory skin diseases on their hands.

*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.

P. Tumsutti, M. Maiprasert, P. Sugkraroek, R. Wanitphakdeedecha, A. Bumrungpert, **Effects of a combination of botanical actives on skin health and antioxidant status in post-menopausal women: A randomized, double-blind, placebo-controlled clinical trial**, J Cosmet Dermatol. 2022;21: p. 2064–2072

Background: Skin aging is one of the most concerning issues during the post-menopausal period. Despite the promising effects of hormonal therapy, there is still concerned about the long-term outcomes from the treatment. Therefore, nutraceuticals that contain estrogenic and antioxidative effects have gained a lot of attention as an alternative therapy for slowing down skin age-related changes in women after menopause. Objective: This study was aimed at evaluating the effects of a combination of nutraceuticals on skin health and antioxidant status in women after menopause. Methods: Post-menopausal women aged 45–60 years old were enrolled and randomly allocated (n = 110) equally to either treatment or placebo group (n = 55 per group). The test product, a nutraceutical containing a blend of Glycine max, Cimicifuga racemosa, Vitex agnus-castus, and Oenothera biennis extracts, was administered over a 12-week period, with dermatological parameters evaluated at baseline, week 6, and week 12 of the study. Additionally, glutathione (GSH) and malondialdehyde (MDA) levels were detected at baseline and week 12 to evaluate the antioxidant status. Results: At week 6, skin roughness was significantly improved in the treatment group (n = 50 completed), while at week 12, a significant improvement and large effect sizes observed in skin elasticity (Cohen's d = 1.56, [SDpooled = 0.10]), roughness (d = 1.53, [0.67]), smoothness (d = −1.33, [34.65]), scaliness (d = −0.80 [0.095]), and wrinkles (d = −1.02 [13.68]) compared to placebo (n = 51 completed). Moreover, GSH was significantly increased (d = 1.54 [32.52]) whereas MDA was significantly decreased (d = −1.66, [0.66]) in the test group, compared to placebo. Blood biochemistry, along with vital signs, did not differ between groups, and no subjects reported any adverse throughout the trial. Conclusion: These data indicate the supplementation with the formulated blend of four herbal extracts is supportive of skin health and antioxidant status in women of menopausal age.

M. Safa, A. Natalizio, C.K. Hee, **A Prospective, Open-Label Study to Evaluate the Impact of VYC-12L Injection on Skin Quality Attributes in Healthy Volunteers**, Clinical, Cosmetic and Investigational Dermatology 2022:15 411–426

Purpose: Age-related changes in skin structure and function can negatively impact skin quality. VYC-12L is a crosslinked hyaluronic acid fller for treating fne lines and improving hydration and elasticity. The goal of this study was to understand skin quality, histologic, and genomic changes underlying long-term clinical benefts of VYC-12L treatment. Patients and Methods: In this prospective, nonrandomized, open-label study, 11 healthy men (n = 2) and women (n = 9) received intradermal VYC-12L treatment on the volar forearm. Clinical probes assessed skin quality at baseline and months 1 and 3 posttreatment. Punch biopsies were collected 1 and 3 months post-treatment to evaluate histologic and genomic changes. Safety was evaluated throughout. Results: Participants had a mean age of 41 years and Fitzpatrick skin phototypes II (54.5%) and III (45.5%). At months 1 and 3, VYC-12L-treated skin had higher hydration in the stratum corneum than untreated skin. Cutometer measurements indicated treated skin that was frmer and more resistant to deformation. Histology showed increased epidermal AQP3 and Ki67 expression 1 and 3 months post-treatment and a qualitative increase in papillary dermal collagen I at month 3. Genomic analyses demonstrated treatmentrelated upregulation of genes involved in adipocyte differentiation, lipid metabolism, keratinocyte renewal, and dermal extracellular matrix (ECM) maintenance. Injection site reactions were mild-to-moderate in severity and resolved by month 1. Five participants reported 19 adverse events; most (68.4%) were related to the biopsy and none to VYC-12L. Conclusion: VYC-12L produced changes in hydration, frmness, and ECM density and composition consistent with improved skin properties, demonstrating that VYC-12L can act as a substrate for tissue repair.

Y. Huang, J. Sanz, N. Rodríguez, X. Duran, A. Martínez, X. Li, P. Foro, M. Conde, M. Zhao, F. Liu, A. Reig, J. Dengra, I. Membrive, P. Pérez, M. Algara, **Quantitative assessments of late**

radiation-induced skin and soft tissue toxicity and correlation with RTOG scales and biological equivalent dose in breast cancer, Clinical and Translational Oncology (2022) 24: p. 836–845

Purpose: Radiation-induced toxicity (RIT) is usually assessed by inspection and palpation. Due to their subjective and unquantitative nature, objective methods are required. This study aimed to determine whether a quantitative tool is able toassess RIT and establish an underlying BED-response relationship in breast cancer. Methods: Patients following seven diferent breast radiation protocols were recruited to this study for RIT assessment with qualitative and quantitative examination. The biologically equivalent dose (BED) was used to directly compare diferent radiation regimens. RIT was subjectively evaluated by physicians using the Radiation Therapy Oncology Group (RTOG) late toxicity scores. Simultaneously an objective multiprobe device was also used to quantitatively assess late RIT in terms of erythema, hyperpigmentation, elasticity and skin hydration. Results: In 194 patients, in terms of the objective measurements, treated breasts showed higher erythema and hyperpigmentation and lower elasticity and hydration than untreated breasts ($p < 0.001$, $p < 0.001$, $p < 0.001$, $p = 0.019$, respectively). As the BED increased, Δerythema and Δpigmentation gradually increased as well ($p = 0.006$ and $p = 0.002$, respectively). Regarding the clinical assessment, the increase in BED resulted in a higher RTOG toxicity grade ($p < 0.001$). Quantitative assessments were consistent with RTOG scores. As the RTOG toxicity grade increased, the erythema and pigmentation values increased, and the elasticity index decreased ($p < 0.001$, $p = 0.016$, $p = 0.005$, respectively). Conclusions: The multiprobe device can be a sensitive and simple tool for research purpose and quantitatively assessing RIT in patients undergoing radiotherapy for breast cancer. Physician-assessed toxicity scores and objective measurements revealed that the BED was positively associated with the severity of RIT.

U. Ifeanyi, S.G. Danby, R. Lewis, M.J. Carré, R. Maiti, **Effect of seasonal change on the biomechanical and physical properties of the human skin**, Journal of the Mechanical Behavior of Biomedical Materials, 127, 2021

In this study, the effect of one cycle of winter to summer seasonal transition on the mechanical and physical properties of skin was investigated in vivo. Fourteen healthy skin volunteers aged between 22 and 42 years were studied at the volar lower and upper arms. The findings indicate a 22.15% and 34.29% decrease in trans-epidermal water loss (TEWL) and the average epidermal roughness (AER), respectively. Also, improved skin properties were observed such as a 25.48% rise in average epidermal hydration (AEH), 22.59% in skin thickness, 38.64% and 21.92% in melanin and redness, respectively, as well as an 8.25% rise in its firmness and 23.14% in elasticity when strained with axial deformations. An inverse correlation was established between TEWL and AEH with a linear relationship between stratum corneum roughness versus TEWL as well as thickness and hydration. Also, the skin firmness exhibited a direct proportionality with TEWL and an inverse correlation with skin hydration where these relationships were stronger in summer than in winter. Furthermore, time-dependent results demonstrated three-staged elastic, viscoelastic and creep deformations with high, moderate and low strain rates respectively at both anatomical locations. The winter season displayed lower skin firmness and elasticity of 0.37mm and 0.04mm compared to 0.40mm and 0.06mm in summer accordingly. Anatomically, the two arm regionsdisplayed different results with the upper arm having more consistent results than the lower arm. These results will find relevance in sensor skins and exoskeletons in Medicare, robotic and military technologies as well as innovations in cosmetics and dermatology.

V.M. Tadić, A. Žugić, M. Martinović, M. Stanković, S. Maksimović, A. Frank, Nešić, **Enhanced Skin Performance of Emulgel vs. Cream as Systems for Topical Delivery of Herbal Actives (Immortelle Extract and Hemp Oil),** Pharmaceutics 2021, 13, 1919

Immortelle, as rich source of chlorogenic acid and the phloroglucinol alpha-pyrone compound arzanol, possesses anti-inflammatory and antioxidant properties, affects cell regeneration, and has positive effect on many skin conditions. Hemp oil, characterized by a favorable omega-6 to omega-3 ratio, as well as an abundance of essential fatty acids and vitamin E, participates in immunoregulation and also act as an anti-inflammatory. In the present study, we examined the effect on the skin of creams and emulgels with immortelle extract and hemp oil, by comparing them to placebo samples and a non-treated control. A long-term in vivo study of biophysical skin characteristics, which lasted for 30 days, was conducted on 25 healthy human volunteers. Measured parameters were electrical capacitance of the stratum corneum, trans-epidermal water loss (TEWL), and skin pH and erythema index. Further, a sensory study was carried out in which the panelists had to choose descriptive terms for sensory attributes in questionnaire. The results showed that application of all preparations led to increase of skin hydration and TEWL reduction, while the skin was not irritated, and its normal pH was not disrupted. This study also showed importance of the carrier. Not only were emulgels described by

panelists as preparations with better sensory properties, there was a significant difference between the skin hydration effect of emulgel with immortelle extract and hempoil compared to the placebo emulgel, which was not the case with creams. Such findings indicated enhanced delivery of herbal active substances from emulgel compared to the cream.

Y. Ye, Y. Li, T. Bi, L. Jiang, **Improvement of urban eye skin in Chinese female by supramolecular retinol plus acmella oleracea extractcontaining product**, J Cosmet Dermatol, November 2021

Background: Studies on the anti-wrinkle effects of retinol have been widely reported, but there are few reports on the infraorbital dark circles reducing effects. Objective: To evaluate the efficiency and tolerance of one novel formulation containing supramolecular retinol plus acmella oleracea extract in Chinese urban eye skin. Methods: Thirty-three women with dark circles and visible fine wrinkles around the eyes, aged 20-45 years, were enrolled and instructed to use the formula for 6 weeks. Instrumental measures and subject assessment were obtained at baseline and at 3-week intervals. Results: After 6 weeks, Mexameter MX18 results demonstrated a statistically significant 13.8% decrease in MI (melanin index) value, and Colorimeter CL400 results demonstrated a statistically significant 0.5% increase in L* (lightness) value, which proved the efficacy of reducing dark circles. Primos-Lite data showed that the wrinkles parameters of Ra, the wrinkle area %, and number of the wrinkles under the eyes and crow's feet revealed significant reduction to varying degrees. Cutometer results showed that R2 value increased significantly by 13.0%, indicating the benefits of firmer skin. In addition, subject assessment revealed that at the end of 6 weeks, the eye skin was noticeably improved. Conclusions: By clinical evaluation and subject assessment, the novel formulation containing supramolecular retinol plus acmella oleracea extract can effectively diminish the collective signs of stressed urban eye skin for Chinese female in terms of dark circles, fine wrinkles, and sagging skin with good tolerance.

Z. Khosrowpour, S.A. Nasrollahi, A. Samadi, A. Ayatollahi, M. Shamsipour, A. Rajabi-Esterabadi, S. Yadangi, A. Firooz, **Skin biophysical assessments of four types of soaps by forearm in-use test**, J Cosmet Dermatol, Nov 2021

Background: While soaps are the most commonly used cleansing agents for human skin, they also damage the epidermal barrier and potentially increase the risk of disorders such as contact dermatitis. Aims: This study set out to compare the potential skin irritancy of four types of soaps and their effects on the skin barrier function and biophysical parameters. Methods: In a nonblinded comparative study, three types of soaps (alkaline, creamy, and glycerin soaps), and a syndet were applied to four different groups of 15 healthy subjects. Subjects washed their left forearm with the respective soap at home at least four times a day for seven days. Biophysical skin parameters, including transepidermal water loss (TEWL), erythema, friction, and pH, were measured at various time points using the Cutometer MPA 580. Results: After the first wash, a significant increase in TEWL was observed for all groups compared to the preintervention period. For the alkaline soap, a substantial increase in pH was observed at all time points compared to the baseline. Syndet, the only acidic soap in this study, showed a significant decrease in pH at the last time compared to all time points. The mean value of erythema was significantly higher in alkaline soap users than glycerin and creamy soap users. Conclusion: Our study showed that alkaline-based soaps could cause erythema and increase TEWL and skin pH due to their strong cleansing action, and the addition of compounds such as glycerin can modify these effects. A newer generation of soap containing a mild surfactant such as syndets causes less skin damage.

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.

I. Micek, J. Nawrot, A. Seraszek-Jaros, D. Jenerowicz, G. Schroeder, T. Spizewsk, A. Suchan, M. Pawlaczyk, J. Gornowicz-Porowska, **Taxifolin as a Promising Ingredient of Cosmetics for Adult Skin**, Antioxidants 2021, 10, 1625

Active substances, effective in the reduction in or delay of skin changes caused by aging occurring in natural compounds, are desirable. Taxifolin (TXF), a flavonoid of strong antioxidant activity found in the plant Stizolophus balsamita (S. balsamita), has been tested for its biological effects on adult human skin. The aim of the study was to investigate the effects of two creams: 3% S. balsamita extract and 3% TXF on the function of adult skin. In total, 97 Caucasian women with clinical signs of skin aging were investigated. The biophysical and biomechanical skin parameters were measured before and after applying the creams, using Colorimeter CL400, Mexameter MX16, Skin-pH-Meter PH900, Skin-Thermometer ST 500, Glossymeter GL200, and Cutiscan SC100. Patch tests were performed with the investigated products to assess their potential irritant properties. The percutaneous penetration of creams was examined with the use of electrospray ionization mass spectrometry (ESI-MS) and confocal Raman spectroscopy. The 3% S. balsamita extract cream reduced hyperpigmentation, erythema, and elevated pH. All the tested preparations were proven to be nonirritant. A higher penetration rate was revealed for the 3% TXF cream than for the 3% S. balsamita extract cream. A total of 3% TXF cream improved skin viscoelasticity. The obtained results suggested that S. balsamita extract and TXF may be considered as ingredients of skincare products for adults.

M.A. Kim, Y.C. Jung, E. Kim, **Correlation between various skin biophysical properties and erythemal response to ultraviolet radiation**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Ultraviolet (UV) radiation induces acute and long term damages on human skin, such as sunburn, photocarcinogenesis and photoaging. As an indicator of individual skin response to UV radiation, minimal erythema dose (MED) is commonly used. MED is defined as the lowest erythemal effective radiant dose that produces the first perceptible unambiguous erythema with defined borders appearing over more than 50% of exposure subsite, 16 h to 24 h after UV exposure. MED has been known to be affected by various factors including Fitzpatrick skin types, skin color, pigmentation, anatomical body sites, and so on. A number of studies found that individuals with the lower skin type and with the lighter skin color showed the lower MED, indicating the higher sensitivity to UV radiation. However, studies on the relation between skin biophysical properties and erythemal response to UV radiation remain rare. Therefore, the aim of this study was to investigate various skin biophysical properties determining individual skin sensitivity to UV radiation.

H.-L. Jo, J. Han, B.-F. Suh, E. Kim, **Digital aging: Skin Changes by digital device**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Visible light is emitted from natural and artificial sources. As a major natural source, solar radiation contains a large proportion of visible light. Visible light exposure from artificial sources can originate from a variety of instruments, including computers, smartphones, televisions, and light-emitting diodes (LEDs).1 With the rapid technological development of the modern society, skin aging is also connected to digital. In the past, there have been many discussions about extrinsic aging such as sunlight, but recently, aging caused by digital devices such as smartphones has emerged as an issue. Recently, in the UK, it is being pointed out that the selfie craze is the main cause of skin aging, and it is drawing attention. Our previous studies have reported that repeated exposure to blue light energy can cause skin damage including increase of erythema index and melanin index and decrease of skin hydration and transparency.2 However, there is no clinical test report on the visible light source emitted by digital devices. In this study, we have studied that the harmful skin effects on visible light source emitted by digital devices.

T.-C. Hsiao, F.-W. Pan, X.-F. Lin, X.-L. Wang, Y.-Y. Gao, Y. Chen, **Effective Components of the *Prunus Speciosa* Flower Extract on Blue Light Filtration, Whitening and Skin Repair**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

The *Prunus Speciosa Guangzhou, Rosaceae* has shown promising results for skin health. In 2013, the “Guangzhou Cherry Blossom” was named after the city of Guangzhou, China. The single-leafed pink flower is the most weather proof and heat-tolerant of all varieties of Cherry Blossom. Natural active ingredients extracted from Prunus Speciosa Flour (PSFE), such as flavonoids, quercetin, have proved to be the most effective at blue light filtration、 skin whitening and repair. Skin

adaptive responses help to increase production from light-induced damage. The PSFE achieves the inhibition of tyrosinase activity and melanin content in vitro experiments. In order to study skin barrier effects, sodium lauryl sulfate (SLS) was used to irritate the skin of 3D models to establish an alternative human patch test. At the same time, a clinicaltrial was conducted using PSFE facial cream twice a day for 28 days. The changes inskin moisture, melanin content and skin elasticity of 20 human subjects were studied.

F. Huang, Y.-N. Lu, Q. Liu, L. Zhou, Y. Xiong, J. Tian, ***Medicago sativa* Extract: Resist the Blue Light (HEVL) Damage in Cell and Skin**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Blue light, also known as high energy visible light (HEVL) , which wavelength is among 400 ~ 500 nm in visible light. Studies have reported that HEVL can penetrates the epidermis of the skin and reaches the dermis, causing oxidative stress and inflammation in cells, which leads to apoptosis. It also causes melanocytes to produce more melanin and reduce the extracellular matrix, leading to photoaging. In this paper, the function of *Medicago sativa* Extract (MS) against HEVL damage was identified from molecular and cellular terms to the human skin. Data suggest that *Medicago sativa* Extract could resist the HEVL damage through ROS reduction.

L.-D. Zhou, Y.-N. Lu, L. Zhang, J. Tian, **Efficacy of a Multi-herb Extraction SGS for Skin Sensitivity and Barrier Function**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Sensitive skin is a clinical syndrome defined by the occurrence of unpleasant sensations (stinging, burning, pain, pruritus, and tingling sensations) in response to normal stimuli. The possible pathogenesis of sensitive skin includes disturbed barrier, neurogenic inflammation and related immune cells. The multi-herb extraction SGS, extracted from *Sophora flacescens* root, *Glycyrrhiza inflata* root and *Scutellaria baicalensis* root, was used to study its effect on skin inflammation and barrier function.

Y. Ye, Y. Li, A. Liu, L. Jiang, **Evaluation of the efficacy of an eye cream on the specific early aging eye problems, including periorbital hyperpigmentation, eye bags and fine lines**, Poster at the IFSCC conference, Cancun, Mexico, October 18-28 2021

Staying up late and staring at mobile phones and computer screens for long time can cause a variety of eye skin problems of some young modern women, including periorbital hyperpigmentation, eye bags and fine lines. Besides physiological characteristics and its natural aging, UV light, environmental pollution, lack of sleep, and stress would accelerate aging progress and contribute to the development and deterioration of aging signs around the eyes.

Y. Pan, X. Ma, Y. Song, J. Zhao, S. Yan, **Questionnaire and Lactic Acid Sting Test Play Different Role on the Assessment of Sensitive Skin: A Cross-sectional Study**, Clinical, Cosmetic and Investigational Dermatology 2021:14, p. 1215–1225

Background: Questionnaires and lactic acid sting test (LAST) are two widely used methods to identify sensitive skin. However, the self-perceived sensitive skin by questionnaires was not consistent with the determination of LAST. Objective: The aim of the study was to measure the biophysical properties noninvasively of sensitive skin evaluated by questionnaire and LAST and to investigate their correlations with the scores of questionnaire and LAST. Methods: A total of 209 healthy Chinese females completed the study. Self-assessment questionnaire and LAST were both performed to identify sensitive skin. Epidermal biophysical properties, including skin hydration, transepidermal water loss (TEWL), sebum content, erythema index (EI), a* value, L* value, skin elasticity, and skin pH, were measured with noninvasive instruments. Results: The frequency of sensitive skin was 50.2% and 66.0% by questionnaire and LAST, respectively. Subjects with self-assessed sensitive skin had a slightly higher LAST positive rate. Skin hydration, sebum content, a* and EI values were signifcantly higher in the selfassessed sensitive skin group, while TEWL, a* and EI values increased but L* value decreased with signifcance in the LAST positive group. The LAST stingers among sensitive skin subjects had higher EI but not in the healthy skin subjects. In addition, questionnaire scores positively correlated with skin hydration, sebum content, a* and EI values, while a positive relationship of LAST scores with TEWL, a* and EI values was observed. The scores of questionnaire and LAST both negatively related to L* value. Conclusion: Self-assessed questionnaire is associated with sensitive skin featured by oily and red face without impaired barrier function, whereas LAST is suitable to identify fragile skin barrier and enhanced blood flow on the face. Combination of both methods to diagnose sensitive skin might be more reliable.

T. Montero-Vilchez, A. Martinez-Lopez, A. Sierra-Sanchez, M. Soler-Gongora, E. Jimenez-Mejias, A.

Molina-Leyva, A. Buendia-Eisman, S. Arias-Santiago, **Erythema Increase Predicts Psoriasis Improvement after Phototherapy**, J. Clin. Med. 2021, 10, 3897

Psoriasis is a major global health problem. There is a need to develop techniques to help physicians select the most appropriate cost-effective therapy for each patient. The main objectives of this study are (1) to evaluate changes in epidermal barrier function and skin homeostasis after phototherapy and (2) to explore potentially predictive values in epidermal barrier function and skin homeostasis to assess clinical improvement after fifteen sessions of phototherapy. A total of 76 subjects, 38 patients with plaque-type psoriasis and 38 gender- and age-matched healthy volunteers, were included in the study. Erythema, transepidermal water loss (TEWL), temperature, stratum corneum hydration (SCH), pH, sebum, and antioxidant capacity were measured before and after the first and fifteenth phototherapy session. Erythema (401.09 vs. 291.12 vs. 284.52 AU, $p < 0.001$) and TEWL (18.23 vs. 11.44 vs. 11.41 g·m-2·h-1, $p < 0.001$) were significantly higher at psoriatic plaques than in uninvolved psoriatic skin and healthy volunteers, respectively, while SCH was lower (9.71 vs. 44.64 vs. 40.00 AU, $p < 0.001$). After fifteen phototherapy sessions, TEWL (–5.19 g·m-2·h-1, $p = 0.016$) decreased while SCH (+7.01 AU, $p = 0.013$) and erythema (+30.82 AU, $p = 0.083$) increased at psoriatic plaques. An erythema increase exceeding 53.23 AU after the first phototherapy session, with a sensitivity of 71.4% and specificity of 84.2%, indicates that a patient may improve Psoriasis Area and Severity Index (PASI) by ≥3 points after fifteen phototherapy sessions. In conclusion, phototherapy improves epidermal barrier function in psoriatic patients and the erythemaincrease after one phototherapy session could help doctors select psoriasis patients who are more likely to respond to phototherapy.

Y.I. Lee, S.G. Lee, J. Kim, S. Choi, I. Jung, J.H. Lee, **Proteoglycan Combined with Hyaluronic Acid and Hydrolyzed Collagen Restores the Skin Barrier in Mild Atopic Dermatitis and Dry, Eczema-Prone Skin: A Pilot Study**, Int. J. Mol. Sci. 2021, 22, 10189

Dry and eczema-prone skin conditions such as atopic dermatitis and xerotic eczema primarily indicate an impaired skin barrier function, which leads to chronic pruritus. Here, we investigated the effects of a novel emollient containing H.ECMTM liposome, which contains a soluble proteoglycan in combination with hydrolyzed collagen and hyaluronic acid. A prospective, singlearm study was conducted on 25 participants with mild atopic dermatitis or dry skin to assess the hydration and anti-inflammatory effect of the novel emollient applied daily over four weeks. All efficacy parameters, including itching severity, transepidermal water loss, and skin hydration, improved significantly after four weeks. The in vitro and ex vivo studies confirmed the restoration of the skin's barrier function. The study revealed the clinical and laboratory efficacy of H.ECMTM liposome in reducing itching and improving the skin's barrier integrity. Thus, the use of H.ECMTM liposome can be considered a therapeutic option for dry and eczema-prone skin.

P. Chaikul, M. Kanlayavattanakul, J. Somkumnerd, N. Lourith, ***Phyllanthus emblica* L. (amla) branch: A safe and effective ingredient against skin aging**, J Tradit Complement Med. 2021 Sep; 11(5): p. 390–399

Background and aim: Skin aging influences the changes in skin, including skin dryness, wrinkle, and irregular pigmentation. Amla (*Phyllanthus emblica* L.) branch has shown several benefits, but not the anti-skin aging. The study aimed to evaluate the anti-skin aging efficacy of amla branch. Experimental procedure: Amla branches were standardized the phenolic acids. The extract was investigated anti-skin aging activities, including antioxidant, anti-tyrosinase, anti-melanogenesis, and matrix metalloproteinase-2 inhibitory assays. Topical gel containing extract was prepared and evaluated the skin irritation by a single closed patch test. Randomized, double-blind, placebo-control study was performed in 20 volunteers for 84 consecutive days. The tested skin was evaluated by Chromameter® CR 400, Dermalab® USB, Mexameter® MX 18, Corneometer® CM 825, and Visioscan® VC 98. Results: Amla branch extract, a dark brown powder, consisted a variety of phenolic acids, mainly sinapic and ferulic acids. The extract exhibited the potent antioxidant and tyrosinase inhibitory activities *in vitro* assays and the melanin suppression through inhibition of tyrosinase and tyrosinase-related protein-2 activities, the strong antioxidant, and the potent matrix metalloproteinase-2 in cellular assays at 0.1 mg/mL. Topical gel containing 0.1% extract was a stable and safe formulation. Clinical study was proved the superior anti-skin aging efficacy, including the lightening skin color, the enhanced skin elasticity and hydration, and the skin wrinkle reduction. Conclusion: The study results suggested that amla branch is a rich source of bioactive compounds and can be a potential ingredient for utilization in anti-skin aging products.

I. Micek, M. Pawlaczyk, A. Kroma, A. Seraszek-Jaros, M. Urbańska, J. Gornowicz-Porowska, **Treatment of melasma with a low-fluence 1064 nm Q-switched Nd:YAG laser: Laser toning in Caucasian women**, Lasers in Surgery and Medine, 2021, Sep 2

Background and Objectives: Melasma is a common, therapeutically challenging, and very often relapsing disorder of hyperpigmentation most often observed in women. Low-fluence, multipass technique with Q-switched-mode laser—"laser toning" is broadly used to treat melasma, especially in Asia. The study aimed to evaluate the effects of a series of laser treatments with very short, nanosecond pulses in the treatment of melasma in Caucasian women. Material and Methods: Forty polish females with Fitzpatrick skin phototype II–III and melasma were treated with 1064 nm Q-switched neodymium:yttrium-aluminum-garnet (QSNY) laser (pulse with 5 ns; spot size, 6–8 mm; fluence, 1.7–3.2 J/cm^2; 2–8 passes; nine treatments). Melanin index (MI), erythema index (EI) by Mexameter MX18®, the modified Melasma Area Severity Index (mMASI), and the participant's self-assessment were used to evaluate the treatment results. Twenty-one patients were subjected to a 1-year follow-up. Results: Significant improvement in melasma pigmentation was observed in the mean MI and mMASI score; both were significantly reduced ($p < 0.0001$). Significant erythema reduction was achieved ($p < 0.001$). In total, 70% of participants rated the laser as a method that met their expectations for treating melasma. Clinical follow-up after one year showed that the reduced melasma effect was still maintained. Patients also noticed improved skin conditions (radiance, smoothness, brightness, hydration, regeneration). No serious adverse effects were observed. Conclusions: Low-fluence 1064 nm QSNY laser is an effective, safe, and noninvasive method with long-term results in melasma treatment. QSNY (1064 nm) improves the condition of melasma patients with erythema.

P. Piyavatin, S. Chaichalotornkul, T. Nararatwanchai, A. Bumrungpert, T. Saiwichai, **Synbiotics supplement is effective for Melasma improvement**, J Cosmet Dermatol, 2021 Sep;20(9): p. 2841-2850

Background: Melasma is a disorder of melanogenesis among humans causing localized, chronic acquired hypermelanosis of the skin requiring a combination of treatments. Related studies have shown probiotics contribute distinct advantages for skin disorders possibly including melasma because of its anti-inflammatory activities, anti-oxidation properties, ultraviolet protection, and tyrosinase activity inhibition. Aims: The study aimed to investigate the effects of synbiotics supplement on improving melasma (evaluated from mMASI score). Methods: This research comprised an experimental study employing a prospective, double-blind, randomized controlled trial among 57 Thai participants divided in 2 groups (29 for the experimental and 28 for the placebo groups). The participants were aged 30-50 years old, had Fitzpatrick skin type III-VI, with facial melasma on both sides of the face and attending Mae Fah Luang University Hospital, Bangkok from January-December 2019. Participants were randomly treated with oral synbiotics or placebo, 1 sachet daily for 12 weeks. Melasma severity and skin health were evaluated at 4 visits for each participant (baseline, weeks 4, 8, and 12, respectively). Results: Severity of melasma scored by mMASI of the synbiotics group was 7.54 ± 0.79, 7.36 ± 0.80, 7.16 ± 0.73, and 6.98 ± 0.72 at baseline, weeks 4, 8, and 12, respectively, and 7.51 ± 0.86, 7.52 ± 0.88, 7.54 ± 0.86, and 7.54 ± 0.89 at baseline, weeks 4, 8, and 12, respectively, in the placebo group. Comparing between two groups at week 12, melasma score in the synbiotics supplement group was significantly lower than that in the placebo group (P = .008). Conclusion: Oral synbiotics supplementation for 12 weeks improved the severity of melasma score.

S.H. Kim, B.R. Park, S.H. Lee, S.M. Lee, M.J. Kim, E.J. Kim, C.Y. Leow, C. Cho, W.-S. Park, B.-F. Suh, **Clinical brightening efficacy and safety of Melasolv™ (3,4,5-trimethoxy cinnamate thymol ester, TCTE) in Southeast Asian women**, J Cosmet Dermatol, 2021 Sep;20(9): p. 2851-2859

Background: Skin darkening because of increased and irregular synthesis of melanin causes melasma, solar lentigo, and freckles. Melasolv™, produced in the early 2000s, shows potent depigmenting effect and has low cytotoxicity. It has been used as a brightening agent in cosmetics for decades. Aims: This study was conducted to investigate whether Melasolv™ is effective for the skin of ASEAN (Southeast Asia) women. Methods: We recruited ASEAN women in Singapore and divided them into two groups (active group vs. placebo group). Melasolv™ and placebo formulations were applied twice a day for 12 weeks. The changes in the pigmented spots were visually evaluated by an expert and assessed using a spectrophotometer and Mexameter at 0, 4, 8, and 12 weeks. Results: The visual evaluation revealed significant improvements, in both size and color intensity, in the active group compared with those in the placebo group at 12 weeks. In the spectrophotometric evaluation, the L* value of the pigmented spots in the active group was significantly higher than that in the placebo group at 12 weeks. Similar results were obtained in the evaluation using the Mexameter. After 12 weeks, the melanin index of the pigmented spots significantly decreased, and it was significantly higher than that in the placebo group. There was no significant change in the erythema index. In the

image analysis, there were no significant differences in skin color brightness and evenness in the active group compared with those in the placebo group. Conclusion: Melasolv™ can be effective used for skin brightening.

L. Kongpanichakul, A. Chuangsuwanich, N. Kongkunnavat, W. Tonaree, **Effcacy of Low-temperature Plasma for Treatment of Facial Rejuvenation in Asian Population**, Plast Reconstr Surg Global Open, Sep 2021

Background: Plasma, the fourth state of matter, has been widely proposed in antiaging medicine. The usage of low-temperature plasma (LTP), which converts nitrogen gas into plasma, demonstrates releasing of several growth factors and promotion of tissue regeneration. The nonchromophore-dependent property and preservation of skin architecture after treatment make LTP an interesting tool for facial rejuvenation. This study aimed to investigate the effcacy of LTP for facial rejuvenation. Methods: A prospective cohort study involving 40 women who received full face LTP treatment once a week for 5 consecutive sessions. The melanin index, erythema index, and elasticity index were measured by Mexameter and Cutometer, respectively. The Fitzpatrick wrinkle scale and quartile grading scale were assessed by two plastic surgeons. Results: All patients were between 26 and 55 years old and had mild-to-moderate Fitzpatrick wrinkle scale scores. The Fitzpatrick wrinkle scale scores showed a mean improvement of 0.47 and 0.89 at 4 and 12 weeks posttreatment ($P < 0.001$). Statistically signifcant improvements in melanin index, erythema index, and elasticity index at periorbital and perioral areas were found at 4 and 12 weeks after treatment ($P < 0.001$). Most subjects had quartile grading scale improvement of 51%–75% at 4 and 12 weeks after treatment. Patients reported a greater than 75% improvement in dyspigmentation, wrinkles, and elasticity in 60%, 50%, and 57.5% of subjects, respectively. Conclusion: LTP is another choice for facial rejuvenation, wrinkles reduction, and dyspigmentation with signifcantly improved results.

C. Borzdynski, C. Miller, D. Vicendese, W. McGuiness, **Brief intermittent pressure offloading on skin microclimate in healthy adults - A descriptivecorrelational pilot study**, J Tissue Viability, 2021 Aug;30(3): p. 379-394

Aim: This study examined microclimate changes to the skin as a result of pressure over a 1 h period. The results were compared to skin parameter results following brief consecutive off-loading of pressure-prone areas. Design: A descriptive-correlational pilot study was undertaken. Method: A convenience sample of 41 healthy adults aged 18-60 years was recruited. Participants engaged in four 1 h data collection sessions. The sessions were conducted in both semi-recumbent and supine positions. Measures of erythema, melanin, stratum corneum hydration, and skin temperature were taken at pressure-prone areas at baseline and after 1 h in an uninterrupted method (continuous pressure-loading) and every 10 min in an interrupted method (brief offloading). The Corneometer and Mexameter (Courage + Khazaka Electronics GMbH, 2013) and Exergen DermaTemp DT-1001 RS Infrared Thermographic Scanner (Exergen Corporation, 2008) provided a digital appraisal of skin parameters. Intraclass correlation coefficients (ICC) were calculated to indicate test-retest reliability and absolute agreement of results between the two methods.

S. Wahab, A.I.Anwar, A.N. Zainuddin, E.N. Hutabarat, A.A. Anwar, I. Kurniadi, **Combination of topical and oral glutathione as a skin-whitening agent: a double-blind randomized controlled clinical trial**, Int J Dermatol, 2021 Aug;60(8): p. 1013-1018

Background: The antimelanogenesis effect of topical and oral glutathione has been shown in several in vitro and clinical studies. However, whether combination of topical and oral glutathione is superior to topical or oral monotherapy is unknown. This study aimed to compare the skin-whitening effect of topical and oral glutathione combination therapy against topical and oral monotherapy. Methods: This double-blind randomized controlled study was done on 46 participants who were divided into two equal groups. Each group received oral placebo and oral glutathione, respectively. All participants were also instructed to apply topical placebo and glutathione to each facial side, respectively. Colorimeter examination was done biweekly using mexameter and chromameter for 8 weeks. One-way ANOVA test was used to compare the results of all groups. Results: The combination group showed significantly lower melanin index (MI) and L* score to placebo ($P < 0.05$). The mean MI and L* score of the combination group were the highest of all groups. Statistical significance of difference in L* score was reached when the combination group was compared to the oral placebo and topical glutathione group ($P < 0.05$). Conclusion: This study showed that topical and oral glutathione were effective skin-lightening agents. Furthermore, combination of topical and oral glutathione might be superior to monotherapy.

M. Chatterjee, S. Neema, G. Rameshsing Rajput, **A randomized controlled pilot study of a**

proprietary combination versus sunscreen in melasma maintenance, Indian Journal of Dermatology, Venereology and Leprology, August 2021

Background: Melasma is the commonest cause of facial hypermelanosis in skin type IV-VI. First-line treatment includes a triple combination containing topical corticosteroid and hydroquinone which have side effects on prolonged use. Chemical peels are a secondline management option with the laser being used in refractory cases, but the worsening of hyperpigmentation in darker skin types can occur following laser therapy. Sunscreen is a must to prevent relapses. Aims and Objectives: (i) To compare the effects of treatment with a proprietary combination (phenyl ethyl resorcinol, nonapeptide-1, aminoethyl phosphinic acid, antioxidants and sunscreen) versus sunscreen alone in limiting or reducing, melasma and preventing recurrence as a maintenance regimen after the initial use of triple combination,(ii) to evaluate the safety of the formulation studied, and (iii) to study the improvement of the quality of life of the patients after using the study formulation versus placebo. Methods: It was a prospective double-blinded parallel-group randomized controlled pilot study. A total of 46 subjects were recruited by consecutive sampling methods and randomized to 23 each in case and control groups. The study period was eight months with three phases. Phase 1 constituted the application of triple combination for eight weeks by both groups followed by phase 2 with the case group applying proprietary medicine and the control group applying sunscreen. Phase 3 was a follow-up period to see the sustenance of results in both groups as well as any evidence of relapses. Sunscreen was applied in all three phases. Results: Case group in the study showed improvement in the melasma severity score and mean melanin index as measured by mexameter but it did not attain statistical signifcance as compared to the control group. The melasma area and severity index score showed a consistent reduction in the case group, whereas it increased in the control group from baseline. Limitations: Small sample size and a short follow-up period of our study were major limitations. Conclusion: The proprietary combination, which has sunscreen as one of its constituents, is more effective in maintaining remission after triple combination without any added inconvenience of application of two separate preparations as compared to sunscreen alone.

M. Tasic-Kostov, M. Martinović, D. Ilic, M. Cvetkovic, **Cotton versus medical face mask influence on skin characteristics during COVID-19 pandemic: A short-term study,** Skin Research & Technology, August 2021

Background: In the still ongoing COVID-19 pandemic, one of the main prevention strategy remain to be the use of protective face masks. Changes in skin characteristics and dermatological problems related to wearing different types of masks have been observed. The aim of this study was to compare the short-term effects of cotton versus medical masks on skin biophysical parameters in general population. Materials and methods: Twenty-eight human volunteers were enrolled and divided in cotton mask and medical mask wearing groups. We measured four skin biophysical parameters: trans-epidermal water loss (TEWL), stratum corneum hydration (SCH), skin pH, and erythema index (EI) before and 3 h after wearing masks on both uncovered and mask-wearing face area.Results: TEWL increased after 3 h on exposed skin in cotton mask group and slightly decreased in medical mask group There was an increase in SCH after 3 h of wearing protective face masks in both groups. pH of the covered skin slightly decreased whileEI increased after 3 h in both groups; changes were not statistically significant. Parameters did not change significantly on uncovered skin. Conclusion: There were no differences between the influence of cotton versus medical protective masks on the skin of healthy volunteers in our study. Both types of masks could be recommended for short-time protection in individuals with healthy skin during COVID-19 pandemic.

K. Goldie, M. Kerscher, S. Guillen Fabi, C.Hirano, M. Landau, T.S. Lim, H. Woolery-Lloyd, K. Mariwalla, J.-Y. Park, Y. Yutskovskaya, **Skin Quality – A Holistic 360° View: Consensus Results**, Clinical, Cosmetic and Investigational Dermatology 2021:14, p. 643–654

Introduction: Skin quality is an important component of human attractiveness. To date, there are no standardized criteria for good skin quality. To establish a consensus for good skin quality parameters and measurement and treatment options, a virtual skin quality advisory board consisting of a global panel of highly experienced aesthetic dermatologists/ aesthetic physicians was convened. Methods: A total of 10 dermatologists/aesthetic physicians served on the advisory board. A modifed version of the Delphi method was used to arrive at consensus. Members accessed an online platform to review statements on skin quality criteria from their peers, including treatment and measurement options, and voted to indicate whether they agreed or disagreed. Statements that did not have agreement were modifed and the members voted again. Consensus was defned as: strong consensus = greater than 95% agreement; consensus = 75% to 95% agreement; majority consent = 50% to 75% agreement; no consensus = less than 50% agreement. Results: There was strong consensus that good skin quality is defned as healthy, youthful in appearance (appearing younger than a person's

chronological age), undamaged skin and that skin quality can be described across all ethnicities by four emergent perceptual categories (EPCs): skin tone evenness, skin surface evenness, skin frmness, and skin glow. The EPCs can be affected by multiple tissue layers (ie, skin surface quality can stem from and be impacted by deep structures or tissues). This means that topical approaches may not be suffcient. Instead, improving skin quality EPCs can require a multilayer treatment strategy. Conclusion: This global advisory board established strong consensus that skin quality can be described by four EPCs, which can help clinicians determine the appropriate treatment option(s) and the tissue or skin layer(s) to address. Skin quality is important to human health and wellbeing and patients' perception for the need for aesthetic treatment.

D. Maroto-Morales, T. Montero-Vilchez, S. Arias-Santiago, **Study of Skin Barrier Function in Psoriasis: The Impact of Emollients**, Life 2021, 11, 651

Psoriasis is a chronic multi-systemic inflammatory disease that affects the epidermal barrier. Emollients can be used as a coadjutant therapy for psoriasis management, but little is known about how the epidermal barrier function in psoriatic patients is modified by moisturizers. The objective of this study is to evaluate the effect of Vaseline jelly and a water-based formula on epidermal barrier function in psoriatic patients. Thirty-one patients with plaque-type psoriasis and thirty-one gender and age-matched healthy controls were enrolled in the study. Temperature, transepidermal water loss (TEWL), stratum corneum hydration (SCH), pH, elasticity and the erythema index were measured using non-invasive tools before and after applying Vaseline jelly and a water-based formula. TEWL was higher in psoriatic plaques than uninvolved psoriatic skin (13.23 vs. 8.54 g·m-2·h-1; $p < 0.001$). SCH was lower in psoriatic plaques than uninvolved psoriatic skin and healthy skin (13.44 vs. 30.55 vs. 30.90 arbitrary units (AU), $p < 0.001$). In psoriatic plaques, TEWL decreased by 5.59 g·m-2·h-1 ($p = 0.001$) after applying Vaseline Jelly, while it increased by 3.60 g·m-2·h-1 ($p = 0.006$) after applying the water-based formula. SCH increased by 9.44 AU after applying the water-based formula ($p = 0.003$). The use of emollients may improve epidermal barrier function in psoriatic patients. TEWL is decreased by using Vaseline, and SCH is increased by using the water-based formula.

R.D. Pârvănescu (Pană), C.G. Watz, E.-A. Moacă, L. Vlaia, I. Marcovici, I.G. Macas, F. Borcan, I. Olariu, G. Coneac, G.-A. Drăghici, Z. Crăiniceanu, D. Flondor (Ionescu), A. Enache, C.A. Dehelean, **Oleogel Formulations for the Topical Delivery of Betulin and Lupeol in Skin Injuries—Preparation, Physicochemical Characterization, and Pharmaco-Toxicological Evaluation**, Molecules 2021, *26*, 4174

The skin integrity is essential due to its pivotal role as a biological barrier against external noxious factors. Pentacyclic triterpenes stand as valuable plant-derived natural compounds in the treatment of skin injuries due to their anti-inflammatory, antioxidant, antimicrobial, and healing properties. Consequently, the primary aim of the current investigation was the development as well as the physicochemical and pharmaco-toxicological characterization of betulin- and lupeol-based oleogels (Bet OG and Lup OG) for topical application in skin injuries. The results revealed suitable pH as well as organoleptic, rheological, and textural properties. The penetration and permeation of Bet and Lup oleogels through porcine ear skin as well as the retention of both oleogels in the skin were demonstrated through ex vivo studies. In vitro, Bet OG and Lup OG showed good biocompatibility on HaCaT human immortalized cells. Moreover, Bet OG exerted a potent wound-healing property by stimulating the migration of the HaCaT cells. The in ovo results demonstrated the non-irritative potential of the developed formulations. Additionally, the undertaken in vivo investigation indicated a positive effect of oleogels treatment on skin parameters by increasing skin hydration and decreasing erythema. In conclusion, oleogel formulations are ideal for the local delivery of betulin and lupeol in skin disorders.

M.A. Nilforoushzadeh, M. Heidari-Kharaji, S. Alavi, M. Nouri, N. Nikkhah, F. Jahangiri, M. Mahmoudbeyk, A. Peyrovan, B. Baiat Tork, E. Torkamaniha, S. Zare, **Transplantation of autologous fat, stromal vascular fraction (SVF) cell, and platelet-rich plasma (PRP) for cell therapy of atrophic acne scars: Clinical evaluation and biometric assessment**, J Cosmet Dermatol, 2021 Jul

Background: Scarring is an unfortunate result of acne because it causes the psychological and cosmetic problems for the patients. Unfortunately, no single treatment is suitable, and using multiple methods may have a better result. The autologous fat and stromal vascular fraction (SVF) cells and their secretory factors can enhance the angiogenesis, collagen synthesis, and migration of fibroblasts, therefore regenerate hurt tissues. Moreover, other treatments for acne scarring, such as platelet-rich plasma (PRP), induce the increase in scare. Aims: This study aimed to verify the effectiveness of transplantation of autologous fat, SVF cells, and PRP as cell therapy techniques on atrophic acne scars. Patients/methods: This study included 9 adult patients with atrophic acne scars on face. All

patients received the transplantation of autologous fat, stromal vascular fraction (SVF) cells, and PRP. The treatment outcome was measured by biometric assessment (VisioFace 1000 D, Colorimeter, multi-probe adapter Cutometer, Tewameter, Mexameter, and skin ultrasound imaging system), and also, the satisfaction of patients was evaluated. The patients were followed 6 months after the treatment. Results: There was a significant improvement in the skin pores, spots, skin lightness and melanin content of skin, skin elasticity, and TEWL (transepidermal water loss) after 6 months of the treatment. Furthermore, denser skin layers were observed both in the epidermis and in the dermis. Moreover, 66.6% of patients showed good satisfaction after the treatment. Conclusion: In brief, the transplantation of autologous fat, SVF cells, and PRP is an effective cell therapy for atrophic acne scars.

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.

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.

A. Cekiera, J. Popiel, M. Siemieniuch, Z. Jaworski, M. Slowikowska, N. Siwinska, A. Zak, A. Niedzwiedz, **The examination of biophysical parameters of the skin in Polish Konik horses**, PLoS ONE 16(6), June 2021

This study aimed to assess the biophysical parameters of the skin in Polish Konik horses (Polish primitive horses). According to the authors, this is the first assessment performed on such a wide scale in this group of animals. The evaluation carried out is innovative both with regards to the breed of the animals and the wide scope of the physicochemical skin assessment. The study group comprised mares, stallions and geldings, and the evaluations concerned transepidermal water loss, corneometry, pH, skin temperature assessment and mexametry. These parameters were assessed in five skin regions: the lips, the right ear, the prosternum, the right side of the neck and the chest. The measurements were taken after spreading the hair apart, with the use of a Multiprobe Adapter System (MPA®) and dedicated probes (Courage + Khazaka electronic GmbH, Cologne, Germany). The

measurements revealed statistically significant differences in the values of transepidermal water loss in the lips in mares compared with stallions (P = 0.023) and also in stallions compared with geldings (P = 0.009). Corneometry showed significantly higher results in the neck region in mares compared with stallions (P = 0.037) and the prosternum areas in mares and geldings compared with stallions (P = 0.037 and P = 0.018). Skin pH measurement on the right side of the neck rendered significantly higher values in stallions than in mares (P = 0.037). In geldings, the skin temperature was significantly higher than in stallions (P = 0.049). Once the appropriate physicochemical values for specific animal species and breeds are determined, non-invasive methods of skin examination in many diseases and also methods of evaluation of the efficacy and/or adverse effects of applied medications can be established.

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.

A. Kyritsi, S. Kikionis, A. Tagka, N. Koliarakis, A. Evangelatou, P. Papagiannis, A. Stratigos, V. Karalis, P. Dallas, A. Vitsos, E. Ioannou , V. Roussis, M. Rallis, **Management of Acute Radiodermatitis in Non-Melanoma Skin Cancer Patients Using Electrospun Nanofibrous Patches Loaded with *Pinus halepensis* Bark Extract**, Cancers 2021, 13, 2596

Abstract: Acute radiodermatitis is the most common side effect in non-melanoma skin cancer patients undergoing radiotherapy. Nonetheless, despite the ongoing progress of clinical trials, no effective regimen has been found yet. In this study, a non-woven patch, comprised of electrospun polymeric micro/nanofibers loaded with an aqueous extract of *Pinus halepensis* bark (PHBE), was fabricated and clinically tested for its efficacy to prevent radiodermatitis. The bioactivity of the PHBE patch was evaluated in comparison with a medical cream indicated for acute radiodermatitis. Twelve volunteer patients were selected and randomly assigned to two groups, applying either the PHBE patch or the reference cream daily. Evaluation of radiation-induced skin reactions was performed during the radiotherapy period and 1 month afterwards according to the Radiation Therapy Oncology Group (RTOG) grading scale, photo-documentation, patient-reported outcomes (Visual Analog Scale, questionnaire), biophysical measurements (hydration, transepidermal water loss, erythema, melanin), and image analysis. In contrast with the reference product, the PHBE patch showed significant antiinflammatory activity and restored most skin parameters to normal levels 1 month after completion of radiation therapy. No adverse event was reported, indicating that the application of the PHBE patch can be considered as a safe medical device for prophylactic radiodermatitis treatment.

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.

H. Bonnekoh, C. Vera, A. Abad-Perez, S. Radetzki, M. Neuenschwander, E. Specker, N.A. Mahnke, S. Frischbutter, E. Latz, M. Nazaré, J. v. Kries, M. Maurer, J. Scheffel, K. Krause, **Topical inflammasome inhibition with disulfram prevents irritant contact dermatitis**, Clin Transl Allergy. 2021

Background: The pathogenesis of contact dermatitis, a common inflammatory skin disease with limited treatment options, is held to be driven by inflammasome activation induced by allergens and irritants. We here aim to identify inflammasome- targeting treatment strategies for irritant contact dermatitis. Methods: A high content screen with 41,184 small molecules was performed using fluorescent Apoptosis associated speck-like protein containing a CARD (ASC) speck formation as a readout for inflammasome activation. Hit compounds were validated for inhibition of interleukin (IL)-1β secretion. Of these, the approved thiuramdisulfde derivative disulfram was selected and tested in a patch test model of irritant contact dermatitis in 25 healthy volunteers. Topical application of disulfram, mometasone or vehicle was followed by application of sodiumdodecylsulfate (SDS) for 24 h each. Eczema induction was quantifed by mexameter and laser speckle imaging. Corneocyte sampling of lesional skin was performed to assess inflammasome-mediated cytokines IL-1β and IL-18. Results: Disulfram induced a dose-dependent inhibition of ASC speck formation and IL-1β release in cellular assays in vitro. In vivo, treatment with disulfram, but not with vehicle and less mometasone, inhibited SDS-induced eczema. This was demonstrated by signifcantly lower erythema and total perfusion values assessed by mexameter and laser speckle imaging for disulfram compared to vehicle ($p < 0.001$) and/or mometasone ($p < 0.001$). Also, corneocyte IL-18 levels were signifcantly reduced after application of disulfram compared to vehicle ($p < 0.001$). Conclusion: We show that disulfram is a dose-dependent inhibitor of inflammasome pathway activation in vitro and inhibitor of SDS-induced eczema in vivo. Topical application of disulfram represents a potential treatment option for irritant contact dermatitis.

S.-H. Kwon, J.-I. Na, C.-H. Huh, K.-C. Park, **A Clinical and Biochemical Evaluation of a TemperatureControlled Continuous Non-Invasive Radiofrequency Device for the Treatment of Melasma**, Annals of Dermatology 2021;33(6): p. 522-530

Background: Melasma shows characteristic histological features of photoaged skin.Objective: We evaluated the effect of dermal rejuvenation using a temperature-controlled continuous non-invasive radiofrequency (RF) device on melasma. Methods: Continuous skin heating at the temperature of 43°C for 20 minutes was performed in ten subjects with melasma who underwent 3 tri-weekly RF sessions. Pigmentation was evaluated with Mexameter® and investigator's global assessment (IGA). Immunohistochemical staining and image analysis was performed to evaluate biopsies from melasma skin before and after the treatment. Results: The lesional melanin index was decreased by 13.7% at week 9. IGA score was improved from 3.50 at baseline to 2.95 at week 9. No significant adverse event was reported. Histologic analysis revealed reduced melanin and increased collagen density and thickness. The expression of procollagen-1 and type IV collagen was increased after the treatment. The number of p16INK4A-positive senescent fibroblasts was reduced after the treatment, while the expression of heat shock protein 70 and 90 was increased. Stromal derived factor-1, a senescence-associated anti-melanogenic factor secreted from the fibroblasts, was up-regulated after the treatment, while the level of c-kit was not changed. Conclusion: Thermal skin stimulation by the temperature-controlled continuous RF device improved melasma through dermal rejuvenation.

D. Sobkowska, I. Micek, M. Urbańska, A. Seraszek-Jaros, G. Nowak, L. Zaprutko, R. Czajkowski, Z. Adamski, J. Gornowicz-Porowska, **The effects of baths and wet wraps with a sweet whey solution on the level of hydration and barrier function of the epidermis**, Adv Dermatol Allergol 2021; XXXVIII (5): p. 798–803

Introduction: Sweet whey is known for its various pharmacological uses as an anti-inflammatory and antioxidant agent. This is because whey proteins accelerate the release of bioactive peptides, increase the level of intracellular glutathione and the production of interleukin IL-8. However, the potential skin care effects of whey, especially in its unprocessed state, are still not clear. Aim: To evaluate in vivo the cosmetic features of sweet whey baths and wet wraps on human skin. Material and methods: Thirteen healthy Caucasian adult females with no dermatological diseases were examined. We used the Courage-Khazaka MPA-9 device to evaluate the effects of sweet whey baths/wet wraps on skin hydratation, transepidermal water loss (TEWL) and melanin and erythema index and pH level in human skin. Results: It appeared that bathing in the sweet whey solution significantly improved the barrier function of the skin in comparison with tap water treated control area on the face cheek as well as on the forearm by decreasing the value of transepidermal water loss with statistical significance. Skin hydration was enhanced only on the facial skin. No significant differences

concerning other parameters were observed. Conclusions: We showed that sweet whey may have decreased the TEWL level and fixed the barrier function of epidermis in this way. It seems that a bath solution with sweet whey is well tolerated and may promote local blood circulation without affecting the pH value of the skin.

C. Leeyaphan, S. Varothai, S. Trakanwittayarak, P. Suphatsathienkul, S. Pattaravadee, L. Matthapan, W. Prasong, K. Lertrujiwanit, S. Supcharoenkul, K. Kulthanan, **A randomized controlled trial to compare the effectiveness and safety of adsorbent lotion containing tapioca starch, spent grain wax, Butyrospermum parkii extract, argania spinosa kernel oil, aloe barbadensis, rosehip oil, and allantoin with a low-potency topical corticosteroid in the treatment of intertrigo**, J Cosmet Dermatol, 2021 Apr 3

Background: Intertrigo is an inflammatory skin-fold condition. Candida infections may occur concurrently or afterward. Topical corticosteroids may reduce inflammation but exacerbate Candida infections. The treatment is contentious. Objective: To evaluate the efficacies and safety of adsorbent lotion containing tapioca starch, spent grain wax, Butyrospermum parkii extract, argania spinosa kernel oil, aloe barbadensis, rosehip oil, and allantoin for the treatment of mild-to-moderate intertrigo, relative to 1% hydrocortisone cream. Methods: This randomized, double-blinded study enrolled 40 intertrigo patients. Twice daily, 20 patients applied adsorbent lotion while the remainder used 1% hydrocortisone cream. Efficacy evaluation, skin biophysical measurements, skin tolerability, safety, and visual analog scale (VAS) patient-satisfaction scores were evaluated at baseline and Week 2. Results: The adsorbent lotion showed higher complete cure rates for color, partial epidermal loss, papules/pustules/vesicles/patches, dryness, and scaling than the corticosteroid without statistical significance. Adsorbent lotion demonstrated significantly higher reduction in pruritus than the corticosteroid treatment. Reduction of erythema level using Mexameter and VAS patient-satisfaction scores were not statistically different between adsorbent lotion and hydrocortisone cream. No adverse effects or superimposed infections were reported. Conclusions: The anti-inflammatory efficacies of adsorbent lotion and low-potency steroid were equivalent. The lotion was safe and produced excellent pruritus reduction. Patient satisfaction was high.

L.E. Bostan, C.E. Clarkin, M. Mousa, P.R. Worsley, D.L. Bader, J.I. Dawson, N.D. Evans, **Synthetic Nanoclay Gels Do Not Cause Skin Irritation in Healthy Human Volunteers**, ACS Biomaterials Science & Engineering, Vol 7/Issue 6, April 2021

Synthetic clays are promising biomaterials for delivery of therapeutic molecules in regenerative medicine. However, before their use can be translated into clinical applications, their safety must be assessed in human volunteers. The aim of this study was to test the hypothesis that a synthetic nanoclay (LAPONITE) does not cause irritation to the human skin. To achieve this, a nanoclay gel at two different concentrations (1.5 and 3% w/v) was applied on the forearm of healthy volunteers for 24 h. 1% sodium lauryl sulfate (SLS) and 3% (w/v) polyacrylic acid were used as the positive and negative controls, respectively. The compromise in the skin barrier function was measured by trans-epidermal water loss (TEWL), erythema by spectroscopic measurements, and skin inflammatory biomarkers (IL-1α and IL-1RA) by the enzyme-linked immunosorbent assay. We found that the nanoclay caused no prolonged increase in TEWL, erythema, or induction of inflammatory cytokines. This was in contrast to 1% SLS, a known irritant, which induced significant increases in both skin erythema and TEWL. We conclude that the nanoclay is not an irritant and is thus suitable for therapeutic interventions at the skin surface.

S. Sipos, E.-A. Moacă, I.Z. Pavel, S. Avram, O.M. Cret, D. Coricovac, R.-M. Racoviceanu, R. Ghiulai, R.D. Pană, C.M. Şoica, F. Borcan, C.A. Dehelean, Z. Crăiniceanu, ***Melissa officinalis* L. Aqueous Extract Exerts Antioxidant and Antiangiogenic Effects and Improves Physiological Skin Parameters**, Molecules 2021, 26, 2369

Melissa officinalis (MO) is a medicinal plant well-known for its multiple pharmacological effects, including anti-inflammatory, anticancer and beneficial effects on skin recovery. In this context, the present study was aimed to investigate the in vitro and in vivo safety profile of an MO aqueous extract by assessing cell viability on normal (HaCaT—human keratinocytes) and tumor (A375—human melanoma) cells and its impact on physiological skin parameters by a non-invasive method. In addition, the antioxidant activity and the antiangiogenic potential of the extract were verified. A selective cytotoxic effect was noted in A375 cells, while no toxicity was noticed in healthy cells. The MO aqueous extract safety profile after topical application was investigated on SKH-1 mice, and an enhanced skin hydration and decreased erythema and transepidermal water loss levels were observed. The in ovo CAM assay, performed to investigate the potential modulating effect onthe angiogenesis process and the blood vessels impact, indicated that at concentrations of 100 and 500

µg/mL, MO aqueous extract induced a reduction of thin capillaries. No signs of vascular toxicity were recorded at concentrations as high as 1000 µg/mL. The aqueous extract of MO leaves can be considered a promising candidate for skin disorders with impaired physiological skin parameters.

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.

S.J. Oh, D. Yoon, J.-H. Park, J.H. Lee, **Effects of Particulate Matter on Healthy Skin: A Comparative Study between High- and Low-Particulate Matter Periods**, Ann Dermatol Vol. 33, No. 3, 2021, p. 263-270

Background: The influence of airborne particulate matter (PM) on skin has primarily been studied in patients with skin diseases such as atopic dermatitis. Recently, the effect of PM on healthy human skin has gained attention. Objective: To evaluate the relationship between PM concentration and objective skin changes in healthy subjects. Methods: This prospective study enrolled 25 healthy volunteers without any skin disease. Data regarding daily meteorological parameters and air pollution were collected during a high-PM period and a low-PM period for 14 days. Environmental and lifestyle factors that might influence skin conditions of subjects were also collected during the study period. Biophysical parameters of the skin such as transepidermal water loss (TEWL), hydration, erythema index, and melanin index were measured. Pores, wrinkles, sebum, and skin tone were evaluated using a facial analysis system. Results: Mean TEWL value during the high-PM period was significantly higher than that during the low-PM period (10.16 g/m2/h vs. 5.99 g/m2/h; p=0.0005). Mean erythema index was significantly higher in the highPM period than that in the low-PM period (4.3 vs. 3.42; p=0.038). For facial analysis system indices, uniformity of skin tone was higher in the low-PM period than that in the high-PM period ($p<0.0001$). In addition, with increasing PM10 and PM2.5, TEWL also showed increase when other environmental components were constant (regression coefficient [RC]=0.1529, $p<0.0001$ for PM10; RC=0.2055, p=0.0153 for PM2.5). Conclusion: Increased PM concentrations may contribute to disturbed barrier function, increased facial erythema, and uneven skin tone even in healthy human skin.

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.

D. Leskur, I. Perišić, K. Romac, H. Šušak, A. Šešelja Perišin, J. Bukić, D. Rušić, N. Kladar, B. Božin, D. Modun, **Comparison of mechanical, chemical and physical human models of in vivo skin damage: Randomized controlled trial**, Skin Research & Technology, Volume 27, Issue 2, March 2021 p. 208-216

Introduction: Human in vivo models of skin damage were often used in research of cutaneous disorders. The most commonly used models were tape-stripping as mechanical, sodium lauryl

sulphate-induced irritation as chemical and ultraviolet radiation as physical damage model. In regard to differences between models, they were expected to have different responses to damage and recovery, with unique skin parameters' changes over time. Objective: The aim was to compare skin parameters in three different skin damage models on the same anatomical location, with and without topical treatment. Methods: Four test sites on each forearm were randomly assigned to three skin damage models with the fourth sites on each forearm chosen as a control, undamaged site. Skin parameters were assessed using non-invasive methods. Results: Sodium lauryl sulphate irritation caused the strongest damage with delayed reaction to the irritant. Tape stripping leads to highest initial skin barrier disruption but afterwards it showed the fastest skin recovery. Ultraviolet radiation did not affect skin barrier function, but it elevated skin erythema and melanin level. Tested preparation did not lead to changes in measured parameters. Conclusion: The skin of the participants had different response to three skin damage models with distinct changes of skin parameters and recovery.

T. Pattayadeekul, T. Pawcsuntorn, T. Nararatwanchai, **The efficacy and safety of autologous stromal vascular fraction transplantation for infraorbital skin rejuvenation: A clinical prospective study**, Journal Cosmet Dermatol, March 2021

Background: The stromal vascular fraction of fat tissue contributes to its rejuvenation properties. The stromal vascular fraction is a minimal processed cell population. Therefore, it is purportedly a suitable cell therapy for skin rejuvenation. Objectives: This clinical trial aimed to evaluate the efficacy and safety of transplantation of autologous stromal vascular fraction to aging skin in the infraorbital region. Patients/methods: Nineteen patients were candidates for stromal vascular fraction isolation and transplantation. They underwent lipoaspiration of the abdomen to obtain samples of fat tissue. The stromal vascular fraction was thereafter harvested and transplanted in each infraorbital area. The patients' outcomes were measured and were based on surface evaluation of wrinkles, surface evaluation of scaliness, and melanin evaluation with a Mexameter. The red blood cell volume and skin elasticity were measured with an erythrometer and cutometer, respectively. Results: Three months and 6 months after autologous stromal vascular fraction transplantation, the elasticity, wrinkle, and pigmentation of the infraorbital skin improved significantly, but not surface evaluation of scaliness and erythema. The phenotype also improved in the infraorbital skin area, as evaluated by physicians. Conclusion: The stromal vascular fraction of adipose tissue represents an attractive cell source. In our study, preliminary data showed that clinical outcomes were also generally satisfactory with no serious adverse effects. Thus, stromal vascular fraction cells are safe for clinical rejuvenation use. We encourage future evidence-based controlled studies to maintain a strong focus on the efficacy and safety profile of stromal vascular fraction therapy.

M.E Baumann, D.M. DeBruler, B.N. Blackstone, R.A Coffey, S.T Boyce, D.M. Supp, J.K. Bailey, H.M. Powell, **Direct comparison of reproducibility and reliability in quantitative assessments of burn scar properties**, Burns, 2021 Mar;47(2): p. 466-478

Introduction: Determining the efficacy of anti-scar technologies can be difficult as qualitative, subjective assessments are often utilized instead of systematic, objective measures. Perceptions regarding the reliability of instruments for quantitative measurements along with their high cost and increased data collection time may discourage their use, leading to use of scar scales which are relatively quick and low-cost. To directly evaluate the reliability of instruments for quantitative measurements of scar properties, instruments and two qualitative scales were compared by assessing a variety of cutaneous scars. Methods: Scar height and surface texture were evaluated using a 3D scanner and a mold/cast technique. Scar color was evaluated by using a spectroscopy-based tool, the Mexameter®, and digital photography with image analysis. Scar biomechanics were evaluated using the BTC-2000™, Dermal Torque Meter (DTM®), and ballistometer®. The Vancouver Scar Scale (VSS) and Patient and Observer Scar Assessment Scale (POSAS) were used to qualitatively evaluate the same scar properties. Intraclass correlation coefficients (ICC) were used to determine inter- and intra-user reliability (poor, moderate, good, excellent) with all instruments and the kappa reliability statistic was used to asses inter-user reliability (poor, fair, moderate, good, very good) for VSS and POSAS. Time for measurement collection and after collection analysis was also recorded. Results: The Mexameter® was the most reliable method for evaluating erythema and pigmentation compared to digital photography and image processing, POSAS and VSS. Digital photography and analysis was more reliable than POSAS and VSS. Assessment of scar height was significantly more reliable when using a 3D scanner versus VSS and POSAS. The 3D scanner and mold-cast techniques also offered an additional benefit of providing an absolute value of scar height relative to the surrounding tissue. Intra-user reliability for all mechanical tests was moderate to good. Inter-user reliability was greater when using the BTC-2000™ and ballistometer® versus the DTM®. All quantitative measurements took less than 90 s for collection, with the exception of the mold/cast technique. Conclusion: Non-

invasive instruments allow scar properties to be quantitatively assessed with high sensitivity and as a function of time and/or treatment without the need for biopsy collection. Overall, the reliability of scar assessments was significantly improved when quantitative instruments were utilized versus scar scales. Quantitative assessment of color and biomechanics were swift, requiring less than 90 s per measurement while assessments of texture and height required additional analysis time after collection. With proper training of clinical staff and well-defined protocols for measurement collection, reliable, quantitative assessments of scar properties can be collected with little disruption to the clinical workflow.

A.I. Anwar, Y. Asmarani, A. Madjid, I. Patellongi, A. Adriani, S. As'ad, I. Kurniadi, **Comparison of 2% deoxyarbutin and 4% hydroquinone as a depigmenting agent in healthy individuals: A double-blind randomized controlled clinical trial**, J Cosmet Dermatol, 2021 Mar 8

Background: Hydroquinone, which is considered the gold standard skin depigmenting agent, has been associated with multiple side effects. Lately, deoxyarbutin has been suggested to be an alternative of hydroquinone with better safety profile. Objective: To compare the depigmenting effect of 2% deoxyarbutin and 4% hydroquinone sera. Methods: This double-blind randomized controlled study was done on the right and left arms of healthy participants. Subjects were instructed to apply either 2% deoxyarbutin or 4% hydroquinone serum on each arm, which were randomly labeled as group A and B, every day for 12 weeks. Chromameter and mexameter analysis were done every 2 weeks to assess the color change. Paired and independent t-tests were used to assess the color change within and between both groups, respectively. Results: A total of 59 females participated in this study. Both groups showed significant improvement in skin depigmentation as shown by the chromameter (increase in L* value) and mexameter (decrease in melanin index) analysis at the end of the study ($p < 0.05$). No significant difference in both parameters was observed between both groups ($p > 0.05$). No side effects were reported in either groups. Conclusion: 2% deoxyarbutin and 4% hydroquinone sera showed comparable depigmenting efficacy.

N. Lourith, M. Kanlayavattanakul, **Fruitful Skin Benefits - Litchi Peel Extract for Natural Brightening**, Cosmetics & Toiletries, March 2021, p. 54-60

Litchi *(Litchi chinensis* Sonn.), or lychee, is a fruit with a particular flavor and taste that has long been used as a medicinal herb in several Asian recipes for weight control, lowering cholesterol and diabetes treatment. It also has an anti-inflammatory effect due to pharmacologically active phenolics, which have been shown to mitigate obesity-associated metabolic syndrome. Accordingly,it is widely cultivated in Asian countries including Thailand, as 's one of the country's most important fruit crops, especially in Chiang Rai where the Emperor cultivar, a golf ball-sized fruit with a slightly acidic flavor, .is cultivated as the signature fruit product.

D. Roggenkamp, N. Dlova, T. Mann, J. Batzer, J. Riedel, M. Kausch, I. Zoric, L. Kolbe, **Effective reduction of post-inflammatory hyperpigmentation with the tyrosinase inhibitor isobutylamido-thiazolyl-resorcinol (Thiamidol)**, Int J Cosmet Sci, 2021;43: p. 292–301

Objective: Post-inflammatory hyperpigmentation (PIH) is a major cosmetic concern especially in individuals with darker skin complexion. Unfortunately, treatment with anti-inflammatory ingredients alone does not prevent the development of hyperpigmented spots. Recently, isobutylamido-thiazolyl-resorcinol (Thiamidol) was described as a very potent inhibitor of human tyrosinase. The objective of this research was to investigate the potential of this compound to prevent PIH induced by epidermal wounding (suction blister) and related to acne. Methods: Suction blister-induced PIH was treated with a formulation containing Thiamidol or a vehicle for 3 months, and the changes in hyperpigmentation were monitored by spectroscopic measurements. The effect of skin care formulations containing Thiamidol on acne-related PIH was investigated in two studies, a vehiclecontrolled, double-blinded, randomized clinical study and a clinical observational study. Both studies had a duration of 3 months and included assessments such as clinical photography, clinical grading and melanin index measurements. Results: Already after 2 weeks of treatment, suction blister sites treated with Thiamidol were significantly lighter than control sites and improved throughout the treatment period. Subjects´ self-grading demonstrated that Thiamidol significantly improved the visibility of acne-induced hyperpigmentation compared to the vehicle treatment. A skin care regimen with Thiamidol significantly improved acne-related PIH over 12 weeks shown by Mexameter measurements, expert grading, self-grading and clinical photography. Conclusion: Thiamidol represents a safe and effective ingredient for cosmetic products against post-inflammatory hyperpigmentation.

M.A. Nilforoushzadeh, M. Heidari-Kharaji, S. Alavi, M. Mahmoudbeyk, E. Torkamaniha, A. Peyrovan, M. Nouri, S. Zare , **Assessing the effectiveness of the combination therapy with fractional Er-**

YAG laser and platelet-rich plasma in treatment of periorbital dark circles patients: A clinical trial, J Cosmet Dermatol, 2021 Feb 27

Background: Numerous therapeutic techniques for periorbital hyperpigmentation have been suggested. Aim: In this comparative intrapatient study, the effectiveness of combination therapy included fractional Er: YAG laser and autologous platelet-rich plasma (PRP) compared to Er: YAG laser in periorbital hyperpigmentation treatment. Patients/methods: Thirty-two patients were enrolled. The right periorbital sides of patients received combination of Er: YAG laser and autologous platelet-rich plasma (PRP) and the left side received Er: YAG laser (three sessions with 4 weeks' intervals). PRP was used in two ways included injection and topical. Patients were evaluated by biometric characteristics, patients, and physician assessments. Also, the patient's satisfaction was assessed and side effects were evaluated. Results: The mexameter results showed that the melanin content in the right side of the periorbital of the patients was significantly decreased compared to left side. Also, significant increase was observed in the skin lightness of the right side in compare to left. The visioface results showed the decrease in the percent change of the color and wrinkle in both sides, but in the right side these changes were significantly more than left side. The patients and physician assessment confirmed the measured results. Conclusion: Combination of Er: YAG laser and PRP is significantly effective for periorbital hyperpigmentation.

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?

A. Tortora, M. Bimonte, A. Tito, C. Zappelli, F. Apone, **Soothing Moves - Cannabis Sativa Cell Culture Alleviates Inflammation**, Cosmetics & Toiletries, January 2021, p. 34-44

Originating from central Asia, Cannabis sativa is an annual herbaceous flowering plant. Although used medicinally for centuries, it recently has experienced a significant resurgence in interest, becoming a buzzword in beauty. The main reasons behind this are the richness of chemical compounds produced by the plant and the significant opening up of regulatory markets. Cannabis plants contain more than 500 known compounds.

W.Pangkanon, P. Yenbutra, N. Kamanamool, A. Tannirandorn, M. Udompataikul, **A comparison of the efficacy of silicone gel containing onion extract and aloe vera to silicone gel sheets to prevent postoperative hypertrophic scars and keloids**, J Cosmet Dermatol. 2021;20: p. 1146–1153

Background: Hypertrophic scars and keloids are postsurgery problems. Some studies showed that onion extract and aloe vera might be beneficial for postoperative scars. However, few of the randomized clinical trials were investigated. Aims: To compare the efficacy of silicone gel containing onion extract and aloe vera (SGOA) to silicone gel sheets (SGS) to prevent postoperative hypertrophic scars and keloids. Methods: The prospective randomized assessor-blind controlled trial was conducted with 40 patients who had undergone surgery. The patients were divided into two groups: one treated with SGOA, the other with SGS. The patients were evaluated after 1, 2, and 3 months. The objective assessment was to determine the incidences of scarring, erythema, and melanin values using Mexameter, and pliability through Cutometer. The subjective assessment consisted of the patient and observer scar assessment scale (POSAS) and patient satisfaction. Results: After the 12-week follow-up, there was no statistically significant difference in the scarring incidence rate of both groups. There were no statistical differences in the POSAS score, erythema, and melanin value between both groups. Using objective assessment, pliability in the SGOA group was statistically significantly higher compared to the SGS group. Pain and itchiness significantly decreased in both groups. No adverse effects were reported in either group. Conclusion: Silicone gel containing onion extract and aloe vera is effective as SGS for postoperative scar prevention.

A. Gledovic, A. Janosevic Lezaic, I. Nikolic, M. Tasic-Kostov, J. Antic-Stankovic, V. Krstonosic, D. Randjelovic, D. Bozic, D. Ili, S. Tamburic, S. Savic, **Polyglycerol Ester-Based Low Energy Nanoemulsions with Red Raspberry Seed Oil and Fruit Extracts: Formulation Development toward Effective In Vitro/In Vivo Bioperformance**, Nanomaterials 2021, 11, 217.

This study focuses on the development of biocompatible oil-in-water (O/W) nanoemulsions based on polyglycerol esters, as promising carriers for natural actives: red raspberry seed oil—RO and hydro-glycolic fruit extracts from red raspberry—RE and French oak—FE. Nanoemulsions were obtained via phase inversion composition (PIC) method at room temperature by dilution of microemulsion phase, confirmed by visual appearance, percentage of transmittance, microscopic,

rheological and differential scanning calorimetry (DSC) investigations. The results have shown that the basic RO-loaded formulation could be further enriched with hydro-glycolic fruit extracts from red raspberry or French oak, while keeping a semi-transparent appearance due to the fine droplet size (Z-ave: 50 to 70 nm, PDI value ≤ 0.1). The highest antioxidant activity (~92% inhibition of the DPPH radical) was achieved in the formulation containing both lipophilic (RO) and hydrophilic antioxidants (FE), due to their synergistic effect. The nanoemulsion carrier significantly increased the selective cytotoxic effect of RO towards malignant melanoma (Fem-X) cells, compared to normal human keratinocytes (HaCaT). In vivo study on human volunteers showed satisfactory safety profiles and significant improvement in skin hydration during 2 h after application for all nanoemulsions. Therefore, polyglycerol ester-based nanoemulsions can be promoted as effective carriers for red raspberry seed oil and/or hydro-glycolic fruit extracts in topical formulations intended for skin protection and hydration.

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.

T. Montero-Vilchez, M.-V. Segura-Fernández-Nogueras, I. Pérez-Rodríguez, M. Soler-Gongora, A. Martinez-Lopez, A. Fernández-González, A. Molina-Leyva, S. Arias-Santiago, **Skin Barrier Function in Psoriasis and Atopic Dermatitis: Transepidermal Water Loss and Temperature as Useful Tools to Assess Disease Severity**, J. Clin. Med. 2021, 10, 359

Multiple diagnostic tools are used to evaluate psoriasis and atopic dermatitis (AD) severity, but most of them are based on subjective components. Transepidermal water loss (TEWL) and temperature are skin barrier function parameters that can be objectively measured and could help clinicians to evaluate disease severity accurately. Thus, the aims of this study are: (1) to compare skin barrier function between healthy skin, psoriatic skin and AD skin; and (2) to assess if skin barrier function parameters could predict disease severity. A cross-sectional study was designed, and epidermal barrier function parameters were measured. The study included 314 participants: 157 healthy individuals, 92 psoriatic patients, and 65 atopic dermatitis patients. TEWL was significantly higher, while stratum corneum hydration (SCH) (8.71 vs. 38.43 vs. 44.39 Arbitrary Units (AU)) was lower at psoriatic plaques than at uninvolved psoriatic skin and healthy controls. Patients with both TEWL > 13.85 g·m-2h-1 and temperature > 30.85 ◦C presented a moderate/severe psoriasis (psoriasis area severity index (PASI) ≥ 7), with a specificity of 76.3%. TEWL (28.68 vs. 13.15 vs. 11.60 g·m-2 h-1) and temperature were significantly higher, while SCH (25.20 vs. 40.95 vs. 50.73 AU) was lower at AD eczematous lesions than uninvolved AD skin and healthy controls. Patients with a temperature > 31.75 ◦C presented a moderate/severe AD (SCORing Atopic Dermatitis (SCORAD) ≥ 37) with a sensitivity of 81.8%. In conclusion, temperature and TEWL values may help clinicians to determine disease severity and select patients who need intensive treatment.

V.B. Şorop, V.M. Boruga, I.A. Pînzaru, I.R. Barac, C. Utescu, A.L. Maghiari, F. Baderca, L. Bălan, M. Şorop-Florea, V. Dumitraşcu, D. M. Anastasiu, S. Simu, D. Radu, O. Suciu, **Hormone treatment and UVB exposure influences on female mice regarding skin physiological parameters, biochemical parameters and organ histology**, Rom J Morphol Embryol 2020, 61(3): p. 879–887

Females require at a certain period of life the administration or supplementation of specific hormones (estrogen, progesterone), for various needs, such as: prevention of unwanted pregnancies, decreased menstrual bleeding, dysmenorrhea and pelvic pain in endometriosis, alleviation of

symptoms associated with menopause, regulation of certain skin processes related to acne or aging and others. Also, hormones could act as oncogenes being known eloquent examples of estrogens labeled both as promoters of cell specific alteration or as mutagenic agents. The use of hormones and exposure to solar radiation is expected to cause a number of adverse changes to the body, especially due to their association with malignant processes. The current study was purported as a basis for understanding certain processes that occur with the administration of hormones and exposure to ultraviolet B (UVB) radiation. The animal model was made on healthy adult female BALB/c mice, which were separated into groups and treated with Ethinylestradiol (EES), Levonorgestrel (LNG) and their combination in the presence of UVB radiation. Changes in skin physiological parameters were analyzed by non-invasive methods, biochemical parameters related to changes in blood circulating system were evaluated by standard methods and histopathological analysis was conducted to point out the changes at the level of the internal body. Measurement of skin parameters such as erythema, melanin, skin hydration, has highlighted some changes in hormone-treated and exposed to UVB radiation groups which were significant only in the case of erythema. Biochemical parameters showed variations in terms of liver enzymes in groups treated with active substances. Histologically, aspects of internal organs revealed significant changes in the group treated with EES and LNG and exposed to UVB radiation.

I.B.S. Sitohang, S. Ninditya, **Systemic Glutathione as a Skin-Whitening Agent in Adult**, Hindawi Dermatology Research and Practice Volume 2020

Objectives. To compare the efficacy and safety profiles of systemic glutathione as a skin-whitening agent in adults from several randomized controlled trials (RCTs). Methods. *is study is an evidence-based case report with literature search conducted on Clinical Key, Cochrane, Journal of the American Academy of Dermatology, Taylor and Francis Online, ScienceDirect, and PubMed databases. *ree relevant RCTs were extracted and assessed for validity, importance, and applicability. Results. From 3 included trials, one of the studies opposed glutathione as a skin-whitening agent. However, the other two showed significant results only to some parts of the body or to certain age groups. As a skin-whitening agent, studies showed that glutathione yielded other cosmetic benefits as it may improve skin elasticity and reduce skin wrinkles. Furthermore, glutathione was well tolerated in oral preparations, but not in parenteral preparations. Conclusions. Highestevidence literatures showed that glutathione is not beneficial enough as a skin-whitening agent as it was only effective in some parts of the body and did not elicit long-lasting effects. However, its safety profiles in oral preparations were well tolerated. More researches regarding the time needed for skin color to return to its original state following drug withdrawal need to be conducted as it is yet to be discovered.

D. Saraswati Murniastuti, K. Etnawati, S. Retno Pudjiati, **The correlation between severity of melasma with facial wrinkles in Yogyakarta**, Indonesia, Dermatology Reports 2020; volume 12:8390

Melasma is a common disfiguring condition involving acquired hyperpigmentation especially on the face, for which the pathogenesis is still uncertain, however histopathological studies showed that there is not only hyperpigmentation in the epidermis, but also solar elastosis or photo-aging due to abnormality of dermal extracellular matrix which contributes to clinical wrinkles. This study aimed to examine a link between the severity of melasma and facial wrinkles as a manifestation of photoaging in a tropical area. This study was an observational study with crosssectional design, conducted in Yogyakarta, Indonesia involving 51 patients with melasma aged 30-50 years who had fulfilled the inclusion and exclusion criteria. The melisma severity was measured clinically with the modified Melasma Severity Index (mMASI), and objectively with the Melanin Index (MI) and Erythema Index (EI) assessed with Mexameter Courage Khazaka. The wrinkle severity was measured clinically by scoring from forehead horizontal lines, crow's feet, glabellar and nasolabial lines, and total scores were obtained from all of them. The correlation analysis was done statistically with Spearman's rank tests. The results showed a weak positive but not significant correlation between the mMASI score and total facial wrinkle score (r: 0.165), and a weak positive non-significant correlation between EI and total facial wrinkle score (r: 0.06). There were significant positive moderate correlationsbetween MI and total facial wrinkle score (r: 0.441), due to significant positive moderate correlations between MI and glabella wrinkle (r: 0.392), and between MI and nasolabial wrinkle (r: 0.339). In conclusion, a positive moderate correlation was found between MI and total facial wrinkle score, especially relating to glabellar and nasolabial wrinkles. However, there was no correlation between mMASI score and total facial wrinkle score.

J. Manosroi, C. Chankhampan, W. Kitdamrongtham, J. Zhang, M. Abe, T. Akihisa, W. Manosroi, *A. Manosroi,* **In vivo anti-ageing activity of cream containing niosomes loaded with purple**

glutinous rice (Oryza sativa Linn.) extract, Int J Cosmet Sci, 2020 Dec;42(6): p. 622-631

Objective: To evaluate the anti-ageing activity of cream containing the methanolic purple glutinous rice extract loaded in niosomes. Methods: The in vitro biological activities of the purple glutinous rice extracted by methanol maceration were determined. The extract loaded in niosomes and the cream containing the niosomes were developed. The in vivo anti-ageing activity in 20 human volunteers including skin hydration, pigmentation, roughness and elasticity after daily application for 28 days compared to at initial was evaluated by Corneometer, Mexameter, Visiometer and Cutometer, respectively. Results: The purple glutinous rice extract showed free radical scavenging (SC), lipid peroxidation inhibition (IPC), metal ion chelating (CC) and tyrosinase inhibition (IC) values at 32.31 ± 1.28, 57.40 ± 2.12, 85.05 ± 5.43 and 43.89 ± 2.14 mg/mL which were 0.00031, 0.011, 0.0078 and 0.0016 times of the standards (0.01 ± 0.00, 0.62 ± 0.14, 0.66 ± 0.05 and 0.07 ± 0.01), respectively. The purple glutinous rice extract contained 0.35 µg of anthocyanin/1 mg of the extract determined by HPLC. After loaded in niosomes, the solubility of the extract was not only increased in various solvents, but also the chemical stability in different environments (weak base, reducing agent and acid salt) was improved. The cream formulation containing niosomes loaded with 1%w/v of the purple glutinous rice extract indicated the anthocyanin remaining percentages after 6 cycles of heating and cooling test at 52.28% of the initial. For in vivo anti-ageing activities, cream containing niosomes loaded with the extract gave significant decreased melanin index and skin roughness reduction of -14.05 and -9.95% of the initial, respectively. The % changes of the increased skin hydration, skin elastic extension and skin elastic recovery when applied on human volunteers' skin with this formulation were +48.73, -24.51 and +35.98%, respectively. Conclusion: The cream containing niosomes loaded with the 1%w/v methanolic purple glutinous rice extract gave not only the suitable in vitro antioxidant activity and physical stability of the active anthocyanin, but also the superior in vivo anti-ageing activity on human skin compared to the cream base and before application which can be further developed as a novel anti-ageing cosmeceutical product.

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.

K. Linde, C.Y. Wright, J.L. du Plessis, **Subjective and objective skin colour of a farmworker group in the Limpopo Province, South Africa**, Skin Research & Technology, Volume 26, Issue 6, November 2020, p. 923-931

Background: Farmworkers in the Limpopo Province, South Africa, are at risk of excessive exposure to solar ultraviolet radiation (sUVR) due to both their work and the sUVR environment in the geographic area. However, the natural protection provided by this group's skin against sUVR has not been quantified. The aim of this study was to evaluate the subjective and objective skin colour of a group of farmworkers in order to classify the natural photoprotection provided by melanin and to evaluate the different measurement methods. Materials and Methods: Skin colour was established by using the subjective Fitzpatrick skin phototype system (FST) questionnaire and two objective methods, namely the individual typology angle (ITA°) and melanin index (MI). A total of 71 farmworkers participated in the study. Results: Black Africans tended to perceive their skin to be lighter than objectively measured, potentially due to cultural factors. The constitutive skin colour of most farmworkers was objectively classified in the FST V/brown group. Significant differences were found between the ITA° and MI of sun-exposed (constitutive) and non–sun-exposed (facultative) skin in Black African and White farmworkers. A strong correlation was found between ITA° and MI on different anatomical positions indicating both methods are appropriate to determine skin colour in deeply pigmented skin. Conclusion: The evaluation of skin colour with the use of both subjective and objective methods may be used to design an effective photoprotection programme for farmworkers in the Limpopo Province.

Y. Pan, X. Ma, J. Zhao, S. Yan, Q. Liu, H. Zhao, **The Interaction of Age and Anatomical Region Influenced Skin Biophysical Characteristics of Chinese Women**, Clinical, Cosmetic and Investigational Dermatology 2020:13, p. 911–926

Background: Ageing is an inevitable physiology process of humans, and skin biophysical parameters change owing to genetic and environmental factors in different ethnic populations. Aim: To gain comprehensive data on the skin biophysical parameters of different anatomical regions and to explore the change trend of the skin characteristics associated with age for the indicated regions by generalized additive model. Methods: We measured various skin biophysical parameters on forehead, cheek, chin and inner forearm of 178 Chinese women aged between 20 and 64 years living in Beijing. These parameters comprised skin hydration, transepidermal water loss (TEWL), sebum content, erythema index (EI), melanin index (MI), L*a*b* values, individual typology angle (ITA) and pH, which were quantifed by non-invasive instruments. Results: Comparing the skin parameters among the four test areas, we observed that the hydration, TEWL, EI and a* values were signifcantly higher for the face than for the forearm, but the L* and ITA values were just the opposite. The cheek was the lightest and brightest region with lowest sebum content, while the chin was much darker and the forehead was yellowish. Considering the change of the skin parameters with age, TEWL, sebum content and melanin and erythema indices had a linear relationship with age, whereas skin hydration, L, a, b, ITA and pH values exhibited a non-monotonic relationship. The turning points of these curves appeared almost at the thirties, showing the lightest and evenest skin color and more hydration, with lower pH values. Conclusion: This study indicates that the skin biophysical characteristics of Chinese women were signifcantly affected by age and body regions.

K. Li, F. Nicoli, C, Cui, W.J. Xi, A. Al-Mousawi, Z. Zhang, A. Balzani, L. Neill, R. Sorge, Y. Tong, Y. Zhang, **Treatment of hypertrophic scars and keloids using an intralesional 1470 nm bare-fbre diode laser: a novel efcient minimally-invasive technique**, Scientifc Reports, (2020) 10:21694

Hypertrophic and keloid scars result from abnormal wound healing and can have a variable response to a number of available treatment modalities. The evolution of laser treatments in recent years has shown a wide range of clinical applications including their use in the treatment of scars. We investigated the efectiveness of a 1470 nm diode laser using an intralesional optical fbre deliverydevice in the treatment of hypertrophic and keloid scars. We evaluated its safety and efcacy as a novel and minimally invasive treatment alternative for scar modulation and volume reduction. A prospective cohort study was performed involving 21 patients with hypertrophic scars (HS) (n = 9) and keloids (n = 12) resulting from various aetiology. Patients were treated with one to three treatment sessions. Comprehensive evaluations were performed using the Vancouver Scar Scale, Doppler ultrasound, Cutometer, Mexameter and PeriCam PSI. Scar thickness was reduced by an average of 0.308 ± 0.138 cm ($p < 0.001$). In particular the two subgroups showed a signifcant 27.7% and 28.2% reduction in scar thickness of HS and Keloids, respectively. Scar frmness showed a signifcant

improvement of 1.2% ($p < 0.05$) for HS, though for keloids this was 0.4% ($p = 0.26$). Keloids had a signifcant reduction in pigmentation at 21.3%. Blood perfusion had a signifcant reduction of 29.6% in HS and 22.7% in Keloids. Overall VSS total score improvement of 42% in the HS and at 37.9% in the Keloid subgroup. No adverse events such as hypo/hyperpigmentation, skin infection, or recurrence were reported. This study shows that the intralesional 1470 nm bare-fbre diode laser signifcantly improved hypertrophic and keloid scars based on both subjective and objective analyses and supportsthis type of laser therapy as a safe and efective minimally-invasive treatment option.

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.

H.-J. Li, N.-L. Wu, C.-M. Pu, C.-Y. Hsiao, D.-C. Chang, C.-F. Hung, **Chrysin alleviates imiquimod-induced psoriasis-like skin infammation and reduces the release of CCL20 and antimicrobial peptides**, Scientific Reports (2020) 10:2932

Psoriasis is a common non-contagious chronic infammatory skin lesion, with frequent recurrence. It mainly occurs due to aberrant regulation of the immune system leading to abnormal proliferation of skin cells. However, the pathogenic mechanisms of psoriasis are not fully understood. Although most of the current therapies are mostly efcient, the side efects can result in therapy stop, which makes the efectiveness of treatment strategies limited. Therefore, it is urgent and necessary to develop novel therapeutics. Here, we investigated the efcacy of chrysin, a plant favonoid, which we previously reported to possess strong antioxidant and anti-infammatory efects, against psoriasis-like infammation. Our results revealed that chrysin signifcantly attenuated imiquimod-induced psoriasislike skin lesions in mice, and improved imiquimod-induced disruption of skin barrier. Moreover, the tnf-α, IL-17A, and IL-22-induced phosphorylation of MAPK and JAK-STAT pathways, and activation of the nf-κB pathway were also attenuated by chrysin pretreatment of epidermal keratinocytes. Most importantly, chrysin reduced tnf-α-, IL-17A-, and IL-22-induced CCL20 and antimicrobial peptide release from epidermal keratinocytes. Thus, our fndings indicate that chrysin may have therapeutic potential against infammatory skin diseases. Our study provides a basis for further investigating chrysin as a novel pharmacologic agent and contributes to the academic advancement in the feld of Chinese herbal medicine.

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.

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.

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.

K. Zduńska-Pęciak, H. Rotsztejn, **The effectiveness of ferulic acid and microneedling in reducing signs of photoaging: a split-face comparative study**, Dermatol Ther, Jul 2020

Background: Photoaging is closely related to UV-induced oxidative stress. Ferulic acid is a plant-based antioxidant with anti-aging activity. Combining ferulic acid peel with microneedling enhances it's transdermal penetration. This study was designed to evaluate the efficacy of 14% ferulic acid peel combined with microneedling for facial photoaging. Materials and methods: 16 women aged 45-60 with Fitzpatrick skin type II and III, were enrolled in this trial. All patients received 8 treatment sessions with a full face application of chemical peeling based on 14% ferulic acid in 1-week intervals. During each session, on the right half of patient's face, peeling application was followed by microneedling. Efficacy was measured using MPA (Courage+Khazaka electronic). The measurement of hydration, elasticity, melanin index and erythema index were taken before treatments, after 8th session and 1 month after the last application. Results: The objective evaluation showed statistically significant improvement in all measured skin parameters ($p<0,05$), after ferulic acid peel application, as well as ferulic acid peel followed by microneedling. Combined therapy showed significantly greater improvement especially in skin elasticity, comparing to peeling administered alone. Conclusion: Ferulic acid has a significant bleaching, anti-redness, smoothing and moisturizing activity. When combined with microneedling, the efficiency is increased, in particular regarding skin elasticity.

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.

M. Kanlayavattanakul, W. Chongnativisit, P. Chaikul, N. Lourith, **Phenolic-rich Pomegranate Peel Extract: In Vitro, Cellular, and In Vivo Activities for Skin Hyperpigmentation Treatment**, Planta Med, Jul 2020

The pomegranate phenolics are reported to have cutaneous benefits and to be effective in treating skin disorders, including hyperpigmentation. In this context, a preparation method was developed by which to obtain phenolic-rich pomegranate peel extract. Sinapic acid was presented as the major pomegranate peel phenolics, followed by gallic and ellagic acids, and 4 additional phenolics. The extract exhibited strong antioxidant activity with an *in vitro* tyrosinase inhibitory effect. The skin hyperpigmentation treating potency was confirmed by the suppression of cellular melanogenesis through tyrosinase and TRP-2 inhibitions as examined in the B16F10 melanoma cells. Cellular antioxidant and proliferative activities of the extract toward human dermal fibroblasts were evidenced, as well as an inhibitory effect against MMP-2. The extract was developed into the stable serum and mask. The products were proved to be non-irritated in 30 Thai volunteers participating in a single application closed patch test. A split-face, randomized, double-blind, placebo-controlled test of the skin lightening effect was evaluated in the 30 volunteers over 28 consecutive daily treatments and monitored by the Mexameter MX 18. The active serum and mask were better in facial skin lightening efficacy than the placebo ($p < 0.005$). That was in accordance with the sensory evaluation scored by the volunteers. Phenolic-rich pomegranate peel extract is evidenced as a safe herbal derived material promising for skin hyperpigmentation treatment. Supportive information regarding chemical and biological profiles is presented with the confirmed safety and cutaneous benefits in volunteers.

A. Charpentier, **Clinically supporting 'antiage' and 'pro-age' claims**, Personal Care Europe, June 2020

Claims of personal care evolve following trends and various innovations in the field of the active ingredient development, the finished product formulation and the way both are evaluated, demonstrating their performances. Since 2014, the cosmetics industry is gradually leaving the era of anti-ageing behind. Today, most consumers are more in the mood for a well ageing, slow ageing or pro ageing approach. The philosophy of the 'pro-ageing' movement has sought to remove all 'anti' claims because, according to this concept, women over 50 are not interested in looking younger; they want to look healthy and be honest about their age. Some brands have used the idea of "improves the appearance of skin quality", and "restore the skin comfort", for example. A new vocabulary of renewal, regeneration, plumpness and "glow" now dominates the language of the beauty industry.

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.

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.

T. Quinn, R. Harper, **Evaluation of Barrier Protection Properties of Jojoba Esters**, SOFW Journal 06/20, Volume 146

This research evaluates the ability of jojoba esters and hydrolyzed jojoba esters to protect the skin from insults consumers are exposed to everyday, such as pollution, sensitizers, and commonly used personal care ingredients. Jojoba esters and hydrolyzed jojoba esters are jojoba derived emollients that are commonly included in cosmetic and personal care products for their aesthetically pleasing properties and functionality, which include their ability to moisturize and protect the skin. Consumers encounter a variety of insults to the skin daily, including pollution, allergens, UV rays, as well as various ingredients included within personal care products, such as surfactants, alpha hydroxy acids, and fragrance. A series of in vivo, vehicle-controlled studies were carried out to determine if a combination of jojoba esters and hydrolyzed jojoba esters could protect the skin (i.e. reduce symptoms of irritation) from the following everyday insults: antiperspirant actives, pollution, and known sensitizers (i.e. allergens). The results show that jojoba esters and hydrolyzed jojoba esters provided statistically signifcant benefits for reducing perceived irritation / sensitivity, barrier disfunction (i.e. TEWL), and erythema.

J.-W. Guo, Y.-P. Cheng, C.-Y. Liu, H.-Y. Thong, C.-J. Huang, Y. Lo, C.-Y. Wu, S.-H. Jee, **Salvianolic Acid B in Microemulsion Formulation Provided Sufficient Hydration for Dry Skin and Ameliorated the Severity of Imiquimod-induced Psoriasis-like Dermatitis in Mice**, Pharmaceutics 2020, 12, 457

Psoriasis is a chronic inflammatory skin disorder with a pathogenesis involving the interleukin-23/interleukin-17 axis. Salvianolic acid B exerts several pharmacological effects, such as antioxidation, anti-inflammation, and antitumor effects. The anti-psoriatic effects of salvianolic acid B have not been reported. In this study, we aimed to determine the optimum vehicle for salvianolic acid B, investigate its therapeutic effect on psoriatic-like skin conditions, and explore its underlying mechanisms of action. BALB/c mice were administered topical imiquimod to induce psoriasis-like skin and were then randomly assigned to control, vehicle control, salvianolic acid B in vehicles, and 0.25% desoximetasone ointment treatment groups. Barrier function, cytokine expression, histology assessment, and disease severity were evaluated. The results showed that salvianolic acid B-containing microemulsion alleviated disease severity, reduced acanthosis, and inhibited interleukin-23/interleukin-17 (IL-23/IL-17) cytokines, epidermal proliferation, and increased skin hydration. Our study suggests that salvianolic acid B represents a possible new therapeutic drug for the treatment of psoriasis. In addition, such formulation could obtain high therapeutic efficacy in addition to providing sufficient hydration for dry skin.

T. Chu, N.-L. Wu, C.-Y. Hsiao, H.-J. Li, T.-Y. Lin, C.-H. Ku, C.-F. Hung, **An isoflavone extract from soybean cake suppresses 2,4-dinitrochlorobenzene-induced contact dermatitis**, J Ethnopharmacol, May 2020

Ethnopharmacological relevance: Numerous epidemiological and clinical studies have demonstrated the protective role of dietary isoflavones against development of several chronic diseases. ISO-1, one fraction of isoflavone powders derived from soybean cake, is reported to attenuate inflammation and photodamage. Aim of the study: Contact dermatitis is a common inflammatory skin disease, which accounts for most occupational skin disorders. Instead of oral administration, we aimed to explore the effects of topical ISO-1 application on contact dermatitis by using 2,4-dinitrochlorobenzene (DNCB)-stimulated HaCaT keratinocytes and DNCB-induced mouse dermatitis as models. Materials and methods: In the in vitro study, we first evaluated the biologic effects of DNCB on HaCaT keratinocytes. HaCaT keratinocytes were treated with 2,4-dinitrochlorobenzene (DNCB), and cell viability was measured by MTT assay. Then, we detect the prominent induction of IL-8 mRNA expression after DNCB and ISO-1 treatment by reverse transcription polymerase chain reaction (RT-PCR), and release of IL-8 from HaCaT keratinocytes was measured by ELISA assay. HaCaT keratinocytes were pretreated with ISO-1 and then treated with DNCB, phosphorylation of JNK, p38, ERK and IκBα was analyzed by Western blot. In the in vivo study, the hairless mice were used for an induced contact dermatitis model. The surface changes in the dorsal skin after DNCB and ISO-1 treatment were recorded using photography, and TEWL, erythema were measured using an MPA-580 cutometer. Blood was also collected from mice for measurement of white blood cell counts. Results: Results showed ISO-1 inhibited DNCB-induced IL-8 production and also suppressed DNCB-induced phosphorylation of JNK and p38, and IκBα in HaCaT. In the animal model of DNCB-induced contact dermatitis, topical ISO-1 treatment significantly decreased DNCB-induced erythema and transepidermal water loss (TEWL) in mouse skin. ISO-1 also reduced DNCB-induced skin thickening and increase of white blood cell count. Conclusions: ISO-1 is promising for improvement of DNCB-induced inflammation and skin barrier impairment, suggesting the potential application of topical ISO-1 for inflammatory dermatoses.

M.C. Valbuena, J.A. Nova Villanueva, G. Sánchez Vanegas, **Minimal Erythema Dose: Correlation with Fitzpatrick Skin Type and Concordance Between Methods of Erythema Assessment in a Patient Sample in Colombia**, Actas Dermosifiliogr. 2020;111(5): p. 390-397

Background and objective: The minimal erythema dose (MED), an essential measurement in studies of skin photosensitivity, requires establishing MED values for specific populations, given genetic variation. Different ways to assess erythema are also relevant. We aimed to determine MED values in a sample of Colombian patients and correlations between MED and Fitzpatrick skin type. We also studied concordance correlation between MEDs and two alternative ways to assess erythema. Patients and methods: Cross-sectional study of 113 individuals in Bogotá, Colombia. We used a solar simulator to measure UV-A radiation and combined UV-A and UV-B (UVA + UVB) radiation, for MED calculation. Narrowband UV-B (NBUVB) radiation was measured in a phototherapy cabin. Erythema was assessed visually and with a Mexameter MX 18 device. Results: The median MEDs of UVA + UVB radiation were 22 mJ/cm2 for Fitzpatrick skin types I and II, and 33 and 43 mJ/cm2, respectively, for skin types III and IV. The MEDs of UV-A radiation were 22, 42, 86, and 100 J/cm2 for skin types I, II, III, and IV, respectively. The MEDs of NBUVB radiation were 390, 550, 770, and 885 mJ/cm2 for the 4 skin types. The correlation between MEDs and skin types ranged from 0.5 to 0.69. Lin's concordance correlation coefficients between visual and Mexameter assessments of erythema were greater than 0.8 in all cases. Conclusion: This study allowed us to understand MED values for UV-A, UVA + UVB, and NBUVB according to different skin types in the Colombian population. Concordance correlation coefficients between the different methods of erythema assessment were very good. Correlations between MEDs and skin types were moderate to good.

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.

D. Maggioni, A. Cimicata, A. Praticò, R. Villa, F.M. Bianchi, S. Busoli Badiale, C. Angelinetta, **A Preliminary Clinical Evaluation of a Topical Product for Reducing Slight Rosacea Imperfections**, Clinical, Cosmetic and Investigational Dermatology 2020:13, p. 299–308

Introduction: Rosacea is a chronic multifactorial skin disorder mainly affecting facial skin with an estimated prevalence of about 5% worldwide. Its main symptoms, occurring early during pathology development, are skin dehydration, redness, erythema, and telangiectasia. Given the lack of a resolutive cure, therapeutic approaches able to relieve the main symptoms are needed. Purpose: The aim of this research article is to evaluate the beneficial effect of a topical product (Serum BK46) on rosacea symptoms. Patients and Methods: A monocentric single-arm, non-blinded study was performed to assess the clinical effect of Serum BK46 in relieving the main symptoms of rosacea: skin dryness, increased trans epidermal water loss (TEWL), redness, and abnormal vascularization. Twenty patients with mild to moderate rosacea were enrolled in the study and asked to apply the product twice per day for 56 days. Skin moisturization, TEWL, and erythema index were instrumentally assessed at baseline and following 24 h and 14, 28 and 56 days of treatment. Clinical parameters, including redness and telangiectasia imperfection visibility, were evaluated on a 5-point scale by a specialized dermatologist at baseline and after 14, 28, and 56 days of treatment. Finally, the visibility of vessel diameter was evaluated at baseline and after 28 and 56 days of treatment. Results: Serum BK46 application restored skin hydration and prevented the loss of water by the skin. Long-term treatment with Serum BK46 significantly reduced skin redness, erythema index, and the visibility of telangiectasia imperfections and superficial vessels. The investigated product's clinical effect was demonstrated by both instrumental and clinical evaluation. Furthermore, Serum BK46 was completely tolerated and no adverse effects were recorded. Conclusion: The moisturizing and skin barrier restoring action of Serum BK46 has been clearly proven in patients displaying mild to moderate rosacea; thus, this product is a good candidate for rosacea treatment.

M.G. Suh, G. Y. Bae, K. Jo, J.M. Kim, K.-B. Hong, H.J. Suh, **Photoprotective Effect of Dietary Galacto-Oligosaccharide (GOS) in Hairless Mice via Regulation of the MAPK Signaling Pathway**, Molecules 2020, 25, 1679

This study investigated the suppression of photoaging by galacto-oligosaccharide (GOS) ingestion following exposure to ultraviolet (UV) radiation. To investigate its photoprotective effects, GOS along with collagen tripeptide (CTP) as a positive control was orally administered to hairless mice under UVB exposure for 8 weeks. The water holding capacity, transepidermal water loss (TEWL), and wrinkle parameters were measured. Additionally, quantitative reverse-transcription polymerase chain reaction and Western blotting were used to determine mRNA expression and protein levels, respectively. The GOS or CTP orally-administered group showed a decreased water holding capacity and increased TEWL compared to those of the control group, which was exposed to UVB (CON) only. In addition, the wrinkle area and mean wrinkle length in the GOS and CTP groups significantly decreased. Skin aging-related genes, matrix metalloproteinase, had significantly different expression levels in the CTP and GOS groups. Additionally, the tissue inhibitor of metalloproteinases and collagen type I gene expression in the CTP and GOS groups significantly increased. Oral administration of GOS and CTP significantly lowered the tissue cytokine (interleukin-6 and -12, and tumor necrosis factor-α) levels. There was a significant difference in UVB-induced phosphorylation of JNK, p38, and ERK between the GOS group and the CON group. Our findings indicate that GOS intake can suppress skin damage caused by UV light and has a UV photoprotective effect.

H.J. Choi, B.R. Song, J.E. Kim, S.J. Bae, Y.J. Choi, S.J. Lee, J.E. Gong, H.S. Lee, C.Y. Lee, B.-H. Kim, D.Y. Hwang, **Therapeutic Effects of Cold-Pressed Perilla Oil Mainly Consisting of Linolenic acid, Oleic Acid and Linoleic Acid on UV-Induced Photoaging in NHDF Cells and SKH-1 Hairless Mice**, Molecules 2020, 25, 989

Positive physiological benefits of several plant oils on the UV-induced photoaging have been reported in some cell lines and model mice, but perilla oil collected from the seeds of *Perilla frutescens* L. has not been investigated in this context. To study the therapeutic effects of cold-pressed perilla oil

(CPO) on UV-induced photoaging in vitro and in vivo, UV-induced cellular damage and cutaneous photoaging were assessed in normal human dermal fibroblasts (NHDFs) and HR-1 hairless mice. CPO contained five major fatty acids including linolenic acid (64.11%), oleic acid (16.34%), linoleic acid (11.87%), palmitic acid (5.06%), and stearic acid (2.48%). UV-induced reductions in NHDF cell viability, ROS production, SOD activity, and G2/M cell cycle arrest were remarkably improved in UV + CPO treated NHDF cells as compared with UV + Vehicle treated controls. Also, UV-induced increases in MMP-1 protein and galactosidase levels were remarkably suppressed by CPO. In UV-radiated hairless mice, topical application of CPO inhibited an increase in wrinkle formation, transepidermal water loss (TEWL), erythema value, hydration and melanin index on dorsal skin of UVB-irradiated hairless mice. CPO was observed to similarly suppress UV-induced increases in epidermal thickness, mast cell numbers, and galactosidase and MMP-3 mRNA levels. These results suggest CPO has therapeutic potential in terms of protecting against skin photoaging by regulating skin morphology, histopathology and oxidative status.

J. Cotton, C. Gondran, E. Oger, K. Cucumel, **Enhancing nocturnal processes for beautiful skin**, Personal Care Europe, April 2020

Ashland has unlocked the secret of our skin at night so you can awaken like Sleeping Beauty from your slumber, with skin re-set for the day ahead. Ashland Nightessence biofunctional was developed to enhance the naturally occurring nocturnal process that helps skin boost molecules such as timezyme andmelatonin. Leveraging off the current beauty sleep trend, this is the first biofunctional of its kind tailored to understand and optimise skin's nighttime needs. It helps restore it overnight, so skin looks rested, renewed and illuminated by morning. Nightessence was eco-consciously designed from field-to-skin. Our premium lavender is grown sustainably on the mountain slopes in Provence, France, and the flowers are extracted using Ashland's proprietary Plant Small RNA technology to offer a novel type of lavender essence to the cosmetic market

S. Hettwer, E. Besic Gyenge, B. Obermayer, **Influence of cosmetic formulations on the skin's circadian clock**, International Journal of Cosmetic Science, 2020, 42, p. 313–319

Objetive: The circadian rhythm was set into focus by awarding the Nobel Price of Physiology/Medicine to Jeffrey Hall, Michael Rosbash and Michael Young in late 2017. Numerous publications elucidated the molecular mechanisms driving the circadian biorhythms of our body, peripheral organs and each single cell. However, there is minor knowledge on the circadian rhythm of the skin, which has its own peripheral circadian clock in contact with cosmetic formulations. The skin's epidermal clock is excessively influenced by environmental factors like UV radiation or modern lifestyle, which may induce epidermal jetlag. Here, we give an overview on the current knowledge about the epidermal circadian clock and provide a cosmetic solution to protect and preserve the biorhythm of the skin. Methods: Quantitative RT-PCR to analyse the gene expression of circadian clock genes and the downstream DNA repair gene OGG1 in keratinocytes irradiated with UV-B. In vivo study to determine skin parameters dependent on the circadian cycle and interference of cosmetic formulations to them by assessment of morning and evening values at each measurement day after 28, 56 and 84 days of the study. Results: UV-B irradiation leads to a pronounced delay in circadian clock and downstream gene expression which interferes in the proper function of epidermal stem cells and as thus skin function. The use of a cosmetic active ingredient prevents cyclobutene pyrimidine dimer formation, protects epidermal stem cells and resets the circadian gene expression. It preserves the circadian changes in skin hydration, reduces daily fluctuations of skin redness and strengthens the skin barrier. Conclusion: The skin has its own circadian biorhythm to gain full functionality. Interruption of this oscillation will lead to functional impairments. Here we show a cosmetic solution to protect and preserve the skin's circadian rhythm. DNA protection, ROS elimination and stimulation of circadian gene expression seem to be crucial to keep the skin in balance.

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.

T. Jörger, **Hautphysiologische Untersuchungen an dermatologischen Patienten vor, während und nach Therapie in Abhängigkeit körperspezifischer Einflussgrößen,** Dissertation der Medizinischen Fakultät der Ludwig-Maximilians-Universität zu München, April 2020

Die Haut ist nicht nur das größte und schwerste Organ des Menschen, sondern sicherlich auch eines der wichtigsten. Begegnen wir einem Mitmenschen, ist sie eines der ersten Dinge, die wir an ihm wahrnehmen. Nach ihrem Aussehen beurteilen wir, ob er gesund erscheint oder eher blass und kränklich. Ist die Haut glatt und straff, oder schlaff und faltig? Allein dadurch ist es oftmals möglich, das Alter eines Mitmenschen zu schätzen. Ist die Haut stark gebräunt, folgt oft unweigerlich eine Frage wie: „Warst du im Urlaub?“. Wirkt die Haut gepflegt oder unrein und fettig? Hat unser Gegenüber einen Ausschlag im Gesicht und wenn ja, ist er vielleicht ansteckend? Sollten wir uns lieber von ihm fernhalten? Solche, teils unbewusste Gedanken und noch viele mehr können bereits ein festes Bild von einem Mitmenschen in uns festlegen, bevor wir überhaupt ein Wort mit ihm gewechselt oder ihm die Hand geschüttelt haben.

S. Meer, S. Aslam, M.S.A. Abbasi, M. Aslam Tahir, **Improvements in human skin texture and surface with the use of emulgels containing *Annona squamosa* L. fruit extract along with penetration enhancer**, International Journal of Scientific & Engineering Research Volume 11, Issue 3, March, 2020

This investigational study was designed to characterize anti-aging effects of o/w emulgels containing *Annona squamosa* L. fruit extract by comparing it with its control and the variation in these effects with the addition of penetration enhancer. The control (without extract and penetration enhancer i.e. clove oil 8%) and the two test formulations with 4% fruit extract (one without clove oil and other with clove oil) were formulated and applied on the cheeks of 26 healthy female human volunteers (n=26, divided into two equal groups) for a period of 12 weeks. All the formulation was evaluated for skin texture parameters (energy, contrast and variance) and surface evaluation of the living skin (SELS parameters) using Visioscan® VC 98. There was a visible improvement of the overall skin appearance and reduced number of fine lines by both of the test formulations. Moreover, skin texture (variance and contrast) and SELS (SEr, SEsc and SEw) parameters showed significant decline ($p < 0.05$) and the texture parameter of energy and SEsm showed significant increase ($p < 0.05$). All our findings indicate that the emulgel containing 4% *Annona squamosa* L. fruit extract improves skin texture and SELS parameters ultimately possesses anti-aging effects and these effects can be increased by the addition of penetration enhancer.

C. Karamani, I.T. Antoniadou, A. Dimou, E. Andreou, G. Kostakis, A. Sideri, A. Vitsos, A. Gkavanozi, I. Sfiniadaki, H. Skaltsa, G.T. Papaioannou, H. Maibach, M. Rallis, **Optimization of psoriasis–like mouse models: A comparative study**, bioRxiv, March 2020

Psoriasis, a common chronic, autoimmune, inflammatory, relapsing disease should benefit from reliable and human relevant animal models in order to pre-clinically test drugs and approach their mechanism of action. Due to ease of use, convenience and low cost, imiquimod (IMQ) induced psoriasis-like model is widely utilized; however, are all mouse strains equivalent, is the hairless mouse utilizable and can the imiquimod model be further optimized? Under similar experimental conditions, common mouse strains (BALB/c, C57BL/6J, ApoE) and a new hairless strain (ApoE/SKH-hr2) as well as several inducers (IMQ, IMQ + Acetic Acid (AcOH) topical and IMQ +AcOH systemic) were compared by clinical, histopathological, biophysical and locomotor activity assessment. Results showed that BALB/c mice yielded optimal psoriasislike phenotype with IMQ+AcOH topical treatment, C57BL/6J moderate, ApoE mild, while the ApoE/SKH-hr2 mice due to Munro abscess absence in histopathology analysis left doubts about the psoriasis-like acquisition. The locomotor activity of BALB/c mice treated with IMQ, IMQ+AcOH topically and IMQ+AcOH systemically, showed with all treatments, a decreased covered distance and rearing and an increased immobility. In conclusion, BALB/c appears an optimal psoriasis-like model when utilizing IMQ+AcOH topical application.

V.Z. Lim, A.A. Yong, W.P.M. Tan, X. Zhao, M. Vitale, C.L. Goh, **Efficacy and Safety of a New Cosmeceutical Regimen Based on the Combination of Snail Secretion Filtrate and Snail Egg Extract to Improve Signs of Skin Aging**, Journal of Clinical and Aestetic Dermatology, March 2020, Volume 13, Number 3

Background: Two extracts derived from the gastropod Cryptomphalus aspersa have been shown to have dermal regeneration properties: SCA® (secretion fltrate) with fbroblast growth factor-like activity and IFC®-CAF (cellular activating factor), a snail egg extract with skin stem cell activation

activity. Objective: The objectives of this study were to evaluate the synergic antiaging activity and tolerability of SCA and IFC-CAF in a combined regimen compared to vehicle as a placebo control. Methods: A three-month, single-center, double-blinded, randomized, vehicle-controlled trial assessed the effects of a daily skincare routine divided into two treatment phases, as follows: intensive (1 month) and maintenance (2 months). Fifty women, aged 45–65 years, with signs of photoaging were randomized to receive either the active ingredients (n=30) or vehicle (n=20). Clinical evaluations included objective measurements of barrier function and skin hydration, elasticity, and color/brightness. Subjective assessments were conducted according to the Rao-Goldman and Glogau scales for wrinkles, the Patient Global Assessment (PGA) scale and Investigator Global Assessment (IGA) scale. Results: Subjects in the active treatment group experienced reductions in transepidermal water loss and significant improvements in skin roughness, frmness, and elasticity. Both groups showed significant improvements in fne lines and wrinkles. PGA and IGA assessments indicated greater improvement in the active treatment group. Conclusion: The active snail extract treatment appears to be effective in improving signs of skin aging in women 45 to 65 years old. Larger randomized, controlled studies are needed to confrm our results.

S. Maya-Enero, J. Candel-Pau, J. Garcia-Garcia, A.M. Giménez-Arnau, M.Á. López-Vílchez, **Validation of a neonatal skin color scale**, Eur J Pediatr, Mar 2020

Ethnic classification does not correlate well with skin tone. As there are no neonatal skin color scales, we aimed to create and validate one of our own. After creating the scale and briefly training our staff, we conducted a prospective, observational study to assess reproducibility and correlation of each scale color with the melanin and erythema indexes and transcutaneous bilirubin. The reliability of our color scale was measured using Kappa agreement (and its 95% confidence interval) and the concordance index by comparing inter-observer classification of neonatal skin color. We also calculated inter-rater agreement with the intraclass correlation coefficient (ICC). The Kendall tau-b correlation coefficient was used to test the correlation between our color scale and the Mexameter® MX 18. We obtained data from 258 newborns. Inter-observer agreement on color assignment was 83.2%. Median melanin index was significantly different among the 4 color groups, whereas erythema index and transcutaneous bilirubin were not.Conclusions: Our proposed neonatal skin color scale correlates well with the melanin index at 24 h of life, increasing from colors 1 to 4, and the only chromophore different among our four color groups is melanin. Scale color assignment is reproducible. Therefore, it can be used to classify neonatal skin color. Further research is warranted to assess the clinical relevance of these findings.What is known:• Classifying neonates by skin color is difficult because to date there are no skin color scales available based on real skin tone regardless of ethnicity or country of origin. Skin color differs among individuals from a given ethnic group and depends, among others, on melanin and hemoglobin.What is new: We created a neonatal skin color scale based on real skin color. We conducted a study to validate it, and confirmed a good inter-observer agreement in color assignment as well as a good correlation between each color in the scale and the median melanin level.

N. Lourith, M. Kanlayavattanakul, **Formulation and clinical evaluation of the standardized Litchi chinensis extract for skin hyperpigmentation and aging treatments**, Ann Pharm Fr, 2020 Mar;78(2): p. 142-149

Introduction: The standardized litchi extract had been revealed on phytochemical actives, in vitro and cellular activities against aging and darkening of skin. However, a formulation containing the extract has never been developed as per clinical evaluated. Materials and methods: The litchi serum was developed, safety and efficacy were clinically evaluated in human volunteers. The stable and none irritated 0.05 and 0.1% litchi serums were randomized-single blind placebo control clinical applied on the inner forearm of 29 volunteers for a consecutive 112 days and monitored by Mexameter® MX18, Cutometer® MPA 580 and Visioscan® VC 98. Results: Skin lightening efficacy of the 0.1% and 0.05% litchi serum was significantly ($P<0.001$ and $P<0.05$) higher than the placebo. Skin elasticity and wrinkle reduction was significantly ($P<0.05$ and $P<0.005$) achieved by the 0.1% litchi serum. The efficacy of litchi serums was confirmed by a split-face, randomized, single-blind controlled that the 0.1% litchi serum was significantly ($P<0.05$) better than the 0.05% one of all examined parameters. Conclusion: Safety and efficacy of litchi extract are clinically confirmed for hyperpigmentation and aging of skin treatments.

F. Bracone, A. de Curtis, A. di Castelnuovo, R. Pilu, M. Boccardi, S. Cilla, G. Macchia, F. Deodato, S. Costanzo, L. Iacoviello, G. de Gaetano, A.G. Morganti, K. Petroni, C. Tonelli, M.B. Donati, C. Cerletti, **Skin toxicity following radiotherapy in patients with breast carcinoma: is anthocyanin supplementation beneficial?**, Clinical Nutrition, 2020

Background: The EU-supported ATHENA project stems from a previous study suggesting that moderate wine consumption reduced the side-effects of radiotherapy (RT) in breast cancer patients, an effect possibly due to non-alcoholic anthocyanin fractions of wine. Objective: To evaluate the role of anthocyanins on RT skin side effects in breast cancer patients. Methods: Randomized, controlled, double-blind clinical trial. Patients were assigned to an intensity modulated radiation therapy (IMRT) either for three or five weeks, then randomized to receive three times a day a water-soluble anthocyanin (125 mg)-rich extract of corn cob or a placebo. Supplementation started one week before till the end of RT. Skin characteristics were detected by a standardized, noninvasive Cutometer® dual-MPA580, providing quantitative indices of skin maximal distensibility (R0), elasticity (R2, R5, R7) and viscoelasticity (R6); a Mexameter® MX18 probe evaluated the skin erythema (Er) and melanin (M). Measures were performed before (T0), at the end of RT and of supplementation (T1), and 1, 6 and 12 months after RT (T2-T4). Acute and late skin toxicity were scored according to the RTOG/EORTG scale. Selected biomarkers were measured at T0 and T1. Results: 193 patients previously assigned to 3- or 5-week RT schedules were randomized to eitheranthocyanin (97) or placebo (96) supplementation. RT induced changes in skin parameters: R0, R2, R5 and R7 decreased, while R6 increased; the changes in R0 and R6 continued in the same direction up to one year, while the others recovered towards basal values; Er and M peaked at T1 and T2, respectively, and returned to basal values at T4. Comparable skin changes were apparent in anthocyanin and placebo groups. A moderate RT-induced increase in total and HDL cholesterol and triglycerides was prevented by anthocyanins. Conclusions: Anthocyanin supplementation did not prevent RT-induced local skin toxicity. The supplementation was well tolerated and safe.

H. Sekine, Y. Kijima, M. Kobayashi, J. Itami, K. Takahashi, H. Igaki, Y. Nakai, H. Mizutani, Y. Nomoto, K. Kikuchi,·H. Matsushita, K. Nozawa, **Non-invasive quantitative measures of qualitative grading efectiveness as the indices of acute radiation dermatitis in breast cancer patients**, Breast Cancer 2020

Background: Recent improvement of machinery evaluation for the skin changes in various therapies enabled us to evaluate fne changes quantitatively. In this study, we performed evaluation of the changes in radiation dermatitis (RD) using quantitative and qualitative methods, and verifed the validity of the conventional qualitative assessment for clinical use. Methods: Forty-three breast cancer patients received conventional fractionated radiotherapy to whole breast after breastconserving surgery. Erythema, pigmentation and skin dryness were evaluated qualitatively, and biophysical parameters of RD were measured using a Multi-Display Device MDD4 with a Corneometer for capacitance, a Tewameter for transepidermal water loss (TEWL), a Mexameter for erythema index and melanin index. Measurements were performed periodically until 1 year. Results: The quantitative manifestations developed serially from skin erythema followed by dryness and pigmentation. Quantitative measurements detected the efects of irradiation earlier than that of qualitative indices. However, the grades of the domains in RD by qualitative and quantitative assessment showed similar time courses and peak periods. However, no signifcant correlation was observed between the skin dryness grade and skin barrier function. In contrast to serial increase in pigmentation grades, melanin index showed initial decrease followed by marked increase with signifcant correlation with pigmentation grades. Conclusion: Subjectively and objectively measured results of RD were almost similar course and peak points through the study. Therefore, validity of the conventional qualitative scoring for RD is confrmed by the present quantitative assessments. Instrumental evaluations revealed the presence of modest infammatory changes before radiotherapy and long-lasting skin dryness, suggesting indication of intervention for RD.

L. Téot, T.A. Mustoe, E. Middelkoop, G.G. Gauglitz (Editors): **Textbook on Scar-Management - State of the Art Management and Emerging Technologies** (ebook), Springer 2020

The interest in wound healing goes back to the beginning of history and has not diminished throughout the centuries also because practical implications of wound healing studies have remained very relevant for public health. During the last century, much progress has been made in the understanding of basic mechanisms of skin wound healing, and it has been realized that healing processes evolve similarly in various organs. It has been established that fbrotic diseases are regulated by analogous mechanisms, albeit less controlled, compared to those regulating wound healing. Moreover, many advances, such as the use of antiseptics and, later, of antibiotics, as well as the introduction of skin transplants have facilitated the treatment of wounds. It has been shown that wound healing evolution depends on several factors including the type of injury causing the damage, the tissue and/or organ affected, and the genetic or epigenetic background of the patient. This Compendium has the merit of discussing a broad spectrum of topics, including the general biology of wound healing, modern diagnostic approaches, and therapeutic tools, applied to many different clinical

situations. It should be of interest to teachers, students, and clinicians working in different aspects of wound healing biology and pathology. I am sure that it will rapidly become an important reference book in these fields.

Z. Liu, M. Jiang, J. Zhao, Q. Wang, C. Zhang, M. Ga , M. Gu, L. Xiang, **Efficacy of a wound-dressing biomaterial on prevention of postinflammatory hyperpigmentation after suction blister epidermal grafting in stable vitiligo patients: a controlled assessor-blinded clinical study with in vitro bioactivity investigation**, Arch Dermatol Res, Feb 2020

Postinflammatory hyperpigmentation (PIH) is a common disfiguring complication following inflammatory dermatoses and cosmetic procedures in dark-skinned individuals. Anti-inflammatory and repairing agents targeting primary inflammation and injury are becoming promising choices for preventing PIH. The aim of this active-controlled, assessor-blinded, intra-individual monocentric study was to evaluate the preventive effect of a wound-dressing biomaterial, mussel adhesive protein (MAP) in the suction blister-induced PIH model. Twenty Chinese patients underwent suction blister epidermal grafting had defined wound areas to receive a topical MAP spray or a potent corticosteroid cream once daily for seven consecutive days after operation. In situ semi-quantitative evaluations of inflammation and pigmentation were achieved by Mexameter, reflectance confocal microscopy and dermoscopy on week 1, week 4, and week 12. Topical application of MAP / exerted remarkably inhibitory effect on PIH comparable to fluticasone propionate, manifested as significantly lower melanin index and papillary contrast measured by Mexameter and confocal microscopy on week 12 compared to untreated sites. Although MAP exhibited moderate anti-inflammatory effect weaker than fluticasone propionate, MAP-treated sites healed faster than steroid-treated and untreated sites. The biological activity of MAP was further studied in UVB-irradiated HaCaT cell model, which revealed MAP decreased the expression of UVB-induced α-melanocyte stimulating hormone (α-MSH) and pro-inflammatory cytokines (IL-1α, IL-6, COX-2). It also protected HaCaT cells from UVB-induced cell death and apoptosis. In conclusion, MAP could be a novel postoperational wound dressing preventing PIH associated with skin inflammation and injury.

N. Shihab, J. Prihartono, A. Tovar-Garza, T. Agustin, L. Legiawati, A.G Pandya, **Randomised, controlled, doubleblind study of combination therapy of oral tranexamic acid and topical hydroquinone in the treatment of melisma**, Australas J Dermatol, Feb 2020

Background/objectives: Melasma is a common pigmentary disorder for which oral tranexamic acid has shown some efficacy in previous studies. The aim of this study was to assess the effectiveness of oral tranexamic acid in combination with hydroquinone cream in the treatment of melasma. Methods: Subjects with moderate-to-severe melasma were enrolled. Group A received hydroquinone 4% cream, sunscreen and oral tranexamic acid, while Group B received hydroquinone 4% cream, sunscreen and placebo capsules for 3 months. All subjects had an additional 3-month follow-up visit on sunscreen alone. The primary outcome measure was change in modified Melasma Area and Severity Index (mMASI) score. In addition, the melanin index was measured using a mexameter. Results: Fifty subjects were enrolled, and all completed the study. There was a 55% reduction in mMASI after 3 months from mean 8.96 (SD 2.45) to 4.0 (SD 1.6) in Group A compared to 10.9% from mean 8.53 (SD 2.04) to 7.6 (SD 2.0) in Group B. Three months after oral and topical therapy was discontinued, there was a 42% decrease in mMASI compared to baseline in Group A (mean 5.1 SD 1.7) vs. 4.7% in Group B (mean 8.1 SD 2.0). No serious adverse events were observed. Conclusions: A combination of oral tranexamic acid and topical hydroquinone is more effective than hydroquinone alone in the treatment of melasma.

M. Denzinger, S. Krauss, M. Held, L. Joss, J. Kolbenschlag, A. Daigeler, J. Rothenberger, **A quantitative study of hydration level of the skin surface and erythema on conventional and microclimate management capable mattresses and hospital beds**, J Tissue Viability, 2020 Feb;29(1): p. 2-6

Background: In addition to pressure itself, microclimate factors are gaining more attention in the understanding of the development of pressure ulcers. While there are already various products to reduce pressure on sore-prone areas to prevent pressure ulcers, there are only a few mattresses/hospital beds that actively influence skin microclimate. In this study, we investigated if microclimate management capable mattresses/hospital beds can influence skin hydration and skin redness/erythema. Methods: We included 25 healthy subjects in our study. Measurements were made using Courage & Khazaka Multi Probe Adapter MPA with Corneometer CM825 and Mexameter MX18 to determine skin hydration of the stratum corneum and skin redness/erythema before and after the subjects were lying in conventional (Viskolastic® Plus, Wulff Med Tec GmbH, Fedderingen, Germany and Duo™ 2 mattress, Hill-Rom GmbH Essen, Germany) or microclimate management capable

mattresses/hospital beds (ClinActiv + MCM™ and PEARLS AFT, Hill-Rom GmbH Essen, Germany). Results: While there was no difference in skin redness/erythema on the different mattresses/hospital beds, skin hydration of the stratum corneum decreased significantly in an air fluidized bed compared to baseline values and values measured on standard mattress/Viskolastic® Plus.

A. Treesirichod, S. Chaithirayanon, T. Chaikul, S. Chansakulporn, **The randomized trials of 10% urea cream and 0.025% tretinoin cream in the treatment of acanthosis nigricans**, J Dermatolog Treat., 2020 January

Background: Acanthosis nigricans is characterized as hyperpigmented skin and velvety surface on posterior and lateral folds of the neck and the intertriginous areas. This study aimed to assess the efficacy of topical 10% urea cream compared to 0.025% tretinoin cream in the treatment of acanthosis nigricans. Material and methods: This was an 8-week trial, double-blind, randomized, comparative study of topical 10% urea and 0.025% tretinoin for the treatment of the neck hyperpigmentation. The Mexameter MX18 was used for assessing treatment efficacy. The global evaluation scale was also used to evaluate the overall success rate at weeks 2, 4, and 8 of the study. Results: There was a statistically significant difference between 10% urea and 0.025% tretinoin in the treatment of acanthosis nigricans ($p < 0.01$). The efficacy of 10% urea and 0.025% tretinoin treatment shows $11.4 \pm 5.7\%$ and $20.1 \pm 9.7\%$ improvement, respectively. The treatment efficacy using the investigator's global evaluation found that 36.8% of participants treated with 10% urea and 63.2% of participants treated with 0.025% tretinoin had more than 75% skin improvement. Conclusion: Both medications significantly improved neck hyperpigmentation. However, the efficacy of 0.025% tretinoin was significantly better than 10% urea in the treatment of acanthosis nigricans.

H.H. Homann,. T. Ohmann, C. Seelmann, **Abschlussbericht zum Vorhaben „Einfluss perkutaner Kollageninduktion mittels Medical Needling bei Patienten mit Verbrennungsnarben“ – Eine prospektive kontrollierte Interventionsstudie (FR-260)**, BG Klinikum Duisburg, 31. Januar 2020

Ziel der Studie war es, zu untersuchen, ob das Verfahren des Medical Needlings bei Verbrennungsnarben zu einer dauerhaften Verbesserung der Narben- und Lebensqualität führen kann. Aktivitäten/Methoden Studiendesign: prospektive kontrollierte Interventionsstudie Studienpopulation: 5 Patienten (3 männlich, 2 weiblich, Ø Alter: 38,8 ± 10,9 Jahre, Ø BMI: 32,1 ± 4,9 kg), insgesamt 15 Hautstellen. Die Verbrennungsnarben mussten seit mindestens 2 Jahren ausgeheilt sein und es durfte zuvor noch kein Medical Needling stattgefunden haben.Die erste Datenerhebung fand einen Monat vor dem Needling statt (t0). Die Hautstellen wurdendaraufhin einen Monat lang mit einem Vitaminöl zur OP-Vorbereitung eingerieben. Die zweite Datenerhebung fand direkt vor der Behandlung statt (t1), die dritte (t2) einen Monat nach dem Needling und die vierte und letzte (t3) sechs Monate nach dem Medical Needling. Das Primärziel der Studie ist die Quantifizierung der subjektiven Verbesserung der Narbenqualität 6 Monate nach der Behandlung anhand des POSAS. Sekundärziel war zum einen die objektive Erfassungder Narbenqualität anhand von Messungen mit dem Cutometer und zum anderen die subjektive Erfassung der Narbenqualität anhand der VSS und die Erfassung der Lebensqualität anhand des BSHS B und des SF36. Die Ergebnisse der Studie lassen darauf schließen, dass das Medical Needling einen kurzfristigen Einfluss auf Hauteigenschaften der Narbenareale zum Zeitpunkt t2 zu haben scheint. Somit könnte tatsächlich eine Kollageninduktion angestoßen worden sein. Anhand der objektiven Messungen mit dem Cutometer und den subjektiven Einschätzungen anhand des POSAS und des VSS können wir diesen Effekt, zumindest zum Zeitpunkt t3, nicht bestätigen. Auch in Bezug auf die Lebensqualität konnte kein signifikanter Unterschied festgestellt werden. Ein möglicher kumulativer Effekt, der durch wiederholtes Medical Needling zustande käme und deutlich messbare Veränderungen der Hauteigenschaften mit sich bringen könnte, wurde in der Studie nicht erfasst. Die geringe Anzahl an longitudinal untersuchten Hautstellen lässt keine zuverlässige Aussage über studienbedingte Veränderungen der Verbrennungsnarben zu. Somit kann anhand der vorliegenden Studienergebnisse kein Einfluss des Medical Needling auf die Narben- und Lebensqualität der Patienten gezeigt werden.

P. Perugini, M. Bleve, R. Redondi, F. Cortinovis, A. Colpani, **In vivo evaluation of the effectiveness of biocellulose facial masks as active delivery systems to skin**, J Cosmet Dermatol. 2020;19: p. 725–735

Background: In recent years, bacterial cellulose (BC), or biocellulose, a natural polymer synthesized by certain bacteria, has attracted great interest in dermatology and cosmetic applications. Several bioactive ingredients are currently loaded into BC masks. However, only a few studies have reported the effectiveness of such delivery systems. Aim: The aim of this study was to evaluate the effect on skin parameters of three biocellulose masks formulated to have different cosmetic effects (anti-aging, lifting, and cell renewal). In particular, skin moisturizing, skin color, skin viscoelastic

properties, skin surface smoothness, wrinkle reduction, dermal homogeneity, and stratum corneum renewal were evaluated. Materials and methods: The study involved 69 healthy Caucasian female volunteers between 25 and 64 years, who were divided into three different studies. Biocellulose facial masks were applied using the split-face method three times a week for 4-8 weeks depending on the study. Results: The results obtained from this work highlight that biocellulose masks are very well tolerated. A significant decrease in skin roughness and wrinkle breadth, and an improvement in dermal homogeneity and firmness, was observed after 2 months of treatment with “anti-aging” masks. A significant improvement in skin firmness and elasticity was observed after 1 month of treatment with “lifting” masks. Furthermore, a 1-month treatment with “cell renewal” masks promoted the production of new skin cells through a mild exfoliating action. Conclusions: This study highlights that biocellulose masks are effective delivery sys tems to successfully release into the skin several types of active compounds exerting many beneficial effects.

P. Rattanawiwatpong, R. Wanitphakdeedecha, A. Bumrungpert, M. Maiprasert, **Anti-aging and brightening effects of a topical treatment containing vitamin C, vitamin E, and raspberry leaf cell culture extract: A split-face, randomized controlled trial**, J Cosmet Dermatol. 2020 Jan

Background: Skin aging has many manifestations such as wrinkles, uneven skin tone, and dryness. Both intrinsic and extrinsic factors, especially ultraviolet light-induced oxidative radicals, contribute to the etiology of aging. Human skin requires both water- and lipid-soluble nutrient components, including hydrophilic and lipophilic antioxidants. Vitamins C and E have important protective effects in the aging process and require exogenous supply. Raspberry leaf extracts contain botanical actives that have the potential to hydrating and moisturizing skin. Topical products with these ingredients may therefore combine to provide improved anti-aging effects over single ingredients. Objectives: To evaluate the anti-aging and brightening effects of an encapsulated serum containing vitamin C (20% w/w), vitamin E, and European raspberry (Rubus idaeus) leaf cell culture extract. Methods: Fifty female volunteers aged 30-65 years were allocated one capsule of serum for topical application on one side of the face for 2 months, in addition to self-use of facial skin products. Both test (treated) and contralateral (untreated) sides were dermatologically assessed after 4 and 8 weeks. Skin color (melanin index), elasticity, radiance, moisture, and water evaporation were measured by Mexameter MX18®, Cutometer®, Glossymeter GL200®, Corneometer CM825®, and Tewameter TM300® instruments, respectively (Courage + Khazaka Electronic GmbH). Skin microtopography parameters, smoothness (SEsm), roughness (SEr), scaliness (SEsc), and wrinkles (SEw), were measured by Visioscan® VC98 USB (Courage + Khazaka Electronic GmbH), and gross lifting effects were measured by VECTRA® H1 (Canfield Scientific), and adverse reactions and satisfaction were also assessed. Results: Skin color, elasticity, and radiance were significantly improved. The smoothness, scaliness, and wrinkles were also revealed significant improvement. Mild adverse reactions were tingling and tightness. Conclusions: The vitamin C, vitamin E, and raspberry leaf cell culture extract serum has anti-aging and brightening effects of skin.

D. Hertz-Kleptow, A. Hanschmann, M. Hofmann, T. Reuther, M. Kerscher, **Facial skin revitalization with CPM®-HA20G: an effective and safe early intervention treatment**, Clinical, Cosmetic and Investigational Dermatology 2019:12, p. 563–572

Background: Hyaluronic acid (HA) fillers are popular for the treatment of signs of facial skin aging. Objective: The objective of this study was to confirm the performance and safety of a new cohesive polydensified matrix HA filler ([CPM®-HA20G, Belotero Revive®, lidocaine-free], Merz Pharmaceuticals GmbH, Frankfurt, Germany) for the treatment of early signs of facial skin aging by use of biophysical measurements as well as subject and investigator satisfaction. Methods: Twenty-five healthy female subjects with signs of facial skin aging were enrolled in this open-label, rater-blinded, observational post-market clinical follow-up study, and received 20 micropuncture treatments of 50 µL CPM®-HA20G each into the lower cheek area at three injection visits 4 weeks apart. Objective biophysical assessments were conducted to demonstrate effects on viscoelastic properties of the skin, surface roughness, tone and radiance, and hydration, at baseline and at all follow-up visits up to 36 weeks. Results: CPM®-HA20G significantly increased gross elasticity of the skin (at weeks 9 and 12), skin firmness (up to week 24), skin tone and radiance and skin hydration (all up to 36 weeks). Significant reduction of skin fatigue (up to 9 weeks), skin roughness (up to 28 weeks), and redness (up to 36 weeks) was also observed. Subjects and blinded investigator were highly satisfied with the treatment outcomes. The treating investigator reported a high level of satisfaction with the ease of injection and the clinical performance of the device. Moreover, data demonstrated a good safety profile of the device. Conclusion: CPM®-HA20G is considered to be an effective and safe HA injectable for skin revitalization in patients suffering from signs of skin aging and loss of skin elasticity. It seems to

be a perfect early intervention approach in patients that do not need volumizing treatment and a combination approach in older patients with more pronounced aging.

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.

M. Boccardi, F. Bracone, F. Deodato, A. De Curtis, G. Macchia, S. Cilla, A. Di Castelnuovo, A. Ianiro, C. Cerletti, A.G. Morganti, M.B. Donati, **Preliminary results of anthocyanin supplementation in breast cancer radiotherapy: impact on skin side effects**, Poster EP-1287 at 38 ESTRO Milan, 2019

The role of anthocyanins has been studied in the prevention of radiotherapy (RT) side effects. In a prospective randomized study (Athena Project-FP7 European Union), we verified the impact of anthocyanin supplementation on acute and mediumterm skin side effects of RT in breast cancer (BC) patients.

L. Krings, J. Liebmann, M. Born, M. Leverkus, V. von Felbert, **A randomized study comparing the efficacy and safety of blue light and topical vitamin D treatments for mild Psoriasis vulgaris,** Trends in Photochemistry and Photobiology, Volume 18, 2019

The aim of this study is to evaluate the efficacy and safety of blue light with a high peak-intensity of 600 mW/cm2 at different durations of treatment of mild Psoriasis vulgaris, compared to a topical vitamin D3-analogue (calcipotriol) treatment. In 2016 a monocentric, prospective, randomized, intraindividual study assessed the efficacy and safety of localized blue light treatment versus topical calcipotriol (Daivonex) treatment for mild Psoriasis vulgaris (Pv). 51 patients with mild Pv were randomized into two treatment groups, receiving 600 mW/cm2 blue light either for 30 min (group30) or 15 min (group15) on one localised plaque, daily for 12 weeks, at home. This was compared intraindividually with a contralateral plaque treated daily with topical calcipotriol (Daivonex). Psoriasis severity was assessed by the investigator by applying the Local Psoriasis Severity Index (LPSI) and by the patient using a 100 mm visual analogue scale (VAS). Additionally, the Dermatology Life Quality Index (DLQI) was measured at different time points. The LPSI significantly decreased in both irradiated and comparator areas in group15 and in group30 patients. No difference between blue light and topical calcipotriol treatments was detected. Psoriasis severity VAS scale values assessed by the patients were significantly reduced in both groups (15 and 30 min) with a slightly, but insignificantly better outcome in group30. The DLQI was reduced by -1.76 in group15 compared to -3.39 points in group30. No adverse device effects were seen during the study other than a slight hyperpigmentation. Daily treatment for 12 weeks with blue light for 15 and 30 minutes is as efficient and safe as standard treatment for mild Psoriasis vulgaris with calcipotriol.

S. Yamawaki, **Scar Evaluation**, in R. Ogawa (Edt): Total Scar Management: From Lasers to Surgery for Scars, Keloids, and Scar Contractures, Springer December 2019

Scars induce cosmetic disfgurements, functional disorders, and psychological problems. The treatment of scars is challenging for plastic surgeons. Many treatment modalities are available for

scars, including surgical excision, steroid injection, silicone gel sheeting, pressure treatment, and laser treatment. Thus, it is essential to robustly assess the outcomes of scar treatment. Assessment tools for scars fall into two categories, namely subjective assessment using scar rating scales and objective assessment using devices. We introduce the most common assessment methods in this chapter.

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.

M.W.M. Chan, S.Y. Shek , C.K. Yeung, H.H. Chan, **A Prospective Study in the Treatment of Lentigines in Asian Skin Using 532 nm Picosecond Nd:YAG Laser**, Lasers Surg Med. 2019 Nov;51(9): p. 767-773

Background and Objective: To evaluate safety and efficacy of treatment with the picosecond Nd:YAG 532 nm for lentigines in Asian skin. Study Design/Materials and Methods: This was a prospective, open-label cohort study, using a novel picosecond 532-nm laser for the treatment of facial lentigines. Subjects received up to three laser treatments every 4-6 weeks and were assessed at 4 and 12 weeks after final treatment. Primary endpoint was degree of improvement in lentigines at 12 weeks after the final treatment, assessed by treating investigator based on Physicians Global Assessment. Secondary end-points included degree of improvement in lentigines at 12 weeks after final treatment, assessed by subject (Subject's Global Assessment), and change in mean relative Melanin index (MI) value at 3 months after final treatment as compared to baseline as assessed by mexameter measurement. Results: A total of 20 patients (3 male, and 17 female) of Asian-descent with Fitzpatrick skin type III and IV, with lentigines on the face were included in this study. A total of 89 lesions were treated with the laser setting of 532-nm, 750 picoseconds, fluence of 0.2-0.5 J/cm ^{2} , and spot size of 4 mm. One hundred and thirty-seven treatment sessions were given in total. Eighteen patients (90%) achieved a moderate to significant improvement at 12-week follow-up based on a 5-grade physician global assessment scale. The improvement rate of relative MI (MI in the lesion minus normal skin) was 33.30 ± 18.71 and 37.63 ± 19.25% at 4- and 12-week follow-up. Post-inflammatory hyperpigmentation (PIH) occurred in 14 of 137 sessions (10.2%), and hypopigmentation occurred in one patient with five lesions (3.6%). Conclusion: This study demonstrates that using picosecond Nd:YAG laser 532 nm for removal of solar lentigines in darker skin type appears to be safe and effective.

M. Kubiak, P. Mucha, H. Rotsztejn, **Comparative study of 15% trichloroacetic acid peel combined with 70% glycolic acid and 35% trichloroacetic acid peel for the treatment of photodamaged facial skin in aging women,** J Cosmet Dermatol., 2019 Oct

Background: Photoaging (extrinsic aging) is caused by environmental exposure to ultraviolet radiation. Superficial and medium-depth chemical peels with trichloroacetic acid (TCA) are performed to reduce wrinkles, hyperpigmentation, dryness, and erythema caused by photoaging process. Aim: The aim of this study was to compare the efficacy and tolerability of 15% TCA peel against the combined 70% glycolic acid and 35% TCA for the treatment of photodamaged facial skin. Patients/methods: Forty female patients with types II and III of Glogau photoaging scale were divided into two groups of twenty subjects (GA/TCA and 35% TCA). The GA/TCA group was treated with

combination peeling of 70% GA and 15% TCA, whereas the 35% TCA group was treated with monopeeling of 35% trichloroacetic acid. Each patient was submitted to five sessions of these peels, with an interval of 14 days between each session. The following skin aging parameters were examined before treatments, before each session, and 3 months after the last application: hydration, elasticity, melanin index, and erythema index (MPA-5; Courage-Khazaka, Germany); and depth and volume of wrinkles (PRIMOS; GFMesstechnik GmbH, Germany). Results: Both peel methods achieved significant improvement in all skin parameters: elasticity, hydration, melanin index, and erythema index. Significant differences between the GA/TCA and 35% TCA groups were found only for hydration and melanin index. GA/TCA was characterized by significantly higher values of the hydration parameter and lower values of melanin index compared with 35% TCA. Combination peel GA/TCA did not cause dryness, edema, or intensive lysis of the epidermis, and the frequency of peel-induced erythema did not increase with the addition of glycolic acid, but with higher concentration of the TCA solution. However, subject-perceived improvements of the 35% TCA peel did not differ significantly from subject-perceived improvements of combination peel treatment. Adverse events requiring intervention or discontinuing treatment were not observed in either group. Conclusion: The addition of glycolic acid before 15% TCA chemical peel application significantly enhanced TCA-induced improvement in photoaging parameters (increase in skin elasticity and hydration; reduction in melanin index and erythema index), and subject-perceived improvements. However, 35% TCA peel is more effective in reducing wrinkles, despite a lower tolerability. Both medium-depth chemical peels including 15% TCA in combination with 70% GA and 35% TCA alone proved to be useful for the removal of epidermal or superficial lesions and to improve the texture of photodamaged facial skin (grade II-III Glogau photoaged skin).

J.A. Boras. A. Grau-Campistany, S. Pastor, P. Carulla, E. Bisceglia, **Modulation of cell-to-cell communication in skin by a novel peptide increases skin brightness**, presentation at the 25th IFSCC Conference Milan, October 2019

Hyperpigmentation is one of the most common concerns of cosmetic consumers. With the increasing awareness of the role of exposure to ultraviolet radiation in the development of photoaging, there is an urgent need for new active ingredients that act on this undesired pigmentation, which are highly active, safe, stable and compatible with sun exposure, some of the drawbacks of the current lightening agents in the market. However, skin coloration is a result of many complex processes and years of investigation in pigmentation have been able to establish that there are multiple factors that regulate skin pigmentation.

J.-M. So, A. Kim, K. Lee, S. Kim, Y.-J. Cho, M.-Y. Chang, G. Nam, **The Effects of application of Tetraacetyl-phytopshingosine (TAPS) on Dark Circles**, presentation at the 25th IFSCC Conference Milan, October 2019

We conducted clinical test through instrumental measurements, image analyses, and visual evaluation to study the effects of TAPS on dark circles. 12 female subjects applied the cream containing TAPS to face for 8 weeks. Skin brightness and melanin index were measured, and visual evaluation was conducted before and after the application. To support the instrument measurement results and to overcome the differences between instrument measurements and visual evaluation, image analyses were carried out. Image analyses were conducted by extracting L*, a*, b* values of dark circle area and normal area, and analyze the brightness (quasi L* value) ratio. For visual evaluation, investigators assessed the dark circle grade from 0-5. The results showed that the brightness of the dark circles and the brightness (quasi L* value) ratio of the dark circle area to the normal area increased statistically significantly. The melanin index measurements and visual evaluation resulted in statistically significant decrease 8 weeks after the application.

A.P. Eijkenboom, **Nichtinvasive Untersuchung hautphysiologischer Parameter bei Ekzempatienten im Langzeitverlauf - Eine explorative Analyse**, Dissertation an der Medizinischen Fakultät der Ludwig-Maximilians-Universität zu München, Oktober 2019

Das atopische Ekzem (AE) ist eine verbreitete, chronisch entzündliche Hauterkrankung die in westlichen Ländern gehäuft vorkommt. Nur teilweise verstandene Wechselbeziehungen zwischen genetischen und Umweltfaktoren sind an der Entstehung der Erkrankung beteiligt. Die Erkrankung zeichnet sich durch einen variablen klinischen Phänotyp mit einer heterogenen Pathophysiologie aus. Das atopische Ekzem ist häufig mit Asthma, allergischer Rhinoconjunctivitis und durch Nahrungsmittelallergien ausgelösten, erhöhten Immunoglobulin E (IgE)-Spiegeln assoziiert [1]. Die Prävalenz des AE wird bei Erwachsenen auf 2 – 10 % und bei Kindern auf 15 - 20 % geschätzt [2, 3]. Der Schweregrad ist bei Patienten, welche einen Arzt konsultieren, in 70 % der Fälle mild, in 20 % der Fälle moderat und in 2 % der Fälle schwer [4]. Davon treten 85 % der Fälle vor dem 5. Lebensjahr auf,

wobei bis zu 70 % der Fälle bis zum Erwachsenenalter remittieren. Ein AE, das sich erst im Erwachsenenalter manifestiert, lässt sich oft schwer therapieren [5].

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.

P. Sirithanabadeekul, A. Dannarongchai, A. Suwanchinda, **Platelet-rich plasma treatment for melasma: A pilot study**, J Cosmet Dermatol. 2019 Sep

Background: Melasma treatments have varying success and are associated with some complications. Aims: To assess the effectiveness of platelet-rich plasma (PRP) treatment for melasma. Methods: Ten female patients with bilateral mixed-type melasma were enrolled in our randomized, split-face, single-blinded prospective trial. Over 4 treatment sessions that each took place every 2 weeks, PRP was injected intradermally on one side of the face (PRP condition) and normal saline on the other (control condition). PRP was prepared by using the YCELLBIO Kit®. Outcomes were evaluated with the modified Melasma Area and Severity Index (mMASI), Mexameter®, and Antera® 3D. Patient satisfaction was also assessed at baseline, at 2, 4, and 6 weeks, and 1 month after treatment completion. Results: mMASI score and Antera® 3D-assessed melanin levels show significant improvement in the PRP condition than control condition between baseline and week 6, while patient satisfaction significantly increased over time. However, Mexameter®-assessed erythema and melanin indices did not significantly differ between the control and PRP conditions, though there was a trend toward reduced pigmentation in the latter. Finally, side effects of treatment were mild and resolved spontaneously within a few days. Conclusion: This is the first randomized, placebo-controlled trial study using PRP for treatment of melasma. PRP injection significantly improved melasma within 6 weeks of treatment in terms of mMASI scores, patient satisfaction, and Antera®-assessed melanin levels. Hence, intradermal PRP injection could be used as an alternative or adjuvant therapy for melasma. However, additional trials are needed for more rigorous evaluation of its long-term efficacy and safety.

S.M. Henning, J. Yang, R.-P. Lee, J. Huang, M. Hsu, G. Thames, I. Gilbuena, J. Long, Y. Xu, E. Haein Park, C.-H. Tseng, J. Kim, D. Heber, Z. Li, **Pomegranate Juice and Extract Consumption Increases the Resistance to UVB-induced Erythema and Changes the Skin Microbiome in Healthy Women: a Randomized Controlled Trial**, Scientific Reports,| (2019) 9:14528

In vitro and animal studies have demonstrated that topical application and oral consumption of pomegranate reduces UVB-induced skin damage. We therefore investigated if oral pomegranate consumption will reduce photodamage from UVB irradiation and alter the composition of the skin microbiota in a randomized controlled, parallel, three-arm, open label study. Seventy-four female participants (30–45 years) with Fitzpatrick skin type II-IV were randomly assigned (1:1:1) to 1000 mg of pomegranate extract (PomX), 8 oz of pomegranate juice (PomJ) or placebo for 12 weeks. Minimal erythema dose (MED) and melanin index were determined using a cutometer (mexameter probe). Skin microbiota was determined using 16S rRNA sequencing. The MED was signifcantly increased in the PomX and PomJ group compared to placebo. There was no signifcant diference on phylum, but on family and genus level bacterial composition of skin samples collected at baseline and after 12 week intervention showed signifcant diferences between PomJ, PomX and placebo. Members of the Methylobacteriaceae family contain pigments absorbing UV irradiation and might contribute to UVB skin protection. However, we were not able to establish a direct correlation between increased MeD and bacterial abundance. In summary daily oral pomegranate consumption may lead to enhanced protection from UV photodamage.

V. Mazzarello, G. Piu, M. Ferrari, G. Piga, **Efficacy of a Topical Formulation of Sodium Bicarbonate in Mild to Moderate Stable Plaque Psoriasis: a Randomized, Blinded, Intrapatient, Controlled Study**, Dermatol Ther (Heidelb) (2019) 9: p. 497–503

Introduction: Psoriasis is a chronic inflammatory disease characterized by the presence of erythematosquamous lesions. A wide variety of topical treatments for therapy of this pathology are available, including sodium bicarbonate (SB). A few papers reported in literature focus on use of SB baths for treatment of psoriasis, but none assess evidence concerning the efficacy of SB topical

preparations. This study aimed to determine the effectiveness of a galenic SB in lanette vax formulation compared with lanette vax base in mild to moderate stable plaque psoriasis. Methods: A randomized, double-blind, intrapatient, controlled study was performed in 28 days. Thirty patients of both genders were selected for testing. A blinded investigator evaluated the patients' psoriasis using a modified Psoriasis Area and Severity Index (PASI), body surface area (BSA), and objective parameters using sensors (Multiprobe Adapter MPA5; Courage & Khazaka Electronic GmbH, Cologne, Germany). Results: Data analysis of objective parameters highlighted that use of the SB topical preparation led to no improvement in skin hydration, no reduction in transepidermal water loss, and no decrease of erythema. The modified PASI and BSA did not change from baseline. Conclusions: The results obtained show that use of the studied product did not improve psoriatic lesions.

J.W. Jung, W.O. Kim, H.R. Jung, S.A. Kim, Y. W. Ryoo, **A Face-Split Study to Evaluate the Effects of Microneedle Radiofrequency with Q-Switched Nd:YAG Laser for the Treatment of Melasma**, Ann Dermatol Vol. 31, No. 2, 2019

Background: Laser toning using a low-fluence 1,064 nm Q-switched Nd:YAG laser is one of the most frequently used treatment modalities for melasma. However, this therapy is time consuming because it requires a lot of treatment sessions. Recently, it has been reported that transdermal radiofrequency (RF) is effective for the treatment of melasma. bjective: To determine whether microneedle RF conduction could be an adjunct therapy for melasma, we have studied the effect of simultaneous treatments with laser toning and RF for melasma. Methods: Fifteen patients with melasmaunderwent five sessions of laser toning and microneedle RF on the right side of the face, and only laser toning on the left side. Responses to treatments were evaluated using the Mexameter® (Courage Khazaka, Germany) score, the pigmentation and severity index (PSI) score, and the patient's overall assessment. Additionally, an electron microscopic study of a skin biopsy was performed. Results: Both laser toning and combination therapy showed significant decreases in the Mexameter® and PSI score after five treatment sessions. Combination therapy showed a more significant improvement of melasma than laser toning. No remarkable side effects were reported. Electron microscopic analysis showed a greater number of vacuolar changes and increased loosening of melanocytes and adjacent epidermal cells after combination therapy. Conclusion: The combination treatment of laser toning and microneedle RF therapy showed a better therapeutic effect for melasma than laser toning alone.T herefore, the microneedle RF technique could be a new and safe adjunct therapy for the treatment of melasma.

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.

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.

F. Andre, J.W. Fluhr, T. Hawro, M.K. Church, M. Maurer, M. Metz, **Characterization of cowhage-induced pruritus in inflamed and non-inflamed skin**, JEADV June 2019

Background and objective Pruritus is a major symptom of many inflammatory diseases and impacts greatly the quality of life in patients. We aimed to specify the characteristics of experimentally induced pruritus in normal skin and in experimentally induced inflammatory dermatitis in healthy volunteers. Methods Skin inflammation was induced by the repeated application of sodium lauryl sulphate (SLS 2%) on the volar forearms of 30 healthy volunteers. Inflammatory dermatitis intensity was assessed using the eczema score adapted from Frosch and Kligman. Non-histaminergic pruritus was induced by cowhage spicules rubbed on the volar forearms andrecorded for 30 min on a 10-cm visual analogue scale (VAS) in both non-inflamed and inflamed skin. Results Induction of inflammatory dermatitis by SLS resulted in a mild inflammatory dermatitis with an inflammation score of 2.3 ± 0.1 within 7 days of treatment. Cowhage-induced pruritus was of markedly higher intensity ($P < 0.001$), and all but two individuals had higher maximum pruritus intensity in inflamed skin as compared to non-inflamed skin, whereas the kinetics of the pruritus response were similar. The quality of cowhage-induced pruritus was significantly different with more 'burning' and 'painful sensations' in inflamed skin ($P < 0.01$). Maximum pruritus intensity in inflamed skin strongly correlated with maximum pruritus intensity in non-inflamed skin ($r = 0.51$, $P = 0.004$). Skin hydration, skin barrier integrity and dermatitis severity did not correlate with pruritus intensity. Conclusion Taken together, pruritus in inflamed skin is perceived as more intense, painful and burning. This may explain, in part, why pruritus is a major driver of quality-of-life impairment in patients with chronic inflammatory skin conditions such as atopic dermatitis.

Z. Khosrowpour , A.S. Nasrollahi, A. Ayatollahi, A. Samadi, A. Firooz, **Effects of four soaps on skin trans-epidermal water loss and erythema index**, J Cosmet Dermatol. 2019 Jun;18(3): p. 857-861

Background: Various tests have been carried out to determine the irritant potential of soaps/cleansers. Objectives: This study was carried out to compare the effects of four different soap formulations on biophysical parameters of the skin, including trans-epidermal water loss (TEWL) and erythema index. Methods: Four different soap formulations (creamy, glycerin containing, syndet, and traditional alkaline soaps) were studied. Twenty healthy volunteers were enrolled and 8% solutions (W/V) of the soaps made with distilled water, 20% sodium dodecyl sulfate (positive control) and water (negative control) were applied to their volar forearms as a single dose patch test. The patches remained on the sites for 4 hours. The skin TEWL and erythema index were measured before applying the patches and 24 and 72 hours after removal of them using TEWAmeter and Mexameter probes, respectively. Results: Alkaline and creamy soaps caused a significant increase in TEWL 24 hours after patch removal. However, 72 hours after patch removal, this increase was significant only in case of alkaline soap (P-value = 0.002). A decreasing trend in skin erythema was observed 24 and 72 hours after application of syndent, glycerin, and creamy soaps. In case of creamy soap, this decrease was significant 72 hours after patch removal (P-value = 0.006). Conclusion: Traditional alkaline soap increased TEWL and skin erythema, which are signs of prolonged damage to the skin barrier. However, the effects of other formulations were transient, and TEWL returned to baseline at 72 hours. Creamy soap even showed a relative protective effect (decrease in erythema index compared to baseline), probably due to the lanolin content of the formulation.

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.

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.

M. Nawaz, H.M. Shoaib Khan, N. Akhtar, T. Jamshed, R. Qaiser, H. Shoukat, M. Farooq, **Photodamage and Photoprotection: An *In vivo* Approach Using Noninvasive Probes**, Photochemistry and Photobiology 95(5), May 2019

Solar radiations trigger the physiological alteration in skin which progress toward photoaging. Sunscreens are known to be effective against the photodamaging effects of sunlight. The purpose of this study was to evaluate the extent to which aging signs caused by real-life sunlight exposure could be avoided by comparing various parameters between sun-exposed and sun-protected skin using noninvasive probes. Female volunteers ($n = 11$) after getting their consent were provided with marketed sunscreen product to apply onto their skin for 6 months. Measurements were scheduled every 15 days from the baseline reading for 6 months. Cutometer, Mexameter and Corneometer were used for evaluation of facial skin parameters. Clinical evaluations showed the effects of sunlight exposure on different skin parameters by comparing sun-protected and unprotected skin, where Gross elasticity (R2), Net elasticity (R5), Viscoelasticity (R6) and Biological elasticity (R7) showed insignificant results, while Hydration, Melanin and Erythema showed significant results. Sun-exposed skin presented 0.72%, 0.66%, 0.77%, 1.39%, 1.99%, 2.01% and 3.15% changes in R2, R5, R6 and R7, melanin, erythema and hydration, respectively, which were potentially prevented by sunscreen application. Premature aging is inhibited by following photoprotective regimen on routine basis, emphasizing the potential benefit of sunscreen against early aging signs.

M. Kanlayavattanakul, N. Lourith, P. Chaikul, **Youth in Yields - Jasmine Rice Extract Whitens, Protects and Smooths Skin,** Cosmetics & Toiletries, Vol. 134, No, 5, May 2019, p. 26-33

The demand from consumers for natural products including cosmetics continues to inrease. Eco-friendly, organic and sustainable options are in the mainstream of this trend. Moreover, active phenolics derived from natural sources are playing an important role in the safety and efficacy of cosmetics. In relation, rice, or Oryza sativacv. Indica (Oryzeae), is well-known as the major staple in Asian cuisine. It has long been used in traditional Asian medicines as well as Italian remedies, including for aesthetic benefits for skin.

S. Desai, E. Ayres, H. Bak, M. Manco, S. Lynch, S. Raab, A. Du, D. Green, C. Skobowiat, J. Wangari-Talbot, Q. Zheng, **Effect of a Tranexamic Acid, Kojic Acid, and Niacinamide Containing Serum on Facial Dyschromia: A Clinical Evaluation**, J Drugs Dermatol., 2019 May 1;18(5): p. 454-459

Background: Stubborn dyschromia such as melasma and post-inflammatory hyperpigmentation (PIH) are leading causes for cosmetic consultation. Topical treatment is challenging, using a range of modalities, to stop, hinder, and/or prevent steps in the pigment production process. Tranexamic acid (TXA), a potent plasmin inhibitor, is proposed to control pigmentation by inhibiting the release of inflammatory mediators involved in triggering melanogenesis. TXA has been recently introduced as a topical therapy aimed at reducing pigmentation in melasma. Methods: In a 12-week clinical study, a novel, topical facial serum containing 3% TXA, 1% kojic acid,

and 5% niacinamide was evaluated for its effectiveness in treating melasma, PIH, and hyperpigmentation in Brazilian female subjects with Fitzpatrick skin types I-IV. Efficacy evaluations were performed at pre-treatment baseline, weeks 2, 4, 8, and 12, and included expert clinical grading, bio-instrumental measurements, and self-assessment questionnaires. Cutaneous tolerability was also evaluated by assessing subjective and objective irritation of the treatment area. Results: A significant improvement in the appearance of PIH, hyperpigmentation, melasma, skin texture, and skin tone homogeneity was observed beginning at week 2 and continued through week 12. Melanin index, as measured by Mexameter®, demonstrated a significant decrease by week 12 as compared to both pre-treatment baseline and control. Conclusions: The findings suggest that the test product is an effective and well-tolerated treatment option for addressing hyperpigmentary conditions, including melasma. Additional in vitro data suggests that TXA may act by mediating the inhibition of PGE2-stimulated human epidermal melanocytes.

L.-Y. Lin, S.-C. Chiou, S.-H. Wang, C.-C. Chi, **Effects of Facial Threading on Female Skin Texture: A Prospective Trial with Physiological Parameters and Sense Assessment**, Evidence-Based Complementary and Alternative Medicine, Volume 2019

Background: Facial threading is a common tradition in Taiwan, Southeast Asia (called “Bande Abru”), Middle East (called “Khite”), and Egypt (called “Fatlah”). In addition to the ability to remove facial vellus hairs, facial threading can make the skin fairer and shinier. However, there has been a lack of hard evidence regarding the effects of facial threading on the skin. Objective: To examine the effects of facial threading on skin physiology as well as visual and touch senses by using scientific instruments. Methods. A total of 80 participants were allocated to receive facial threading, application of powder only, exfoliation, and shaving. Prior to and following the assigned treatment, a noninvasive skin condition detection device was used to measure skin coarseness, hydration, melanin, and erythema index. Sense assessment and image analysis were also performed. Results: This study showed that facial threading was found to improve the facial skin roughness indices with significant decreases by 30.4%, 35.9%, and 16.7%, respectively, for the participants’ forehead, cheek, and mouth corner skin. No significant adverse changes in moisture levels and skin pigment indices were detected. In addition, there was improvement in subjects’ touch sense of their skin and feelings about skin color. Conclusions. Traditional facial threading can remove facial vellus hairs and lower skin roughness levels, thereby improving the skin texture. However, pricking sensation appeared during the facial threading process, which might causeconcerns about irritation.

S. Angelino dos Santos Teodoro, L. Kfuori, J. Rodriguez, G. Noguiera, S.A. Monteiro e Silva, **Desenvolvimento e avalição de performance clareadora axilar de formação provida de complexo clareador,** Congresso Colamiqc, São Paulo, May 21-23, 2019

La pele das axilas possui particularidades como: é uma regiao úmida, que sotre com atrito constante, pouca aeração, maior pH (altero coesão edpidermica), maior perda di color, maior temperatura e com, a função harreira prejudicata, dada à altra humidade temperatura e atrito.

C. Cho, E. Cho, N. Kim, J. Shin, S. Woo, J. Lee, J. Lee, E. Lee, J. Ha, **Biophysical properties of striae rubra and striae alba in human skin: Comparison with normal skin**, Skin Res Technol. 2019;25: p. 283-288

Background: Striae distensae are common dermal lesions that progress through two different stages: the striae rubra, which appears to be erythematous, and striae alba, which is characterized by a hypopigmented feature. The clinical characteristics between striae distensae stages and normal skin remain unknown. Objectives: We aimed to investigate the clinical characteristics according to stages of striae distensae in terms of their biophysical properties, using objective noninvasive measurements in comparison with adjacent normal skin. Methods: Sixty-one healthy female subjects with striae distensae were included as follows: 30 with striae rubra and 31 with striae alba on the abdomen and thighs. Hydration of the epidermis and dermis, skin color brightness, and Erythema index were measured. Skin elasticity, roughness, and dermal echo-density of the skin with striae distensae and adjacent normal skin were also measured. Results: Hydration of the epidermis and dermis showed no significant difference between the skin with striae distensae and normal skin. Brightness of skin with striae alba and normal skin was significantly higher than that of skin with striae rubra. Erythema index of skin with striae rubra was significantly higher than that of skin with striae alba and normal skin. Skin with striae rubra and striae alba had a rougher surface than normal skin. Elasticity and dermal echo-density were significantly lower in striae distensae skin. Conclusions: Striae rubra and striae alba had similar biophysical properties in terms of skin hydration, elasticity, roughness, and dermal density. Moreover, striae distensae have less elasticity, more roughness, and lower dermal density than normal skin.

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.

H. Cortes, J.J. Magana, O.D. Reyes-Hernandez, N. Zacaula-Juarez, M. Gonzalez-Torres, W. Diaz-Beltran, M.C. Leon-Trejo, L. Carino-Calvo, G. Leyva-Gomez, M. Gonzalez-Del Carmen, **Non-invasive analysis of skin mechanical properties in patients with lamellar ichthyosis**, Skin Res Technol. 2019;25: p. 375-381

Background: Reliable methods for the quantitative evaluation of skin of patients with ichthyosis are critically needed. Our purpose was to evaluate the biomechanical parameters of skin in a cohort of patients with clinically diagnosed lamellar ichthyosis. Materialsand methods: Twenty-two patients diagnosed with lamellar ichthyosis were studied. Ichthyosis plaques located in upper distal limbs were assayed, and a nearby anatomical region without plaques from the same patient was employed as control.Skin biomechanical properties were studied through a non-invasive device (Cutometer ' ' MPA 580). Results: Ichthyosis plaques had higher values for the Uf-Ua parameter and lower values for the Ua/Uf, Ur/Ue, and Ur/Uf parameters. Adults and children showed similar statistical differences.There wereno significant differences in data from men, whereas in women differences for all of the parameters were found. There was a significant decrease in the hydration and an increase in melanin index in the ichthyosis plaques. Conclusion: Our results suggest that analysis of parameters Uf-Ua, Ua/Uf, Ur/Ue, Ur/Uf, hydration, and melanin index could be employed for quantitative monitoring of skin. Therefore, the non-invasive method applied may be suitable for evaluation of skin of patients with ichthyosis in response to medical treatments.

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.

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.

A. Charpentier, **Soothing effect dedicated to sensitive skin,** PERSONAL CARE EUROPE, April 2019, p. 76-77

The skin plays multiple roles of protection, perception, immunity, regulation of blood and lymphatic reservoir for the whole body. Thanks to several mechanical, chemical or biological (sebum, biofilm...) reactions, the skin ensures its integrity according to the various endogenous or exogenous environmental variations. Today, the increase in the fragile phenomena of skin is a major issue in the development of dermo-cosmetics.

S.H. Kim, S.J. Lee, J.W. Lee, H.S. Jeong, I.S. Suh, **Clinical trial to evaluate the efficacy of botulinum toxin type A injection for reducing scars in patients with forehead laceration**, Medicine (2019) 98:34(e16952)

Skin damage by either trauma or surgical intervention inevitably results in scar formation. In some patients, facial scars can be cosmetically disfiguring and may cause functional impairment and psychosocial withdrawal.[1] Cutaneous scars are generally distinguished from surrounding normal skin by differences in color, thickness, contour, compliance, overall cosmetic, and functional damages such as contracture formation. Not only the disfigurement contributes to the undesirable appearance, but also to prolonged contracture, itching, or tingling which intervenes in the daily-living of patients. Young and Hutchison found that patients were usually dissatisfied with their surgical scars, irrespective of sex, age, ethnicity, or geographical location and that 91% of them would value even a small improvement in their scars.[2] Although surgeons make every effort to prevent widening, hypertrophy, hypo- or hyperpigmentation of scars, in some situations (massive trauma or burn) the situations is out of their hands, resulting in horrible sequalae. Despite numerous methods, such as excision, steroid administration, radiation, laser, and pressure therapy, having been introduced until now, scar management has always been a troublesome and challenging task for surgeons.

A. Zavorins, A. Silova, J. Voicehovska, J. Kisis, **Rubeosis faciei diabeticorum is not associated with oxidative stress and skin autofluorescence**, An Bras Dermatol. 2019;94(5): p. 561-566

Background: Rubeosis faciei diabeticorum is a persistent facial erythema in patients with diabetes mellitus. The actual pathogenesis has not been studied. However, it is speculated to be a cutaneous diabetic microangiopathy. Objective: Examine the correlation between the severity of facial erythema and the possible causes of microvascular diabetic complications, namely oxidative stress, hyperglycemia, andcutaneous accumulation of advanced glycation end-products. Methods: Patients diagnosed with Type 2 diabetes mellitus (n = 32) were enrolled in the study. The facial erythema index was measured using the Mexameter MX18; cutaneous accumulation of advanced glycation end-products was estimated by measuring skin auto fluorescence with the AGE Reader (DiagnOptics Technologies B.V. --- Groningen, Netherlands). Glycated haemoglobin, total antioxidant status, and malondialdehyde were measured in blood by TBARS assay. The correlation between the selected variables was assessed by Spearman's rank test; $p \leq 0.05$ was considered statistically significant. Results: There was a statistically significant correlation between total antioxidant status and the facial erythema index (= 0.398, p = 0.024). Malondialdehyde, skin autofluorescence, glycated haemoglobin, body mass index, duration of diabetes, and age did not demonstrate statistically significant correlation with the facial erythema index. Study limitations: This is an observational study. Elevation of total antioxidant status could have been caused by several factors that might have also influenced the development of rubeosis faciei, including hyperbilirubinemia and hyperuricemia.

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.

B. Nedelec, M.A. Couture, V. Calva, C. Poulin, A. Chouinard, D. Shashoua, N. Gauthier, J.A. Correa, A. de Oliveira, B. Mazer, L. LaSalle, **Randomized controlled trial of the immediate and long-term effect of massage on adult postburn scar,** Burns, 2019 Feb; 45(1): p. 128-139

Background: One objective of massage therapy applied to hypertrophic scar (HSc), is to improve the structural properties so skin possesses the strength and elasticity required for normal mobility. However, research supporting this effect is lacking. The objective of this study was to characterize the changes in scar elasticity, erythema, melanin, and thickness immediately after a massage therapy session and after a 12-week course of treatment compared to intra-individual matched control scars. Method: We conducted a prospective, randomized, single-blinded, pragmatic, controlled, clinical trial evaluating the impact of a 12-week course of massage therapy. Seventy burn survivors consented to participate and 60 completed the study. Two homogeneous, intra-individual scars were randomized to usual care control or massage therapy plus usual care. Massage, occupational or physical therapists provided massage treatment 3x/week for 12 weeks. Scar site characteristics were evaluated weekly immediately before and after massage treatment including elasticity (Cutometer), erythema and melanin (Mexameter), and thickness (high-frequency ultrasound). Analysis of covariance (ANCOVAs) were performed to test for immediate and long-term treatment effects. A mixed-model approach was used to account for the intra-individual scars. Results: Scar evaluation immediately before and after massage therapy at each time point revealed changes for all scar characteristics, but the group differences were predominantly present during the early weeks of

treatment. The within group long-term analysis revealed a significant increase in elasticity, and a reduction in thickness, during the 12-week treatment period for both the control scar (CS) and massage scar (MS). The increase in elasticity reached significance at week 8 for the MS and week 10 for the CS and the reduction in thickness at week 5 for the CS and week 7 for the MS. There was no significant within group long-term differences for either erythema or melanin. There were group differences in erythema at week 8 and 11 where the CS was less erythematous than the MS. Conclusion: The immediate impact of forces applied during massage therapy may lead patients and therapists to believe that there are long-term changes in elasticity, erythema, and pigmentation, however, once baseline measures, the control scar, and time were incorporated in the analysis there was no evidence of long-term benefit. Massage therapy applied with the objective of increasing scar elasticity or reducing erythema or thickness over the long-term should be reconsidered.

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.

H.-Y. Cheng, L.-F. Li, **Skin Biophysical Parameters and Patch Test Results in People Predisposing to Xiaotong Tiegao Induced Irritant Contact Dermatitis**, Hindawi Evidence-Based Complementary and Alternative Medicine, Volume 2019

Background. Xiaotong Tiegao (XTT) is an ancient topical Tibetan medicine plaster which is widely used in China. Irritant contact dermatitis (ICD) caused by XTT is very common. It is still unclear why some people aremore prone to develop ICD.The aim of this study is to study the baseline skin biophysical parameters and patch test results in individuals predisposing to XTT induced ICD. Methods. During a four-month period, 149 healthy volunteers with ICD and 50 volunteers without ICD after applying XTT were recruited. The skin biophysical parameters were measured, and contact allergy to 20 common allergens was patch tested, at two weeks after the ICD was recovered. Results.There were no significant differences in age and sex between ICD and control groups. It was found that skin median melanin value (176.50 vs 189.50, $P < 0.05$, Mann-Whitney U-test) and erythema value (319.90 ± 70.49 vs 347.93 ± 84.55, $P < 0.05$, Independent-Samples T test) were much lower in ICD than control group. Overall patch test results were not different, but the positivity rate of nickel sulfate (15.44% vs 4.00%, $P < 0.05$, Fisher's exact test) was significantly higher in ICD group. Conclusions. In conclusion, people with nickel allergy, lower values of skin melanin, and erythema are predisposing to develop ICD.

N. Theppornpitak, M. Udompataikul, T. Chalermchai, S. Ophaswongse, P. Limtanyakul, **Nitrogen plasma skin regeneration for the treatment of mild-to-moderate periorbital wrinkles: A prospective, randomized, controlled evaluator-blinded trial**, J Cosmet Dermatol. 2019 Feb;18(1): p. 163-168

Background: Nitrogen plasma skin regeneration is a novel device that produces heat to the skin, resulting in the production of new collagen. Because of lower energy with safer skin damage and lesser adverse effects who have high Fitzpatrick's skin type especially Thais, this technique is very interesting for clinical application for skin esthetic treatment. However, this treatment has yet been empirically studied as the treatment for mild-to-moderate periorbital wrinkles. Objectives: This study aimed to evaluate clinical efficacy of nitrogen plasma for the treatment of mild-to-moderate periorbital

wrinkles. Methods: Eighteen volunteers were enrolled. Each volunteer was randomized to receive nitrogen plasma treatment on one side of periorbital wrinkles with three sessions at a three-week interval and compared with contralateral side without treatment. Photographic examination, skin wrinkle (SEw) score, melanin index, patients' satisfaction score, side effect, and pain score were reported. Results: At over fourteen weeks, all volunteers completed the study. Treatment with nitrogen plasma group had significantly better improvement for periorbital wrinkles score by Lemperle scale, skin wrinkle (SEw) score by Visioscan® VC 98, and the melanin index by Mexameter® than the control groups ($P = 0.004$, $P < 0.001$, $P < 0.001$, respectively). This study also showed significantly greater satisfaction score to favor the nitrogen plasma treatment group than the control group ($P < 0.001$). The short-term adverse effects included erythema, scaling, temporary hyperpigmentation, pruritus, and dryness. Conclusion: Nitrogen plasma skin regeneration is effective and safe for the treatment of mild-to-moderate periorbital wrinkles and darkening.

W. Liu, M. Wang, S. Xu, C. Gao, J. Liu, **Inhibitory effects of shell of *Camellia oleifera Abel* extract on mushroom tyrosinase and human skin melanin**, J Cosmet Dermatol. 2019; p. 1–6

Background: As an oil production byproducts, the shell of *Camellia oleifera Abel* (SC) is usually discarded in the dump. However, previous investigations suggested that the SC could provide valuable bioactive materials. Objective: The objectives of this study were to examine the ability of SC extract to inhibit in vitro tyrosinase activity and the melanin inhibition effects of cosmetic formulations containing SC 1,3-butanediol extract in human volunteers. Methods: The cell viability was determined using a WTT assay. A mushroom tyrosinase was used to evaluate the anti-tyrosinase activity of the SC extract. The placebo (no extract) or test (SC 1,3-butanediol extract) or positive control (kojic acid) cosmetic cream was applied on face of volunteers (30 female subjects) three times a day for 8 weeks. The active compounds in SC extract were screened using liquid chromatography-high-resolution mass spectrometry (UHPLC-QTOF). Results: The result showed that the cytotoxicity of SC extract is insignificant when the concentration of SC extract is below 160 μg/mL. In addition, SC extract dose dependently inhibited tyrosinase activity and SC 1,3-butanediol extract possessed a stronger inhibitory activity than methanol extract and water extract. Clinical evaluatios revealed that facial melanin levels of the volunteers receiving cosmetic formulations (containing SC 1,3-butanediol extract) were decreased 59% from baseline in 6th weeks, whereas the placebo group showed no effect. SC 1,3-butanediol extract was detected to contain 12 kaempferol compounds, significantly, kaempferol 3-O-[α- rhamnopyranosyl-(1→6)-β-glucopyranoside] and kaempferol-3,7-O-α-L-dirhamnoside are the major compounds. Conclusion: These results indicate that SC extract can be used as a natural skin-whitening agent in cosmetic products.

D. Leskur, J. Bukić, A. Petrić, L. Zekan, D. Rušić, A. Šešelja Perišin, I. Petrić, M. Stipić, N. Puizina-Ivić, D. Modun, **Anatomical Site Differences of Sodium Laurylsulphate Induced Irritation: randomised controlled trial,** Br J Dermatol. 2019 January

Background: Sodium laurylsulphate (SLS) induced contact dermatitis is a commonly used model for testing effects of different topical formulations. Volar forearms are preferred testing site by the guidelines, but other anatomical locations were used in previous research, especially upper back, as the clinically used site for testing different antigens. Objectives: Aim of the present study was to investigate existence of anatomical variations of skin response to irritation and its' effects on response to treatment. Methods: Irritation was induced with SLS on symmetrical sites on both forearms and sides of upper back with additional sites exposed to water as controls. Half of the sites were treated with emollient cream while the other half were left untreated. Irritation was assessed using bioengineering methods and clinical scoring. Results: Upper back skin showed higher reactivity to irritants with stronger barrier disruption (measured by Tewameter, 80·2±18·3 vs 48·0±24·2 gm^{-2} h^{-1}), more pronounced erythema (measured by Mexameter, 186·5±88·4 vs 92·1±58·2 AU) and dryness (measured by Corneometer, -28·6±14·5 vs 2·7±16·9 AU). Skin recovery rates were also influenced by anatomical location with the upper back showing faster recovery (316·7±223·1 vs 156·2±198·5). Treatment didn't lead to improvement in measured parameters, regardless of anatomical location. Conclusion: Skins' reaction to irritant and recovery were dependent on anatomical location. Location where testing was conducted should always be reported as treatments tested across different locations could not be directly compared to each other.

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.

M. Kerscher, A.T. Nurrisyanti,. C. Eiben-Nielson, S. Hartmann, J. Lambert-Baumann, **Clinical and Biophysical Outcomes of Combining Microfocused Ultrasound with Visualization and Calcium Hydroxylapatite Filler for Facial Treatment**, Dermatol Ther (Heidelb) (2019) 9: p. 135–142

Introduction: Combined cosmetic treatments are becoming increasingly popular. The objective of this clinical evaluation was to assess the long-term safety and efficacy of combining microfocused ultrasound with visualization (MFU-V) treatment with a calcium hydroxylapatite (CaHA) dermal filler to tighten skin at the submental region and contour the jawline.Methods: Women with loss of contour and skin laxity in the lower face received MFU-V treatment. If subjects did not respond satisfactorily after 12 weeks, they received CaHA to the jawline. Evaluations—which were performed by blinded raters at baseline and after 12, 24, and 48 weeks—included live Global Aesthetic Improvement Scale (GAIS) ratings, Merz Aesthetic Scale (MAS) ratings, skin parameters, and tolerability. Results: Of the 22 subjects, 9 received combined treatments. GAIS scores showed that subjects were much and very much improved (50% each) at 48 weeks. The MAS score was decreased by at least one point in 89% of subjects. Skin thickness was significantly improved after 24 weeks (p \ 0.05) and remained above baseline after 48 weeks. Skin firmness was significantly improved after 48 weeks (p \ 0.05). No unexpected adverse events were reported. Conclusion: Combined MFU-V and CaHA treatments for laxity in the lower face did not alter skin barrier function, improved appearance, and slowed visible skin aging processes for at least 48 weeks.

M. Kerscher, A.T. Nurrisyanti, C. Eiben-Nielson, S. Hartmann, J. Lambert-Baumann, **Skin physiology and safety of microfocused ultrasound with visualization for improving skin laxity**, Dove Press, January 2019 Volume 2019:12, p. 71-79

Purpose: The efficacy of microfocused ultrasound with visualization (MFU-V; Ultherapy®) has been demonstrated in clinical studies and daily practice. However, data addressing skin physiology after MFU-V treatment are lacking. This observational evaluation was aimed to assess skin physiology before and after MFU-V treatment using noninvasive biophysical measurements. Patients and methods: Twenty-two female patients with moderate-to-severe skin sagging at the jawline and submental region on the Merz Aesthetics Scale obtained a single MFU-V treatment according to protocol. Skin function measurements focused on short-term effects up to 3 days and long-term effects up to 24 weeks after treatment. Skin temperature, transepidermal water loss, skin hydration, erythema, elasticity, and skin thickness and density were evaluated under standardized conditions. Pain was assessed using a validated numeric visual analog scale. Results: Skin temperature remained in a physiologic range and no significant increase was noted at day 3 after MFU-V treatment. Transepidermal water loss, hydration, and erythema values were fairly stable and showed no significant differences at short- and long-term measurements vs baseline. At week 4 after a single MFU-V treatment, gross and net elasticity values were significantly decreased (P=0.003 and P=0.0001, respectively), followed by significantly increased values at week 12 (P=0.015, P=0.046) and week 24 (P=0.001, P=0.049). Edema due to MFU-V treatment resolved without sequelae. For all patients, pain diminished shortly after treatment. No adverse events occurred during the 24-week follow-up period. Conclusions: MFU-V treatment is well tolerated and it does not alter the epidermal barrier function or physiology of skin. Significant increase in the elasticity of skin was observed at 12

and 24 weeks after a single treatment, which reflects improvement in dermal tissue function. These short- and long-term effects are congruous with the mode of action of MFU-V due to a proven intrinsic tissue remodeling process.

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.

S. Akita, K. Hayashida, H. Yoshimoto, M. Fujioka, C. Senju, S. Morooka, G. Nishimura, N. Mukae, K. Kobayashi, K. Anraku, R. Murakami, A. Hirano, M. Oishi, S. Ikenoya, N. Amano, H. Nakagawa, **Novel Application of Cultured Epithelial Autografts (CEA) with Expanded Mesh Skin Grafting Over an Artificial Dermis or Dermal Wound Bed Preparation**, Int. J. Mol. Sci. 2018, *19*, 57

Cultured epithelial autografts (CEA) with highly expanded mesh skin grafts were used for extensive adult burns covering more than 30% of the total body surface area. A prospective study on eight patients assessed subjective and objective findings up to a 12-month follow-up. The results of wound healing for over 1:6 mesh plus CEA, gap 1:6 mesh plus CEA, and 1:3 mesh were compared at 3, 6, and 12 months using extensibility, viscoelasticity, color, and transepidermal water loss by a generalized estimating equation (GEE) or generalized linear mixed model (GLMM). No significant differences were observed among the paired treatments at any time point. At 6 and 12 months, over 1:6 mesh plus CEA achieved significantly better expert evaluation scores by the Vancouver andManchester Scar Scales ($p < 0.01$). Extended skin grafting plus CEA minimizes donor resources and the quality of scars is equal or similar to that with conventional low extended mesh slit-thickness skin grafting such as 1:3 mesh. A longitudinal analysis of scars may further clarify the molecular changes of scar formation and pathogenesis.

M. Barbero, S. Rodríguez, I. Zaldívar, **PB Serum Wrinkle Hyaluronic Complex**, ZURKO research Laboratories Information

Facial skin is one of the most sensitive parts of our body, as it is the one that suffers the wear of weather, temperature changes, closed environments, stress, etc. Therefore, the face loses elasticity over the years and expression lines appear. The objective of the present study is to demonstrate that the exclusive lyophilized cocktail based on Keratinase KerA PB333 and hyaluronic acid, has a high capacity of reducing wrinkles and expression lines. The unique biologic active KerA PB333 acts on the skin promoting an effective and soft peeling effect, without altering skin balance or reducing its natural hydration. The Hyaluronic acid penetrates in the skin smoothing wrinkles.

M. Hayashi, K. Okamura, Y. Araki, M. Suzuki, T. Tanaka, Y. Abe, S. Nakano, J. Yoshizawa, Y. Hozumi, M. Inoie, T. Suzuki, **Spectrophotometer is useful for assessing vitiligo and chemical leukoderma severity by quantifying color difference with surrounding normally pigmented skin,** Skin Research & Technology 2018; 24: p. 175-179

Background: Acquired skin hypopigmentation has many etiologies, including autoimmune melanocyte destruction, skin aging, inflammation, and chemical exposure. Distinguishing lesions from normally pigmented skin is clinically important to precisely assess disease severity. However, no gold standard assessment method has been reported. We aimed to investigate whether spectrophotometers are useful for assessing vitiligo and rhododendrol (4-(4-hydroxyphenol)-2-butanol)

(Rhododenol^)-induced leukoderma disease severity by quantifying skin color. Methods: Mexameter MX18 and CM-700d spectrophotometer were used for assessing vitiligo/leukoderma by measuring melanin index, *L*a*b** color space,and *AE*ab* value, which represents the color difference between two subjects and is calculated by the values of *L*a*b*.* Results: MX18 and CM-700d can quantitatively distinguish vitiligo/leukoderma from normally pigmented skin based on melanin index. CM-700d consistently quantified the color of vitiligo/leukoderma lesions and surrounding normally pigmented skin in *L*a*b** color spaces and *AE*ab. AE*ab* is well correlated with melanin index and clinical appearance. Conclusion: *AE*ab* has been frequently used in aesthetic dentistry; however, current study is the first to use it in the measurement of skin color. *AE*ab seems* to be a useful parameter to evaluate the color contrast between vitiligo/leukoderma and surrounding normally pigmented skin and can be used to evaluate disease severity and patient's quality of life.

J.L. Schiefer, R. Rath, E. Ahrens, D. Grigutsch, I. Gräff, J.-P. Stromps, P.C. Fuchs, A. Schulz, **Evaluation of scar quality after treatment of superficial burns of the hands and face with Dressilk or Biobrane—An intra-individual comparison**, Burns 44 (2018), p. 305 – 317

Introduction: The aesthetic outcome after burn of exposed areas such as the hand and face is of high importance. A number of wound dressings used for the treatment of superficial and partial thickness burns promise rapid wound healing and reduced scarring. Previously, wound healing of hands and faces with superficial burns treated with Dressilk1 compared to Biobrane1 was evaluated intra-individually with similar results. Nevertheless, up to date objective information regarding the scarring after superficial burns treated with Dressilk1 does not exist. Methods: Therefore, 30 patients with superficial burns of the hand and face that were treated with Dressilk1 and Biobrane1 simultaneously were included in the study. An objective scar evaluation was performed analyzing melanin and erythema levels, skin elasticity, transepidermal water loss and scar perfusion three and six and 12 months after injury. Furthermore, a subjective scar evaluation was performed with the patient and observer scar assessment scale (POSAS) and the Vancouver scar scale (VSS). Results: Dressilk1 and Biobrane1 both lead to an aesthetic pleasing outcome after superficial burns of the hands and faces. Regarding the objective scar evaluation only trans-epidermal water loss of burned hands after 6 months showed significant differences between the two dressings. However, these differences were not detected in the 12-month follow up examination. In the subjective scar evaluation no statistical differences could be found between the dressings. All patients stated high satisfaction of scar quality. Conclusion: Dressilk1 is an interesting alternative to Biobrane1 for the treatment of superficial burns of aesthetic and functional important areas.

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.

V. Mazzarello, M. Ferrari, P. Ena, **Werner syndrome: quantitative assessment of skin aging**, Clinical, Cosmetic and Investigational Dermatology 2018: 11, p. 397–402

Background: Werner syndrome (WS) is a rare autosomal recessive disorder characterized by premature aging in adults. Although not sufficient to diagnose WS, persistent short stature and alteration of the dentition are among the few early signs that appear at puberty and can lead to a suspected diagnosis. Objective: The study aimed at quantifying the signs of WS skin aging through biophysical parameters to find new parameters to be applied together with clinical observations in order to diagnose the disease early. Patients and methods: The skin disorders induced by the disease were studied using noninvasive techniques: Tewameter TM300, Corneometer CM825, Skin-pH-Meter PH900, Mexameter MX16, Visioscan VC98, and Cutometer MPA580. Twenty-four patients divided into young group, WS group, and elderly group were recruited for the study. Results: The WS skin is quite similar to aged skin, with some differences concerning the barrier function and skin elasticity; for instance, a WS patient of 30 years of age has the same skin roughness of a 50/60 years old subject with a more severe skin condition leading to higher dryness, high transepidermal water loss, and less distensibility correlating with skin indurations. Conclusion: In patients with WS, the biophysical parameters can quantify the damage induced on the skin by the disease. In order to stage the degree of the disease, biophysical parameters could be used in the future as a diagnostic procedure in the initial stages of the disease as they may reveal lesions not yet clinically perceptible or in advanced stages.

S. Meer, N. Akhtar, **Annona muricata extract containing pharmaceutical emulgels with and without penetration enhancer for depigmenting and antierythmic effects,** Pak J Pharm Sci. 2018 Nov; 31/6 (Supplementary): p. 2683-2688

The basic purpose of this research work was to investigate the skin depigmenting and antierythmetic effects of emulgel containing Annona muricata L. fruit extract by comparing it with its control and the variation in these effects with the addition of penetration enhancer. The control (without extract and penetration enhancer i.e. clove oil 8%) and the two test formulations with 4% fruit extract FA and FB (without clove oil and with clove oil) were formulated and evaluated for in vitro characteristics (pH, conductivity and in vitro release). The emulgels were then applied on the cheeks of 26 healthy female human volunteers (n=26) for a study period of 12 weeks. Skin melanin and erythema contents were measured by Mexameter at base line and then after every 2 weeks. Both the test formulations showed significant decrease in melanin and erythema contents when compared to control but FB showed marked decrease in skin melanin when compared to the FA. While in case of skin erythema, the effects of FA were greater as compared to other formulation. When paired sample t test (5% level of significance) was applied, the test formulations showed significant results. This study reveals that the Annona muricata L. fruit extract naturally contains some important phenolic compounds and can be effectively used in topical preparations for the treatment of skin hyperpigmentation and dermatitis. Skin whitening effects can be increased by the addition of penetration enhancer.

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.-H. Busch, A. Aliu, N. Walezko, M. Aust, **Medical Needling: Effect on Skin Erythema of Hypertrophic Burn Scars**, Cureus, 10(9) 2018

Introduction: Burn scars frequently tend to have pathological discolorations, which is manifested in the development of persistent erythema. Affected people suffer from psychological and physiological issues when they are restricted or rejected in their daily life. In this context, medical needling seems to be an efficient therapy for erythematous scars with a relatively low risk rate of postoperative complications. Study research has already shown significant improvements in the scar quality with reference to the parameters “moisture and transepidermal water loss.” Clinical data is up-to-date and provides an innovative therapy outcome of scar treatment with medical needling. Objective: The aim of our study was to examine the influence of medical needling on the pathological and persistent erythema of hypertrophic burn scars. By means of reliable measurement methods, we were able to prove positive and sustainable outcomes for normal and healthy skin. The patient cohort included 20 patients with an average age of 34.63 years. Our examinations involved scars that were at least two years old and had healed by secondary intent. Every scar showed the pathological values of persistent erythema according to the participation requirements. Methods: For the practical implementation of medical needling or percutaneous collagen induction (PCI), we used a roller covered with needles of 3 mm length. The needling device is rolled over the scar alternatively in a vertical, horizontal, and diagonal orientation. Multiple micro-wounds at a close distance cause intradermal bleeding, which evokes modified skin regeneration provoked by the effects of medical needling. Every patient has been followed up for 12 months postoperatively. Further on, valid results have been evaluated objectively as well as subjectively by the patient and observer. Results: Our study has shown that persistent erythema of hypertrophic scars can be considered as an indication of PCI. The needling procedure influences vascularization by stimulating angiogenesis in the post-needling wound healing cascade. As the method is based on percutaneous collagen induction, the synthesis of collagen improves the vital thickness of the epidermis, which is directly associated with less transparency. Examined scars showed a significant reduction of erythema and were less reddened after treatment. Based on the outcomes of objective measurements, medical needling achieves a normalization of the skin color and an adjustment to healthy skin after repetitive treatments. Conclusion: Medical needling seems to be a suitable therapy approach for treating erythematous, hypertrophic burn scars.

P.M.B. G. Maia Campos, L. Salomão Calixto, V. Rego de Moraes, **Application of Biophysical and Skin Imaging Techniques for the Evaluation of the Efficacy of a Depigment Cosmetic Formulation,** IFSCC Congress, Munich, September 2018

Skin pigmentation disorders are common among the population and can emerge from different pathways. Clinical efficacy studies enable the evaluation of formulations with depigmenting effect in the search of treatment for these conditions. The objective of this study was to evaluate the whitening effect of a cosmetic formulation using biophysical and skin imaging techniques. For this, 12 participants between 39 and 55 years old, with phototypes II or III were recruited after an interview trial. All participants received a whitening formulation to be applied every evening during 2 months. They also received one photoprotective formulation to be applied every morning. Measurements were performed before (baseline values) and after 30 and 60 days of application of the formulations. Clinical efficacy was assessed in terms of brightness on the dermalepidermal junction, thickness of dermis and viable epidermis, depth of dermal papilla using Vivascope® (Reflectance Confocal Microscopy – RCM); color of the skin using Mexameter® and skin lightness, dark spots and before/after images were obtained using Visioface®. For each participant, two regions were followed: area with spot (lesional) and area next to the spot (perilesional). It was observed a decrease in melanin and erythema values for the lesional area of skin after the treatment and it was observed that these parameters did not change in the perilesional area. The brightness on the dermalepidermal junction significantly decreased in the lesional area after 30 and 60 days of use. From the high resolution full face photographs was possible to observe that the treatment reduced the dark spots compared to the non-injured area. In conclusion, the studied formulation was able to reduce the skin pigmentation after 60 days of application and providing benefits to skin structure.

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 lifestyle on 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.

O. Exposito, M. Perez, M. Mas, A. Gallego, D. Luna, P. Riera, S. Laplana, T. Ruiz, **Microbiome Quorum Sensing Modulation - A Genuine Mechanism of Action to Rebalance the kin Microbiota Dysbiosis from a New Paradigm: shoot the Message not the Messenger**, IFSCC Congress, Munich, September 2018

Skin conditions due to microbial dysbiosis are of great interest because of their importance in dermatology and the difficulty treating them, being classical antibiotics not useful in most cases due the overreaction of the immune system when exposed to dead microbes, and the absence of

restoration of microbial homeostasis after treatments. Quorum sensing is a key process in the growth and development of microbial populations on skin, representing one of the main factors affecting dysbiosis. We studied the effect of Morinda citrifolia cell cultures, a plant known for its anti-microbial activity, on different dysbiosis-related processes and in acne as human dysbiosis pathology in volunteers. In vitro the effect of M. citrifolia was evaluated in anti-inflammatory, antimicrobial, biofilm formation and P. acnes luxS gene expressed in assays and in vivo by determination of the sebum level, pore size and acne severity index. The results demonstrated a reduction in growth and biofilm formation rates of all the microbes tested as well as a reduction in acne symptoms and successful restoration of microbial skin homeostasis, opening an opportunity for the development of antimicrobial skin therapies based on plant cell cultures

T. Chalermchai, P. Rummaneethorn, **Effects of a fractional picosecond 1,064 nm laser for the treatment of dermal and mixed type melisma,** J Cosmet Laser Ther, 2018 Jun;20(3): p. 134-139

Background: Picosecond laser is a novel modality for pigmented skin disorders with extremely short pulse duration. Little is known about the effects of the picosecond laser in melasma. Objective: This study aimed to investigate the efficacy of fractional picosecond 1,064 nm laser in melasma treatment. Study Design: A prospective, randomized, assessor-blinded, intra-individual split face comparative study. Methods: Female subjects with melasma were enrolled and received fractional picosecond 1,064 nm laser plus 4% hydroquinone cream on one randomly assigned side of the face; the results were compared to the use of hydroquinone cream only on the contralateral side. The modified melasma area severity index (mMASI) score, melanin index by Mexameter MX18®, participant satisfaction score by quartile rating scale, and the quality of life by the dermatology life quality index (DLQI) were evaluated over 12°weeks. Results: Thirty female subjects completed the protocol. The mean (± standard deviation, SD) mMASI score at the 12-week visit was significantly reduced in the picosecond laser-treated areas compared to controls (3.52 ± 1.4 and 4.18 ± 2.03 respectively; p = 0.035). No differences were observed in the mean Mexameter melanin index, participant satisfaction score, and DLQI score. The observed adverse effects included transient mild erythema and mild skin desquamation. Conclusion: The addition of fractional picosecond 1,064 nm laser to 4% hydroquinone was effective and significantly better than 4% hydroquinone alone for the treatment of melasma.

A. Jaros, M. Zasada, E. Budzisz, R. Dębowska, M. Gębczyńska-Rzepka, H. Rotsztejn, **Evaluation of selected skin parameters following the application of 5% vitamin C concentrate,** J Cosmet Dermatol, 2018 Apr 30

Background: Ascorbic acid is a substance with confirmed anti-free-radical properties. It triggers the collagen synthesis, has a depigmenting effect and seals blood vessels. All these properties have a significant effect of the skin's appearance. The characteristic traits of capillary skin include telangiectasias as well as erythema, which might consolidate in the future, along with the feeling of burning and increased skin sensitivity. Objectives Study and evaluation of selected parameters of capillary skin after the application of 5% vitamin C concentrate throughout the period of 6 weeks with the use of instrumental tests and questionnaires. Methods: The research was conducted on a group of 30 women ranging from 30 to 60 years of age with capillary skin indicating visible signs of erythematous plaques. The concentrate was applied once a day. Analyses of skin conditions were conducted four times: before the launch of the research D(0), after two 2D(14), after four 4D(28), and after 6 D(42) weeks of application. The research was conducted with the use of Mexameter MPA equipment, which was used to measure changes in the intensity of erythematous plaques. The depth of wrinkles was measured by PRIMOS system (two times D0 and 6D(42). The research also used VISIA system which allowed to perform visual and numeral skin analyses. Each research was finalized with a questionnaire which provided a subjective evaluation of the examined product among participants. Results: Significant reduction in erythema has been widely recorded. After 2 weeks, erythema dropped by 9%. After 4 weeks, it decreased by 16% and by 21% after 6 weeks. The concentrate's efficiency in diminishing erythematous plaques was confirmed by photographs generated by VISIA photograph system. Thanks to PRIMOS, decrease in both depth and volume of nasolabial folds was recorded in 87% of participants after 6 weeks of research. Conclusion: 5% vitamin C concentrate is effective in treating capillary and photograph-aging skin. It decreases erythema and telangiectasias as well as triggers the shallowing of skin wrinkles.

I. Dolechova, J. Bystronova, M. Maresova, V. Hrobaf, P. Sedova, M. Cepa, 0. Zideh, Z. Dushova, M. Pravda, R.Buffa, **Crosslinked Hyaluronic Acid for Topical Cosmetic Applications,** sofw journal 1144, 04/18, p. 52-57

Crosslinked hyaluronic acid-based hydrogels (crossHA) have been widely used in the

cosmetic industry as injectable dermalfillers. However, HA hydrogels also emerge as interesting raw materials for cosmetic topical products with various other potential benefits. In this work, we developed and characterized a new type of crossHA (crossHA-3; INCI Sodium Hyaluronate Crosspolymer-3) in a powder form dedicated for the topical cosmetic application and tested its properties *in vitro* and *in vivo* on human volunteers. CrossHA-3 powder is fully soluble in water creating a soft hydrogel microparticle suspension macroscopically resembling true solution. Large amount of water absorbed in the porous structure of crossHA-3 effectively moisturizes the skin *in vivo.* CrossHA-3 also creates a protective film on the skin surface and immediately and visibly reduces even deep mimic wrinkles. Because crossHA-3 is less susceptible to enzymatic degradation than HA, it stays longer on the skin surface and so its anti-wrinkle effect is prolonged. Beside water, crossHA-3 can absorb various cosmetic active ingredients in its pores and ensures their continuous, long-term delivery into the skin leading to their more effective utilization by the skin cells as we showed in another *in vivo* study using niacinamide (vitamin B3) as a model cosmetic active ingredient.

A. Markiewicz, M. Zasada, A. Erkiert-Polguj, M. Wieckowska-Szakiel, E . Budzisz, **An evaluation of the antiaging properties of strawberry hydrolysate treatment enriched with L-ascorbic acid applied with microneedle mesotherapy**, Journal of Cosmetic Dermatology, April 2018

Background: Mature skin is characterized by a loss of elasticity, hyperpigmentation, and dehydration. L-ascorbic acid stimulates the synthesis of collagen type I, inhibits melanogenesis, and helps to maintain correct skin hydration. Combining microneedle mesotherapy with the application of preparations rich in vitamin C results in better therapeutic effects due to the improved absorption of active substances. The study evaluates the effectiveness of the application of strawberry hydrolysate enriched with L-ascorbic acid using microneedle mesotherapy. Materials and Methods: Seventeen volunteers aged 45-70 years underwent a series of four microneedle mesotherapy treatments with vitamin C serum, performed every 10 days. The 20% L-ascorbic acid solution (pH = 3.5) was prepared immediately before application. After the treatment, the participants gave a subjective assessment of the effectiveness. Cutometer® was used to measure skin elasticity and firmness, Corneometer® to measure skin hydration, and Mexameter® skin tone. Results: The results of the survey showed improvements in skin hydration and elasticity. In vivo studies confirmed the effectiveness of serum and the impact of the active substance on skin firmness and elasticity, the degree of hydration and skin tone. Conclusion: Microneedling with vitamin C improves skin tone, hydratation and firmness, and decreases the visibility of hyperpigmentation.

A. Schulz, I. Rothermund, R. Lefering, P. Christian Fuchs, J. Schiefer, **Long-term Scar Quality after Treatment of Standardized Partial-Thickness Skin Graft Donor Sites**, Advances In Skin & Wound Care, March 2018: 31: p.109-117

Background: The long-term aesthetic appearance of scars is of great importance to patients. Biobrane (Smith and Nephew, Fort Worth, Texas), a biosynthetic skin dressing, is a successfully established dressing for the treatment of superficial wounds. A new silk barrier dressing (Dressilk; Prevor, Moulin de Verville, France) has also shown good results in wound healing. This study evaluated the long-term scar quality of superficial wounds treated with these dressings. Methods: From February 2012 to May 2013, 11 patients with burns in need of skin grafting received donor site treatment. Study authors dressed 2 adjacent, standardized, partial-thickness skin graft donor sites on each participant with Biobrane or Dressilk. Scar formation on both treated areas was compared 24 months after initial application using subjective and objective assessment methods. Results: Independent of treatment, the majority of the patients described scar quality similar to normal skin using subjective and objective evaluation tools. However, for scar perfusion, significantly lower oxygen saturation was shown in both treated areas compared with untreated skin. Conclusions: Comparatively, the 2 wound dressings showed similar results, making silk dressings an interesting alternative to biosynthetic ones.

L.M. Römhild, **Wirkung von Methylprednisolonaceponat auf experimentell erzeugte Juckreizformen,** Dissertation der Klinik für Dermatologie und Allergologie der Medizinischen Fakultät Charité – Universitätsmedizin Berlin, Germany, März 2018

Methylprednisolonaceponat (MPA) ist ein anti-entzündlich wirkendes topisches Glukokortikosteroid, das in der Dermatologie ein weites Einsatzspektrum findet. Es wird vor allem bei entzündlichen Hauterkrankungen, die oft mit einem chronischen Juckreiz einhergehen, wie der atopischen Dermatitis (AD), eingesetzt. Darüber hinaus werden topische Glukokortikosteroide in der klinischen Praxis auch bei juckenden Hauterkrankungen eingesetzt, die nicht mit primär entzündlichen Hautveränderungen einhergehen. Über die direkten, antipruritischen Effekte von Glukokortikosteroiden liegen bislang keine verlässlichen Daten vor. Diese Studie untersucht daher die

antipruritische Wirksamkeit von MPA bei Histamin- und Cowhage-induziertem Juckreiz an gesunden Probanden. Dazu wird ein Modell verwendet, welches die verschiedenen Juckreizparameter wie maximale Juckreizintensität, deren Veränderung über die Zeit, die Rötung und die Quaddelbildung erfasst. Es ermöglicht, Aussagen über die Eigenschaften der verschiedenen, induzierten Juckreizformen und deren Veränderung über die Zeit zu erlangen, bzw. deren Veränderung durch bestimmte topische Substanzen wie das oben erwähnte MPA zu beobachten. MPA 1% und Vehikel werden randomisiert und kontrolliert unter Okklusion auf den rechten und linken Unterarm von 30 gesunden Probanden aufgetragen und dort für eine Stunde belassen, bevor die Juckreizprovokation durch das Einreiben von 40-45 Cowhagehärchen oder durch Hautpricktestung mit Histamin (10mg/ml) erfolgt. Die Juckreizintensität wird von den Probanden 30 Minuten lang mittels einer visuellen Analogskala aufgezeichnet. Die auftretende Rötung und Quaddelbildung wird mehrmals, vor und nach Provokation, mit verschiedenen Messmethoden erfasst. Durch die Nutzung dieses Modells kann gezeigt werden, dass ein topisches Steroid (MPA) keinen Einfluss auf die Juckreizintensität und die weiteren untersuchten Parameter hat. Weder bei Histamin- noch bei Cowhageinduziertem Juckreiz können juckreizmindernde Effekte von MPA beobachtet werden.

P. Sirithanabadeekul, R. Srieakpanit, **Intradermal tranexamic acid injections to prevent post-inflammatory hyperpigmentation after solar lentigo removal with a Q-switched 532-nm Nd: YAG laser**, J Cosmet Laser Ther, 2018 Mar 5: p. 1-7

Introduction: Post-inflammatory hyperpigmentation (PIH) after solar lentigo removal using a Q-switched (QS) 532-nm Nd:YAG laser is a cause for concern. This study aimed to evaluate the efficacy and safety of intradermal injections of tranexamic acid (TA) at reducing the risk of PIH after QS 532-nm Nd:YAG laser treatment of solar lentigines. Methods: Twenty-five patients with 50 solar lentigines on forearms underwent QS 532-nm Nd:YAG laser treatment. Then, TA (50 mg/mL) was injected randomly into one lesion and 0.9% normal saline was injected intradermally into another lesion. Two blinded dermatologists and a Mexameter® evaluated photographs at baseline, and at weeks 2, 4, 8, and 12. Results: At the end of the study, the mean melanin index (MI) had decreased significantly in both groups. The TA group showed a significant reduction in the mean MI compared with that in the control group at week 4 (p=0.025). The overall PIH rates were 16% and 28% in the TA and control groups, respectively. The side effects of TA were minimal and they were resolved within 1 h. Conclusion: Single dose of intradermal TA (50 mg/mL) injected can reduce the risk of developing PIH 4 weeks after 532-nm QS Nd:YAG laser treatment of solar lentigines.

L.-C. Borcan, Z. Dudas, A. Len, J. Fuzi, F. Borcan, M.C. Tomescu, **Synthesis and characterization of a polyurethane carrier used for a prolonged transmembrane transfer of a chili pepper extract**, International Journal of Nanomedicine 2018:13, p. 7155–7166

Purpose: Red chili peppers have been highly valued in gastronomy and traditional medicine since ancient times; it seems that it is not just an ingredient for food but also a good remedy for various medical conditions such as increased blood pressure and high levels of serum triglycerides and cholesterol, myocardial infarction, arthritis, and migraines. The objective of this study is the characterization of a new carrier used for encapsulated extract. Methods: Chili pepper extract was obtained and was physically entrapped inside polyurethane microparticles in order to diminish the irritative potential of this extract. The particles were evaluated by Zetasizer measurements, small-angle neutron scattering and thermal analysis, scanning electron microscopy (SEM), and Fourier transform infrared spectroscopy; the encapsulation effcacy and the drug release profle were assessed by UV-Vis spectroscopy. Bioevaluations on mice skin were performed to predict the irritative potential of the samples. Results: Two different types of samples were compared: hollow polyurethane microparticles vs polyurethane particles containing the natural extract. The sizes of the particles were very similar, but the sample containing the extract presents three particle populations (the polydispersity index increases from 0.3 to 0.6 from one sample to another). The zeta-potential measurements and SEM images indicate a medium tendency to form clusters, while the UV-Vis study revealed an almost 70% encapsulation effcacy. Conclusion: The results suggest that encapsulation of a chili pepper extract inside polyurethane microparticles leads to a non-irritative product with a prolonged release: ~30% of encapsulated extract is released within the frst 8 days and a maximum 45% is reached in 2 weeks.

T.D. Dobbs, T.H. Jovic, Z.M. Jessop, A. Kyle, H.A. Hutchings, I.S. Whitaker, **Objective and Patient-reported Assessments of Skin Grafts and Keystone Flaps—A Pilot Retrospective Cohort Study**, Plast Reconstr Surg Glob Open 2018

Background: The keystone perforator island flap provides a versatile form of reconstruction. Perceived benefits include better donor-recipient color match, less contour defect, and fewer

complications. To date, there has been no high-quality evidence comparing keystone flaps to split-thickness skin grafts (SSG) from both a qualitative and quantitative point of view. Methods: The Objective and Patient Reported Assessments of Skin grafts versus Keystone flap cohort study compares keystone flaps with SSGs for the reconstruction of skin cancer defects. Patient-reported outcome measures were collected using the EuroQol 5 dimension scale and Patient and Observer Scar Assessment Scale (POSAS) questionnaires. Objective assessments of skin quality were assessed with the Courage and Khazaka system. Cost analysis was also performed. Results: Thirty-eight patients were studied: 20 keystone flaps and 18 SSGs. The keystone group had higher EuroQol 5 dimension scale scores (keystone median = 1.0; SSG median = 0.832; P = 0.641) indicating better general quality of life and lower POSAS scores indicating better disease/condition specifc quality of life (keystone mean = 27.7; SSG mean = 35.7; P = 0.323). Observer POSAS scores were signifcantly lower in the keystone group compared with the SSG group (keystone mean = 10.889; SSG mean = 17.313; P < 0.001). Preservation of sensation was signifcantly better in keystone flaps (P = 0.006). There was an average £158/$207 (15%) saving when performing a keystone flap. Conclusion: This pilot study demonstrates a number of possible benefts of keystone flaps over SSGs. The results demonstrate the need for further research comparing these reconstructive options. We propose a prospective, controlled study using the methods developed in this pilot study.

J. István, V. Tünde, **Diagnosztikai lehetőségek és jelentőségük a sebkezelésben** (in Hungarian), XXI. évfolyam, 2018. 1. Szám

A sebkezelő legfontosabb feladata, hogy a sebgyógyulás komplex folyamata menedzselése során a lehető legoptimálisabb feltételeket biztosítsa, azaz a hatékony sebgyógyuláshoz szükséges terápiás döntéseket folyamatosan meghozza. Ehhez megfelelő információra van szüksége, amely a sebkezelésben a diagnosztikus tevékenységünk fontosságára hívja fel a fgyelmet. A seb gyógyítása során akkor dolgozhatunk leghatékonyabban, vagy számíthatunk egyáltalán a seb záródására, ha az általános sebkezelési feladatok mellett megfelelő hangsúlyt fektetünk a változatos etiológiának megfelelő oki kezelésre. Súlyos hibát véthetünk - mely a kezelésünk eredményességét veszélyezteti, ha a sebkezelés diagnózis felállítása nélkül indul el, vagy ha nem megfelelő diagnózis születik.

J.M. Spencer, J. Accioly, N. Kitchen, **Double Blind, Placebo Controlled Evaluation of a Novel Skin Lightening Agent,** J Drugs Dermatol, 2018 Jan 1;17(1): p. 113-115

Melasma remains a troubling problem for physicans and patients alike. It is a chronic irregular, symmetric hyperpigmentation seen most often in women. In this study, a unique combination of ingredients with non-irritating properties was tested for treatment of melasma. In a double blind, placebo controlled, split face trial, 17 patients with melasma were treated on one half of the face, left or right, while the other received placebo control. All patients used sunscreen on both sides. Measurement with a colorimeter (Mexameter) was taken at baseline and after 8 weeks of daily use. The active side showed an objective decrease in hyperpigmentation of 14.60% while the control side showed a decrease of 9.82%. We conclude the product provides a non-irritating effective therapy for melasma.

A.P.M. Martini, P.M.B.G. Maia Campos, **Influence of visible light on cutaneous hyperchromias: Clinical efficacy of broad-spectrum sunscreens,** Photodermatol Photoimmunol Photomed, 2018 Jan 30

Introduction: Cutaneous hyperchromias are disorders of skin pigmentation involving increased melanin production and its irregular accumulation in skin cells. The use of sunscreens is fundamental for the control of hyperchromias by reducing the stimulation of pigmentation, as melanin synthesis is mainly stimulated by solar radiation. Many studies have demonstrated that visible light can induce significant skin damage. Considering the effects of visible light, effective photoprotection should not be limited only to UV protection but should also involve visible and infrared protection. Objective: The aim of this study was to evaluate the efficacy of UV-VIS sunscreens in protecting skin against damages caused by solar radiation and the influence of visible light on the appearance of cutaneous hyperchromias. Methods: Forty volunteers aged 18 to 39 years with skin hyperpigmentation participated in the study. To evaluate the efficacy of the formulations developed, the percentage of hyperpigmented area was evaluated using high-resolution images-Visioface® Quick (Courage-Khazaka, Germany) and the analysis of epidermal pigmentation was performed by RCM-Vivascope® 1500 (Lucid, USA). Also, the melanin index was determined using the Mexameter® M X16 colorimeter (Courage-Khazaka, Germany). Results: The developed formulations were effective in the reduction in melanin index, epidermal pigmentation, and percentage of hyperpigmented area. Conclusion: Finally, this study discusses how the combination of UV filters and pigments can protect the skin from solar radiation and reduces skin hyperpigmentations.

P. Likhitthummaguna, P. Koonngamb, A. Seeremaspun, **Anti-aging effect of oral very high proline complex collagen (DERMOFIX®) on skin properties: a randomized, double-blind, placebo-controlled clinical study**

Taking collagen supplement to rejuvenate skin is now finding public favor due to antiaging trend. Synthesizing collagen, the body needs a specific amino acid group –Proline, Hydroxyproline and Glycine called "Proline complex" to make a core structure of every type of collagen fiber in human body. DERMOFIX®, which is a new very high proline complex containing-collagen supplement, helps promoting collagen synthesis naturally leading to antiaging effects on skin properties as well as other collagen-containing organs. The objective is to study the anti-aging effects of the oral very high proline complex collagen (VHPCC) primarily on skin properties compared to placebo and commercially available collagen (CAV) in Thailand, and secondarily on knee joint. In this randomized, double blind, placebo-controlled clinical trial, 50 women aged 30-45 years old were randomized to receive the VHPCC 10 g, CAV 10 g or placebo 10 g once daily for 8 weeks. Six aging related skin properties, which are skin elasticity, hydration, melanin index, transepidermal water loss, smoothness and wrinkle were objectively measured at 0, 1, 2, 4, 8 weeks. Knee joint assessments, photo-shooting, blood tests for CBC, creatinine and *sirt1* gene expression level were evaluated before and after the study. Results: The VHPCC showed statistically significant improvement and gave faster effects than the CAV and placebo, in skin elasticity, hydration, melanin index, transepidermal water loss, smoothness and wrinkles. Most effects by VHPCC showed significant improvement since the first week while CAV showed improvement mostly at fourth or eighth week. Safety blood tests are normal in all groups. However, the Sirt1 gene expression did not increase in any groups. No adverse effect was reported throughout the study. Conclusion: The study demonstrated that the VHPCC (DERMOFIX®) supplement wasproved safe, gave much faster and more effective effects than CAV in anti-aging of skin properties, knee joints and collagen-containing organs.

Y. Xu, R. Ma, J. Juliandri, X. Wang, B. Xu, D. Wang, Y. Lu, B. Zhou, D. Luo, **Efficacy of functional microarray of microneedles combined with topical tranexamic acid for melisma - A randomized, self-controlled, split-face study**, Medicine 2017

To evaluate the efficacy of a functional microarray of microneedles (MNs) plus topical tranexamic acid (TA) for melasma in middleaged women in China. Thirty female subjects with melasma were enrolled in this study. The left or right side of the face was chosen randomly to be pretreated with a functional microarray of MNs, followed by topical 0.5% TA solution once per week for 12 weeks. The other half-face was the control, treated with a sham device plus topical 0.5% TA solution. At baseline and at weeks 4, 8, and 12 of treatment, clinical (photographic) evaluations and parameters determined by Visia were recorded. At baseline and week 12, patient satisfaction scores and the biophysical parameters measured by Mexameter were also recorded. Side effects were evaluated at baseline and at the end of the 12 weeks. In total, 28 women (93.3%) completed the study. The brown spots' scores measured by Visia were significantly lower on the combined therapy side than on the control side at 12 weeks after starting treatment; there was no significant difference between sides at 4 or 8 weeks. After 12 weeks, melanin index (MI) decreased significantly in both 2 groups, and the MI was significantly less on the combined side at week 12. Transepidermal water loss, roughness, skin hydration, skin elasticity, and erythema index showed no significant differences between 2 sides at baseline, 4, 8, and 12 weeks after treatment. Physicians' evaluations of photographs showed better results at week 12with combined therapy: >25% improvement was observed in the MNs plus TA side in 25 patients, and in the TA side in only 10 patients. Subjective satisfaction scores on both sides increased significantly. The participants were more satisfied with the results of the combined therapy side than the control side. No obvious adverse reactions were observed throughout the study. Combined therapy with a functional microarray of MNs and topical TA solution is a promising treatment for melasma.

A. Rajabi-Estarabadi, H. Hasanzadeh, A. Taheri, S.R. Feldman, A. Firooz, **The efficacy of short-term clobetasol lotion in the treatment of scalp psoriasis**, Journal of Dermatological Treatment, 2017

Background: Scalp psoriasis can have a considerable impact on patients' quality of life and is considered difficult to treat. Treatment failure may, however, be due to poor adherence, as application of topical treatments to hair bearing areas is difficult and time consuming and also poor communication between physician and patient. Objective: To assess the efficacy of short-term treatment of scalp psoriasis with topical clobetasol lotion. Materials and methods: Twelve patients with mild to severe scalp psoriasis were recruited for this study. Patients applied clobetasol 0.05% lotion twice daily for seven days. They were followed up with phone calls three days after starting the treatment. Skin hydration, transepidermal water loss (TEWL) and skin erythema were assessed

noninvasively at baseline and end of study. Results: One week after treatment, median PSI score decreased significantly (p ¼ .002). There was also a significant decrease in median TEWL (p ¼ .012) and increase in skin hydration one week after treatment (p ¼ .010). Eighty three percent of patients were satisfied with treatment result and felt convenient with applying clobetasol lotion. Limitations: Lack of a long-term follow-up. Conclusions: Psoriasis is a long-term disease, and improving adherence in the short time could improve patient's adherence to treatment in long time.

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.

H. Yamaguchi, N. Banno, **Natural UV care for middle-aged skin,** PERSONAL CARE EUROPE, November 2017, p. 31-33

Are looks everything? A survey indicated that both men and women value appearance more than personality as they age. Most men and women wish to remain young (or thought to be young) forever but facial changes are telltale signs that they are ageing. Wrinkles and dark sports on your face are what give an impression of ageing to others. It goes without saying that the major factor in ageing of the skin in exposed areas, such as the face, is ultraviolet rays (UV), and knowledge that "ultraviolet rays are the enemy of beauty" is becoming firmly entrenched. Some people believe they sunburn more easily as they age and feel that somehow their skin becomes redder even though they follow their usual sun block routine. When we conducted a survey (Ichimaru Pharcos Internet Survey [7-11 July 2016]) on 522 women in their 20s to 60s residing in the Tokyo metropolitan area regarding sunburn, 35% of all respondents answered that "When I am exposed to strong sunlight, I sunburn more easily compared to in the past". This indicates that one in three people feel that "ageing makes it easier to get sunburned."

K.B. Biswas, K. Tanaka, S. Takayama, A. Iddamalgoda, **A solution for pollution induced ageing of skin,** PERSONAL CARE ASIA PACIFIC, November 2017, p. 36-38

Environmental pollution has now become the talk of the world. It is very important to keep in mind that more than half of the world's population now lives in an urban area. It is assumed that by 2030, 60% of the world's population will be living in towns and cities, rising to 70% by 2050.' As skin is the first line of defence when it comes to air pollution contact, we should be aware of the harmful effects of pollution on skin in general. Pollution, in fact, is not a problem limited to China or India only, it is almost common, for example, in London, Paris, New York and Milan as well. As urbanisation is the main cause of environmental pollution, it could be speculated that most of the people in the world are going to face higher levels of such pollution than ever before, and it will be very difficult for us to escape from that.

T. Tomova-Simitchieva, A. Lichterfeld-Kottner, U. Blume-Peytavi, J. Kottner, **Comparing the effects of 3 different pressure ulcer prevention support surfaces on the structure and function of heel and sacral skin: An exploratory cross-over trial,** International Wound Journal, 2017; p. 1–9

Special support surfaces are key in pressure ulcer prevention. The aim of this study was to measure the effects of 3 different types of mattresses (reactive gel, active alternating air, basic foam) on skin properties of the sacral and heel skin after 2 hours loading. Fifteen healthy females (median age 66 years) were included. Transepidermal water loss, skin surface temperature, erythema, stratum corneum hydration, epidermal hydration, skin extensibility, elastic function, and recovery as well as skin roughness parameters were measured under controlled room conditions before loading,

immediately after loading, and 20 minutes postloading in the supine position on the different mattresses. The highest increases in transepidermal water loss, skin temperature, and erythema were observed for the foam mattress after loading, indicating higher deformation and occlusion. Cutaneous stiffness decreased in all 3 groups, indicating structural changes during loading. There was a substantial decrease of mean roughness at the heel skin in the foam group, leading to a flattening of the skin surface. Study results indicate that the type of support surface influences skin structure and function during loading. The gel and air mattress appeared to be more protective compared with the foam mattress, but the differences between the gel and air were minor.

M. Scharioa, T. Tomova-Simitchieva, A. Lichterfeld, H. Herfert, G. Dobos, N. Lahmann, U. Blume-Peytavi, J. Kottner, **Effects of two different fabrics on skin barrier function under real pressure conditions**, Journal of Tissue Viability 26 (2017), p. 150 -155

Background: Pressure Ulcers (PUs) are a severe form of skin and soft tissue lesions, caused by sustained deformation. PU development is complex and depends on different factors. Skin structure and function change during prolonged loading on PU predilection sites and surfaces being in direct contact with skin are likely to have an impact as well. Little is known about the influence of fabrics on skin function under pressure conditions. Objectives: To investigate skin responses to sustained loading in a sitting position and possible differences between two fabrics. Methods: Under controlled conditions 6 healthy females (median age 65.0 (61.0e67.8) years) followed a standardized immobilization protocol of a sitting position for 45 min on a spacer and on a cotton fabric. Before and after the loading period skin surface temperature, stratum corneum hydration, transepidermal water loss (TEWL), erythema, skin elasticity and 'relative elastic recovery' were measured at the gluteal areas. Results: A 45 min sitting period caused increases of skin surface temperature and erythema independent of the fabric. Loading on spacer fabric showed a two times higher increase of TEWL compared to cotton. Stratum corneum hydration showed slight changes after loading, skin elasticity and 'relative elastic recovery' remained stable. Conclusions: Sitting on a hard surface causes skin barrier changes at the gluteal skin in terms of stratum corneum hydration and TEWL. These changes are influenced by the fabric which is in direct contact to the skin. There seems to be a dynamic interaction between skin and fabric properties especially in terms of temperature and humidity accumulation and transport.

K.C. Bernhöft, M. Streker, M. Kerscher, **Evaluation einer kosmetischen Maske bestehend aus einem Puder (27% Vitamin C, 4% Emblica Extrakt) und einer Lösung (40% Glykolsäure, 10% Zitronensäure) in Kombination mit einem Produkte-Set zur Reduktion fazialer Hyperpigmentierung**

Fragestellung: Wie effektiv ist die Anwendung einer kosmetischen Peelingmaske in Kombination mit einem Produkte Set für zuhause bei der Reduzierung von Hyperpigmentierung bei Frauen? Methodik: In dieser Pilotstudie wurden 2×12 Probandinnen, insgesamt 24, zwischen 25 und 60Jahren in je einem Zeitraum von 12Wochen untersucht. Die Peelingmaske wurde 6x mit je einem Abstand von 10–14Tagen auf dem gesamten Gesicht nach einem speziellen Behandlungsablauf angewendet. Während des gesamten Studienzeitraums wurden die Probandinnen dazu angehalten das ausgegebene Produkte Set zuhause anzuwenden. Zur Evaluation der direkten Hautreaktion wurde eine Probanden Befragung, als auch eine Experten Einschätzung, zu jeder Visite eingeholt. Zusätzlich wurde zur Effekt Feststellung die standardisierte Fotographie (Visia, complexing analysis), Mexametrie und Probanden Befragungen vor Beginn der Studie, an Tag 42 und an Tag 84 angewendet. Die Verträglichkeit der Behandlung, die Corneometrie, der transepidermale Wasserverlust, als auch der pH Wert wurden mittels biophysikalischer Messungen festgehalten. Ergebnis: Die Probanden stellten in den Befragungen eine Verbesserung der Hauttextur, Ebenmäßigkeit und des gesamt Erscheinungsbildes der Haut fest. Größtenteils sind die Hyperpigmentierungen nach Anwendung der Peelingmaske und des Produkte Sets zurückgegangen. Die Hautfarbe, gemessen an Melanin und Hämoglobin (Erytheme) ist schwächer geworden, verglichen zu den Vorab-Messungen. Die Hautverträglichkeit gemessen an den biophysikalischen Werten ist gegeben gewesen. Schlussfolgerung: Die Anwendung der Peelingmaske, wie auch der Heimpflege-Produkte war verträglich und konnte eine Verbesserung der Haut erreichen. Dies lässt darauf schließen, dass ein oberflächliches, kosmetisches Fruchtsäurepeeling, in diesem Fall in Form einer Peelingmaske, mit einem ergänzendem Produkte Set für zuhause, eine zufriedenstellende und verträgliche Alternative zu aufhellenden Produkten auf dem Markt darstellt.

A. Aguirre, E. Gil-Quintana, M. Fenaux, S. Erdozain, I. Sarria, **Beneficial Effects of Oral Supplementation with Ovoderm on Human Skin Physiology: Two Pilot Studies**, J Diet Suppl. 2017 Nov 2;14(6): p. 706-714

Collagens and hyaluronic acid have long been used in pharmaceuticals and food supplements for the improvement of skin elasticity and hydration. These compounds provide the building blocks of the skin. Ovoderm is an oral supplement obtained from eggshells that contains naturally occurring collagen and glycosaminoglycans, such as hyaluronic acid. We evaluated the efficacy of Ovoderm on skin biophysical parameters related to cutaneous aging such as elasticity, hydration, and pigmentation. Two pilot studies were run to assess the effect of daily oral supplementation with 300 mg Ovoderm on skin parameters. The first consisted of a self-assessment questionnaire intended to perform an assessment on skin, hair, and nail health after 50 days of treatment. The second measured the effect of 5-week treatment on hydration by corneometry, on elasticity with the cutometer, and on pigmentation with the mexameter. In the pilot study 1, participants were predominantly satisfied with the effects obtained on general face (100% volunteers satisfied) and body (94% volunteers satisfied) skin condition and skin properties (100% volunteers satisfied with facial skin softness, 94% with facial skin hydration, and 89% with body skin hydration) and partly with effects on hair (67% volunteers satisfied) and nail (50% volunteers satisfied) condition. The study 2 revealed a statistically significant improvement in skin elasticity (12% increase, p =.0136), a tendency to reduce skin pigmentation (5% decrease), and no significant change in skin hydration. Our study reflects that oral supplementation with Ovoderm is efficacious to reduce the gradual loss of skin elasticity characteristic of aged skin, which helps to improve the appearance of the skin.

M.P. Wakeman, **An open-label forearm-controlled pilot study to assess the effect of a proprietary emollient formulation on objective parameters of skin function of eczema-prone individuals over 14 days,** Clinical, Cosmetic and Investigational Dermatology 2017:10, p. 275–283

Background: This study examines the effcacy of a new plant-based emollient and assesses product acceptability. Methods: Primary effcacy endpoints were improvement in transepidermal water loss, hydration, skin elasticity and frmness, erythema, and skin roughness and smoothness as measured using the versions of Tewameter, Corneometer, Cutometer, Mexameter, and Visioscan VC98, respectively. The cream was applied twice daily by 32 participants to an area of one forearm unaffected by eczema, while the same area of the other forearm was used as a control. Measurements were taken at day 0 and day 14. Secondary endpoints assessed the acceptability of the product. Results: At the end of 2 weeks, transepidermal water loss, hydration, skin elasticity and frmness, erythema, and skin roughness and smoothness improved. All changes were statistically signifcant (p<0.01). The rate of satisfaction with the emollient properties was 82%, and the rate of absorption into the skin was 88%. Results show that the emollient hydrates and repairs eczema-prone skin with high levels of acceptability.

K. Huimin, A.M. Rowledge, C.J. Borzdynski, C. Miller, N. Frescos, G. McKenzie, E. Perry, W. McGuiness, **Reliability of a Skin Diagnostic Device in Assessing Hydration and Erythema**, Adv Skin Wound Care, 2017 Oct;30(10): p. 452-459

Objective: To examine the reliability of a skin diagnostic device, the SD202 (Courage+Khazaka GmBH, Cologne, Germany), in assessing hydration and erythema of periwound skin and pressure injury-prone areas. Design: Intrarater reliabilities from 3 cross-sectional and prospective studies are reported. Setting and Participants: Patients attending an outpatient, nurse-led wound dressing clinic (n = 16), a podiatrist-led high-risk foot clinic (n = 17), and residents (n = 38) at a single residential aged-care facility. Main Outcome Measures: Skin hydration and erythema levels assessed using the SD202. Main Results: High internal consistency was maintained for consecutive skin hydration and erythema measures at a single point on the venous leg ulcer periwound ($\alpha > .996$ and $\alpha > .970$ for hydration and erythema, respectively) and for the pressure-prone areas of the sacrum ($\alpha > .916$), right ($\alpha > .994$) and left ($\alpha > .967$) ischium, right ($\alpha > .989$) and left ($\alpha > .916$) trochanter, right ($\alpha > .985$) and left ($\alpha > .992$) calcaneus, and right ($\alpha > .991$) and left ($\alpha > .990$) lateral malleolus. High consistency was also found for the measures obtained at 4 different locations around the periwound for the venous leg ulcer ($\alpha > .935$ and $\alpha > .870$ for hydration and erythema, respectively). In diabetic foot ulcer assessment, acceptable internal consistency of hydration measures around the periwound was observed ($\alpha > .634$). Internal consistency of erythema measures was variable, ranging from low to high reliability, particularly among predebridement measures. Conclusions: Using the protocols outlined in this study, the SD202 demonstrates high reliability for assessing skin hydration and erythema levels. It is possible that the SD202 can be used in clinical practice as an appropriate tool for skin hydration and erythema assessment.

A. Schulz, P.C. Fuchs, J.P. Stromps, H. Heinel, **Bromelain based enzymatic debridement versus traditional surgical debridement in the treatment of deep dermal facial burn injury,** Oral Presentation, 17th European Burn Association Congress EBA, Barcelona, September 2017

Introduction: Tissue preserving debridement is essential for an optimal long term aesthetic outcome in deep dermal facial burns. Tangential burn eschar excision is still the gold standard. In the recent past promising results were reported for selective and precise eschar removal by NexoBrid, a Bromelain based enzymatic debridement agent. Methods: In a single-centre clinical trial we compared 13 versus 13 patients which received enzymatic and surgical debridement in deep dermal facial burn injury. We assessed time to complete healing, complications in healing process and scar quality after more than 12 months for both groups. Results: 77% of the facial burns that had been debrided enzymatically were found more superficial burned than initially assessed. Enzymatic debridement significantly reduced time to complete wound closure after admission (19.85 days versus 42.23 days, p=0.002), and after enzymatic eschar removal (18.92 days versus 35.62 days, p=0.042). The number of procedures to complete debridement (1.00 versus 1.77, p=0.003) and the need of autografting (15% versus 77%, p=0.002) were significantly reduced in the enzymatic debridement group. Scar quality was superior compared to surgical debridement after 12 months regarding pigmentation (p=0.016), thickness (p=0.16), relief (p=0.10), pliability (p=0.01), surface area (p=0.004), stiffness (p=0.023), thickness (0.011) and scar irregularity (p=0.011). Regarding erythema and melanin, viscoelasticity and pliability, trans - epidermal water loss or laser tissue oxygen saturation, haemoglobin level and microcirculation we found no significant differences for treated and untreated skin in the enzymatic debridement group. Conclusion: Compared to our current SOC we found promising results for enzymatic debridement of deep dermal facial burns with NexoBrid® regarding healing potential, time-efficient treatment and long term caring.

K.Y. Park, H.J. Kwon, C. Lee, D. Kim, J.J. Yoon, M.N. Kim, B.J. Kim, **Efficacy and safety of a new microneedle patch for skin brightening: A Randomized, split-face, single-blind study,** J Cosmet Dermatol, 2017 Sep;16(3): p. 382-387

Background: Although microneedles are one of the best transdermal drug delivery systems for active compounds, few clinical trials have examined the safety and efficacy of brightening microneedle patches. Aims: To determine the efficacy and safety of a newly developed whitening microneedle patch. Patients and Methods: A split-face study was designed for efficacy assessment with 34 Korean women applying the tested product (a whitening microneedle patch) on one cheek and a control whitening essence on the other. We objectively measured changes in melanin index values and skin brightness by mexameter and chromameter. Each participant also used global assessment to determine skin whitening. In addition, 55 participants were selected for primary skin irritation tests and repeated insult patch tests for safety assessments. Results: Mean skin brightness and melanin indexes improved (P<.05) 4 weeks and 8 weeks after product use in both the whitening patch and whitening essence groups. Significant differences (P<.05) were observed between the whitening patch and whitening essence groups 8 weeks after use. Global assessment by participants showed moderate cosmetic outcomes for both the whitening patch and whitening essence groups. No adverse effects were reported, and primary irritation and human repeated insult patch tests revealed no irritation from the test product. Conclusions: A newly developed microneedle patch was effective and safe for skin brightening and would be a promising functional cosmetic product.

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.

G. Nicoletti, P. Perugini, S. Bellino, P. Capra, A. Malovini, O. Jaber, M. Tresoldi, A. Faga, **Scar Remodeling with the Association of Monopolar Capacitive Radiofrequency, Electric Stimulation, and Negative Pressure,** Photomedicine and Laser Surgery, Volume 35, Number 5, 2017

Objective: A study was established to objectively assess the effects of low-intensity electromagnetic and electric stimulation plus negative pressure on mature scars. Background: Radiofrequency plus negative pressure therapy demonstrated a favorable reorganization and regeneration of the collagen and elastic fibers and was proposed for the treatment of cellulitis and skin stretch marks. Methods: Twenty-six mature scars in 20 Caucasian patients (15 females and 5 males) were enrolled in the study. The treatments were carried out with a Class I, BF-type electromedical device equipped with a radiofrequency generator, an electric pulse generator, and a vacuum pump twice a week for 3 months. Corneometry, transepidermal water loss, elastometry, colorimetry, and three-dimensional skin surface pattern were objectively assessed with Multi Probe Adapter System MPA and PRIMOS pico. A subjective assessment was carried out with the VAS and PSAS scales.

Each scar was compared before and after the treatment and with the skin in the corresponding healthy contralateral anatomical area at the same times. Results: Reduction of the scar surface wrinkling and overall scar flattening were demonstrated after the treatment. The scar slightly tended to approach the color and elasticity of healthy skin too. Conclusions: The combined local treatment of mature scars with low-intensity electromagnetic and electric stimulation in association with negative pressure might suggest a favorable synergic effect on the scar collagen and elastic fiber remodeling.

J. Liu, Y. Xu, T.-K. Lin, C. Lv, P.M. Elias, M.Q. Man, **Topical Histamine Stimulates Repigmentation of Nonsegmental Vitiligo by a Receptor-Dependent Mechanism**, Skin Pharmacol Physiol, 2017;30: p. 139–145

Background: Though vitiligo is a common depigmentary disorder, it still represents a substantial therapeutic challenge. Therapeutic options are limited in part due to its uncertain etiology. Objective: Because recent studies suggest that histamine stimulates melanogenesis in vitro, we determined here whether topical histamine stimulates repigmentation in patients with stable, non-segmental vitiligo. Methods: A total of 23 otherwise normal volunteers with vitiligo, including 14 males and 9 females aged 6–59 years (mean age 29.2 ± 2.8), were enrolled in this study. 1% histamine in distilled water was applied to the lesions twice daily for 5 weeks, while comparable lesions, treated with distilled water alone, served as the controls. The melanin index was measured on the uninvolved and lesional skin sites before and after 5 weeks of treatments using the melanin/erythema probe connected to a Courage-Khazaka MPA5 (Cologne, Germany). Changes in epidermal permeability barrier were also assessed at the same time point. To determine whether histamine-induced repigmentation is receptor-dependent, both ears of C57BL/6J mice were treated topically with 5% cimetidine, a histamine type 2 receptor (H2r) antagonist, twice daily for 10 days. One hour after each cimetidine application, the right ear was treated topically with 10% histamine, while vehicle alone was applied to the left ear. Changes in melanin index were measured 24 h after the last application of histamine and vehicle as described in the human study. Results: In patients with vitiligo treated with vehicle alone for 5 weeks, the melanin index remained unchanged, while topical histamine treatment increased the melanin index by 38% ($p < 0.001$ vs. both vehicle and pretreatment), which was paralleled by a >60% reduction in lesion surface area. Moreover, topical histamine accelerated permeability barrier recovery. No adverse events were observed following histamine applications. In mice, topical histamine significantly increased the melanin index, while topical co-applications of the H2r antagonist (cimetidine) prevented the expected histamineinduced increase in melanin index. Conclusions: These studies indicate that topical histamine or an H2r agonist could be useful for treating non-segmental vitiligo, but further clinical studies in large populations will be required to validate the efficacy and safety of this approach.

K. Boron Biswas, K. Tanaka, S. Takayama, A. Iddamalgoda, **A solution for pollution induced ageing of skin**, PERSONAL CARE EUROPE, April 2017, p. 131 - 134

Environmental pollution has now becomethe talk of the world. It is very important to keep in mind that more than half of the world's population now lives in an urban area. It is assumed that by 2030, 60% of the world's population will be living in towns and cities, rising to 70% by 2050.1 As skin is the first line of defence when it comes to air pollution contact, we should be aware of the harmful effects of pollution on skin in general. Pollution, in fact, is not a problem limited to China or India only, it is almost common, for example, in London, Paris, New York and Milan as well.

M. Cocera, R. Saldana, G. Rodriguez, L. Barbosa-Barros, O. Lopez, **Multi-target delivery to eliminate dark spots,** PERSONAL CARE EUROPE, April 2017, p. 137 - 142

Skin pigmentation results from the synthesis and distribution of melanin in the skin. Increased melanin production is a result of either UV exposure or various disorders characterised by the appearance of dark spots on the skin. These dark spots, also called age spots, are permanent and increase over time with ageing, being one of the main concerns of middle-aged women all over the world, and especially in Asia.

S.A. Nasrollahi, H. Hassanzade, A. Moradi, M. Sabouri, A. Samadi, M.N. Kashani, A. Firooz, **Safety Assessment of Tretinoin Loaded Nano Emulsion and Nanostructured Lipid Carriers: A Non-invasive Trial on Human Volunteers,** Curr Drug Deliv. 2017;14(4): p. 575-580

Background and Aim: Topical application of tretinoin (TRE) is followed by a high incidence of side effects. One method to overcome the problem is loading TRE into lipid nanoparticles. The potential safety of the nanoparticle materials has been always considered as a major concern. In this in vivo study, changes in human skin biophysical parameters including hydration, TEWL, erythema, and pH have been used to determine the safety of tretinoin loaded nano emulsion (NE) and

nanostructured lipid carriers (NLC). Method: TRE loaded NE and NLC were prepared using a high pressure homogenizer. Skin biophysical parameters were measured on the volar forearms of twenty healthy volunteers, before and after applying TRE-NE and TRE-NLC lotions. All the measurements were done using respective probes of MPA 580 Cutometer®. Results: We obtained particles of nanometric size (<130 nm) with narrow distribution and optimal physical stability. None of the formulations made any statistically significant change in any of the measured skin properties. P-values were 0.646, 0.139, 0.386, 0.169 after applying TRE-NE and 0.508, 0.051, 0.139, 0.333 after applying TRE-NLC, respectively. Conclusion: Both formulations are reasonably safe to apply on human skin and topicalapplication of TRE-NE and TRE-NLC had almost similar effects on skin biophysical parameters.

N. Kanda, S. Martindale, P. Grant-Ross, C. Searing, G. Daniels, M. Varcin, **Sintonia com Tons de Pele Negra,** Cosmetics & Toiletries (Brasil), Vol. 29, mar-abr 2017, p. 34-39

Este artigo reporta o desenvolvimento de uma base de maquiagem para uniformizar e cobrir impert'eigoes cutaneas para consumidoras de pele negra.
Este articulo describir el desarrollo de una base de maquillaje para igualar y cubrir imperfecxiones cutaneas para consumidoras de piel negra.
This article reports the development of a makeup base to standardize and cover skin imperfections for black skin consumers. *(Article in Portuguese)*

S. Shin, J.U. Shin, Y. Lee, W.Y. Chung, K.-H. Nam, T.G. Kwon, J.H. Lee, **The Effects of Multi-Growth Factors-Containing Cream on Post-Thyroidectomy Scars: A Preliminary Study,** Ann Dermatol Vol. 29, No. 3, 2017

Background: Growth factors play important roles in wound healing. However, the evidence for the effects of growth factors on post-thyroidectomy scars is limited. Objective: We performed a prospective study to assess the preventive and therapeutic effect of a multi-growth factor (MGF)-containing cream on post-thyroidectomy scars. Methods: Twenty-one patients with thyroidectomy scars applied MGF cream twice a day. We assessed the changes in erythema, pigmentation, skin elasticity, and skin hydration status using the erythema index, melanin index, cutometer, and corneometer, respectively. In addition, Vancouver scar scale (VSS) and patient satisfaction were assessed at 10 days after surgery (baseline), 2 weeks, 6 weeks, and 12 weeks after baseline. Results: The mean total VSS scores were significantly lower at 6 weeks (3.24±1.51 vs. 1.91±1.38) and 12 weeks (3.24±1.51 vs. 1.71±1.59) compared to the baseline. The degree of pigmentation was significantly lower at 12 weeks compared to the baseline, and the skin elasticity, and the skin hydration status were significantly higher at 12 weeks compared to the baseline. Over 85% of the patients were satisfied with the use of MGF cream without any adverse effect. Conclusion: MGF cream might have additive or supportive effect for scar formation after thyroidectomy.

N. Kanda, S. Martindale, P. Grant-Ross, C. Searing, G. Daniels, M. Varcin, **Color Corrected: Perfectly Tuning to Black Skin Tones,** www.cosmeticsandtoiletries.com, February 2017

Foundations are the most commonly used decorative cosmetics on the market, and a natural-looking finish is one of their most preferred performance attributes. This puts the pressure on product developers to better match consumer skin tones;1-3 and the process of color-matching foundations true to skin is a challenge. This is due, in part, to the different biological factors defining skin color. These must be transposed into the correct blend of cosmetic pigments, which defines the color of the foundation.

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.

Z. Md Isa, K. Shamsuddin, N. Bukhary, I. Bukhari, **The reliability of Fitzpatrick Skin Type Chart Comparing to Mexameter (Mx 18) in measuring skin color among first trimester pregnant mothers in Petaling District, Malaysia,** Malaysian Journal of Public Health Medicine 2016, Vol. 16 (3): p. 59-65

Malaysia comprises of multiple ethnic groups, each with a different skin color. The skin color type is related with risk factor of skin cancer and vitamin D deficiency. Thus, the device commonly used for skin color measurement are Fitzpatrick Skin Type Chart Measurement (FSTCM) and Mexameter (Mx 18). The objective of this study was to test the reliability of FSTCM in comparison to MX 18 in measuring skin color. A cross sectional study among first trimester pregnant mothers was performed at their first antenatal visit. The samples were taken from subjects from different ethnic backgrounds with different skin color who were currently living in one of the urban districts in Malaysia. A total of 396 (98%) respondents, aged 18-40 years old had completed the skin test using both MX 18 and FSTCM measurement. The mean age of respondents was 28.07 ± 4.09 years old. The skin type for Malays ranged from skin type I to skin type VI, Chinese ranged between skin type I to IV, meanwhile for Indians the skin type ranged from IV to VI. The Kappa value was 0.731 ($p < 0.001$) for inter-researcher agreement for FSTCM measurement. Thus, the agreement was substantial as they agreed on 80% of the subjects. Meanwhile, for Mx 18, the intra-class correlation (ICC) for inter-researcher with average measure was 0.985 (95%CI-0.982-0.988). The intra-class correlation (ICC) between different time points was 0.99, estimating the reliability of Mx 18. Spearman correlation coefficient between FSTCM and Mx 18 was 0.88 ($p < 0.001$). As a conclusion, the predominant skin color type for Malays is skin type III, while for Chinese is skin type II. The Indians skin are mostly in type V-VI. The ethnicity will not determine the skin type color as the skin types are overlapping between the ethnics. Hence, FSTCM which is a reliable and cheap device can be used for skin color screening purposes. Nevertheless, Mx 18 is an appropriate device to be used for diagnostic and cosmetic purposes.

M. Kanlayavattanakul, N. Lourith, P. Chaikul, **Jasmine rice panicle: A safe and efficient natural ingredient for skin aging treatments**, Journal of Ethnopharmacology, Volume 193, 4 December 2016, p. 607-616

Ethnopharmacological relevance: While rice is one of the most important global staple food sources its extracts have found many uses as the bases of herbal remedies. Rice extracts contain high levels of phenolic compounds which are known to be bioactive, some of which show cutaneous benefits and activity towards skin disorders. This study highlights an assessment of the cellular activity and clinical efficacy of rice panicle extract, providing necessary information relevant to the development of new cosmetic products. Materials and methods: Jasmine rice panicle extract was standardized, and the level of phenolics present was determined. *In vitro* anti-aging, and extract activity towards melanogenesis wasconducted in B16F10 melanoma cells, and antioxidant activity was assessed in human skin fibroblast cell cultures. Topical product creams containing the extract were developed, and skin irritation testing using a single application closed patch test method was done using 20 Thai volunteers. Randomized double-blind, placebo-controlled efficacy evaluation was undertaken in 24 volunteers over an 84 d period, with the results monitored by Corneometer® CM 825, Cutometer® MPA 580, Mexameter® MX 18 and Visioscan® VC 98. Results: Jasmine rice panicle extract was shown to have a high content ofp-coumaric, ferulic and caffeic acids, and was not cytotoxic to the cell lines used in this study. Cells treated with extract suppressed melanogenesis *via* tyrosinase and TRP-2 inhibitory effects, which protect the cell from oxidative stress at doses of 0.1 mg/ml or lower. The jasmine rice panicle preparations (0.1-0.2%) were safe (MII=0), and significantly ($p<0.05$) increased skin hydration levels relative to baseline. Skin lightening, and anti-wrinkle effects related to skin firmness and smoothness were observed, in addition to a reduction in skin wrinkling. Improvements in skin biophysics of both 0.1% and 0.2% extracts were showed to be comparable ($p>0.05$). Conclusions: Jasmine rice panicle extract having high levels of phenolics shows cutaneous benefits as the basis for skin aging treatments, as indicated through *in vitro* cytotoxicity assessments and skin testing in human subjects.

B. Nedelec, N.J. Forget, T. Hurtubise, S. Cimino, F. de Muszka, A. Legault, W.L. Liu, A. de Oliveira, V. Calva, J.A. Correa, **Skin characteristics: normative data for elasticity, erythema, melanin, and thickness at 16 different anatomical locations,** Skin Research and Technology 2016; 22: 263-275

Background: The clinical use of non-invasive instrumentationto evaluate skin characteristics for diagnostic purposes and toevaluate treatment outcomes has become more prevalent. The purpose of this study was to generate normative data for skin elasticity, erythema (vascularity), melanin

(pigmentation), andthickness across a broad age range at a wide variety of anatomical locations using the Cutometer (6 mm probe), Mexameter, and high-frequency ultrasound in a healthy adult sample.

S.-R. Park, H.-J. Kim, H.-K. Park, J.-Y. Kim, N.-S. Kim, K.-S. Byun, T.-K. Moon, J.-W. Byun, J.-H. Moon, G.-S. Choi, **Classification by causes of dark circles and appropriate evaluation method of dark circles,** Skin Research and Technology 2016; 22: 276-283

Background: Dark circles refer to a symptom that present darkness under the eyes. Because of improvement in the quality of life, the dark circles have been recognized as one of major cosmetic concerns. However, it is not easy to classify the dark circles because they have various causes.

K.C. Lee, J. Dretzke, L. Grover, A. Logan, N. Moiemen, **A systematic review of objective burn scar measurements,** Lee et al. Burns & Trauma (2016) 4:14

Abstract: Background: Problematic scarring remains a challenging aspect to address in the treatment of burns and can significantly affect the quality of life of the burn survivor. At present, there are few treatments available in the clinic to control adverse scarring, but experimental pharmacological anti-scarring strategies are now beginning to emerge. Their comparative success must be based on objective measurements of scarring, yet currently the clinical assessment of scars is not carried out systematically and is mostly based on subjective review of patients. However, several techniques and devices are being introduced that allow objective analysis of the burn scar. The aim of this article is to evaluate various objective measurement tools currently available and recommend a useful panel that is suitable for use in clinical trials of anti-scarring therapies.

M. Zasada, R. Debowska, M. Pasikowska, E. Budzisz, **The assessment of the effect of a cosmetic product brightening the skin of people with discolorations of different etiology,** J Cosmet Dermatol. 2016 Dec;15(4): p. 493~502

Background: Hyperpigmentations are disorders displayed with a change in the color of the skin, its strange shape, the lack of symmetry, and irregular placement. They appear no matter on the age, gender, and often as a congenital defect. Disorder connected with overproduction of melanin by pigmentary cells. The change of color is due to endogenous and exogenous cause. Objectives: The aim of this thesis was to conduct a research in vivo. This will allow to judge the effectiveness of the cosmetic product which brightens the skin with hyperpigmentation problems. The characteristics of dermocosmetics were tested on people with various etiology of hyperpigmentation. The aim of the research was to assess the effect of the active substances used daily on skin hyperpigmentation. Methods: The tests were carried out on groups of patients with hyperpigmentations. The application of the pharmaceutical and the use of specific apparatus measurements were taken on every medical checkup. A survey was conducted to assess the changes in the face, neck, and neckline skin. The research was based on the apparatus analysis of the skin condition (MPA®, VISIA®). Results: Regular application of the pharmaceutical caused brightening of hyperpigmentations ($P < 0.05$). General improvement in skin condition was also observed - the increase in skin elasticity, smoothness, and the enhancement of hydration levels. Conclusions: Dermocosmetics for people with hyperpigmentation are an essential part of their medical treatment. In case of epidermal hyperpigmentation, the recipe of individually chosen and tested combination of ingredients enables us to reach satisfactory results.

C.Y. Zhao, E.Y. Hao, D.P. Oh, B.S. Daniel, L.K. Martin, J.C. Su, M. Rodrigues, D.F. Murrell, **A comparison study of clinician-rated atopic dermatitis outcome measures for intermediate to dark skin patients,** Br J Dermatol. 2016 Dec 23

Background: Atopic dermatitis (AD) assessment is more difficult in patients with skin of colour (SOC). We sought to compare the reliability of commonly used outcome measures for assessing AD in SOC patients and evaluated a novel greyscale in this population. Method: Twenty-five AD patients each attended a one-day scoring exercise based in either Sydney or Melbourne, Australia. Each patient was scored by the same five physicians using the Eczema Area Severity Index (EASI), Objective-Scoring Atopic Dermatitis score (oSCORAD), Investigator's Global Assessment (IGA) and a novel greyscale. Patients also completed the Patient-Oriented Eczema Measure (POEM) and quality of life measures. A mexameter was used for measuring baseline melanin indices. Ten random patients were rescored to test intra-rater reliability. Results: We included 11 light skinned patients (melanin index <200) and 14 SOC patients (melanin index >200) in the cohort. The inter-rater ICCs were: EASI 0.827 (95% CI 0.658-0.941) for light skin and 0.774 (95% CI 0.598-0.906) for SOC; oSCORAD 0.680 (95% CI 0.441-0.880) for light skin and 0.736 (95%CI 0.544-0.889) for SOC; IGA 0.803 (95%CI 0.618-0.932) for light skin and 0.696 (95%CI 0.490-0.868) for SOC; the greyscale had an ICC of 0.776 (95%CI: 0.601-0.907) when replacing the EASI's erythema scale for SOC patients. All scores showed excellent intra-rater reliability for all skin types. Erythema component analysis showed that erythema

did not contribute to variability. Conclusions: EASI showed excellent reliability for patients of all skin colours, and is recommended as the optimal core measure for patients with all skin colours.

T.H. Xu, Y.H. Li, J.Z. Chen, X.H. Gao, H.D. Chen, **Treatment of infraorbital dark circles using 694-nm fractional Q switched ruby laser**, Lasers Med Sci. 2016 Dec;31(9): p. 1783~1787

The objective of this study was to evaluate the efficacy and safety of using a 694-nm fractional Q-switched ruby laser to treat infraorbital dark circles. Thirty women with infraorbital dark circles (predominant color: dark/brown) participated in this open-labeled study. The participants received eight sessions of 694-nm fractional Q-switched ruby laser treatment using a fluence of 3.0-3.5 J/cm2, at an interval of 7 days. The melanin deposition in the lesional skin was observed in vivo using reflectance confocal microscopy (RCM). The morphological changes were evaluated using a global evaluation, an overall self-assessment, and a Mexameter. Twenty-eight of the 30 patients showed global improvements that they rated as excellent or good. Twenty-six patients rated their overall satisfaction as excellent or good. The melanin index indicated a substantial decrease from 240.44 (baseline) to 194.56 ($P < 0.05$). The RCM results showed a dramatic decrease in melanin deposition in the upper dermis. The adverse effects were minimal. The characteristic finding of dark/brown infraorbital dark circles is caused by increased melanin deposition in the upper dermis. The treatment of these infraorbital dark circles using a 694-nm fractional QSR laser is safe and effective.

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.

Y.J. Suh, J. Shin, M. Kang, H.J. Park, K. Lee, Y.-M. Song, J. Sung, **Genetic and Environmental Influences on General Skin Traits: Healthy Twins and Families in Korea**, Twin Research and Human Genetics, Volume 20 Number 1, p. 36–42

Family study can provide estimates of overall genetic influences on a particular trait because family relationships provide accurate measures of average genetic sharing. However, evidence of genetic contributions to skin phenotypes is limited, which may preclude genetic studies to identify genetic variants or to understand underlying molecular biology of skin traits. This study aimed to estimate genetic and environmental contributions to selected dermatologic phenotypes, that is, to melanin index, sebum secretion, and skin humidity level in a Korean twin-family cohort. We investigated more than 2,000 individuals from 486 families, including 388 monozygotic twin pairs and 82 dizygotic twin pairs. Variance component method was used to estimate genetic influences in terms of heritability. Heritability of skin melanin index, sebum secretion, and skin humidity (arm and cheek) were estimated to be 0.44 [95% CI 0.38–0.49], 0.21 [95% CI 0.16–0.26], 0.13 [95% CI 0.07–0.18], and 0.11 [95% CI 0.06–0.16] respectively, after adjusting for confounding factors. Our findings suggest that genetics play a major role on skin melanin index, but only mild roles on sebum secretion and humidity. Sebum secretion and skin humidity are controlled predominantly by environmental factors notably on shared environments among family members. We expect that our findings add insight to determinants of common dermatologic traits, and serve as a reference for biologic studies.

V. Mazzarello, G. Solinas, P. Bandiera, V. Pomponi, G. Piu, M. Ferrari, A. Montella, **How long does the volumizing effect of a Zingiber officinale-based lip plumper last?**, Int J Cosmet Sci. 2016 Nov 24

Objective: Lip plumpers should enhance lip volume. It has been shown that no noticeable result was obtained after long term use of these products. The present study has been carried out to assess lip plumpers' short term effectiveness within 2 h from application. Methods: Effectiveness was assessed using non-invasive techniques. The effect on vascularisation was analyzed with the Mexameter MX 16®, and the volume enhancing effect was assessed by anthropometric measures and profilometry analysis from 3D scanning electron microscope (SEM) images using Alicona's MEX software. Sixty female volunteers were recruited for the study and the measurements were taken 15, 30, 60, 90 and 120 min after product application. Results: Product application produced a statistically significant increase of lip vascularisation during the first 15 min, which stayed unchanged until the 30th min, then decreased in intensity. The volumizing effect was revealed by 3D profilometry analysis only, not by anthropological measurements. The use of 3D SEM images showed an increase of 0.50 mm in the protrusion of the lip vermilion (MHP parameter) during the first 15 min from product application. Conclusion: Results suggest that the lip plumper temporarily enhances vasodilation and increases lip volume.

C. Nagata, K. Konish, T. Tamura,. K.Wada, M. Havashi, N. Takeda, K. Yasuda, **Skin pigmentation is inversely associated with insulin resistance in healthy Japanese women,** Diabetes Metab. 2016 Nov;42(5): p. 368-371

Aim: As a low-pigment skin type is prevalent in men and women with type 1 diabetes, it is possible that skin pigmentation may be associated with insulin resistance. This study aimed to cross-sectionally examine this association in healthy women. Methods: Study participants were 792 Japanese women who attended a health examination and were not taking any medication for diabetes. Skin pigmentation on the inner upper and lower arms and forehead was measured using a Mexameter® skin colorimeter, a narrow-band reflective spectrophotometer. Data are expressed as a melanin index, which quantifies melanin content. Fasting blood glucose and insulin levels were also measured, and homoeostasis model assessment for insulin resistance (HOMA-IR) scores were calculated Information on medical history and lifestyle factors were obtained by a self-administered questionnaire, while data on sun exposure were collected through interviews. Plasma 25-hydroxyvitamin D levels were measured in a subsample of women (n=464). Results: Melanin indices at the inner upper and lower arms were significantly and inversely associated with fasting insulin levels and HOMA-IR after controlling for age, body mass index, smoking status, indicators for rater effects, cumulative sun exposure and season at the time of measurement. Additional adjustment for plasma 25-hydroxyvitamin D levels did not alter the results. Conclusion: These data suggest that skin pigmentation is associated with insulin resistance, and encourage future studies into the potential role of melanin and related factors in glucose homoeostasis.

R.M. Robati, B. Einollahi, H. Einollahi, S. Younespour, S. Fadaifard, **Skin Biophysical Characteristics in Patients with Keratoconus: A Controlled Study,** Scientifica Volume 2016

Background. Keratoconus is a relatively common corneal disease causing signifcant visual disability. Individuals with connective tissue disorders that affect the skin such as Marfan’s syndrome and Ehlers-Danlos syndrome or patients with atopic dermatitis show an increased prevalence of keratoconus. It seems that there are some concurrent alterations of skin and cornea in patients with keratoconus. Objective. We plan to compare skin biophysical characteristics in patients with keratoconus and healthy controls**.** Methods. Forty patients with keratoconus (18 females and 22 males) with mean (SD) age of 33.32 (9.55) years (range 19–56) and 40 healthy controls were recruited to this study. Skin biophysical characteristics including cutaneous resonance running time (CRRT), stratum corneum hydration, and melanin values were measured in patients and controls. Results. Te median CRRT, stratum corneum hydration, and melanin measurements were signifcantly lower in patients with keratoconus in comparison with healthy controls. Conclusion. Tere are some alterations of skin biophysical properties in patients with keratoconus. Terefore, the assessment of these skin parameters could provide us some clues to the possible common biophysical variations of cornea and skin tissue in diseases such as keratoconus.

N. Bukhary, I, Bukhary, Z. Md Isa, K. Shamsuddin, K. Geok Lin, Z.A. Mahdy, H. Hassan, N. Sharifatul Hana Yeop, **Risk factors for antenatal hypovitaminosis D in an urban district in Malaysia,** BMC Pregnancy and Childbirth (2016) 16:156

Background: Pregnant women form one of the high risk groups facing hypovitaminosis D. Low level of vitamin D will affect directly or indirectly both mother and fetus. Screening vitamin D in the first trimester of pregnancy is important to determine the necessary preventive action. Therefore, this study was aimed to determine the prevalence of hypovitaminosis D and its risk factors among pregnant women in the first trimester. Methods: A cross sectional study was carried out among first trimester

pregnant women during their first antenatal visit. Samples were taken from different ethnicities in an urban district in Malaysia. A total of 396 respondents (99 % response rate) aged 18–40 years completed self–administered and guided questionnaire (characteristics and risk factors), validated semi-quantitative food frequency questionnaire for vitamin D in Malaysia (FFQ vitamin D/My), anthropometric measures (weight and height), blood test for serum 25(OH)D, skin measurement using Mexameter (MX 18) and Fitzpatrick Skin Type Chart Measurement (FSTCM). Data were analyzed to determine the association between risk factors and hypovitaminosis D. Results: The prevalence of hypovitaminosis D (serum 25(OH)D < 50 nmol/L) was 90.4 % (358). The mean age of respondents was 28.06 ± 4.09 years old. The independent predictors of hypovitaminosis D were Malay ethnicity (OR 33.68; 95 % CI: 12.81, 88.56), Indian ethnicity (OR 16.86; 95 % CI: 3.78,75.20), secondary education (OR 12.12; 95 % CI: 2.71, 54.16) and tertiary education (OR 14.38; 95 % CI: 3.31, 62.45). Conclusion: Awareness should be raised among Malay and Indian pregnant women with secondary and tertiary education who consumed vitamin D (especially milk) poorly in order to prevent adverse health outcomes. Further studies need to be conducted among health care workers to determine their level of knowledge related to vitamin D, as they are front liner in detecting the hypovitaminosis D.

P. Pérez Villaverde, J. Sánchez Gálvez, J.M. Rumbo Prieto, M**edición De Parámetros Cutáneos A Través De Un Dispositivo No Invasivo Multi-Sonda. Estudio De Casos En Lesiones Radio,** Enferm Dermatol. 2016; 10 (28)

Objetivo: Valorar el adecuado estado de la piel a través de la medición de parámetros cutáneos por un dispositivo no invasivo multi sonda en pacientes afectados de radiodermitis (lesión radio inducida). Metodología: Estudio observacional descriptivo. Medición de parámetros cutáneos (hidratación, eritema, melanina, elasticidad) a través de un dispositivo multi-sonda y, aplicación de unprotocolo de tratamiento de cura en ambiente húmedo a pacientes con radiodermitis. Estadística descriptiva y de dispersión. Resultados: Se evaluaron 6 casos clínicos (4 hombres y 2 mujeres) afectados de radiodermitis de grado 2-3. En el 67% de los casos se obtuvo una disminución del 74,6% del área de lesión. De todos los parámetros cutáneos evaluados, el eritema y la hidratación fueron los valores que más variabilidad presentaron en referencia al valor de control. Conclusiones: La información de los parámetros cutáneos obtenidos por el dispositivo no invasivo multi-sonda resultó ser útil para determinar la efectividad del tratamiento de cura en ambiente húmedo en lesiones radio inducidas; así como, para el seguimiento, la evolución y el pronóstico de cicatrización.

O. Harumi, C.L. Goh, **The Effect of Melasma on the Quality of Life in a Sample of Women Living in Singapore,** J Clin Aesthet Dermatol. 2016;9(1): p. 21–24

Introduction: Melasma is a common disorder of acquired hyperpigmentation characterized by irregular brown macules and patches that occur primarily on sun-exposed areas. Methods: This was a prospective cross-sectional study that recruited 49 women clinically diagnosed with melasma from a tertiary dermatology referral center in Singapore. Trained investigators assessed the melasma severity objectively using the chromameter and mexameter and subjectively using the Melasma Area and Severity Index. The effect of melasma on the quality of life on the patients was assessed using the melasma quality of life scale and dermatology life quality index questionnaires. Results: The mean ± SD Melasma Area and Severity Index score was 12.1±6.5 (median 10.8). The mean ± SD melasma quality of life scale score was 25.6±15.3 (median 24.0). Melasma quality of life scale scores are significantly correlated (Spearman's coefficient = 0.597, *p*-value <0.001) with the dermatology life quality index scores. There was no correlation between Melasma Area and Severity Index with melasma quality of life scale or dermatology life quality index scores. There is no difference in the melasma quality of life scale scores with different demographic variables including age, duration of disease, levels of education, and employment. Conclusion: This study contributes to building evidence regarding the validity of melasma quality of life scale in accurately evaluating the effect of melasma on a patient's quality of life and the burden of disease in Singaporean women.

K. Mazurek, E. Pierzchała, **Comparison of efficacy of products containing azelaic acid in melasma treatment,** J Cosmet Dermatol, 2016 Sep;15(3): p. 269-2 82

Melasma is one of the most frequently diagnosed hyperpigmentation changes on the skin of women's faces. Nearly 30% of women using oral estrogen therapy struggle with this problem. A common way of reducing melasma is the application of azelaic acid products. Aim:
Comparison of efficacy of three dermocosmetic products, containing azelaic acid, in the reduction in melasma for women aged 35-55. Material and Methods: A group of 60 women diagnosed with melasma were divided into three even, twenty-person subgroups. Each subgroup was assigned one dermocosmetic product containing azelaic acid. For 24 weeks, the patients applied the assigned product twice a day. The level of the colorant within the hyperpigmentation was marked before the

treatment, after 1 month, after 3 months, and after 6 months of therapy. The pigmentation was measured using Mexameter(®) (Courage + Khazaka electronic, Germany). In addition, during each inspection, the patients' level of hydration, elasticity, and intensity of erythema was checked using Corneometer(®) , Reviscometer(®) .Results: All dermocosmetics containing azelaic acid that were applied significantly contributed to the reduction in pigment in the pigmentary lesion. The largest decrease in the amount of pigment was observed in the first 3 months of use of the products. A combination containing 20% azelaic acid and mandelic acid, phytic acid, 4N-butyl resorcinol, and ferulic acid proved to be the most effective dermocosmetic III (Sesderma, Valencia, Spain). Conclusions: Dermocosmetics containing azelaic acid significantly contribute to the clearing of melasma. The effect depends on the treatment time, the acid concentration, and addition of other components.

J.Y. Chuna, J.H. Lee, J.H. Lee, **Topical tranexamic acid as an adjuvant treatment in melasma: Side-by side comparison clinical study**, J Dermatolog Treat. 2016 Aug; 27(4): p. 373~7

Background: Tranexamic acid (TNA) is a novel therapeutic agent for hyperpigmented skin disorders. The efficacy and safety of topical TNA in patients with melasma has not been heretofore studied. The main objective of this study is to evaluate the efficacy and safety of topical TNA combined with intense pulsed light (IPL) treatment in Asians with melisma**.** Methods: A randomized, split-face (internally controlled) study was conducted in 15 women who received four monthly sessions of IPL to both sides of the face. Topical TNA or vehicle was applied to a randomly assigned side during and after IPL treatment. Patients were followed up for 12 weeks after completing the IPL treatments. Baseline and follow-up melanin index (MI; measured by Mexameter®, Courage and Khazaka, Cologne, Germany) and modified melasma area and severity index (mMASI) scores were determined**.** Results: Thirteen subjects completed the study without serious adverse events. MI and mMASI decreased significantly from baseline to 12 weeks after the last IPL treatment on the topical TNA side but not on the vehicle side. The efficacy of topical TNA in preventing rebound pigmentation after IPL treatment was also statistically significant. Conclusion: Topical TNA can be considered an effective and safe adjuvant to conventional treatment for melasma.

S. Xin, L. Ye, G. Man, C.Lv, P.M. Elias, M.-Q. Man, **Heavy Cigarette Smokers in a Chinese Population Display a Compromised Permeability Barrier,** BioMed Research International, Volume 2016

Cigarette smoking is associated with various cutaneous disorders with defective permeability. Yet, whether cigarette smoking influences epidermal permeability barrier function is largely unknown. Here, we measured skin biophysical properties, including permeability barrier homeostasis, stratum corneum (SC) integrity, SC hydration, skin surface pH, and skin melanin/erythema index, in cigarette smokers. A total of 99 male volunteers were enrolled in this study. Smokers were categorized as light-tomoderate (<20 cigarettes/day) or heavy smokers (≥20 cigarettes/day). An MPA5 was used to measure SC hydration and skin melanin/erythema index on the dorsal hand, forehead, and cheek. Basal transepidermal water loss (TEWL) and barrier recovery rates were assessed on the forearm. A Skin-pH-Meter pH900 was used to measure skin surface pH. Our results showed that heavy cigarette smokers exhibited delayed barrier recovery afer acute abrogation (1.02% ± 13.06 versus 16.48% ± 6.07), and barrier recovery rates correlated negatively with the number of daily cigarettes consumption ($p = 0.0087$). Changes in biophysical parameters in cigarette smokers varied with body sites. In conclusion, heavy cigarette smokers display compromised permeability barrier homeostasis, which could contribute, in part, to the increased prevalence of certain cutaneous disorders characterized by defective permeability. Thus, improving epidermal permeability barrier should be considered for heavy cigarette smokers.

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.

Y.S. Jeona, J.H. Kim, J. Choi, H.S. Baek, Y.H. Joo, C.S. Lee, H.J. Shin, Y.H. Park, B.J. Kim, S.S. Shin, **Antimelanogenic activity of a novel adamantyl benzylbenzamide derivative, AP736: a randomized, double-blind, vehicle-controlled comparative clinical trial performed in patients with hyperpigmentation during the summer**, Int J Dermatol., 2016, Jun:55, 61: e321-6

Background/Purpose: AP736 is a novel compound with an adamantyl benzylbenzamide moiety that has shown antimelanogenic activity in melanocytes in vitro and in artificial skin equivalent through the inhibition of key melanogenic enzymes and suppression of the cAMP-phosphokinase A-cAMP response element-binding protein signaling pathway. To estimate the clinical effectiveness of AP736 for the treatment of facial hyperpigmentation, we examined the efficacy and safety of a topical formulation containing AP736 compared with a vehicle formulation in human facial skin. To evaluate the degree of whitening when used in a real-life situation, subjects with hyperpigmentation conditions were selected and the trial was performed from mid-May to the end of June , when there are strong UV rays in Korea. Materials and Methods: Forty-eight healthy Korean women aged 20-60 years were enrolled in this study for 6 weeks. Women who were pregnant or undergoing any concurrent therapy were excluded. Subjects were instructed to apply a randomly assigned formulation containing 0.5% AP736 (test formulation; n = 24) or vehicle (vehicle control; n = 24) in addition to an assigned sunscreen with a twice-daily application protocol. The degree of facial pigmentation was measured objectively using a Mexameter MX18 and Chromameter CM700, in addition to assessment by physicians using clinical photographs. Results: The AP736 formulation was significantly ($P < 0.05$) more effective than the vehicle control formation in reducing the appearance of pigmentation at 3- and 6-week follow-up visits. Conclusion: A formulation containing a novel skin whitening ingredient, AP736, effectively reduced pigmentation and was well tolerated by study subjects in summer season.

K.H. Busch, R. Bender, N. Walezko, H. Aziz, M.A. Altintas, M.C. Aust, **Combination of Medical Needling and Non-Cultured Autologous Skin Cell Transplantation (Renovacell) For Repigmentation of Hypopigmented Burn Scars in Children and Young People**, Annals of Burns and Fire Disasters - Vol. XXIX - No. 2 - June 2016

Burn scars remain a serious physical and psychological problem for the affected. Clinical studies as well as basic scientific research have shown that Medical Needling can significantly increase the quality of burn scars with comparatively low risk and stress for the patient with regards to skin elasticity, moisture, erythema and transepidermal water loss. However, Medical Needling has no influence on repigmentation of large hypopigmented scars. The goal is to evaluate whether both established methods – Needling (improvement of scar quality) and ReNovaCell (repigmentation) – can be combined. So far, eight patients with mean age of 20 years (6-28 years) with deep second and third degree burn scars have been treated. The average treated tissue surface was 76cm² (15-250cm²) and was focused on areas like face, neck, chest and arm. Medical Needling is performed using a roller covered with 3mm long needles. The roller is vertically, horizontally and diagonally rolled over the scar, inducing microtrauma. Then, non-cultured autologous skin cell suspension (ReNovaCell) is applied, according to the known protocol. The patients were followed 12 months postoperatively. Pigmentation changes were measured objectively, and with patient and observer ratings. Patient satisfaction/preference was also obtained. We present the final study results. Taken together, pigmentation ratings and objective measures indicate improvement in six of the study participants. Melanin increase seen 12 months after ReNovaCell treatment in the study group as a whole is notable. Medical Needling in combination with ReNovaCell shows promise for repigmentation of burn scars.

M. Fell, J. Meirte, M. Anthonissen, K. Maertens, J. Pleat, P. Moortgat, **The Scarbase Duo®: Intra-rater and interrater reliability and validity of a compact dual scar assessment tool**, Burns, Volume 42, Issue 2, March 2016, p. 336-344

Objective scar assessment tools were designed to help identify problematic scars and direct clinical management. Their use has been restricted by their measurement of a single scar property and the bulky size of equipment. The Scarbase Duo® was designed to assess both trans-epidermal water loss (TEWL) and colour of a burn scar whilst being compact and easy to use. Twenty patients

with a burn scar were recruited and measurements taken using the Scarbase Duo by two observers. The Scarbase Duo measures TEWL via an openchamber system and undertakes colorimetry via narrow-band spectrophotometry, producing values for relative erythema and melanin pigmentation. Validity was assessed by comparing the Scarbase Duo® against the Dermalab and the Minolta Chromameter respectively for TEWL and colorimetry measurements. The intra-class correlation coefficient (ICC) was used to assess reliability with standard error of measurement (SEM) used to assess reproducibility of measurements. The Pearson correlation coefficient (r) was used to assess the convergent validity. The Scarbase Duo® TEWL mode had excellent reliability when used on scars for both intra- (ICC=0.95) and inter-rater (ICC=0.96) measurements with moderate SEM values. The erythema component of the colorimetry mode showed good reliability for use on scars for both intra- (ICC=0.81) and inter-rater (ICC=0.83) measurements with low SEM values. Pigmentation values showed excellent reliability on scar tissue for both intra- (ICC=0.97) and inter-rater (ICC=0.97) with moderate SEM values. The Scarbase Duo TEWL function had excellent correlation with the Dermalab (r=0.93) whilst the colorimetry erythema value had moderate correlation with the Minolta Chromameter (r=0.72). The Scarbase Duo® is a reliable and objective scar assessment tool, which is specifically designed for burn scars. However, for clinical use, standardised measurement conditions are recommended.

H.J. Fitton, T. Oddie, D. Stringer, S. Karpiniec, **Marine plant extracts offer superior dermal protection,** Personal Care, March 2016

Two specialty macroalgae-derived extracts have been developed by leading Australian biotechnology company Marinova, for use in cosmetic formulations. Wild-grown Undaria pinnatifida and Fucus vesiculosus macroalgae were sourced to extract two well characterised, certified organic fucoidan compounds: Maritech® Reverse and Maritech® Bright. Maritech® Reverse is a highly sulfated, high purity fucoidan, while Maritech Bright is a high purity compound comprised of both fucoidan and marine polyphenols. Extensive clinical and in vitro testing showed both extracts offer superior cosmeceutical benefits, particularly through anti-glycation, immune boosting and enzyme inhibitory mechanisms and UV protecting and soothing activity. Maritech Reverse was particularly effective at increasing the expression of wound-healing genes, while Maritech Bright was shown to clinically reduce age spot and wrinkle appearance. The demonstrated bioactivity of the extracts at low concentrations, in addition to their certified organic and environmentally sustainable status, position Maritech Bright and Maritech Reverse as two highly valuable ingredients for cosmetic formulation.

T. Venter, L.T. Fox, M. Gerber, J.L. du Preez, S. van Zyl, B. Boneschans, J. du Plessis, **Physical stability and clinical efficacy of Crocodylus niloticus oil lotion**, Revista Brasileira de Farmacognosia 26 (2016), p. 521–529

The stability and the anti-ageing, skin hydrating and anti-erythema effects of a commercialized Crocodylus niloticus Laurenti, 1768, Crocodylidae, oil lotion was determined. The lotion was stored at controlled conditions over six months during which several stability tests were performed. For the clinical efficacy studies lotion was applied on volar forearm skin (female volunteers) and compared to a liquid paraffin-containing reference product. Skin hydrating and anti-ageing effects were determined with a Corneometer®, Cutometer® and Visioscan®, following single (3 h) and multiple applications (12 weeks). The Vapometer® and Mexameter® were utilized to determine this lotion's anti-erythema effects on sodium lauryl sulfate irritated skin. The lotion demonstrated good stability over 6 months. The reference product increased skin hydration and decreased skin wrinkles to a larger extent than the C. niloticus lotion after a single application, whereas the C. niloticus lotion decreased skin scaliness better than the reference product. During the long-term study, the reference product overall increased skin hydration more than the C. niloticus lotion, whereas C. niloticus lotion increased skin elasticity to a larger extent than the reference product. C. niloticus lotion increased skin wrinkles and decreased skin scaliness over 12 weeks. Compared to non-treated, irritated skin, C. niloticus lotion demonstrated some potential anti-inflammatory characteristics.

N. Duman, R. Duman, G.F. Yavas. S. Doaruk Kacar, P. Özuğuz, E. Cetinkava, **Periocular mexametric melanin and erythema indexes in adult glaucoma patients treated with topical prostaglandin analogs,** Cutan Ocul Toxicol. 2016 Feb 24: p. 1-3

Context: Although topical prostaglandin analogs (PGAs) have been previously associated with periocular skin hyperpigmentation, studies using objective clinical methods are lacking. Furthermore changes in periocular skin erythema indexes associated with topical PGAs have not been reported previously. Objective: The purpose of the present study was to evaluate periocular melanin and erythema indexes in patients treated with topical PGA using an objective clinical method - Mexameter. Methods: About 45 glaucoma patients treated with topical PGA therapy, and 30 age-, and sex-

matched controls were enrolled in the study. Demographic data, medical history including duration of therapy, PGA type, involved eye (unilateral, bilateral) were noted, and skin phototypes were evaluated. Melanin and erythema indexes on medial and lateral upper and lower eyelids, and normal skin from the upper cheeks were measured using Mexameter MX-18. The index of difference for lower/upper eyelid was calculated. Reading results of patients and controls were compared. Results: Melanin and erythema indexes of upper/lower eyelids, and the index of differences for upper/lower eyelids were significantly higher in patients despite similar clinical findings ($p < 0.05$). Duration of therapy and type of PGA were not associated with skin changes ($p > 0.05$). Conclusions: Both periocular melanin and erythema indexes increased in both upper and lower eyelids due to PGA therapy compared to controls, despite similar clinical findings. Mexametric evaluation is more sensitive than clinical evaluation, and may be used as an objective, sensitive clinical method to evaluate periocular skin changes, even smallest changes, in such patients.

I. Maiid. I. Hag, S. Imran, A. Keen, K. Aziz, T. Arif, **Proposing Melasma Severity Index: A New, More Practical, Office-based Scoring System for Assessing the Severity of Melasma**, Indian J Dermatol. 2016 Jan-Feb; 61(1): p. 39-44

Background: Melasma Area and Severity Index (MASI), the scoring system in melasma, needs to be refined. Aims and Objectives: To propose a more practical scoring system, named as Melasma Severity Index (MSI), for assessing the disease severity and treatment response in melasma. Materials and Methods: Four dermatologists were trained to calculate MASI and also the proposed MSI scores. For MSI, the formula used was 0.4 (a x p2) 1 + 0.4 (a x p2) r + 0.2 (a x p2) n where " a" stands for area, " p" for pigmentation, " 1" for left face, " r" for right face, and " n" for nose. On a single day, 30 enrolled patients were randomly examined by each trained dermatologist and their MASI and MSI scores were calculated. Next, each rater reexamined every 6th patient for repeat MASI and MSI scoring to assess intra- and inter-rater reliability of MASI and MSI scores. Validity was assessed by comparing the individual scores of each rater with objective data from mexameter and ImageJ software. Results: Inter-rater reliability, as assessed by intraclass correlation coefficient, was significantly higher for MSI (0.955) as compared to MASI (0.816). Correlation of scores with objective data by Spearman's correlation revealed higher rho values for MSI than for MASI for all raters. Limitations: Sample population belonged to a single ethnic group. Conclusions: MSI is simpler and more practical scoring system for melasma.

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.

H.J. Kim, J.H. Baek, J.E. Eo, K.M. Choi, M.K. Shin, J.S. Koh, **Dermal matrix affects translucency of incident light on the skin,** Skin Research and Technology 2015; 21:41-46

Background/aims: The age-dependent changes in the optical reflection characteristics have been studied about skin hydration, melanin index, or skin color. However, the age-dependent changes in

the optical reflection have little attention on inner skin structures. To control the factors affecting the optical reflection except for dermal matrix, subjects were selected as our guideline and we evaluated the optical reflection of subsurface on skin layers of two age groups.

N. Aghazadeh, A. Firooz, A. Rajabi Estarabadi, P. Hejazi, **The effects of water exposure on biophysical properties of normal skin,** Skin Research and Technology 2015; 21: 131-136

Background: Water exposure is an influential factor in some common dermatoses. It has also been shown that water has an effect on barrier function and biophysical properties of skin. The aim of this study was to evaluate the effect of water immersion on biophysical properties of normal skin.

M. Udompataikul, S. Huajai, T. Chalermchai, M. Taweechotipatr, N. Kamanamool, **The Effects of Oral Vitamin D Supplement on Atopic Dermatitis: A Clinical Trial with Staphylococcus aureus Colonization Determination,** J Med Assoc Thai. 2015 Oct; 98 Suppl 9: p. S23-30

Background: An increase in Staphylococcus aureus skin colonization in atopic dermatitis patients resulted from the reduction of cathelicidin production in these patients. Recently, an in vivo study demonstrated that vitamin D could stimulate cathelicidin production. Oral supplements of vitamin D might be beneficial in atopic dermatitis. Objective: To determine the effects of oral vitamin D supplements on clinical impact including Staphylococcus aureus skin colonization evaluation in atopic dermatitis patients. Material and Method: Twenty-four atopic dermatitis patients were included in this double-blind, placebocontrolled study. They were randomly assigned into 2 groups for oral 2,000 IUs/day of vitamin D, supplement and placebo. The lesional swab culture for S. aureus was done at week 0, 2 and 4. Clinical outcomes were assessed by SCORAD score, mexameter for erythema index and konometer for conductance were done at week 0 , 2 and 4. Serum vitamin D levels were also determined at week 0 and 4. Results: Twenty patients completed the protocol. S. aureus skin colonization, SCORAD score and erythema index were significantly reduced from baseline to week 4for vitamin D treated group comparing with placebo ($p = 0.022$, 0.028 and 0.014, respectively). There was an inverse correlation between serum vitamin D levels with S. aureus skin colonization and SCORAD score ($r = -1.0$, $p < 0.001$). Conclusion: Oral vitamin D supplement could reduce skin colonization of S. aureus and demonstrated the clinical improvement of patients with atopic dermatitis.

M.S. Chang, A.K. Ghimeray, E.K. Ryu, H.Y. Lee, J.H. Yim, **Skin brightening efficacy of Saururus chinensis extract,** Personal Care, September 2015

Abstract: Hyperpigmentation or excessive melanin production is undesirable since it causes darker or uneven skin colour. Likewise, the synthetic drug used to reduce melanin is also undesirable due to its side effects in human cells. As an alternative, a botanical product was developed from Saururus chinensis for whitening purposes and investigated in Murine B16F1 melanoma cell in vitro. Its formulated product (Natural Skin Renewal) was tested clinically on female subjects in a placebo-controlled trial. The result showed that S. chinensis extract is able to reduce the tyrosinase activity by 35% at a concentration of 100µg/mL. In a clinical study, the formulated cream (Natural Skin Renewal) decreased the melanin index value by 44% in 56D and the individual typology angle (ITA°) value was increased significantly compared to that of placebo (control). Overall, the Natural Skin Renewal cream which contains S. chinensis extract may have a pomising potential for use as an effective whitening agent on human skin.

K. Krull, **Untersuchung von Hautrötung und Helligkeit mittels verschiedener Farbmessverfahren *in vitro* und *in vivo*,** Dissertation an der Medizinische Fakultät der Universität zu Jena, 2015

Zusammenfassung: Die Haut ist das größte Organ unseres Körpers und bildet aufgrund ihres spezifischen Aufbaus eine wichtige Barriere des Organismus gegenüber der Umwelt. Diese Barriere kann jedoch durch verschiedene Reize geschädigt werden, was zu Veränderungen im Aufbau, z. B. durch Abtragung oberster Zellschichten, sowie Änderungen von hautphysiologischen Parametern führt. Diese Parameter sind unter anderem der transepidermale Wasserverlust (TEWL), der Wassergehalt im Stratum Corneum, die Hautdurchblutung und die Pigmentierung der Haut. In der vorliegenden Dissertation wurden die Veränderungen der eben genannten Parameter nach Einfluss exogener Reize mit Hilfe verschiedener Messgeräte untersucht. Ziel war es, die Haut mechanisch mittels Tapestripping, sowie chemisch durch Einwirkung von Natriumlaurylsulfat (engl. Sodium Lauryl Sulfate, SLS) und Wasser unter Okklusion zu reizen, um anschließend herauszufinden, ob eine erfolgte milde Irritation in einer Veränderung der Hautrötung und – pigmentierung resultiert und mit welcher Sensitivität diese Farbveränderungen durch die einzelnen Farbmessgeräte erfasst wurden. Zum Einsatz kamen das Mexameter MX18 (Fa. Courage & Khazaka), die Chromameter 200 und 300 (Fa. Minolta), der DermaSpectropen (Fa. Lange GmbH) und das Colorimeter (Fa. Courage & Khazaka).

J. Kottner, G. Dobos, A. Andruck, C. Trojahn, J. Apelt, H. Wehrmeyer, C. Richter, U. Blume-Peytavi, **Skin response to sustained loading: A clinical explorative study,** Journal of Tissue Viability (2015) 24, 114 – 122

Abstract Background: Severe illness, disability and immobility increase the risk of pressure ulcer development. Pressure ulcers are localized injuries to the skin and/or underlying tissue as a result of long enduring pressure and shear. Little is known about the role of the stratum corneum and the upper skin layers in superficial pressure ulcer development. Objectives: To investigate possible effects of long enduring loading on the skin barrier function under clinical conditions at two pressure ulcer predilection sites. Methods: Under controlled conditions 20 healthy females (mean age 69.9 (3.4) years) followed a standardized immobilization protocol of 90 and 150 min in supine position wearing hospital nightshirts on a standard hospital mattress. Before and immediately after the loading periods skin surface temperature, stratum corneum hydration, transepidermal water loss and erythema were measured at the sacral and heel skin. Results: Prolonged loading caused increases of skin surface temperature and erythema at the sacral and heel skin. Stratum corneum hydration remained stable. Transepidermal water loss increased substantially after loading at the heel but not at the sacral skin. Conclusions: Skin functions change during prolonged loading at the sacral and heel skin in aged individuals. Accumulation of heat and hyperaemia seem to be primarily responsible for increasing skin temperature and erythema which are associated with pressure ulcer development. Increased transepidermal water loss at the heels indicate subclinical damages of the stratum corneum at the heel but not at the sacral skin during loading indicating distinct pathways of pressure ulcer development at both skin areas.

N. Cameli, E. Abril, M. Agozzino, M. Mariano, **Clinical and instrumental evaluation of the efficacy of a new depigmenting agent containing a combination of a retinoid, a phenolic agent and an antioxidant for the treatment of solar lentigines,** Dermatology. 2015; 230(4): p. 360-6

Background: Solar lentigines are common benign macular hyperpigmented lesions localized on sun-exposed areas. Objective: To evaluate the efficacy and safety of a new depigmenting agent containing a retinoid (retinaldehyde), a new phenolic agent (4-(1-phenylethyl)-resorcinol) and a reducing agent (δ-tocopheryl- β-D-glucopyranoside) in the topical treatment of solar lentigines. Patients and Methods: Twenty patients with solar lentigines of the face and hands applied the depigmenting agent on each lentigo once daily for 12 weeks. The outcome was evaluated at 45 days (T1) and 3 months (T2) after the end of treatment compared to baseline (T0) by means of clinical evaluation, Mexameter® and Visioface devices for digital and ultraviolet computerized image analysis of skin color as well as in vivo reflectance confocal microscopy. Results: Image analysis and confocal laser reflectance microscopy showed that hyperpigmentation was significantly reduced at T2 compared to baseline and to controls. Conclusion: The study treatment was well tolerated and showed significant improvement in the depigmentation of solar lentigines.

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.

M. Zając, M.P. Szczepanik, P.M. Wilkołek, Ł.R. Adamek, Z.J.H. Pomorski, W. Sitkowski, M. Gołyński, **Assessment of a correlation between Canine Atopic Dermatitis Extent and Severity Index (CADESI-03) and selected biophysical skin measures (skin hydration, pH, and erythema intensity) in dogs with naturally occurring atopic dermatitis**, The Canadian Journal of Veterinary Research, 2015

Atopic dermatitis is a common allergic skin disease in dogs. The aim of this study was to examine the possibility of a correlation between biophysical skin variables: skin hydration (SH), skin pH, and erythema intensity measured in 10 different body regions and both total Canine Atopic Dermatitis Extent and Severity Index (CADESI-03) and CADESI measured in a given region (CADESI L). The study was conducted using 33 dogs with atopic dermatitis. The assessment of the biophysical variables was done in 10 body regions: the lumbar region, right axillary fossa, right inguinal region, ventral abdominal region, right lateral thorax region, internal surface of the auricle, interdigital region of right forelimb, cheek, bridge of nose, and lateral site of antebrachum. Positive correlations were found between SH and CADESI L for the following regions: the inguinal region ($r = 0.73$) and the interdigital region ($r = 0.82$), as well as between total CADESI and SH on digital region ($r = 0.52$). Also, positive correlations were reported for skin pH and CADESI L in the lumbar region ($r = 0.57$), the right lateral thorax region ($r = 0.40$), and the lateral antebrachum ($r = 0.35$). Positive correlations were found in the interdigital region between erythema intensity and the total CADESI-03 ($r = 0.60$) as well as the CADESI L ($r = 0.7$). The results obtained suggest that it may be possible to use skin hydration, pH, and erythema intensity to assess the severity of skin lesion but positive correlation was only found in < 13.3% of possible correlations and usage of these measures in dogs is limited.

M. Wilkes, C.Y. Wright, J.L. du Plessis, A.I. Reeder, **Fitzpatrick skin type, Individual Typology Angle and melanin index in an African population: taking steps toward universally applicable skin photosensitivity assessments,** JAMA Dermatol., 2015 Aug;151(8):p. 902-3

Calculation of Individual Typology Angle (ITA) based on spectrophotometric measurements has been used to classify skin types into physiologically relevant groups, 1 ranging from very light to dark skin.2 This study directly compares ITA values with melanin index (MI), the latter frequently used in assigning Fitzpatrick Skin Type (FST),3 in order to improve understanding of how these measurements correlate when used in a study that consists, primarily, of FST V and VI. Methods**:** Participants (n=556) were drawn from the Council for Scientific and Industrial Research campus in Pretoria, South Africa, from October 6-22, 2014. All participants provided written consent, spoke English, cleaned their non-dominant arm with a wet wipe, and answered a short questionnaire, self-identifying their population group and skin reaction to sunlight. Courage + Khazaka Skin Colorimeter CL 400 and Mexameter® MX 18 objectively determined ITA and MI respectively, by being held against the upper, inner non-dominant arm. ITA was categorized as previously described.

B.K. Ho, J.K. Robinson, **Color bar tool for skin type self-identification: A cross-sectional study**, J AM ACAD DERMATOL, August 2015

The Fitzpatrick skin type (FST) has limited relevance and reliability among people with skin of color because individuals from a particular ethnic/racial group cluster into Fitzpatrick category. We developed a color tool to assess skin type (available at http://www.jaad.org). The color bar tool was validated with 2 cohorts of 120 patients consisting of non-Hispanic whites (NHWs), Hispanics, non-

Hispanic blacks (NHBs), and Asians with FST I to VI skin determined using the standard survey. Between May and July 2014, a cross-sectional study compared survey responses using the color bar tool, skin tone descriptions, and adapted FST questions. Participants' melanin index was obtained using spectrophotometry (Mexameter MX18 probe; Courage + Khazaka Electronic GmbH,Koln, Germany).

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.

H. Fitton, E. Davis, S. Karpiniec, D. Stringer, **Bioactive fucoidan fractions as cosmetic ingredients,** Personal Care April 2015

Abstract: Marinova, an Australian biotechnology company, developed two speciality cosmetic ingredients from marine algae. Maritech Bright is a Fucus vesiculosus derived extract (pictured) comprising both fucoidan and polyphloroglucinol, and Maritech Reserve is a high purity fucoidan from Undaria pinnatifida. Fucoidan is a sulphated, fucose rich polysaccharide with multiple bioactivities. Polyphloroglucinols are unique marine algal derived polyphenols with profound antioxidant activity.

T.N. Oliphant, R.A. Harper, **Sunless tanners aided by jojoba-derived emollient,** Personal Care, March 2015

Floraesters K-20W Jojoba [INCI Name: Hydrolyzed Jojoba Esters (and) Water] has been shown to enhance the efficacy and sensory properties of multiple finished cosmetic and personal care formulations, and has been explored in various categories such as creams/lotions, hand sanitisers, nonwoven wipes, sunscreens, mascara/eyeliner, shampoos/conditioners, toners/astringents, face washes, and oil-free formulations. Its film-forming properties make it ideal for rinse-off products and products that require water resistance or an extended period of residence time on the skin.

A. Scheel-Sailer, A. Frotzler, G. Mueller, S. Annaheim, R.M. Rossi, S. Derler, **Challenges to measure hydration, redness, elasticity and perfusion in the unloaded sacral region of healthy persons after supine position**, J Tissue Viability, 2015 Mar 13

Aim of the study: To combine measurement methods of biophysical skin properties in a clinical setting and to measure baseline values in the unloaded sacral region of healthy persons after lying 30 min in supine position. Methods: Hydration (Corneometer® CM 825), redness (Mexameter® MX 18), elasticity (Cutometer® MPA 580) and perfusion (PeriFlux System 5000) of the skin in the sacral region of 10 healthy participants (median age: 26.9 years) were measured consecutively in the laying position by two trained examiners. Results: The assessment duration for all four parameters lasted about 15 min. Intra-class correlation coefficients were overall moderate to strong (hydration $r = 0.594$, redness $r = 0.817$, elasticity $r = 0.719$, perfusion $r = 0.591$). Hydration (median 27.7 arbitrary units (AU)) mainly indicated dry skin conditions. Redness (median 158.5 AU) was low. Elasticity (median 0.880 AU) showed similar values as in the neck region. Perfusion (median 17.1 AU) showed values in the range of results reported in the literature. Biophysical skin properties in the sacral region after supine position can be measured within periods of 15 min. Conclusion: The results provide baseline data for the skin of healthy persons as well as insights into skin-physiological variations. But it remains challenging to optimize measurement procedures and test protocols when transferring preclinical tests in a clinical application.

A. Augustyniak, A. Erkiert-Polguj, H. Rotsztejn, **Variable pulsed light treatment of melasma and postinflammatory hyperpigmentation - a pilot study**, J Cosmet Laser Ther, 2015 Feb;17(1): p. 15-19

Hyperpigmentation disorders are a serious aesthetic problem. Various therapies are applied to remove these lesions. The variable pulsed light (VPL) is similar to intense pulsed light (IPL), but instead of one flash of light, energy is provided in a few small and rapid micro-flashes. The aim of the study is a mexametric evaluation of results of the treatment of hyperpigmentation with the application of the VPL device as well as the patient's opinion on this kind of treatment. The therapy with the VPL was administered twice within a period of three weeks. In order to evaluate the effectiveness of the treatment procedure, we carried out the mexametric measurements three times. Eighteen women with hyperpigmentation disorders were included in the study. The lesions were lightened in thirteen patients. Three patients demonstrated more intensive hyperpigmentation. Twelve patients assessed the effects of the therapy as good and excellent. In the patients, in whom the initial mexametric results confirmed the strongest changes, the effect of the VPL therapy appeared to be the greatest. The obtained results allow claiming that the VPL method is effective for treating hyperpigmentation. The level of the patients' satisfaction after the therapy is equally important.

K. Tanaka, A. Iddamalgoda, **Melanosome transportation control via innovative active,** Personal Care, January 2015

Various biological parts and structures are formed within cells and transported to parts of the body by driving proteins called motor proteins. For example, melanin pigment that influences skin tone is produced in melanocytes and passed to keratinocytes through dendrites. Keratinocytes absorb melanin from surrounding areas (or tips of dendrites including melanin) and darken.

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.

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.

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.

B. Nedelec, J.A. Correa, A. de Oliveira, L. LaSalle, I. Perrault, **Longitudinal burn scar quantification**, Burns. 2014 Dec; 40(8): p. 1504-12

Quantitative studies of the clinical recovery of burn scars are currently lacking. Previous reports validate the objective, precise, diagnostic capabilities of high-frequency ultrasound to measure thickness, the Cutometer(®) to measure pliability and the Mexameter(®) to measure erythema and pigmentation of scars. Thus, we prospectively quantified clinical characteristics of patient-matched, after burn hypertrophic scar (HSc), donor site scar (D) and normal skin (N) using these instruments. One investigator measured 3 sites (HSc, D, N) in 46 burn survivors at 3, 6, and 12 months after-burn. A mixed model regression analysis, adjusting p-values for multiplicity of testing, was used to compare means among sites and time points. Participants were 41.2±13.5 years old, 87% males, predominantly Caucasian, with an average of 19.5% body surface area burned. HSc thickness decreased significantly between 3 and 6, 6 and 12, and 3 and 12 months (all $p<0.0001$), but remained thicker than D and N skin (all $p<0.0001$). Pliability differed significantly between HSc, D and N sites at all time points (all $p<0.0001$), with HSc and D increasing between 3 and 12 months ($p<0.05$) but not reaching normal. HSc and D sites were significantly more erythematous than normal skin ($p<0.05$) at 3 and 6 months but D sites approached normal by 12 months. The only time points at which pigmentation significantly differed were the HSc and D sites at 6 months. Thickness, pliability, erythema and pigmentation of N skin remained similar over the 12 months. We found that post-burn HSc thickness, pliability and erythema differed significantly from D and N skin at 3, 6, and 12 months and does not return to normal by 12 months after-injury; however, significant improvements towards normal can be expected. Donor sites are redder than normal skin at 3 and 6 months but can be expected to return to normal by 12 months. Although the color of HSc and D sites change markedly with time these color changes are primarily due to changes in redness of the site, not melanin in this primarily Caucasian population.

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.

C.G. Mendoza, I.A. Singzon, E.B. Handog, **A randomized, double-blind, placebo-controlled clinical trial on the efficacy and safety of 3% Rumex occidentalis cream versus 4% hydroquinone cream in the treatment of melasma among Filipinos**, Int J Dermatol. 2014 Nov;53(11): p. 1412-6

Background: Melasma is a commonly acquired hyperpigmentation symmetrically distributed on the face, neck, and arms. The skin-lightening properties of Rumex occidentalis make it a therapeutic alternative to the reference standard treatment of hydroquinone (HQ). Objectives: This study was conducted to evaluate the safety and efficacy of 3% R. occidentalis cream versus 4% HQ cream in the management of epidermal and mixed melasma. Methods: This was a randomized, double-blind, placebo-controlled trial. Forty-five subjects with epidermal and mixed melasma were recruited to compare 3% R. occidentalis cream, 4% HQ cream, and placebo cream applied twice daily for eight weeks. Changes in pigmentation were measured every two weeks using the Melasma Area Severity Index (MASI) and a mexameter. Adverse events were noted on every visit. Patient and investigator global evaluations were performed at the end of the study. Results: Overall mean MASI and mexameter readings in the three groups decreased from baseline to week 8. The greatest decline in score from weeks 2 to 6 was achieved by the HQ group, followed by the R. occidentalis group. By

week 8, the R. occidentalis group showed a greater mean ± standard deviation decline in MASI and mexameter readings from baseline (MASI: 0.60 ± 0.86; mexameter: 50.56 ± 25.63) than the HQ group (MASI: 0.55 ± 0.62; mexameter: 45.89 ± 47.83). Conclusions: The efficacy of R. occidentalis cream and HQ cream were assessed as similarly favorable by both study subjects and investigators. Rumex occidentalis 3% cream is a safe and effective skin-lightening agent for melasma and is comparable in efficacy with 4% HQ cream.

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.

J.H. Min, I.S. Yun, D.H. Lew, T.S. Roh, W.J. Lee, **The Use of Matriderm and Autologous Skin Graft in the Treatment of Full Thickness Skin Defects**, Arch Plast Surg 2014;41: p. 330-336

Background: For patients with full thickness skin defects, autologous Split-thickness skin grafts (STSG) are generally regarded as the mainstay of treatment. However, skin grafts have some limitations, including undesirable outcomes resulting from scars, poor elasticity, and limitations in joint movement due to contractures. In this study, we present outcomes of Matriderm grafts used for various skin tissue defects whether it improves on these drawbacks. Methods: From January 2010 to March 2012, a retrospective review of patients who had undergone autologous STSG with Matriderm was performed. We assessed graft survival to evaluate the effectiveness of Matriderm. We also evaluated skin quality using a Cutometer, Corneometer, Tewameter, or Mexameter, approximately 12 months after surgery. Results: A total of 31 patients underwent STSG with Matriderm during the study period. The success rate of skin grafting was 96.7%. The elasticity value of the portion on which Matriderm was applied was 0.765 (range, 0.635–0.800), the value of the trans-epidermal water loss (TEWL) was 10.0 (range, 8.15–11.00) g/hr/m2, and the humidification value was 24.0 (range, 15.5–30.0). The levels of erythema and melanin were 352.0 arbitrary unit (AU) (range, 299.25– 402.75 AU) and 211.0 AU (range, 158.25–297.00 AU), respectively. When comparing the values of elasticity and TEWL of the skin treated with Matriderm to the values of the surrounding skin, there was no statistically significant difference between the groups. Conclusions: The results of this study demonstrate that a dermal substitute (Matriderm) with STSG was adopted stably and with minimal complications. Furthermore, comparing Matriderm grafted skin to normal skin using Cutometer, Matriderm proved valuable in restoring skin elasticity and the skin barrier.

F. Watanabe, E. Hashizume, G.P. Chan, A. Kamimura, **Skin-whitening and skin-condition-improving effects of topical oxidized glutathione: a double-blind and placebo-controlled clinical trial in healthy women**, Clinical, Cosmetic and Investigational Dermatology 2014:7, p. 267–274

Purpose: Glutathione is a tripeptide consisting of cysteine, glycine, and glutamate and functions as a major antioxidant. It is synthesized endogenously in humans. Glutathione protects thiol protein groups from oxidation and is involved in cellular detoxification for maintenance of the cell environment. Reduced glutathione (GSH) has a skin-whitening effect in humans through its tyrosinase inhibitory activity, but in the case of oxidized glutathione (GSSG) this effect is unclear. We examined the skin-whitening and skin-condition effects of topical GSSG in healthy women. Subjects and methods: The subjects were 30 healthy adult women aged 30 to 50 years. The study design was a randomized, double-blind, matched-pair, placebo-controlled clinical trial. Subjects applied GSSG 2% (weight/weight [w/w]) lotion to one side of the face and a placebo lotion to the other side twice daily for 10 weeks. We objectively measured changes in melanin index values, moisture content of the stratum corneum, smoothness, wrinkle formation, and elasticity of the skin. The principal investigator and each subject also used subjective scores to investigate skin whitening, wrinkle reduction, and smoothness. Analysis of variance was used to evaluate differences between groups. Results: The skin melanin index was significantly lower with GSSG treatment than with placebo from the early weeks after the start of the trial through to the end of the study period (at 10 weeks, P,0.001). In addition, in the latter half of the study period GSSG-treated sites had significant increases in moisture content of the stratum corneum, suppression of wrinkle formation, and improvement in skin smoothness. There were

no marked adverse effects from GSSG application. Conclusion: Topical GSSG is safe and effectively whitens the skin and improves skin condition in healthy women.

L.T. Fox, J. du Plessis, M. Gerber, S. van Zyl, B. Boneschans, J.H. Hamman, **In Vivo skin hydration and anti-erythema effects of Aloe vera, Aloe ferox and Aloe marlothii gel materials after single and multiple applications**, Phcog Mag 2014;10: p. 392-403

Objective: To investigate the skin hydrating and anti-erythema activity of gel materials from Aloe marlothii A. Berger and A. ferox Mill. in comparison to that of Aloe barbadensis Miller (Aloe vera) in healthy human volunteers. Materials and Methods: Aqueous solutions of the polisaccharidic fractions of the selected aloe leaf gel materials were applied to the volar forearm skin of female subjects. The hydration effect of the aloe gel materials were measured with a Corneometer® CM 825, Visioscan® VC 98 and Cutometer® dual MPA 580 after single and multiple applications. The Mexameter® MX 18 was used to determine the anti-erythema effects of the aloe aterial solutions on irritated skin areas. Results: The A. vera and A. marlothii gel materials hydrated the skin after a single application, whereas the A. ferox gel material showed dehydration effects compared to the placebo. After multiple applications all the aloe materials exhibited dehydration effects on the skin. Mexameter® readings showed that A. vera and A. ferox have anti-erythema activity similar to that of the positive control group (i.e. hydrocortisone gel) after 6 days of treatment. Conclusion: The polysaccharide component of the gel materials from selected aloe species has a dehydrating effect on the skin after multiple applications. Both A. vera and A. ferox gel materials showed potential to reduce erythema on the skin similar to that of hydrocortisone gel.

G. Fabbrocini, N. Cameli, S. Lorenzi, M.P. De Padova, C. Marasca, R. Izzo, G. Monfrecola, **A dietary supplement to reduce side effects of oral isotretinoin therapy in acne patients,** G Ital Dermatol Venereol. 2014 Aug;149(4): p. 441-5

Aim: The purpose of the study was to analyze the potential capacity of a dietary supplement, based on gamma linolenic acid, vitamin E, vitamin C, beta-carotene, coenzyme Q10 and Vitis Vitifera, to reduce side effects, in particular the dry skin, erythema and desquamation, due to treatment with oral isotretinoin, and evaluate the ability of the product to increase adherence to therapy in patients with acne. Methods: Forty-eight patients with nodular acne (32 females and 16 males) were randomly divided into 2 groups: 24 received isotretinoin therapy (20-30 mg/day) for 6 months associated to dietary supplement (twice a day), while the other 24 patients received only isotretinoin (20-30 mg/day) for 6 months. For all patients the degree of acne severity, through GAGS (Global Acne Grading System), the sebum production by Sebutape, the hydration by Corneometer and the erythema by Mexameter, were measured. We have also evaluated the adherence to treatment, asking to patients how many days a week they follow the therapy. Results: Patients treated with dietary supplement had lower side effects, with a less degree of erythema and dryness, and greater degree of hydration; a greater adherence to therapy was also reported. Conclusion: Thanks to antioxidant and moisturizing properties, the dietary supplement containing gamma linolenic acid, vitamin E, vitamin C, betacarotene, coenzyme Q10 and Vitis Vitifera, can be considered a useful supplement in the treatment and prevention of dry skin associated with the use of oral isotretinoin.

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.

R. Parveen, N. Akhtar, T. Mahmood, **Topical microemulsion containing Punica granatum extract: its control over skin erythema and melanin in healthy Asian subjects**, Postep Derm Alergol 2014; XXXI, 6: p. 351–355

Introduction: Punica granatum is apotent source of polyphenolic compounds with strong free radicals scavenging activity. The skin lightening effects of Punica granatum are assumed due to ellagic acid which acts by chelating copper at the active site of tyrosinase. Aim: To explore a topical microemulsion (O/W) of pomegranate (Punica granatum) extract for its control on skin erythema and melanin. Material and methods: Microemulsions were formulated using a polysorbate surfactant (Tween 80®) along with cosurfactant (propylene glycol) and were characterized regarding their stability. The placebo microemulsion (without extract) and the active microemulsion (containing Punica extract) were applied in a split face fashion by the volunteers (n = 11) for a period of 12 weeks. Skin erythema and melanin were measured at baseline and after every 15 days to determine any effect produced by these formulations. Results: Active formulation showed a significant impact on skin erythema and melanin ($p < 0.05$). Conclusions: This study reveals that a suitable topical formulation like microemulsion could employ the Punica granatum extract for conditions where elevated skin melanin and erythema have significantly prone skin physiology.

P. Blanchemaison, E. Presse, R. Clement, A. Lethi, **Un nouveau traitement pour améliorer l'esthétique de la peau: les infrarouges longs,** GENESIS, N° 179, Juin 2014

Au Japon, les bains chauds dans une eau volcanique (« onsen-thérapie ») sont réputés rajeunir la peau. Un appareil à infrarouge longs utilisé dans les Spas ou en milieu médical peut-il prétendre à des résultats similaires ou supérieurs? Le vieillissement cutané du visage est un processus naturel inéluctable qui se traduit par l'apparition de rides et de ridules, de taches pigmentaires, d'une perte de fermeté et d'élasticité de la peau et d'une diminution de l'éclat du teint. Les facteurs de vieillissement peuvent être intrinsèques (génétiques, hormonaux,…) et extrinsèques (stress, agressions climatiques, pollution, tabac…). En dehors de la cosmétique, il existe aujourd'hui d'autres méthodes non invasives pour lutter contre les méfaits du temps sur la peau.

H.J. Lee, E.G. Lee, S. Kang, J.-H. Sung, H.-M. Chung, D.H. Kim, **Efficacy of Microneedling Plus Human Stem Cell Conditioned Medium for Skin Rejuvenation: A Randomized, Controlled, Blinded Split-Face Study**, Ann Dermatol Vol. 26, No. 5, 2014, p. 584-591

Background: The use of growth factors in skin rejuvenation is emerging as a novel anti-aging treatment. While the role of growth factors in wound healing is well established, their use in skin rejuvenation has only recently been to be studied and no controlled trials have been performed. Objective: We evaluated the anti-aging effects of secretory factors of endothelial precursor cells differentiated from human embryonic stem cells (hESC-EPC) in Asian skin. Methods: A total of 25 women were included in this randomized, controlled split-face study. The right and left sides of each participant's face were randomly allocated to hESC-EPC conditioned medium (CM) or saline. To enhance epidermal penetration, a 0.25-mm microneedle roller was used. Five treatment sessions were repeated at 2-week intervals. Results: Physician's global assessment of pigmentation and wrinkles after treatment revealed statistically significant effects of microneedling plus hESC-EPC CM compared to microneedling alone ($p<0.05$). Skin measurements by Mexameter and Visiometer also revealed statistically significant effects of microneedling plus hESC-EPC CM on both pigmentation and wrinkles ($p<0.05$). The only minimal adverse event was mild desquamation in one participant. Conclusion: Secretory factors of hESC-EPC improve the signs of skin aging andcould be a potential option for skin rejuvenation.

Y. Tamai, M. Tsuji, K. Wada, K. Nakamura, M. Hayashi, N. Takeda, K. Yasuda, C. Nagata, **Association of cigarette smoking with skin colour in Japanese women,** Tob Control. 2014 May;23(3): p. 253-6

Background: Having a lighter skin tone is highly valued among many Asian women. If skin colour is affected by smoking, women may be motivated to avoid tobacco or quit smoking. Method: The present study examined the association of tobacco smoking with skin colour in Japanese women. Information on smoking habits was obtained through a self-administered questionnaire completed by 939 Japanese women aged 20-74 in Gifu, Japan, during 2003-2006. Skin colour was examined on the inner side of the upper and lower arm and on the forehead using a Mexameter device (a narrow-band reflective spectrophotometer), which expressed results as a melanin index and erythema index. Results: Current smokers had higher melanin indices than never-smokers and former smokers for all measured sites. The number of cigarettes smoked per day, the years of smoking and pack-years were significantly positively associated with melanin indices for all measured sites after adjustments for age, body mass index, lifetime sun exposure, and room temperature and humidity. Smoking was also

significantly associated with erythema indices on the inner upper and lower arms. Conclusions: These data suggest that smoking is associated with a darker skin colour. If our findings are confirmed by further studies, they could be used in antismoking campaigns or by smoking cessation services.

N. André, E. Doridot, O. Peschard, P. Criton, O. Gracioso, P. Mondon, **The benefits of TCM,** SPC April 2014

Traditional Chinese Medicine (TCM) is more than just medicine. It combines complementary treatments such as acupuncture, phytotherapy, massage and, less well known, moxibustion and cupping. In his book Tao Te Jing, Confucius' contemporary Lao-Tseu revealed TCM's basic philosophy of promoting health and prosperity through understanding and adhering to tao. Tao represents the absolute principle underlying the universe. It emphasises the existence of two equivalent but opposing forces, yin and yang, between which a natural energy, 'qi', flows.

S. Shin, E. Jung, D. Park, **"Afzelin" A Novel Skin Protective Phytochemical against UV radiation,** IFSCC 2014 Paris

Introduction: Ultraviolet (UV) radiation induces DNA damage, oxidative stress, and inflammatory processes in human keratinocytes, resulting in skin inflammation, photoaging, and photocarcinogenesis. Adequate protection of skin against the harmful effects of UV irradiation is essential. Natural substances from plant source have been considered as potential sunscreen resources because of their ultraviolet ray absorption in the UV region and their anti-inflammatory and antioxidant activity. Afzelin (Afz) is one of the major flavonol glycoside derivative which has been reported to have antiinflammatory, and anti-cancer activities [1]. However, it has rarely been applied in skin care. This study aimed to explore the roles of afzelin in protection against UV-induced damage in *in vitro* conditions, *ex vivo* epidermal equivalent model and *in vivo* clinical trial. Results showed that afzelin has UV-absorbing property with no phototoxicity and attenuate UV-induced damage to skin.

M. Mackiewicz-Wysocka, A. Araszkiewicz, J. Schlaffke, S. Kuczynski, I. Micek, D. Zozulinska-Ziolkiewicz, **Lower melanin content in the skin of type 1 diabetic patients and the risk of microangiopathy**, Exp Clin Endocrinol Diabetes. 2014 Apr;122(4): p. 231-5

Background: Various skin diseases are commonly observed in diabetic patients. Typical biophysical properties of diabetic skin such as lower skin elasticity, decreased water content in stratum corneum, increased itching and sweating disturbances are reported. The aim of the study was to examine the distribution and intensity of skin pigmentation in diabetic patients in correlation with the metabolic control and with presence of microangiopathy. Material and Methods: The study was conducted on 105 patients (42 men and 63 women, median age 31), with type 1 diabetes (DM1). The control group of 53 healthy individuals (22 men and 31 women) was age- and sex-matched. Skin pigmentation was measured at 3 different locations of the body (cheek, dorsal surface of a forearm and dorsal surface of a foot) using Mexameter® MX 18. We calculated melanin index (MI) by the meter from the intensities of absorbed and reflected light at 880 nm. Results: Patients with DM1 had lower MI on the foot (173.2 ± 38.8 vs. 193.4 ± 52.7, p=0.016) as compared to controls. In the univariate analysis cheek MI was negatively related to HbA1c level (β=-4.53, p=0.01). Forearm MI was negatively associated with daily insulin dose (β=-0.58, p=0.01), BMI (β=-3.02, p<0.001), waist circumference (β=-0.75, p=0.009), serum TG concentration (β=-18.47, p<0.001) and positively with HDL cholesterol level (β=15.76, p=0.02). Diabetic patients with hypertension had lower foot MI values (β=-18.28, p=0.03). Lower MI was associated with the presence of diabetic neuropathy (β=-18.67, p=0.04) and retinopathy (β=-17.47, p=0.03). Conclusions: In conclusion, there seems to be loss of melanocytes in type 1 diabetes. The melanin content is related to glycemic control of diabetes and obesity. The lower melanin content the higher possibility of microangiopathy. This is a first report in the literature devoted to distribution of melanin in the skin of type 1 diabetic patients.

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.

J.Y. Park, T.G. Lee, J.Y. Kim, M.C. Lee, Y.K. Chung, W.J. Lee, **Acellular Dermal Matrix to Treat Full Thickness Skin Defects: Follow-Up Subjective and Objective Skin Quality Assessments**, Arch Craniofac Surg Vol.15 No.1, 2014, p. 14-21

Background: There are several options for replacement of the dermal layer in fullthickness skin defects. In this study, we present the surgical outcomes of reconstruction using acellular dermal substitutes by means of objective and subjective scar assessment tools. Methods: We retrospectively reviewed the medical records of 78 patients who had undergone autologous split-thickness skin graft with or without concomitant acellular dermal matrix (CGDerm or AlloDerm) graft. We examined graft survival rate and evaluated postoperative functional skin values. Individual comparisons were performed between the area of skin graft and the surrounding normal skin. Nine months after surgery, we compared the skin qualities of CGDerm graft group (n=25), AlloDerm graft group (n=8) with skin graft only group (n=23) each other using the objective and subjective measurements. Results: The average of graft survival rate was 93% for CGDerm group, 92% for AlloDerm group and 86% for skin graft only group. Comparing CGDerm grafted skin to the surrounding normal skin, mean elasticity, hydration, and skin barrier values were 87%, 86%, and 82%, respectively. AlloDerm grafted skin values were 84%, 85%, and 84%, respectively. There were no statistical differences between the CGDerm and AlloDerm groups with regard to graft survival rate and skin functional analysis values. However, both groups showed more improvement of skin quality than skin graft only group. Conclusion: The new dermal substitute (CGDerm) demonstrated comparable results with regard to elasticity, humidification, and skin barrier effect when compared with conventional dermal substitute (AlloDerm).

X. Zhong, X. Wen, D. Zhu, **Lookup-table-based inverse model for human skin reflectance spectroscopy: two-layered Monte Carlo simulations and experiments**, Optics Express, 13 January 2014, Vol. 22, No. 1

Fiber reflectance spectroscopy is a non-invasive method for diagnosing skin diseases or evaluating aesthetic efficacy, but it is dependent on the inverse model validity. In this work, a lookup-table-based inverse model is developed using two-layered Monte Carlo simulations in order to extract the physiological and optical properties of skin. The melanin volume fraction and blood oxygen parameters are extracted from fiber reflectance spectra of *in vivo* human skin. The former indicates good coincidence with a commercial skin-melanin probe, and the latter (based on forearm venous occlusion and ischemia, and hot compress experiment) shows that the measurements are in agreement with physiological changes. These results verify the potential of this spectroscopy technique for evaluating the physiological characteristics of human skin.

Hand- und Hautschutz, Publikation der Berufsgenossenschaft Rohstoffe und Chemische Industrie, Januar 2014

M. Riedel, **Einfluss des Silikongels DERMATIX™ auf standarddiesierte, operative Narbenbildung am Thorax,** Disseration der Klinik für Hals-, Nasen- und Ohrenheilkunde und Plastische Operationen der Universität zu Lübeck, Januar 2013

Jeder invasive Eingriff, bei dem ein Hautschnitt durchgeführt wird, ist mit einer anschließenden Wundheilung und Narbenbildung verbunden. Nach wie vor stellt die minimalste Ausbildung und Ausprägung von Narben nach Eingriffen in der plastischrekonstruktiven Chirurgie eines der entscheidenden Erfolgskriterien, sowohl für den Patienten, als auch für den behandelnden Arzt dar. In diesem Teilbereich der Chirurgie steht für Patienten in vielen Fällen eine kosmetische Korrektur der als störend empfundenen Narbe im Vordergrund. Die Prävention und Therapie hypertropher, keloider oder kosmetisch unbefriedigender Narben ist eine aufwendige, langwierige und nicht selten unbefriedigende Prozedur.

J.W. Jung, Y.W. Lee, Y.B. Choe, K.J. Ahn, **An 8-week face-split study to evaluate the efficacy of cosmeceuticals using non-invasive bioengineering devices**, Skin Research and Technology 2013; 19; 324-329

Background/aims: Even with the increasing demand for functional cosmeceuticals in the recent years, objective standard criteria for assessing their efficacy are currently incomplete at best. In this 8-week face-split study, in which we topically applied high-priced cosmeceuticals on one side and more affordable cosmeceuticals on the other side of face, we compared the efficacy of these two products using non-invasive bioengineering technology. Methods: We assessed the efficacy of a skin-whitening and an anti-wrinkle cosmeceutical product on 25 and 19 healthy female volunteers, respectively. In a single blind split setting, each participant received an 8-week topical application of high-priced cosmeceuticals to the left side of face, and cheaper cosmeceuticals to the right side. Then, the subjects‘ biophysical parameters were measured for an objective evaluation of the results. This was followed by a questionnaire to obtain a subjective assessment.

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.

A.M. Ahmed, I. Lopez, F. Perese, R. Vasquez, L.S. Hynan, B. Chong, A.G. Pandya, **A Randomized, Double-Blinded, Placebo-Controlled Trial of Oral *Polypodium leucotomos* Extract as an Adjunct to Sunscreen in the Treatment of Melasma**, JAMA Dermatol. 2013;149(8): p. 981-983

Treatments for melasma include photoprotection in conjunction with topical agents such as hydroquinone, retinoids, or combinations. These regimens, while reasonably effective, are hindered by adverse effects such as irritation and ochronosis. Aggressive topical sunscreen use improves melasma as monotherapy. However, compliance with frequent sunscreen application is difficult; a more convenient and effective photoprotective regimen is needed. We assessed the effectiveness of *Polypodium leucotomos* extract (PLE), an oral, commercially available UV radiation protectant, as an adjunct to once-daily topical sunscreen application in the treatment of melasma.

A. Heghes, C.M. Soica, S. Ardelean, R. Ambrus, D. Muntean, A. Galuscan, D. Dragos, D. Ionescu, F. Borcan, **Influence of emulsifiers on the characteristics of polyurethane structures used as drug carrier**, Chemistry Central Journal 2013, 7:66

Background: Emulsifiers have a significant role in the emulsion polymerization by reducing the interfacial tension thus increasing the stability of colloidal dispersions of polymer nanostructures. This study evaluates the impact of four emulsifiers on the characteristics of polyurethane hollow structures used as drug delivery system. Results: Polyurethane (PU) structures with high stability and sizes ranging from nano- to micro-scale were obtained by interfacial polyaddition combined with spontaneous emulsification. The pH of PU aqueous solutions (0.1% w/w) was slightly acidic, which is acceptable for products intended to be used on human skin. Agglomerated structures with irregular shapes were observed by scanning electron microscopy. The synthesized structures have melting points between 245-265°C and reveal promising results in different evaluations (TEWL, mexametry) on murine skin. Conclusions: In this study hollow PU structures of reduced noxiousness were synthesized, their size and stability being influenced by emulsifiers. Such structures could be used in the pharmaceutical field as future drug delivery systems.

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 confirmed 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 confirmed by biophysical skin parameter measurements. Changes in the hair growth parameters showed telogen efuvium hair loss.

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.

Reduced Erythema with Floraesters K-100 Jojoba and Floraesters K-20W Jojoba/Nonwoven wipes, Poster Floratech, In-Cosmetics, Paris 2013

A baby wipe containing 0.2% Floraesters K-100 jojoba or 1% Floraesters K-20W Jojoba decreased erythema (redness) better than the vehicle baby wipe and better than the baby wipe containing 0.5% of the known anti-irritant bisabolol. Baseline (pre-shave, pre test article treatment) Mexameter (erythema) measurements were taken on normal forearms. The forearms were then dry shaved followed by post-shave (30 minutes post-shave, pre test article treatment) measurements.

A.Thibodeau, **Luminescence increased by plant-derived lipophilic active**, Personal Care März 2013

Skin ageing is commonly revealed by the appearance of wrinkles and loss of tone. Those cutaneous signs of ageing are predominatly caused by an excessive exposure to UV radiatiomn – actinic ageing – and thus more apparent on skin sitesexposed to the sun. In addition to an obvious change in surface topography, skin ageing in UV-exposed skin areas is also betrayed by the appearance of age spots that are characterised by a localised hyperpigmentation. It is important to mention that, even though they are associated to ageing by connotative definition, age spots are more related to the effect of UV radiation rather than the chronological ageing itself – intrinsic ageing.

T. Mahmood, N. Akhtar, **Short term study of human skin irritation by single application closed patch test: assessment of four multiple emulsion formulations loaded with botanical extracts,** Cutan Ocul Toxicol, 2013 Mar;32(1): p. 35-40

Background: Assessment of skin irritation potential is a major concern in safety assessment of cosmetics, when long-term use of these products are expected. Non-invasive bioengineering probes have been used previously to measure skin irritation potential of cosmetic ingredients. Objectives: Experimentation carried out to weigh up the skin irritation potential of four multiple emulsion formulations via visual and non-invasive measurements. Immediate effects of formulations and

comparison of two assessment techniques were also tried to establish. Methods: Four multiple emulsion formulations one control (without botanical active) and three containing the functional botanical actives plus additives were tested in this study using the following techniques: transepidermal water loss (TEWL), COLIPA visual scoring method (CVSM), Mexameter MPA 5 (Courage + Khazaka, Germany) and capacitance [Corneometer MPA 5 (Courage + Khazaka, Germany)]. Visual examination and non-invasive measurements were performed at baseline and after 24 h. The formulations were applied on the forearm of 12 healthy volunteers of same sexes aged 20-25 years. Results: We found that none of the formulation produced irritation both on visual and instrumental evaluation. However, formulations MeB and MeC have comparable immediate effects on dryness, erythema, melanin and TEWL. Formulation MeC produced more effective results on different parameters, may be due to synergistic effect of two extracts, while MeA failed to produce any immediate effects on skin parameters. Moreover results of both assessment methods are parallel to each other. Conclusion: None of the formulation produce irritant effects, barrier impairment effects or immediate effects except for the formulation MeC which produced appreciable results than other formulations but statistically these results were insignificant ($p > 0.05$). Based on these results, it could be concluded that formulations may be implied safely as skin rejuvenating candidates.

P. Kleesz, R. Darlenski, J.W. Fluhr, **Full-Body Skin Mapping for Six Biophysical Parameters: Baseline Values at 16 Anatomical Sites in 125 Human Subjects,** Skin Pharmacol Physiol 2012; 25; p. 25-33

The skin, as the outermost organ, protects against exogenous hazards (outside-in barrier) and prevents the loss of essential parts of the body (inside-out barrier) The epidermal barrier exerts several functions with specific morphological elements. Regional differences in skin functions are well known. The aim of the present study was to assess and compare skin physiological parameters in vivo at 16 anatomical sites: Barrier function in terms of transepidermal water loss (TEWL), stratum corneum (SC) hydration (assessed by capacitace), skin surface pH, skin surface temperature, erythema index and skin pigmentation were quantified at 16 anatomical sites under basal conditions.

S. Pérez Damonte, M. Baptista, M.A. Moyano, M. Nunez, A. Segall, **The effect of a lipoic acid on the skin: biomechanical properties,** IFSCC 2012, 15-18 Oct. 2012, Sandton, South Africa

α –lipoic acid or the reduced form dihydrolipoate are potent scavengers of hydroxyl radicals, superoxide radicals, peroxyl radicals, singlet oxygen and nitric oxide with anti-inflammatory properties Previously, we have demonstrated in vivo the effect of α-lipoic acid (0.5%) and ascorbic palmitate (0.2%) in the improvement oft he skin barrier and diminished the redness is a sensitive skin. The aims of this study were to analyze the clinical efficacy of formulations containing α-lipoic at 2.5% and 5.0% by measuring in vivo the biochemical parameters of transepidermal water loss TEWL and the color oft he skin initially and after the application.

N. Waranuch, S. Maphanta, W. Wisuitiprot, **Effect of microparticles containing green tea extract on facial skin improvement,** ISBS Copenhagen 2012

To clinically evaluate an effectiveness of skin cream containing green tea extract loaded chitosan microparticles for facial wrinkle treatment. Method: Twenty-nine volunteers were randomly assigned to apply skin cream containing 1% green tea extract loaded chitosan microparticles (GT-Cs) and a placebo cream on each of their half faces for 8 weeks. Skin elasticity was evaluated by using Cutometer and the photographs of each half faces were also compared. Skin moisture and skin irritation were determined by Corneometer and transepidermal water loss (TEWL) respectively.

N. Kindler, **Extrinsische und intrinsische Formen der Hautalterung - Vergleich klassischer Untersuchungsverfahren mit der Multiphotonen-Lasertomographie**, Dissertation der Medizinischen Fakultät der Friedrich-Schiller-Universität Jena, 2012

Unsere Haut und ihr Erscheinungsbild haben in der modernen Gesellschaft zunehmend an Bedeutung gewonnen. Wesentliche Gründe dafür sind einerseits das gestiegene Körperbewusstsein, im Vordergrund steht jedoch die demographische Entwicklung in den Industrienationen. Bei einer stetig steigenden Lebenserwartung mit einer oft guten körperlichen Konstitution auch im hohen Lebensalter, wird dem Thema eines jugendlichen Hautbildes immer mehr Aufmerksamkeit gewidmet. Die menschliche Haut unterliegt jedoch im Verlaufe des Lebens einer Vielzahl von unterschiedlichsten Einflüssen, die eine Veränderung des Hauterscheinungsbildes und somit eine vorzeitige Hautalterung verursachen. In der Forschung werden mittlerweile zwei Formen der Hautalterung unterschieden. Zum einen die durch äußere Einflüsse hervorgerufene extrinsische Hautalterung, deren Ursachen v.a. die UV-Strahlung und der Nikotinabusus darstellen. Zum anderen gibt es die natürliche, genetisch determinierte intrinsische Hautalterung. Bei ihr spielen der natürliche Hormonhaushalt, Veränderungen

im Immunsystem und einige andere intrinsische Prozesse eine entscheidende Rolle, die noch nicht vollständig verstanden sind.

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.

Y.H. Cho, D.W. Jeong, S.H. Seo, S.Y. Lee, E.J. Choi, Y.J. Kim, J.G. Lee, Y.-H. Lee, M.J. Bae, H.W. Chin, **Changes in Skin Color after Smoking Cessation**, Korean J Fam Med. 2012;33: p. 105-109

This study was performed to assess changes in skin color over 1 month after smoking cessation. The study population consisted of 49 men who participated in a smoking cessation program from March 2010 to June 2010 at a public health centre in Yangsan, South Korea. Thirty-four men who stop smoking completely were included in our study. Instrumental evaluations of skin color were performed using Mexameter (MX 18; Courage and Khazaka Electronic GmbH) at the beginning of the study and at 1-week and 4-week follow-up visits. Skin color was evaluated by measurement of 2 main color bases-melanin and haemoglobin-with the results expressed as melanin index (MI) and erythema index (EI). Both MI and EI were significantly reduced at the 4-week follow-up visit on all 7 sites measured. We anticipate that desirable effects on skin color after smoking cessation will play a positive role in maintaining smoking abstinence in routine clinical practice.

W.-J. Kim, M. Song, H.C. Ko, B.-S. Kim, M.-B. Kim, **Topical tacalcitol ointment can be a good therapeutic choice in erythromelanosis follicularis faciei et colli**, J AM ACAD DERMATOL, August 2012

Erythromelanosis follicularis faciei et colli (EFFC) is an uncommon erythematous pigmentary disorder involving hair follicles with unknown origin. 1 It predominantly affects preauricular and maxillary regions and many therapeutic options have been tried.2 However, the results were variable and the treatment of EFFC is still challenging. Tacalcitol is a synthetic analog of vitamin D3 and ist successful treatment in psoriasis and other keratinization disorders such ichthyosis, Darier disease, and keratosis pilaris has been reported.3,4 As it is known that many patients with keratosis pilaris have concomitant EFFC in previous reports,2 we considered tacalcitol as a new therapeutic possibility for EFFC. Thus, we conducted a 12-week study of topical tacalcitol ointment (Bonalfa-high, Teijin Pharma, Tokyo, Japan) once daily for 11 patients with EFFC. The study protocol was approved by the Pusan National University Hospital Institutional Review Board , Busan, Korea. The treatment efficacy was evaluated on weeks 0, 2, 4, 8, and 12 by assessing the level of erythema, roughness, and scaling, and clinically, by measuring erythema index using Mexameter MX 18 (Courage and Khazaka Electronic, Cologne, Germany). The patient global assessment score was also assessed.

J.H. Kim, B.Y Kim, J.W. Choi, S.O. Kim, H.S. Lee, K.C. Park, S.W. Youn, **The objective evaluation of the severity of psoriatic scales with desquamation collecting tapes and image analysis**, Skin Research and Technology, May 2012; 18: p. 143–150

Background: Assessment of psoriatic scales is important to determine the severity of psoriasis. However, there are very limited numbers of objective, quantitative and observerindependent tools for measuring the severity of psoriasis. Objective: To determine whether the bioengineering parameters of the psoriatic scale can be used to assess the severity of psoriasis instead of the psoriatic severity index of scales (PSIs) score. Methods: Thirty-four patients with psoriasis were included. A representative lesion from each patient was selected and bioengineering parameters were measured using the Corneofixs. Simultaneously, the severity of the scales was assessed by the PSIs

score using clinical photographs of the lesions. In addition, skin color and elasticity parameters were also measured using the Colorimeters, the Mexameters and the Cutometers. Results: Statistical differences in the scale parameters were observed between the PSIs 2 and 3 scores. Among the scale parameters, the percent area and area in mm2 were negatively correlated with the PSIs score. In addition, the Colorimeters a, b parameters and the Cutometers R9 parameters were significantly correlated with the PSIs score. Conclusions: The results of this study showed that the severity of psoriatic scales could be measured objectively using the Corneofixs.

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.

S.H. Kim, S.H. Hwang, S.K. Hong, J.K. Seo, H.S. Sung, S.W. Park, J.H. Shin, **The Clinical Efficacy, Safety and Functionality of Anion Textile in the Treatment of Atopic Dermatitis,** Ann Dermatol, Vol. 24, No. 4, 2012 p. 438-443

Background: Several previous studies have suggested the improvement of atopic dermatitis (AD) in response to special fabrics. In particular, beneficial effects have been reported, following the use of anion textiles. *Objective:* The purpose of this study is to evaluate the effectiveness and safety of an anion textile in patients suffering from AD. *Methods:* We compared an anion textile with a pure cotton textile. Fifty-two atopic patients (n=52) were enrolled and divided into two groups. The patients in the test (n=25) and control (n=19) groups wore undergarments made of an anion textile or pure cotton over a period of 4 weeks. The overall severity of disease was evaluated using the SCORing atopic dermatitis (SCORAD) index, whereas, the treatment efficacy was measured using a Tewameter® (Courage & Khazaka, Cologne, Germany), Mexameter® (Courage & Khazaka) and Corneometer® (Courage & Khazaka). *Results:* At the end of the study, a significant decrease in the SCORAD index was observed among the patients with AD in the test group (mean SCORAD decreased from 47.2 to 36.1). Similarly, improvements in the mean transepidermal water loss, skin erythema and stratum corneum hydration were significantly greater among the patients with AD in the test group than in the control group. *Conclusion:* Anion textiles may be used to significantly improve the objective and subjective symptoms of AD, and are similar in terms of comfort to cotton textiles. The use of anion textiles may be beneficial in the management of patients with AD.

T. Oliphant, R.A. Harper, **Advantages of jojoba esters in nonwovens,** Personal Care, February 2012, p. 94–96

Jojoba (Simmondsia chinensis) is a perennial shrub most commonly found in Arizona, California, and Northwestern Mexico. Jojoba seed oil, the oil produced by this plant, is a wax ester that has been used in the past as a folk remedy for renal colic, sunburn, chaffed skin, hair loss, headache, wounds, sore throats, prosiasis, and acne (e.g., sulfurised jojoba) The ester is composed of long-chain linear fatty alcohols, 20 to 24 carbons in length and long-chain linear fatty acids, 18 to 22 carbons in length. Nearly all of the acid and alcohol moieties are 9-mono-unsaturated. Hydrolysis of this wax ester produces a very unique ingredient that can be used in various commercial cosmetic and personal care formulations such as creams, body washes, hand sanitisers, and multiple nonwoven wipe applications.

A. Manosroi, R. Chutoprapat, M. Abe, W. Manosroi, J. Manosroi, **Anti-aging efficacy of topical formulations containing niosomes entrapped with rice bran bioactive compounds**, Pharm Biol. 2012 Feb;50(2): p. 208-224

Context: Rice [Oryza sativa L. (Gramineae)] bran is a rich source of phytochemicals. Its oil also contains several bioactive components that exhibit antioxidative properties such as ferulic acid (F), γ-oryzanol (O), and phytic acid (P) which can be a new source of cosmetic raw materials. Objective: To evaluate the anti-aging effects of the gel and cream containing niosomes entrapped with the rice bran bioactive compounds. Materials and Methods: The semi-purified rice bran extracts containing F, O, and P which indicated the growth stimulation of human fibroblasts and the inhibition of MMP-2 by sulforhodamine B and gelatin zymography, respectively, were entrapped in niosomes by supercritical carbon dioxide fluid (scCO(2)) and incorporated in gel and cream formulations. The skin hydration, elasticity, thickness and roughness, and pigmentation in human volunteers after treated with these gel and creams were investigated by corneometer, cutometer, visiometer, and mexameter, respectively. Results: Gel and cream containing the semi-purified rice bran extracts entrapped in niosomes gave no sign of erythema and edema detected within 72 h on the shaved rabbit skin by the closed patch test investigated by mexameter and visual observation, respectively. These formulations also demonstrated higher hydration enhancement and improvement of skin lightening, thickness, roughness, and elasticity on the skin of 30 human volunteers within the 28-day treatment not more than 9, 27, 7, 3, and 3 times, respectively. Discussion and Conclusions: The formulations containing niosomes entrapped with the rice bran bioactive compounds gave superior clinical anti-aging activity which can be applied as a novel skin product.

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 topicalaminolevulinic acid (ALA) has increasingly been used for thetreatment 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.G. Pandya, L.S. Hynan, R. Bhore, F.I Copeland Riley, I.L. Guevara, P. Grimes, JJ. Nordlund, M. Rendon, S. Taylor, R.W. Gottschalk, N.G. Agim, J.-P. Ortonne, **Reliability assessment and validation of the Melasma Area and Severity Index (MASI) and a new modified MASI scoring method**, J Am, Acad Dermatol 2011;64: p. 78-83

Background: The Melasma Area and Severity Index (MASI), the most commonly used outcome measure for melasma, has not been validated. Objective: We sought to determine the reliability and validity of the MASI. Methods: After standardized training, 6 raters independently rated 21 patients with mild to severe melasma once daily over a period of 2 days to determine intrarater and interrater reliability. Validation was performed by comparing the MASI with the melasma severity scale. The darkness component of the MASI was validated by comparing it with the difference between mexameter scores for affected versus adjacent normal-appearing skin. The area component of the MASI was validated by comparing it with the area of each section of the face determined by computer-based measurement software. Results: The MASI score showed good reliability within and between raters and was found to be valid when comparedwith the melasma severity scale, mexameter scores, and area measurements. Homogeneity assessment by raters showed the least agreement and can be removed from the MASI score without any loss of reliability. Limitations: Patients were limited to Hispanic, African, and Asian backgrounds. Conclusion: The MASI is a reliable measure of melasma

severity. Area of involvement and darkness are sufficient for accurate measurement of the severity of melasma and homogeneity can be eliminated.

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.

E. Ammitzboll Holm, **Skin Colour and Pigmentation,** J. Fluhr (ed.), Practical Aspects of Cosmetic Testing, Springer-Verlag Berlin Heidelberg 2011

Quantification of disease severity is a prerequisite for the development of evidence-based therapy. Today, there is no international consensus on guidelines for assessment of skin colour, and the majority of assessment methods are not standardized. Today, patient history and clinical scoring are the main tools for dermatologists when when attempting to assess the morbidity of patients with various skin diseases. These methods however have their limitations; as they frequently show poor inter- and intra-observer reproducibility, due to the different ways doctors assess, for example, erythema or dry skin. In addition many of the scoring systems include assessment of disease extent, which has been shown to be difficult.

Y. Tian, Y.X. Wang, W.J. Gu, P. Zhang, Y. Sun, Y. E, W. Liu, **Physical measurement and evaluation of skin color changes under normal condition and post-ultraviolet radiation: a comparison study of Chromameter CM 2500d and Maxmeter MX18,** Skin Research and Technology 2011, 17: p. 304-308

Skin color, erythema and melanin are the words that are usually used by dermatologists to describe skin lesions or to record the changes of skin lesions. However, individual observation of skin color by naked eyes is considered more complex and subjective. As subjective color expression seems impossible to give a correct description, some objective measurements are needed. The limitations of visual observations may be overcome by instrumental measurements, such as Chromameter CM2500d recommended by CIE (Commission International de l'Eclariage) and reflectance spectrophotometers (e.g. Maxmeter MX18) specialized in erythema and pigmentation measurements. These two kinds of instrument are commonly used by professionals in dermatology and cosmetic surgery fields in recent years.

M.B. Kim, G.W. Kim, H.J. Park, H.S. Kim, H.W. Chin, S.H. Kim, B.S. Kim, H.C. Ko, **Pimecrolimus 1% cream for the treatment of rosacea**, J Dermatol. 2011 Dec;38(12): p. 1135-9

Rosacea is a common inflammatory skin disorder; the pathogenesis is unclear. Various treatment options for rosacea are available, but most have limited effectiveness. The aim of this study was to investigate the efficacy and safety of 1% pimecrolimus cream for the treatment of rosacea. Thirty patients with rosacea were enrolled in this 4-week, single-center, open-label study of 1% pimecrolimus cream. Patients were instructed to apply the cream to their faces twice daily and were not permitted to use any other agents. Clinical efficacy was evaluated by a rosacea grading system using photographic documentation and a mexameter. The 26 patients who completed the study experienced significantly reduced rosacea clinical scores from 9.65 ± 1.79 at baseline to 7.27 ± 2.11 at the end of treatment ($P < 0.05$). The mexameter-measured erythema index decreased significantly from 418.54 ± 89.56 at baseline to 382.23 ± 80.04 at week 4 ($P < 0.05$). The side-effects were mostly transient local irritations. The results of this study suggest that 1% pimecrolimus cream is an effective and well-tolerated treatment for patients with mild to moderate inflammatory rosacea.

G. Dell'Acqua, C. Wagner, **Lightening and Illuminating Skin With Acetylated Hydroxystilbenes from Rheum rhaponticum,** Cosmetics & Toiletries, Vol, 126, No.9 / September 2011, p. 634-642

Increased melanin pigmentation is a physiological mechanism that the skin adopts to protect itself from the damaging effect of sustained and prolonged UV light exposure. Melanin pigment, produced by melanocyte cells in the basal layers of the epidermis, is transferred to the keratinocytes in the epidermis and sits on the top of the keratinocyte's nucleus to protect the cell's DNA. However, in some conditions (i.e., inflammation or a hormonal imbalance) and with increasing age, the deposition

of melanin in the epidermis increases. This is particularly evident in extreme cases such as melasma, where patchy melanin formation on skin is observed.

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.

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.

E. Berardesca, M. Iorizzo, E. Abril, G. Guglielmini, M. Caserini, R. Palmieri, G.E. Piérard, **Clinical and instrumental assessment of the effects of a new product based on hydroxypropyl chitosan and potassium azeloyl diglycinate in the management of rosacea,** Journal of Cosmetic Dermatology, 2011, p. 37–41

Background Rosacea is a chronic inflammatory skin disease affecting mostly facial skin. Its origin is multifactorial. Important steps in its treatment are avoidance of any triggering factor and control of skin inflammation. Aim To assess the benefit of topical applications of a new product (P-3075). Patients ⁄ Methods A randomized, multicenter, double-blind, placebo-controlled, parallelgroup, pilot study was carried out to evaluate the efficacy and tolerability of a cream (P-3075) based on 5% potassium azeloyl diglycinate (PAD, Azeloglicina) and 1% hydroxypropyl chitosan (HPCH). Forty-two patients (rosacea stages I and II) were enrolled and randomized, 28 in the P-3075 group and 14 in the placebo group. They were asked to apply the cream twice daily for 4 weeks. The main assessments were the objective quantification of erythema and skin hydration using the Mexameter and Corneometer devices, respectively. Clinical signs and symptoms were evaluated on a four-point scale. Results The P-3075 cream applied for 28 days was effective in skin protection by reducing erythema, evaluated both instrumentally and clinically. In addition, the clinical assessments of other symptoms

such as flushing, stinging, and burning supported the beneficial effect of the P-3075 cream. Conclusions The anti-inflammatory and moisturizing effects of potassium azeloyl diglycinate combined with the protective properties of HPCH allow the new product to be a good candidate for controlling signs and symptoms of rosacea.

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.

Y. Wu, M.S. Matsui, J.Z. Chen, X. Jin, C.M. Shu, G.Y. Jin, G.H. Dong, Y.K. Wang, X.H. Gao, H.D. Chen, Y.H. Li, **Antioxidants add protection to a broad-spectrum sunscreen**, Clin Exp Dermatol. 2011 Mar;36(2): p. 178-87

Background: Exposure of human skin to ultraviolet radiation (UVR) results in erythema, pigment darkening, skin cancer and photoageing. In addition to conventional organochemical and the physicalmineral type sunscreens (SS), other non-SS protective strategies have been investigated, including antioxidants (AOx) and topical DNA repair enzymes. Aim: To investigate whether AOx could improve the protection provided by a broad-spectrum sunscreen (SS) preparation. Methods: Volunteers were exposed to repetitive solar-simulated (ss)UVR at 1.5 times minimal erythema dose for four consecutive days. Thirty minutes before each exposure and 6, 24 and 48 h after the last exposure, the test materials [vehicle, SS (sun protection factor 25) alone, AOx alone and SS plus AOx] were applied to four different sites. Another two sites received ssUVR only, or SS plus AOx only, and a third site was left untreated (neither ssUVR or product). Erythema and pigmentation were measured using a Mexameter. Biopsy specimens were taken 72 h after the last irradiation. The thickness of the stratum corneum and epidermis were measured by microscopy. Expression of cytokeratins (CKs), matrix metalloproteinases (MMPs) and CD1a-positive Langerhans cells (LCs) analysed by immunohistochemical staining, and relative expression levels were compared between all seven sites. AOx alone did not reduce erythema. Results: There was a significant reduction in pigmentation, and the product almost completely protected against LC depletion. AOx plus SS gave better protection against pigment formation and CK5/6 induction than SS alone. AOx alone protected against ssUVRinduced hyperproliferation, as shown by epidermal thickness and CK16 biomarkers, and was better than SS alone. Interestingly, although protection against induction of MMP-9, a marker of photoageing, did not reach significance when either SS or AOx were applied separately, there was complete protection against MMP-9 induction when these were combined. Conclusions: Non-SS materials such as AOx can contribute significantly to sun protection whenadded to a broad-spectrum SS and applied topically to human skin in vivo.

S. Ardelean, S. Feflea, D. Ionescu, V. Năstase, C.A. Dehelean, **Toxicologic screening of some surfactants using modern in vivo bioassays**, Rev Med Chir Soc Med Nat Iasi, 2011 Jan-Mar;115(1): p. 251-258

This paper aims to evaluate the degree of skin irritation using specific in vivo tests. The completion of the study is to develop models with wide applicability in toxicological area. HET-CAM or chorioallantoic membrane assay is a new method accepted as an INVITTOX protocol that is a substitute of Draize test. The methods applied in present study were CAM assay on embryonated egg and CD1 Nu/Nu experimental model. The evaluation of erythema that is an important toxic effect of surfactants was done using a Mexameter MX18 (Courage Khazaka research line). The main observations were that sodium lauryl sulphate is the most toxic compound on our series but the non-

ionic surfactants are not completely non-noxious. Non-invasive methods can be associated with other test such as CAM assay to evaluate irritant compounds.

R. Fearmonti, J. Bond, D. Erdmann, H. Levinson, **A Review of Scar Scales and Scar Measuring Devices,** www.eplasty.com

Objective: Pathologic scarring affects millions of people worldwide. Quantitative and qualitative measurement modalities evaluate and monitor treatments. Methods: This article reviews the literature on available tools and existent assessment objectively characterize scar. Results: We describe the attributes and deficiencies of each tool and scale and critical. Conclusion: An optimal, universal scar scoring system is needed in order to better characterize, understand.

The Clearing Line Skin without Dark spots and fine lines, naturally, Marzia de Servi, Product information

The Marzia de Servi Clearing Line is designed to target two skin concerns: dark spots resulting from an excessive production of melanin, and wrinkles. These aesthetic problems often appear simultaneously on the skin. Marzia de Servi has created a new cosmetic line that inhibits excessive melanin formation and leaves skin visibly brighter and eventoned. It also acts on fine lines, reducing them and smoothing skin appearance. All Marzia de Servi Clearing Line natural formulas products contain highly effective key ingredients, and respect skin's delicate physiological balance.

J. Viyoch, I. Tengamnuay, K. Phetdee, P. Tuntijarukorn, N. Waranuch, **Effects of Trans-4-(Aminomethyl) Cyclohexanecarboxylic Acid/Potassium Azeloyl Diglycinate/Niacinamide Topical Emulsion in Thai Adults With Melasma: A Single-Center, Randomized, Double-Blind, Controlled Study**, Current Therapeutic Research, Volume 71, Number 6, December 2010; p. 345–359

Background: Melasma is an acquired hyperpigmentary disorder characterized by dark patches or macules located on the cheeks, forehead, upper lip, chin, and neck. Treatment of melasma involves the use of topical hypopigmenting agents such as hydroquinone, tretinoin, and azelaic acid and its derivatives. Objective: The purpose of this study was to assess the efficacy of a formulation containing a combination of trans-4-(aminomethyl) cyclohexanecarboxylic acid/potassium azeloyl diglycinate/niacinamide compared with an emulsion-based control in the treatment of melasma in Thai adults. Methods: In this single-center, randomized, double-blind, controlled study, Thai patients with mild to moderate facial melasma (relative melanin value [RMV] in range of 20–120) were randomized for the application of either the test or the emulsionbased (control) product in the morning and before bedtime for 8 weeks. The supplemental sunscreen product with sun protection factor 30 was distributed to all patients. Subjects were assessed for the intensity of their hyperpigmented skin area by measuring the difference in the absolute melanin value between hyperpigmented skin and normal skin (RMV). This parameter was used as a primary outcome of this study. Additionally, the severity of melasma was determined visually using the Melasma Area and Severity Index (MASI) scored independently by 3 investigators. The assessments of melasma intensity and other skin properties were performed before administration (week 0) and every 2 weeks thereafter for up to 8 weeks. Other skin properties, including moisture content, pH, and redness (erythema value), were measured. Adverse events (AEs), including erythema, scaling, and edema, were also assessed by a dermatologist using the visual grading scale of Frosch and Kligman and COLIPA. Results: The resulting primary intent-to-treat (ITT) population included 33 patients in the test group and 34 patients in the control group. Sixty patients completed all 8 weeks of the study (on-treatment [OT] population): 91% (30) of the 33 patients in the test group, and 88% (30) of the 34 patients in the control group. Betweengroup differences in mean RMV were statistically significant at week 6 in both the primary ITT ($P = 0.005$) and OT ($P = 0.006$) populations. The significant differences in mean MASI scores between the test and the control groups were initially observed at weeks 4 ($P = 0.005$) and 8 ($P = 0.027$) in the OT and primary ITT populations, respectively. Other parameters, including skin pH, erythema, and moisture content did not significantly change from baseline at any time point of study. The incidence of AEs was not different between the test (4/33 [12%]) and control (5/34 [15%]) groups. Conclusions: The significant differences in RMVs between the test and control groups were observed after 6 weeks of treatment, both in the primary ITT and OT populations. The incidence of patients with AEs was not significantly different between the test and control groups.

Oestro Cream – Firmer and Beautiful Breast Cream, www.Oestrocream.com, 2010

Oestro cream is a natural breast enhancement cream scientifically engineered with Transdermal Technology to naturally enhance the size, shape and firmness of women's breats.

A.C. Dweck, **The role of natural ingredients in anti-ageing of the skin,** Australian Society of Cosmetic Chemists

The skin ages for a number of reasons. It will naturally age with increasing loss of flexibility and ageing as collagen and elastin within the epidermis slowly cross-links and become less elastic. To a degree this is part of the genetic inheritance present within all of us, since do not seem to age at the same rate, nor share identical lifestyles. It has been extensively proven that sunlight hastens the degradation of the ski by the bombardment of tissue with high energy photons present in UV-A and UV-B wavelength of sunlight. This high energy has sufficient power to cleave molecules into free radicals, which are then available to react, modify and sometimes destroy healthy cellular chemistry.

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.

G. Dell'Acqua, K. Schweikert, G. Calloni, **Stimulating and Protecting Skin Immunity to Decrease UV-Induced Skin Erythema**, SOFW Journal 11-2010

Skin is permanently exposed to stress from the external environment. In order to defend itself and to increase its repairing capacity, skin possesses molecules that are part of the innate immunity system. These molecules are expressed by the keratinocytes and also present on Langerhans cells. They are highly conserved through evolution and represent the first line of defense against foreign antigens and environmental stress. Although during the early response these molecules act locally, they may trigger eventually a more systemic immune response if the aggression can not be resolved rapidly. These molecules also called innate immunity markers can be considered, together with the Langerhans cells, the skin immune sentinels (1) making sure that a pro-inflammatory aggression is detected and controlled (1-4). Among the skin immunity markers we can list anti-microbial peptides like cathelicidins and defensins that directly kill invasive microbes (5, 6); heme oxygenase 1 (HO-1), involved as an anti-oxidant and wound healing agent (7, 8); S100 proteins, with both anti-microbial (9) and skin barrier properties (10); and Toll like receptor-2 with signaling function (10) but also important in anti-microbial defense (11,12).

Tyrostan – Wasserlöslicher Bräunungsbeschleuniger, Sinerga Product Information, Biesterfeld Spezialchemie GmbH, LifeScience –Cosmetic; Nr. 11-November 2010

Tyrostan ist ein N-Acyl Derivat von Tyrosin, gewonnen durch Kondensation von Tyrosin mit dem Kaliumersatz der Caprinsäure. Der Einsatz von Tyrostan stellt der Haut etwa 10% reines Tyrosin zusätzlich zur Verfügung, wodurch unter der Einwirkung von Sonnenlicht die Melaninprodution stimuliert und für eine schnelle Bräune gesorgt wird. Das für die Hautbräunung verantwortliche Pigment ist das Melanin, das in den Melanozyten gebildet wird. Die Ausgangssubstanz der Melaninbildung ist die Aminosäure Tyrosin. Durch die Aktivierung des Enzyms Tyrosinase werden über diverse nacheinander folgende Stoffwechselschritte die Melanine synthetisiert, wobei das UV-Licht ein wichtiger Aktivator ist. Die Bräunung der Haut bildet eine natürliche Schutzbarriere vor der UV-Strahlung der Sonne.

C.G. Benevenuto, M.A.S Di Matteo, P.M.B.G Maia Campos, L.R. Gaspar, **Influence of the Photostabilizer in the Photoprotective Effects of a Formulation Containing UV-Filters and Vitamin A,** IFSCC 2010 Buenos Aires, Argentina

Retinyl palmitate has been used in daily use moisturizing, antiageing and protective formulations since it acts on epithelization in dry and rough skin, as well as on keratinization

considered being abnormal. However, some studies report that this substance shows some photoreactivity and can form photoproducts, which can lead to the impairment of safety and efficacy of cosmetic products containing this vitamin. Consequently, cosmetic formulators have been doing many efforts to stabilize formulations containing vitamin A derivatives and other photounstable substances such as searching for new UV-filters or using photostabilizers to increase their photostability and consequently their safety and effectiveness. Thus, the objective of this research was to evaluate the influence of different photostabilizers on the photoprotective effects of a cosmetic formulation containing UV-filters and a vitamin A derivative.

S. Kiefer, M. Weibel, J. Smits, M. Juch, J. Tiedtke, N. Herbst, **A Liposomal encapsulated Blend of Citrusflavonoids for Skin Lightening,** IFSCC 2010 Buenos Aires, Argentina

Melanin, the substance responsible for the pigmentation of skin, is produced to protect the nucleus from harmful UV radiation and results in visible darkening of the skin.Freckles, age spots and melasmas are frequent undesired consequences of stimulated melanin production. Many cosmetic ingredients are used to lighten the skin, by inhibition of melanin production or stimulation of melanin decomposition. The use of flavonoids as cosmetic ingredients has long been known and is well established. The aim of this study was to find the ideal composition of flavonoids from various citrus fruit extracts for a skin lightening cosmetic ingredient. The subsequent liposomal encapsulation of the active ingredients enhances penetration of the active substances into deeper layers of the skin and produces a deposition effect due to film formation on the skin surface. Various citrus extracts were analyzed by HPLC-UV, with a C18 column (Uptisphere ODB) and isocratic elution mobile phase of 75% water, 10% methanol, 10% acetonitrile and 5% acetic acid.

T.S. Balogh, C A. Pedriali, R.M. Gama, C. Pinto, V. Bedin, R.T. Villa, T.M. Kaneko, M.V.R. Velasco, A.R. Baby, **Study of Sunless Tanning Formulations Using Shed Snake Skin as Alternative Membrane Model,** IFSCC 2010 Buenos Aires, Argentina

Sunless tanning formulations promote a secure and effective tan. The temporary pigmentation provided by these formulations resembles an UV-induced tan. The great majority of these formulations present dihydroxyacetone (DHA). This study evaluated the sunless tanning effect of carbomer gels and cold process self emulsifier base emulsions with different concentrations of a system constituted for DHA and N- acetyl tyrosine applied in the shed snake skin by Mexameter® MX 18. Eight sunless tanning formulations were developed, four gels and four emulsions (base, base plus 4.0, 5.0 and 6.0% w/w of a system constituted for DHA and N- acetyl tyrosine). Artificial tanning was induced in the shed snake skins (2,0 x 3,0 cm) by the application of the 30 mg/cm2 of each formulation. Mexameter® MX 18 was used to evaluate the shed snake skin tanning index, in the following intervals: T0 (before the application) and after 24, 48, 72, 168, 192 and 216 hours. It was verified that shed snake skins are promising substratum for *in vitro* sunless tanning efficacy tests, due to their similarity to the human *stratum corneum*.

M.E. Posternak, S.H. Perez Damonte, **Influence of Isopropyl Myristate in the Action of Externally Applied Vitamin K1 on the Skin pH and on the color of Erythema in Skins with Rosacea,** IFSCC 2010 Buenos Aires, Argentina

In this work, it was evaluated the influence of topic 5% vitamin K1 on the skin pH and on the color of erythema in patients with rosacea and the influence of replacing the mineral oil contained in the formulation with an enhancer of dermal penetration, isopropyl myristate, in 5% vitamin K1 creams on the skin pH and on the color of erythema. Four types of cream were prepared, all with pH 5 ± 0.1: 1) Base cream with mineral oil 2) Base cream with isopropyl myristate 3) 5% vitamin K1 cream with mineral oil 4) 5% vitamin K1 cream with isopropyl myristate. After 45 days of treatment, the statistical analysis of the measurements obtained with the MexameterR MX18 instrument shows that the two creams with 5% vitamin K1 reduce the color of erythema significantly. After 30 days of treatment, the cream with isopropyl myristate proved to be more effective than the cream with mineral oil as regards erythema treatment. Using the equipment Minolta ChromameterRCR-200 , on the other hand, no significant reduction was observed in the color of erythema with neither of the creams with 5% vitamin K1.

C. Selem, N. Delic, **Sphagnum Magellanicum Peat. Characterization and Proposal for Cosmetics Uses,** IFSCC 2010 Buenos Aires, Argentina

This paper focuses on the characterization of Spagnum Magellanicum peat, its properties and the different uses in cosmetic products. Studies were conducted to analyze the organic, inorganic and microbiological content of this material. The results determined that it is an important source of poliphenols with antioxidant capacity. It has anti-inflammatory action and is safe in contact with skin. It

has germicide properties. Humic substances have a large capacity to retain multivalent ions forming metalorganic complexes acting as a natural organic sequestrant. Because the intensity of UV light absorption it can be used in the formulation of coloured sunscreen emulsions and taking into account the other properties tested in the development of others cosmetic products. Considering the results obtained we found that Sphagnum Magellanicum peat has interesting properties for being used in the cosmetic industry coupled with the benefit of this raw material which has the important property of being natural and organic.

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.

J. Liu, W.Y. Man, C.Z. Lv, S.P. Song, Y.J. Shi, P.M. Elias, M.Q. Man, **Epidermal Permeability Barrier Recovery Is Delayed in Vitiligo-Involved Sites,** Skin Pharmacol Physiol, 2010; 23: p. 193–200

Background/Objectives: Prior studies have demonstrated that both the skin surface pH and epidermal permeability barrier function vary with skin pigmentation types. Although melanin deficiency is the main feature of vitiligo, alterations in cutaneous biophysical properties in vitiligo have not yet been well defined. In the present study, stratum corneum (SC) hydration, the skin surface pH and epidermal permeability barrier function in vitiligo were evaluated. Methods: A total of 30 volunteers with vitiligo comprising 19 males and 11 females aged 13–51 years (mean age: 27.91 8 2.06 years) were enrolled in this study. The skin surface pH, SC hydration, melanin/erythema index and transepidermal water loss (TEWL) were measured by respective probes connected to a Courage-Khazaka MPA5. SC integrity was determined by measuring the TEWL following each D-Squame application. The barrier recovery rate was assessed at 5 h following barrier disruption by repeated tape stripping. Results: In addition to SC hydration, both melanin and erythema index were significantly lower in vitiligo lesions than in contralateral, nonlesional sites, while no difference in skin surface pH between vitiligo-involved and uninvolved areas was observed. In addition, neither the basal TEWL nor SC integrity in the involved areas differed significantly from that in the unin volved areas. However, barrier recovery in vitiligo-involved sites was significantly delayed in comparison with uninvolved sites (40.83 8 5.39% vs. 58.30 8 4.71%; t = 2.441; p < 0.02). Conclusion: Barrier recovery following tape stripping of the SC is delayed in vitiligo. Therefore, improvement in epidermal permeability barrier function may be an important unrecognized factor to be considered in treating patients with vitiligo.

A.S. Ranti, M. Tilaar, W.L. Wih, M. Suryaningsih, **Whitening agent derived from combination of plants,** Personal Care September 2010, p. 21-23

Whitening products have shown tremendous growth in recent years. This is especially true of tropical places like Indonesia where the local women strive to have a lighter skin complexion. There are many harsh whitening products in the market; however, consumers are now shifting towards the safer, naturally derived whitening agents. Several aspects should be considered when utilising plant materials in cosmetic, such as, the quality of the plant materials, process, its stability, biological activity, and safety consideration. The aim of this study is to look for a whitening agent from an Indonesian botanical resource. This paper will describe a stable natural complex ingredient (SWC now referred to as the new whitening agent) extracted with ethanol from several plants.

M. Choi, J.-W. Choi, S.-Y. Lee, S.-Y. Choi, H.-J. Park, **Low-dose 1064-nm Q-switched Nd: YAG laser for the treatment of melisma,** Volume 21 (4) Informa Healthcare, Jul. 1, 2010

Abstract Background: Melasma is a common acquired pigmentary disorder which is sometimes hard to treat with conventional methods. Various kinds of modalities have been applied for the treatment of melasma but none shows constantly good results. Objectives: In this study, we would like to know the effect of low-dose 1064 -nm Q-switched Nd:YAG laser (QSNYL) on melasma and want to evaluate the changes of skin after laser treatment. Methods: Twenty melasma patients were enrolled. Two regions were evaluated from each patient; a total of 40 sites. The 1064-nm QSNYL at fluences of 2.0–3.5 J/cm 2 was used to treat the whole face, including the melasma lesions. The fluence was adjusted individually and increased until erythema was developed on the laser-treated area. The treatment was performed five times with a 1-week interval. Non-invasive measuring methods, including a chromatometer, mexameter, cutometer, visioscan and a corneometer, were used before and after treatment.

S.-W. Hwang, J.-H. Kang, S.-Y. Jung, J.-H. Choi, J.-K. Seo, D. Lee, H.-S. Sung, **Vitiligo Coexistent with Nevus Depigmentosus: This Was Treated with Narrow-Band UVB and These Lesions Were Followed Using the Mexameter®, a Pigment-Measuring Device**, Ann Dermatol Vol. 22, No. 4, 2010, p. 482-485

Nevus depigmentosus (ND) is a congenital, non-progressive, hypopigmented lesion that is usually stable throughout an affected individual's lifetime. The clinical features of vitiligo are similar to those of ND, but the two diseases have different treatment responses and prognoses. We report here on a rare case of vitiligo that was coexistent with ND. Both conditions were treated with narrow-band UVB. An 11-year-old boy presented with two distinct types of hypopigmented lesions, one on the forehead and the other on his back. The first was a hypopigmented patch with leukotrichia, and it was incidentally discovered 3 months before the child was examined at our clinic and it had rapidly increased in size. The second hypopigmented patch was detected at birth and it had slowly been increasing in size. The hypopigmented lesion on the child's forehead was diagnosed as vitiligo, and the one on his back as ND. Once- or twice-weekly narrow-band UVB treatment was initiated. Improvements in the two lesions were assessed with clinical photography and using a Mexameter® (Courage-Khazaka Electronic, Germany), which is a pigment-measuring device.

N. Ostovari, N. Saadat, S. Nasiri, H. Moraweg, P. Toossi, **The 308-nm excimer laser in the darkening of the white lines of striae alba,** Journal of Dermatological Treatment 21 (4): 229

To evaluate the true efficacy of the 308-nm excimer laser for darkeening striae alba using a modified approach. Methods: ten subjects were treated using the excimer laser on the white lines off striae, while the normal skin near to and between the lines was covered with zinc oxide cream. Assessment o efficacy was performed by colorimetric scores based on mexameter measurement and also digital photograps showing before – after laser therapy, which were compared by two independent dermatologists. The mexameter-based data analysis showed that the excimer laser was weakly effective in the repigmentation of the lines of striae.

M. Majeed, R. Trinidad, V. Pineda, G. Chan, T. Gabriel, J. Dayrit, C.A. Pelayo, L. Prakash, **A randomized, double-blind, placebo-controlled, comparative study,** Household and Personal Care TODAY, n 3/2010, p. 44-46

Hydroquinone, which is extensively used in the treatment of hyperpigmentary disorders is associated with known side effects. Safer, natural depigmenting actives are therefore being explored. A randomized, placebo controlled study in 50 human subjects, showed that the depigmenting effects of 0,25 percent tetrahydrocurcumin cream and 4 percent hydroquinone cream were comparable in a four week trial.No adverse reactions were noted from 0,25 percent tetrahydrocurcumin cream, while mild to moderate adverse effects were observed with 4 percent hydroquinone cream. 0,25 percent

tetrahydrocurcumin cream is therefore an effective and safe alternative to 4 percent hydroquinone cream in depigmenting formulations.

H. Yim, Y.-S. Cho, C.–H. Seo, B.-C. Lee, J.-H. Ko, D. Kim, J. Hur, W. Chun, J.-H. Kim, **The use of AlloDerm on major burn patients: AlloDerm prevents post-burn joint contracture**, BURNS, Vol. 36, Issue 3, p. 322-328

A total of 64 patients received AlloDerm graft selectively on joint areas during the study period from March, 2005 to July, 2007. From January to March, 2008, a total of 31 patients returned to our burn center to examine the functional results by measuring range of motion of joints. Additionally, the quality of grafted skin condition criteria of skin elasticity, scar thickness, trans-epidermal water loss, melanin and erythema level was measured in a total of 11 patients among them. By analyzing the limitation level of 55 joints excluding hand areas, we found that 24 joints (43.6%) showed no limitations, 12 joints (21.8%) showed limitations below 10%, 16 joints (29.1%) showed limitations between 10 and 19% and 3 joints (5.5%) showed limitations over 20%. The scar thickness of non-AlloDerm applied areas was 2.5 ± 0.9 mm and AlloDerm applied areas was 1.8 ± 0.7 mm ($p = 0.396$). Trans-epidermal water loss for non-AlloDerm applied areas was 20.9 ± 7.7 g/h/m^2 and AlloDerm applied areas was 10.8 ± 3.4 g/h/m^2 ($p < 0.001$). Erythema value for non-AlloDerm applied areas was 436.1 ± 65.8, whereas AlloDerm applied area was 394.4 ± 61.2 ($p < 0.001$). Acellular dermal matrix is a good option for treating major burns to prevent scar formation after burn and loss of joint function.

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.

Y.-H. Li, Y. Wu, H.-C. Wie, Y.-Y. Xu, L.-L. Jia, J. Chen, X.-S. Yang, G.-H. Dong, X.-H. Gao, H.-D. Chen, **Protective effects of green tea extracts on photoaging and photommunosuppression,** Skin Research and Technology 2009; 15; 338-345

It is well known that solar ultraviolet radiation (UVR) causes many detrimental events, e.g. sunburn, immunosuppression, skin carcinogenesis as well as photoaging. Acute UVR results in epidermal thickening and expression of proliferation and differentiation markers, such as Ki-67 and cytokeratins (CK)-1, 6 (3, 4).

J, Fluhr, **Objektive Messmethoden bei dermatologischen Erkrankungen,** 18th Congress of EADV Berlin, 2009

Der Kurs unter Leitung von Priv. Doz. Dr. Fluhr, Berlin, Prof. Jemec, Kopenhagen (Dänemark) und Prof. Berardesca, Rom (Italien) ist darauf ausgelegt, das Basisverständnis für biophysiklische Messungen der Haut zu vermitteln. Diese Messungen sollen dann für die quantitative Bewertung der Schwere und Verlaufs von spezifischen Hauterkrankungen herangezogen werden. Über die letzten drei Dekaden wurden multiple nicht-invasive Instrumente für die quantitative oder semi-quantitative Erfassung von hautphysiologischen Parametern entwickelt und validiert.

J.S. Choi, J.H. Moon, J.Y. Lee, C.H. Seo, A.Y. Jun, E.H. Choi, K.U. Jang, **Effect of Intradermal Injection of Placenta Hydrolysate to Postburn Hyperpigmented Skin,** J Korean Burn Soc, Dec 2009

The skin hyperpigmentation or hypermelanosis caused by burns results in social withdrawal due to cosmetic problem and depression as a psychiatric aspect. The treatment of the skin hyperpigmentation includes sunscreen, whitening material, skin massage, laser therapy and plastic surgery Placenta extract can be used to reduce and inactivate the synthesis of the important enzyme (tyrosinase) that compose melanin. This study was performed to estimate the effect of intradermal injection of placenta extract (placenta hydrolysate) for the postburn hyperpigmentation. Total 10 subjects who have postburn hyperpigmentation were selected. Two sites of skin area from each subject were randomly selected as possible as symmetrical body area, the one site was to be “Treated site” with placenta extract, the other site was untreated “control site”.

M. Mangues, J.M. Garcia-Anton, A. Calvillo, C. Carreño, **Assessment of new skin brightening agents,** Personal Care, November 2009, p. 31–36

Exogenous causes, particularly chronic ultraviolet light exposure, are a common factor in pigment abnormalities such as melasma, solar lentigines (or age spots), freckling, mottled pigmentation, and ephelides. There are numerous internal and external stresses that affect human skin pigmentation. Exposure to certain drugs and chemicals as well as the existence of certain disease states can result in hyperpigmentation. Post-inflammatory pigmentation, another skin hiperpigmentation disorder, usually develops after resolution of inflammatory skin eruptions like acne, contact dermatitis or atopic dermatitis.

A. Khaiat, P. Belinski, H. Lasser, Y. Kamron, **Unique technology for safe and effective skin whitening,** Personal Care, September 2009

Melanin, the dark pigment in the skin, is produced in the basal layer of the epidermis by specialized cells, the melanicytes, and transported, following its complete formation, to the upper layers of the epidermis where it enters into skin cells (keratinocytes) to give them their typical colour. Ageing-associated accumulation of melanin in the upper layer of the skin is the main cause for pigmentation disorders, which is observed in Asian skin as uneven hyperpigmentation at younger ages.

W. Pratchyapruit; **Grading of improvement and relapse in melasma of thai females after 8 weeks-treatment with a combined cream of hydroquinone, steoid and tretinoin;** ISBS Barcelona, 2009

Melasma is a common skin problem in any races including Asians. It commonly occurs in Thai females, age 30-40 years and females outnumber males about 13:1. In addition to multiple etiologic factors, the environmental factor of Thailand as a tropical and sunny climate country constitutes a definite factor responsible for improvement and relapse of pigmentation after any treatments. At present, the topical treatment consisting of hydroquinone (HQ), steroid and tretinoin together with sunlight protection is a standard treatment for melasma.

Y. Tian, T. Hoshino, C.J. Chen, Y.E.S. Yabe, W. Liu, **The evaluation of whitening efficacy of cosmetic products using a himan skin pigmentation spot model,** Skin Research and Technology 2009, 15; p. 218-223

To establish a pigmentation spot model on human skin and to assess whitening efficacy for whitening products by this established pigmentation spot model. Twenty subjects between 20 and 45 years old with skin phototype III or IV were selected. Three consecutive daily UV exposures were performed on buttockis of the subjects as follows: Day 1 = 1 minimal erythema dose (MED), Day 2 = 0,5 MED and Day 3 = 0,5 MED.

Positiver Effekt der Mani Bio-Olivenölcreme, www.mani.at/pages/gesundbheit/studie-zur olivencreme.php

Motivation der Studie war herauszufinden, ob die Mani Bio-Oliven Crème anti-inflammatorische (entzündungshemmende) Eigenschaften hat und zur schnelleren Wundheilung beiträgt. Bei Behandlung von leichten Verbrennungen mit dieser Creme ist aufgefallen, dass der Schmerz schnell nachlässt und die Haut sich schneller regeneriert. Aus diesem Grund hat die Firma Bläuel in Zusammenarbeit mit alchemia-nova und Unterstützung der österreichischen Forschungsförderungsgesellschaft mbH beschlossen, diesen Erfahrungswert zu überprüfen. Eine Studie von alchemia-nova kann in diesem Auftragsumfang auf keinem Fall einer klinischen ähnlich kommen und eine Bewertung auf heilende Eigenschaften kann nicht zu medizinischen Zwecken erfolgen.

M. Tilaar, W.L. Who, A.S. Ranti, S.M. Wasiaatmadja, M. Suryaningsih, **Hibiscus rosasinensis extract – Its whitening and moisturizing properties;** Household and Personal Care TODAY, No. 4/2009

The demands on whitening skin care products have shown tremendous growth in recent years, along with the expectation of its safety and efficacy. With the influence of back to nature trend, people prefer the products containing natural ingredients as they have perception that those kinds of products tend to be safe and compatible with their skin. As an answer for customer needs, Martha Tilaar Innovation Centre has conducted so many researches on potential plant extracts, which can deliver the whitening effect. Several aspects should be considered when utilizing botanical materials in cosmetic, such as, the quality of the plant materials, process, biological activity, and safety consideration.

D. Khazaka, C. Uhl, **More than 2 decades of bioengineering for efficacy testing and product recommendation,** Household and Personal Care TODAY, No. 1/2009

Due to high competition in the cosmetic and growing customer expectations, in the past two decades there has been a continuousdevelopment of new cosmetic products with more efficient ingredients covering new effects on the skin. Simultaneously to this, there was an increasing demand for new measuring techniques to substantiate the new product claims. The field of skin bioengineering has consequently been immensely enriched in the last years by inventing new physical and optical measurement methods for all kind of skin parameters.

S.H. Lim, S.M. Kim, Y.W. Lee, K.J. Ahn, Y.B. Choe **Change of biophysical properties of the skin caused by ultraviolet radiation-induced photodamage in Koreans,** Skin Research and Technology 2008; 14, p. 93-102

Ultraviolet (UV) irradiation affects the function and complecion of the skin by inducing changes in physical properties through formation of erythema, proliferation of epithelial cells, DNA damage, activation or inactivation of various enzymes and proteins, and free radical formation. In this study, the authors intended to observe the overall course of changes in barrier function and reflectance of the skin induced by photodamage, and healing reaction in the course of time, and alteration of skin complexion

*B. Sommer***, Regenerationsergebnisse nach Nervenverletzungen an der oberen Extremität – Einflussfaktoren und die Optimierung klinischer Untersuchungsmethoden**, Dissertation aus der Klinik für Plastische Chirurgieder Universität zu Lübeck, Lübeck 2008

Klinik der Nervenverletzungen: In der Handchirurgie nimmt die Verletzung peripherer Nerven der oberen Extremität mit 10% aller zu versorgenden Fälle einen wesentlichen Stellenwert ein. Durch motorische und sensible Ausfälle im entsprechenden Versorgungsgebiet des Nerven kommt es zum Verlust von sensomotorischen Fertigkeiten, die zu Bewältigung von Situationen im Berufsleben als auch im häuslichen Lebensumfeld von zentraler Bedeutung sind. Der hohe Anteil der postoperativen Arbeitslosigkeit [51] hat in den letzten Jahren den wirtschaftlichen Einfluss auf das Gesundheitssystem nach Verletzungen der oberen Extremität immer mehr in den Fokus neuer Studien gerückt [34,94]. Insbesondere Nervenverletzungen haben einen nachhaltigen Einfluss auf den sozioökologischen Status des Patienten und können zu erhöhten Behandlungskosten vor allem im Bereich Rehabilitation und sekundärer Rekonstruktion führen [34]. Trotz der hohen klinischen Relevanz können Nervenverletzungen im Rahmen vermeintlicher Bagatellverletzungen leicht übersehen werden.

A. del Pozo, M. Solans, C. Fernandez, M. Dolz, Corrias, M. Herráez, O. Diez-Sales, **Efficacy evaluation and characterization of chitosan nano emulsions with Spirulina hydro-glycolic extract,** IFSCC Barcelona 2008 Presentation and Poster

Nanoemulsions represent an interesting prospect for use as vehicles in the development of formulations to deliver active ingredients to the human body. Particularly, nanoemulsion formulations have been shown to be superior for transdermal and dermal delivery of hydrophilic and lipophlic compounds, compared to conventional vehicles, such as hydrogels and emulsions. Lecithins (phosphatidylcholines) have been used in several studies as surfactants for topical nanoemulsion vehicles. These surfactants are able to form nanoemulsions without cosurfactants. In this context, less surfactant is associated with lesser irritation.

G.W. Nam, E.J. Kim, H.K. Lee, S.M. Ahn, S.H. Kim, S.J. Moon, I.S. Chang, **New approach to a non-invasive visualization of whitening effects in UV-induced pigmentation using In vivo reflectance confocal microscopy,** IFSCC Barcelona 2008

Hyperpigmentation on face is a highly anxiety-producing symptom, especially for women from the aspect of beauty. Pigmentation of the skin is related to the amount of melanin that provides protection against UV radiation. *In vivo* reflectance confocal microscopy is a non-invasive imaging tool allowing visualization of the skin without tissue alteration, by placing a microscopy directly on the living skin.

*S.H. Pérez Damonte, C.L. Selem, C. Groisman***, Bi-Functional Study of Ion Calcium in the Skin,** IFSCC Barcelona 2008

The Calcium ion has an important function in the skin. Its gradient plays a role in regulating epidermal growth and differentiation *in-vivo*. In the intact epidermis, the extra cellular calcium content is low in both, malpighi and spinosum strata, but increases from the inner to the outer layer of the stratum granulosum [1]. Also, the calcium ion participates in the formation of the epidermal desmosomes, fibroblasts and keratinocytes, which provide the integrity and firmness of the skin [2]. All of these factors are important for the correct function of the epidermal barrier.

S.H Pérez Damonte, A.M. Martín, M. E. Daraio, **Safety Assessment for Nickel in Cosmetics,** IFSCC Barcelona 2008

Many environmental chemicals produce contact hypersensitivity or local inflammatory responses in the skin. Nickel released from metal objects is well known as a sensitizing agent in humans. Since the initial damage caused by nickel remains to be the leading cause of skin disorders such as allergic contact dermatitis worldwide, the aim of this study is to investigate if the content of nickel in cosmetics could produce such reactions.

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.

*L. Barbosa-Barros, C. Barba, L. Coderch, A. de la Maza, O. López***, Relevance of Lipid Self-Assembly in Nanostructures on the Skin Properties,** IFSCC Barcelona 2008

Phospholipid systems show high morphological diversity as a function of its structure and composition [1]. This fact plays an important role in the applications of aggregates such as micelles, bicelles and vesicles, which are extendedly used in skin research [2]. Thus, investigations that help clarifying the relation of structural parameters with the effect of the phospholipid aggregates in the skin are needed. Liposomes and micelles have often been used for skin treatment [3-4], although their application is debated due to some aspects. Liposomes seem to be too large to penetrate into the narrow interlamellar spaces of stratum corneum (SC) lipids [5]. Concerning to the micelles, the usual presence of surfactant in their composition supposes a problem due to the well-known irritating effect of these solubilising agents on the skin [6]. In this line, the use of bicelles (discoidal micelles constituted by phospholipids) for skin treatment may report advantages comparing to the use of liposomes and micelles: the size of bicelles is small enough for passing through the SC lipid lamellae and their composition consists exclusively of lipids.

B. Sadr, S. Davoudi, A. Firooz, S. Keshavarz, M. Shohrati, M. Naghizadeh, **Comparison of erythema and melanin level in sulfur mustard-induced chronic skin leasions with normal skin,** Abstract; EADV Paris 09/2008

Background: Sulfur mustard gas is a chemical agent that has been used in many wars, especially in Iran-Iraq war. This chemical agent affects many organs including lungs, eyes and skin and causes numerous acute and chronic lesions including erythema and hyperpigmentation, respectively.
Objective: This study was conducted to evaluate erythema and melanin in subjects with a history of exposure to sulfur mustard.

C. Huh, M. Choi, S. Lee, S. Kim, Y. Park, B. Kim, H. Park, S. Choi, S. Youn,K. Park, **Low dose 1064nm Q-switched Nd:YAG laser for the treatment of melisma,** Abstract; EADV Paris 09/2008

Background : Melasma is a common acquired pigmentary disorder that is known for its recalcitrance to the conventional treatment. Although Q-switched Nd: YAG laser (QSNYL) is widely used for the treatmemt of melasma, little has been published regarding its effect. Objectives: In this study, we would like to know the effect of low dose 1064nm QSNYL (MedLite C6, HOYA Conbio, CA) on the treatment of melasma objectively.

B. Nedelec, J.A. Correa, G. Rachelska, A. Armour, L. LaSalle, **Quantitative Measurement of Hypertrophic Scar: Intrarater Reliability, Sensitivity, and Specificity,** Journal of Burn Care & Research May/June 2008

The comparison of scar evaluation over time requires measurement tools with acceptable intrarater reliability and the ability to discriminate skin characteristics of interest. The objective of this study was to evaluate the intrarater reliability and sensitivity and specificity of the Cutometer, the Mexameter and the DermaScan C relative to the modified Vancouver Scar Scale (mVSS) in patient-matched normal skin, normal scar (donor sites), and hypertrophic scar.

B. Nedelec, J.A. Correa, G. Rachelska, A. Armour, L. LaSalle, **Quantitative Measurement of Hypertrophic Scar: Intrarater Reliability and Concurrent Validity,** Journal of Burn Care & Research May/June 2008

Research into the pathophysiology and treatment of hypertrophic scar (HSc) remains limited by the heterogeneity of scar and the imprecision with which its severity is measured. The objective of this study was to test the interrater reliability and concurrent validity of the Cutometer measurement of elasticity, the Mexameter measurement of erythema and pigmentation, and total thickness measure of the DermaScan C relative to the modified Vancouver Scar Scale (mVSS) in patient-matched normal skin, normal scar, and HSc.

H. Oshima, H. Takiwaki, **Evaluation of dark circles of the lower eyelid: comparison between reflectance meters and image processing and involvement of dermal thickness in appearance,** Skin and Research Technology, Vol 14, No. 2, May 2008

Dark circles of the lower eyelid (DCLE) are areas of darkened skin that may indicate hyperpigmentation and /or stasis in the lower eyelids and may represent a beauty problem in severe cases. Furthermore, a concave sunken eye area changes light reflection to create shadowing and accentuate dark circles (1).

Y.H. Li, J.Z. Chen, H.C. Wei, Y. Wu, M. Liu, Y.Y. Xu, G.H. Dong, H.D. Chen, **Efficacy and safety of intense pulsed light in treatment of melasma in Chinese patients**, Dermatol Surg, 2008 May;34(5): p. 693-700

Background: Melasma is commonly seen in the Asian population. Traditional therapies are less effective and may cause adverse effects. Objective: The objective was to study the efficacy and safety of a new intense pulsed light (IPL) device in the treatment of melasma in Chinese patients. Methods: Eighty-nine women with melasma were enrolled in this open-labeled study. Subjects received a total of four IPL treatments at 3-week intervals. Changes in facial hyperpigmentation and telangiectasis were evaluated using an objective, skin colorimeter (Mexameter, Courage & Khazaka), the melasma area and severity index (MASI), and a global evaluation by the patients and blind investigators. Results: Sixty-nine of 89 patients (77.5%) obtained 51% to 100% improvement, according to the overall evaluation by dermatologists. Self-assessment by the patients indicated that 63 of 89 patients (70.8) considered more than 50% or more improvement. Mean MASI scores decreased substantially from 15.2 to 4.5. Mexameter results demonstrated a significant decrease in the degree of pigmentation and erythema beneath the melasma lesions. Patients with the epidermal-type melasma responded better to treatment than the mixed type. Adverse actions were minimal. Conclusion: IPL treatment is a good option for patients with melasma. Adverse actions of IPL were minimal and acceptable.

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.

M. Andreassi, R. Bilenchi, G. Mariotti, M. Centini, L. Andreassi, C. Anselmi, **Phytic Acid: a Novel Topically Active Antioxidant Suitable for Cosmetic Preparations**, 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Many substances with antioxidant activity are present in the human skin, and their concentrations are generally higher in the epidermis than in the dermis. Under the effect of an oxidative stress, such as that caused by ultraviolet (UV) rays, these substances are strongly depleted, especially in the external epidermal layer

B. Piot, J. De Rigal, C. Yarhi, D. Compan-Zaouati, M. Lefebvre, **The skin sebageous function: in Asian and Caucasian climate influences,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Objective of the study: The first objective was to compare the sebaceous function in Asian and Caucasians, female, in real life conditions, using both intrumental measurement and visual evalutation by expert. A second objective was to investigate climate induced changes in the sebaceous function on a separate group of Japanese women, using the same methodology.

A.V. Anstey, A. Carter, K. Wyness, M. Kalavala, C. Edwards, **A Study to Assess the Use of TL01 Dose Response Curves to Inform an Incremental Regimen for Narrow Band UVB Phototherapy in Psoriasis,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Variation in narrow-band UVB (nbUVB) psoriasis treatment regimens between phototherapy units affects the starting dose, the dosage increments and the ceiling dose. In the UK it is now standard practice in most units to determine the minimal erythema dose (MED) on unaffected skin before phototherapy commences, which informs the starting dose selected for each patient. A dose-response curve for each patient can easily be constructed from the MED dose series without additional UVB irradiation.

C.G. Sason, V.M. Verallo-Rowell, **The Efficacy and Safety of Illuminants Anti-Perspirant with Gigawhite Versus Vehicle for Axillary Hyperpigmentation: a Double Blind, Parallel Group, Randomized Clinical Trial,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Axillary Hyperpigmentation is a significant cosmetic concern of people with skin of color, most especially those of women. The objective of this study wa to determine the efficacy and safety of illuminants Anti-perspirant with Gigawhite in the treatment of axillary hyperpigmentation. This study utilized a double blind randomised parallel group design.

N. Chua-Vivar, E.J. Masa, E. Handog, MS. Obleplass, **A Prospective Randomized, Double-Blind, Placebo-Controlled Trial on Efficacy of 10% Vitamin C Solution, Applied Using Iointophoresis Technology, in The Treatment of Melasma in Filipino Women,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Background/Objective: Melasma is one of the major cosmetic concerns among Asians and Hispanics. Among management options, hydroquinone has gained wide application despite the increasing incidence of adverse effects associated with its use, even in preparations of lower potency. Iontophoresis, a modality for enhancing drug penetration, is considered safe, effective, non-invasive and in combination with whitening agents is purported as safer alternatives in treating melasma.

P. Msika, J.L. Levy, L. Agopian-Simoneau, B. Chadoutaud, **Effect of a New Cosmetic Formulation on Reducing Cutaneous Pigmentation: A Clinical And Biometrological Approach,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Intracellular signal transduction pathways regulating melanogenesis imply PKC, camp through the activation of PKA and NO. A new whitening formulation, that targets these three different pathways, have been tested on melasma, with image analysis and a particular interest on the Qualiy of Life (QoL) of the volunteers. The tested product was a cosmetic cream containing protein kinase C (PKC) and protein kinase A (PKA) inhibitors, vitamins E and C.

C. Grolsman, C. Selem, S. Pérez Damonte, N. Delic. P. López, **Etidronic Acid a New Concept of Action for an Actie Ingredient of Conventional Use,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Study Purpose: The aim of this study is the Etidronic Acid use (EA). This active ingredient is a biphosphonate, the 1-Hidroxyethylidene-1, 1-di-phosphonic Acid. This active ingredient is well known in the medical field and its application in different treatments. EA is also listed as an ingredient of several cosmetic formulations such as soap bars and shampoos.

R. Yankova, **Skin Photoirritation and Provoked Pigmentation Rates Related to Topical Anti-Acne Agents,** 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

To investigate the skin photoirritation and pigmentation due to anti-acne topical treatments we enrolled fifty volunteers in a study to evaluate the UV erythema after applying ten anti-acne formulations. 3%, 5% and 10% benzoyl peroxide gel. 0,01 %, 0.025% and 0.05% tretinoin cream, 3% tetracycline hydrochloride ointment, 1% clindamycine phosphate lotion, 1,2% zinc acetate dihydrate + 4% erythromycin lotion, and 20% azelaic acid cream.

K. Lazou, N.S. Sadick, R. Kur-furst, M. Bonnet-Duquennoy, M. Neveu, C. Nizard, C. Heusele, S. Schnebert, E. Perrier, **The use of antisense strategy to modulate human melanogenesis**, J Drugs Dermatol, 2007 Jun;6(6 Suppl): p. 2-7

Background and objectives: Skin without significant dyschromia is an aesthetic goal of people worldwide. Current options for lightening skin could have significant drawbacks. The antisense strategy may be a viable alternative. The reactions in melanogenesis are catalyzed mainly by tyrosinase, tyrosinase-related protein 1 (TRP-1), and TRP-2. Activation of tyrosinase is associated with phosphorylation by protein kinase C-betaI (PKC-betaI) and formation of a complex between phosphorylated tyrosinase and TRP-1. The aim of this study was to use 2 antisense oligonucleotides to modulate the synthesis of the tyrosinase/TRP-1 complex, PKC-beta, or both by interacting with the targeted mRNA, thus whitening skin by interfering with melanogenesis at the translational level.

Methods/study design: In the in vitro study, the effect of the antisense oligonucleotides was evaluated by measuring the rate at which dihydroxyphenylalanine (DOPA) oxidase transforms LDOPA to DOPAchrome in the pathway for melanin biosynthesis. A reduction in the reaction rate compared to the controls corresponded to a decrease in the enzyme activity and, consequently, to a reduction of the formation of melanin pigments. To evaluate the in vivo lightening effect of the antisense oligonucleotides, 30 Asian women volunteers with pigmented spots on both hands applied the test product twice daily for 8 weeks. The test product was applied to 2 marked-off areas of the hand: a pigmented spot (to evaluate the effect of the test product on the color of the spot) and a nonpigmented spot area (to evaluate the effect of the test product on normal skin pigmentation). The lightening effect was evaluated by comparing chromametric and mexametric parameters before treatment, after 4 weeks, and after 8 weeks. Results: In vitro DOPA-oxidase activity was inhibited by 13% in melanocytes treated with the antisense sequence for PKC-BI alone, by 16% with the antisense sequence for TRP-1 alone, and by 36% with the association of 2 sequences. The inhibiting effect with both sequences required the

U. Eich, **Thermische Verletzungen im Kindes- und Jugendalter,** Dissertation Universität zu Lübeck 06.06.2007

Einführung**:** Jedes Jahr verunglücken circa 7100 Kinder im Alter von 0 bis 20 Jahren durch thermische Unfälle, sodass sie stationär in einem der 44 Betten für Kinder in einem Schwerbrandverletztenzentrum in Deutschland behandelt werden müssen[86]. Thermische Verletzungen entstehen im Kleinkind- und Vorschulalter vorwiegend (etwa 85%) in Form von Verbrühungen, d.h. bei Kontakt mit heißen Flüssigkeiten[18, 20, 84]. Der Inhalt einer Tasse mit heißem Wasser genügt, um bis zu 30% der Körperoberfläche eines Säuglings- oder Kleinkindes zu verbrühen[27]. Verbrennungen treten hingegen häufiger bei Schulkindern auf und werden vornehmlich durch Hausbrände, Grillunfälle und Experimentieren mit dem Feuer hervorgerufen[11, 43, 62]. Bei circa 3000 Kindern verbleiben nach der Therapie einschränkende Narben[43, 62]. Diese sind häufig hypertroph, verursachen Schmerzen und Juckreiz und können zu funktionellen Einschränkungen führen[32]. Gut sichtbare Narben, insbesondere an Gesicht und Händen, können zudem auch psychosoziale Probleme im Leben der Kinder nach dem Unfall hervorrufen[51].

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 DNA-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.

J.-L. Levy, L. Agopian, B. Chadoutaud, P. Msika, **Effect of a new cosmetic formulation on reducing cutaneous pigmentation,** AB174 J. Am. Acad. Dermatol.

Intracellular signal transduction pathways regulating melanogenesis imply PKC, camp through the activation of PKA and NO. A new whitening formulation that targets these three different pathways, has been tested on melasma with image analysis and a particular interest on the quality of life (QoL) of the volunteers.

H. Pham, P. Grimes, A. Parikh, B. Jones, **Efficacy of a skin lightening regimen to improve melasma,** AB170 J. Am. Acad. Dermatol.

Melasma is a common disorder of hyper-pigmentation. It is characterized by symmetrical brown-grey pigmentation affecting the cheeks, forehead, upper lips and chin. It impacts all women, although the disease is more commonly observed in darker racial ethnic groups. The condition is more common in areas with intense ultraviolet light exposure.

E. Berardesca, **Bioengineering as a Tool in Occupational Dermatology,** Dermatologie in Beruf und Umwelt, Jahrgang 55, Nr. 2/2007, p. 67

Bioengineering techniques have been proven to be helpful in monitoring changes in skin physiology and quantifying skin disease. Detection of subliminal or non visual changes is a challenge in order to predict potentially pathological conditions such as irritation or pre-clinical dermatitis.

H. Scheuvens, **Bestimmung des Irritationspotentials von Dusch- und Badeölen auf normaler bis trockener Haut**, Dissertation aus der Universitätshautklinik der Albert-Ludwigs-Universität Freiburg, 2007

Irritativ-toxische Kontaktekzeme und allergisch bedingte Dermatitiden sind ein zunehmendes Problem, das Patienten aller Altersgruppen betrifft. Nicht immer ist dabei die hautirritierende Substanz bekannt, die diese entzündlichen Hautveränderungen hervorruft. Bei diesen Patienten ist es daher besonders wichtig, eine sorgfältige, dermatologische Basisbehandlung durchzuführen, die die gestörte Permeabilitätsbarriere nach entzündlich bedingten Hauterkrankungen wieder herstellt und das erneute Eindringen von Irritanzien und Allergenen verhindert. Zu dieser Basistherapie gehören auch medizinische Dusch- und Badeöle mit ihrer rückfettenden Wirkung auf die ausgetrocknete Haut. Lodén et al. [38] konnten in ihren Versuchsreihen erstmals nachweisen, dass einige Dusch- und Badeöle die Hautbarriere schädigen können, indem sie hautirritierende Substanzen auf der Hautoberfläche zurücklassen. Sie zeigten weiterhin, dass andere Badeöle eine protektive Ölschicht auf der Haut aufbauen.

D. Seiler, **Untersuchung der Wirksamkeit von Pflanzenextrakten im Natrium-LaurylsulfatIrritanzientest,** Dissertation der Medizinischen Fakultät der Albert-Ludwigs-Universität Freiburg im Breisgau, Germany, 2006

Die Anwendung von Pflanzen in der Dermatologie geht auf eine lange Geschichte zurück und gewinnt in der heutigen Zeit wieder zunehmend an Bedeutung. Gerade im Bereich der Behandlung von entzündlichen Hauterkrankungen wächst das Interesse an Alternativen zu den Standardtherapeutika wie beispielsweise Kortikoiden. Um solche Alternativen auf ihre Wirksamkeit zu prüfen, bieten sich epikutane Testmodelle an. Sie haben folgende Gestaltung: Ein Irritans reizt gezielt ein Hautareal, so dass dort eine umschriebene Entzündung entsteht. Diese wird regelmäßig mit der Prüfsubstanz behandelt. Gleichzeitig werden Messparameter, die mit der Inflammation der Testareale korrelieren, in ihrem Verlauf beobachtet und beurteilt. So können die Prüfsubstanzen auf eine mögliche antientzündliche Wirkung getestet werden. In der Dermatologie anerkannte Epikutantest-Modelle sind z.B. der UV-Erythem-Test, bei dem UV-Strahlen die Haut irritieren, und der Natrium-Laurylsulfat-Irritanzientest (NLS-Test), bei dem das Detergens Natrium-Laurylsulfat (NLS) die Entzündung hervorruft. In zwei vorangegangenen Studien der Universitäts-Hautklinik Freiburg von Schempp und Mitarbeitern wurden bereits verschiedene Pflanzenextrakte und in der Praxis verwendete Standardprodukte im UV-Erythem-Modell untersucht [Kessler 2004; Hornstein 2004; Jocher 2005]. Hier zeigten einige Pflanzenextrakte, wie z.B. Salbei und Tormentilla, gute Effekte, die z.T. mit denen der Standardprodukte, beispielsweise Hydrokortison, vergleichbar waren [Hornstein 2004; Jocher 2005]. Aufgrund dieser Ergebnisse scheint die Nutzung einiger Pflanzenextrakte in der Dermatologie möglich und soll in dieser Studie mit dem NLS-Test weiter untersucht werden.

B.S. Schönfeld, **Effekte von pflanzlichen Antiphlogistika auf UV-induzierte Erytheme bei gesunden Probanden,** Dissertation der Universitäts-Hautklinik der Albert-Ludwigs-Universität Freiburg im Breisgau, Germany, 2006

Pflanzen und deren Extrakte werden in der Heilkunde seit Jahrhunderten verwendet. Teils begründet sich ihre Anwendung auf persönlichen Erfahrungen, Traditionen und Überlieferungen, teils auch, vor allem in der neueren Zeit, auf wissenschaftlichen Studien. Das Interesse an pflanzlichen Heilmitteln hat durch ein neues Naturbewusstsein in den letzten Jahren deutlich zugenommen. Die pharmakologische Schulmedizin ist in Verruf geraten, viele Patienten ziehen natürliche Heilmittel den starken Präparaten mit einer endlosen Liste an Inhaltsstoffen und Nebenwirkungen vor. In der

volkstümlichen Medizin wird die Phytotherapie als Alternative, in der modernen Medizin als Ergänzung zur Schulmedizingesehen und anerkannt.

T. Takekoshi, A. Asahina, M. Komine, K. Tamaki, **Treatment of Psoriasis Vulgaris with Narrow-band UVB and Topical Maxacalcitol**, 2006 Acta Dermato-Venereologica

Narrow-band ultraviolet B (nUVB) phototherapy is one of the most effective treatment modalities for patients with psoriasis, offering an excellent short-term beneft/risk ratio. However, its long-term adverse effects have not been thoroughly assessed. Therefore, photocombination therapies that combine UVB therapy with other treatment modalities are important and of high interest, not only to improve effcacy, but to reduce the cumulative UVB dose.

E.S. Park, J.I. Na, S.O. Kim, C.H. Huh, S.W. Youn, K.C. Park, **Application of a pigment measuring device - Mexameter® - for the differential diagnosis of vitiligo and nevus depigmentosus**, Skin Research and Technology 2006, 12, p. 298-302

Vitiligo, an acquired pigmentation disorder, is characterized by a loss of melanocytes and results in white skin patches. Nevus depigmentosus (ND) is frequently confused with vitiligo, and is defined as a congenital non-progressive hypopigmented lesion that is stable in terms of size and distribution throughout life (1).

T. Sherwood, **Just Below the Surface,** GCI Magazine (Dec. 2006), p. 34-35

In order to substantiate claims, manufacturers and brands must prove that their products do what they claim with the safety of the consumer in mind. The Cosmetic, Toiletry and Fragrance Association (CTFA) recently introduced its new commitment code for cosmetic companies, promoting industry self-regulation regarding product safety.

Beurteilung von frühkindlichen Verbrennungen – Objektivität optimiert Therapie; aesthetic Tribune, Ausgabe 8, Dezember 2006

Die Beurteilung von Narben erfolgt im Allgemeinen visuell und palpatorisch durch den Arzt. Darin liegt allerdings auch ein grosses Fehlerpotential begraben, da jeder Untersucher die Narbe subjektiv eurteilt. Was leistet die objektive Einschätzung mittels Apparaten? Zur Beurteilung von Narben hat sich die Vancouver Scar Scale (VSS) etabliert. Mit ihr werden Hautrötung, Pigmentierung, Erhabenheit und Elastizität beurteilt. Allerdings spielen hier zahlreiche subjektive Einflussfakoren durch den Untersucher mit, sodass diese Methode insbesondere den wissenschaftlichen Ansprüchen nicht genügt. Dr. Jörn Lohmeyer von der Plastischen, Hand- und Wiederherstellungschriurgie und Intensivstation für Schwerbrandverletzte in Lübeck stellte Methoden vor, Narben nach frühkindlichen Verbrennungsunfällen mit objektiven Kriterien zu beurteilen.

E. Berardesca, N. Cameli, G. Primavera, M. Carrera, **Clinical and Instrumental Evaluation of Skin Improvement after Treatment with a New 50% Pyruvic Acid Peel,** Dermatol Surg 2006

Pyruvic acid is an a-keto acid that presents keratolytic, antimicrobial, and sebostatic properties as well as the ability to stimulate new collagen production and elastic fibers formation. Because of its low *p*Ka and its small dimension, it penetrates rapidly and deeply through the skin, so far as to be considered a potent chemical peel agent. It has proven its efficacy for the treatment of many dermatological conditions such as acne, superficial scarring, photodamage, and pigmentary disorders. Pyruvic acid application usually induces intense burning, and the postpeeling period is characterized by erythema, desquamation, and, sometimes, crusting.

Y.J. Kim, M.Y. Kim, P.K. Lee, H.O. Kim, Y.M. Park, **Evaluation of natural change of skin function in split-thickness skin grafts by noninvasive bioengineering methods**, Dermatol Surg. 2006 Nov;32(11):1358-63

Background: Autologous split-thickness skin grafts (STSGs) are considered the mainstay for the treatment of large full-thickness wounds. There have been few studies reporting the natural change of the skin function in STSGs after procedure, however. Objective: The objective was to evaluate the natural change of the skin function in STSG usingnoninvasive bioengineering methods. Methods: Eighteen patients were eligible for the study. The skin functions of the graft and the controlsite were evaluated by an evaporimeter, corneometer, mexameter, and cutometer at Postoperation Days 0.5, 1, 2, 3, 6, 9, and 12 months. Results: Transepidermal water loss (TEWL) of the graft was maintained around that of the normal skin. The values of the skin hydration testing generally decreased during the follow-up period. Erythema was highly maintained for the whole period. For the pigmentation, the ratio tended to increase after 6 months. The skin pliability of the graft was abruptly decreased at 0.5 month, and it recovered from 3 to12 months. The value did not reach that of

the normal skin, however. Conclusion: Our results showed that the STSGs had changed within the frame of the skin function, including the TEWL, epidermal hydration, color, and pliability, throughout 1 year after surgery. The authors have indicated no significant interest with commercial supporters.

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.

A.G. James, J.E. Pople, W.E. Parish, A.E. Moore, N. Dunbar, **Histological evaluation of hyperpigmentation on female Filipino axillary skin**, Int J Cosmet Sci, 2006 Aug;28(4): p. 247-253

Females in South East Asia (Thailand, Indonesia and the Philippines) show concern about dark areas of skin which develop in their underarms, but little is known about the features differentiating pale and hyperpigmented axillary skin in the general population. To investigate this, a histology study was undertaken in the Philippines to define the aetiology of underarm darkening, which is postulated to be a mild form of postinflammatory hyperpigmentation (PIHP). Punch biopsies were taken from dark and light axillary skin sites of 20 female subjects, of whom seven had hyperpigmented underarms, based on an instrumental (Mexameter MX-18, Courage and Khazaka Electronic GmbH, Cologne, Germany) measure, and 13 had not. Histological and immunohistochemical analyses were undertaken using a range of stains and antibodies, including haematoxylin-eosin for general histopathology, Masson-Fontana for melanin, anti-CD68 for monocytes and macrophages, Van Gieson's technique for fibrosis, anti-proliferating cell nuclear antigen for cell mitosis, and the melanocyte-specific immunostains, anti-tyrosinase and antityrosinase-related protein 1. In most cases, dark skin sites from hyperpigmented panelists had increased intensity of Masson-Fontana, anti-tyrosinase and/or anti-TRP1 staining, indicative of melanocyte stimulation and increased melanin production. Furthermore, hair plucking emerged as a key stimulus to increased pigmentation. The trauma of hair plucking slightly increased the number of infiltrating mononuclear cells and macrophages that ingested melanosomes leaking from the damaged epidermis, more so in the skin of hyperpigmented panelists; this, in turn, potentially increases pigmentation. However, cell infiltration was focal, mainly near the plucked follicles, and not indicative of diffuse inflammation. The results from this study support the hypothesis that axillary darkening is mild PIHP, characterized by increased epidermal melanin, following stimulation or mild irritation of skin, with hair plucking as a key factor in this process.

W. Geissel, **Gesunde Haut durch gute Beratung**, Igel Plus: Juni 2006, p. 18-19

Wird ein Mensch in der Sonne überhaupt braun und wenn ja, wie schnell und wie intensiv? Bekommt er schnell einen Sonnenbrand? Mit einer kurzen Anamnese lässt sich der Hauttyp eines Menschen grob in die Phototyp-Skala einordnen, sagt PD Joachim Fluhr von der Klinik für Dermatologie der Universität Jena.

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.

P. Granata, R. Maffei Facino, A. Ghirardini, E. Berardesca, G. Primavera, M. Carrera, **Tyrosyl-Histidine Dipeptide: A new Approach against Premature Aging,** Presentation at the IFSCC in Florence 2005

Oxidative fragmentation of polyunsaturated fatty acids in the skin generates cytotoxic aldehydes, mainly 4-hydroxy-*trans*-2-nonenal (HNE), involved in premature skin aging and photo-

aging, due to the formation of collagen and elastin cross-links, skin enzymes inactivation, accumulation of lipid peroxidation products. Since histidine-containing dipeptides have been recently shown to possess carbonyl quenching activity, we developed a series of different dipeptides with the aid of combinatorial chemistry and each of them was subjected to antioxidant and anti-carbonyl assays, in a cell-free model using the ORAC assay (Oxygen Reactive Antioxidant Capacity) for anti-lipoperoxidant activity, HPLC analysis for the evaluation of the HNE quenching ability and LC-MS/MS for the characterization of the site and of the mechanism of adduction.

G. Oberto, A. Berghi, F. Portolan, E. Bauza, C. Dal Farra, N. Domloge, **Cotton Honeydew Oligosaccharides for Hair Care Cosmetics,** Presentation at the IFSCC in Florence 2005

Cotton honeydew extract is a unique composition of oligosaccharides, including fructose, glucose,inositol, melezitose, saccharose, trehalose, and trehalulose. The interaction of these oligosaccharides provides a stimulating effect on keratin synthesis, which allows for protection against nutrient deprivation and osmotic stress. Consequently, we were interested in studying the effect of these oligosaccharides on human hair, using scanning electron microscopy.

R. Ismail, S. Ahmad, **Sodium lactates in skin lightening formulations: its synergy with other skin lightening agents**, Presentation on the IFSCC in Florence 2005

In many Western countries, skin lighteners and related products sold in the market are aimed to prevent and treat melasma, freckles and age spots. However in Asia, skin-lightening products are primarily used to achieve the beauty ideal of a white and flawless skin, although they also treat problem areas.

P. Tengamnuay, T. Rojanadilok, **Comparative Efficacy Evaluation of Some Commercial Skin Whitening Lotions**, Presentation on the IFSCC in Florence 2005

To have a white, smooth skin appears to be the most desirable feature among women, especially those from Asian countries like China, Japan, Korea and Southeast Asia. As a result, a great number of whitening products is available on the market. The active whitening ingredients in these products range from conventional UV filters to highly sophisticated combination of various skin-whitening agents.

J.W. Fluhr, M. Breternitz, M. Flach, P. Elsner, **Acute experimentally induced barrier disruption by tape stripping is influenced by pressure, time and anatomical location: Integrity and Cohesion assessed by sequential tape stripping,** Presentation on the ISBS Meeting 2005 in Philadelphia and Skin Research and Technology 2005, 11 (abstracts)

Tape stripping is a well-known procedure in stratum corneum physiology research. Adhesive films are pressed to the surface of SC and then removed. The superficial layers of SC adhere on the film and are accessible for further investigations. Although this method is widely used, only few information about standardization are known.

M. Ardigò, P. Jacovelli. G. Leone, M. Eitaro, E. Berardesca, **Microscopic melanocytic patterns in vitiligo treated and untreated patients analyzed with reflectance confocal microscopy and image analysis**, Presentation on the ISBS Meeting 2005 in Philadelphia and Skin Research and Technology 2005, 11 (abstracts)

Vitiligo is common cutaneous disorder characterized by a loss of melanocytes at dermal-epidermal junction, which results in the complete absence of melanin and the consequent clinical presentation as achromic patches. I listological features and laboratory data support apoptohe mechanism of disappearing of melanocytes, rather than necrosis. Based on recent morphologic findings *in vivo* a new theory is suggested proposing melanocytorrhagv as the primary defect. Confocal scanning laser microscopy of live human skin is a new technique that allows to investigate the correlation between *in vivo* cellular and morphologic features to histology by the effect of wavelength on imaging and the role of melanin as a contrast agent. In this tecnique melanin provided strong contrast bv increased backscatlering of light such that the cytoplasm in heavily pigmented cells imaged brightly. Also keratinocytes show reflectance proprieties (less than melanocytes) because of the requirement of melanin from melanocytes. Dynamic processes can be easily evaluated and more 'specimens' can be analyzed in comparison with biopsies (not well tolerated bv vitiligo patients). The purpose of our study was the morphological and functional evaluation of vitiligo lesions vs normal skin and the effect of UVB radiation on vitiligo. 20 subjects (phototype 11- V) affected by diftuse vitiligo, in treatment with UVB-narrow band phototherapy and 10 healthy controls entered the study. Uninvolved and lesional skin were evaluated by *in vivo* confocal microscopy (Vivascope 1500, Lucid, USA). Obective quantification of pigmentation assessed by reflectance spectophotomertv (Mexameter.

Courage and Khazaka, Germany) on affected and healthy skin was done; spectrophotomctric analysis and binary transformation of confocal image were also performed. Differences in melanocytes density, morphology and distiibution were observed in correlation with different levels of repigmentation and phototype. In conclusion, *in vivo* confocal microscopy potentially offers dermatologists an instant and non invasive diagnostic tool. Apparently normal skin of vitiligo patients disclosed abnormalities in number, morphology anil distiibution of melanocytesas compared to normal individuals. Affected skin presents modification in morphologyand number of melanocytes as a response to the UVB radiation.

S. Savic, S. Tamburic, S. Vesic, G. Vuleta, C. Müller-Goymann, **Effect of Vehicle Composition on In vitro/ in vivo Hydrocortisone Penetration,** Presentation at the 14th EADV Congress, London, Oct. 2005

Diffusion/penetration properties of locally applied drugs are affected by both the status of the stratum corneum (SC) and by the composition and colloidal structure of the vehicle.

New Whitening agent based on "theory of melanin diet", Clairju brochure 2005

Skin color is not the same among races. What causes the difference in skin color? The most imporatnt factor for skin coloration is melanin pigment, though skin color is also influenced by blood circulation and the skin's surface condition.

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.

H. Lautenschläger, **Individuell den Sonnenschutz messen**, Kosmetik International, Vol. 8, 2004.

Die Sonne aktiviert unseren Stoffwechsel und fördert unser Wohlbefinden (siehe Ki 7/04, S. 77). Allein die richtige Dosis entscheidet über die heilende oder schädigende Wirkung. Ein Übermaß an Sonnenlicht führt zu Sonnenbrand und kann bei langfristiger Lichtschädigung das Risiko für Hautkrebs erhöhen. Die Abnahme der Ozonschicht wird für den deutlichen Anstieg von Hautkrankheiten, Hautkrebs und Allergien der Atemwege verantwortlich gemacht.

K.L. Gebhard, **Evaluation und Standardisierung von Hauttestungen zur Diagnostik der irritativen Kontaktdermatitis**, Dissertation des Fachbereichs Humanmedizin der Philipps-Universität Marburg, April 2004

Die irritative Kontaktdermatitis (IKD) ist eine im klinischen Alltag häufig anzutreffende Erkrankung, deren Diagnostik jedoch, aufgrund ihres morphologisch sehr ähnlichen Erscheinungsbildes zur allergischen Kontaktdermatitis (AKD) (Björnberg, 1968) und anderen dermatologischen Krankheitsbildern, oft sehr schwierig ist. Zur Erleichterung der Diagnostik werden routinemäßig epikutane Irritationstests durchgeführt. Mit Hilfe solcher Tests kann die Diagnosestellung einer IKD vereinfacht, aber auch frühzeitig Hautrisikogruppen identifiziert werden. Ein Standardtest ist hier der Natriumlaurylsulfat (NLS)-Test. Dieser Test besteht klassischer Weise aus einer 24-stündigen Applikation okklusiver Testpflaster, die mit einer 0,5 %-igen NLS-Lösung in aqua destillata (aqua dest.) getränkt sind. Zur objektiven Messung der Testergebnisse stehen verschiedene nicht-invasiveb hautphysiologische Meßmethoden zur Verfügung, z.B. die Messung des transepidermalen Wasserverlustes (TEWL).

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).

C. Stoltz, **New biological results obtained in the Fight against Skin Pigmentation Disorders,** Personal Care Ingredients Asia, Guangzhou, March 2004

Skin pigmentation is an international preoccupation. Natural or photo-induced ageing, hormonal disorders (contraceptives, pregnancy, menopause, etc.), repeated exposure to the sun and irritation or inflammation reactions lead to the appearance of skin pigment problems. The complexion is not uniform and highly unattractive marks appear on the skin.

S.T. Casares, A. Castro de Catsro, L.A. Castro Sáder, **Efectividad de activos naturales para evitar la formacion de la piel de naranja**, XVI Congreso latinoamericano e iberico Quimicos Cosmeticos Colamiq, Cartagena, 2003

La aparacion de la aestetica piel de naranja conjuntamente con la disminucion de la forma, sedosidad, y brillo de la piel de un cuerpo joven, afecta la imagen femenina de tal forma que hoy en dia, se ha transformado en un verdadero problema social y psicologico, padecerla es peor que tener algun mal que genere dolor.

L. Petit, G.E. Piérard, **Analytic quantification of solar lentigines lightening by a 2% hydroquinone–cyclodextrin formulation,** JEADV (2003)17, 546–549

Abstract: Background: The innate melanin pigmentation of skin is modulated during lifetime by a series of factors, including ageing and chronic ultraviolet light exposure. Actinic lentigines may be of particular concern from a cosmetic point of view. Conventional hypopigmenting agents are usually deceptive. Using cyclodextrins to form inclusion compounds with these agents might represent a more active drug delivery system. Objective: To assess sensitive and objective methods predicting the effects of a 2% hydroquinone–cyclodextrin formulation on solar lentigines. Study design: Thirty Asian adults applied a 2% hydroquinone–cyclodextrin formulation once daily on solar lentigines of a forearm for 2 months. The other untreated forearm served as a control. Monthly assessments were performed using skin colorimetry and fluorescence video recording combined with image analysis. Corneomelametry following photodensitometry of cyanoacrylate skin surface strippings was performed after melanin staining of the samples.

J. Wiechers, S. Swaminathan, **The equaliser,** SPC Asia, Nov. 2003

In the quest to find the fountain of youth for skin, formulators of personal care products search for ingredients with the potential to change skin back to the way it was when we were young adults. Formulators have yet to find these magic ingredients but in their search they have devised skin-toning materials that go a long way towards biologically changing the skin.

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.

A.E. Sagiv, Y. Marcus, **The connection between in vitro water uptake and in vivo skin moisturization,** Skin Research and Technology 2003, 9, 306-311

Adding hydroxyl groups to a consecutive set of polyhydroxyalkanes increases the humectancy of the polyols in vitro. This elevation was found to be linear at low relative humidities (Relative humidity = 31,9 % and 37°C). In vivo, moisture was returned to normal within a week in all three groups. However, only glycerol managed to abolish the erythema within 7 days.

M. Augustin, **Phytotherapie bei Hauterkrankungen: Möglichkeiten und Grenzen**, Präsentation 2003

L.R. Gaspar, P.M.B.G. Maia Campos, **Evaluation of the protective effect of alpha-tocopheryl acetate in a sunscreen, preventing erythema formation, transepidermal water loss and sunburn cell formation,** IFSCC, Vol. 6, No. 3/2003

Nowadays, vitamin E acetate is used as an antioxidant and moisturizer in sunscreens. Although free vitamin E presents UV protection effects, little data has been forthcoming documenting the beneficial effects of vitamin E acetate on cutaneous photodamage, when combined with sunscreens. The aim of this study was to evaluate the protective effect of a sunscreen formulation with or without vitamin E acetate on erythema in hairless mice, transepidermal water loss (TEWL) and sunburn cell formation.

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.

H. S. Oh, M. H. Lee, S. Y. Park, H. C. Kim, **New Skin colour analysis technique**, Skin Research and Technology, Vol. 9, No. 2, May 2003, Abstract No. P114

It is very important aspect in skin color analysis that the objective evaluation of color distribution in same image. But conventional spectrophotometer are able to analysis as average value of region of interest (ROI) not to color distribution analysis. We tried to develop the new skin color analysis technique so as to objective measured skin color distribution as a pixel or ROI using liquid crystal tunable filter (LCTF) and CCD camera (so called Skin Color Distribution Analyser: SCDA).

W. Manuskiatti, A. Sivayathorn, P. Leelaudomlipi, R.E. Fitzpatrick, **Treatment of acquired bilateral nevus of Ota-like macules (Hori's nevus) using a combination of scanned carbon dioxide laser followed by Q-switched ruby laser,** J Am Acad Dermatol, 2003 Apr;48(4): p. 584-591

Background: Acquired bilateral nevus of Ota-like macules (Hori's nevus) is a dermal pigmented lesion commonly seen in middle-aged women of Asian descent. The Q-switched ruby laser (QSRL) has been used successfully to treat a variety of benign pigmented lesions. Multiple, sequential treatments are typically required for complete clearance of the dermal pigmented dermatoses. Objective: The purpose of this study was to determine the efficacy of QSRL in the treatment of Hori's nevus and the beneficial effect of epidermal ablation using the scanned carbon dioxide (CO(2)) laser before QSRL. Methods: A total of 13 women from Thailand with Hori's nevus were randomly treated with the scanned CO(2) laser followed by QSRL on one side of their face, and QSRL alone on the other side. The same fluence of QSRL was used on both sides in individual patients. The treatment response was objectively evaluated by measuring the melanin index using a Mexameter (Courage & Khazaka Electronic GmbH, Köln, Germany), and subjectively assessed by the patients before treatment and 3 and 16 months after treatment. Adverse sequelae of the treatment and the patients' tolerance were also evaluated at the same follow-up visit. Results: The 3- and 16-month posttreatment melanin index was significantly decreased compared with that of pretreatment on both treated sites and this corresponded to the patients' subjective evaluations. The response rate, defined as "the percentage of reduction in melanin index," was significantly higher on the sides treated with scanned CO(2) laser followed by QSRL, compared with the sides irradiated with QSRL alone at both follow-up visits. At the 3-month follow-up, the most common adverse effect was hypopigmentation, found in 15% (2 of 13) of the patients on the sites treated with QSRL alone, and on the sites treated with scanned CO(2) laser followed by QSRL (8%, 1/13). Erythema was observed in 15% (2/13) of the patients only on the sites that received combination treatment. However, no adverse sequelae were observed at the 16-month posttreatment follow-up. Conclusion: Epidermal ablation with scanned CO(2) laser before the use of the pigment-specific laser may be an effective technique for increasing therapeutic efficacy in the treatment of dermal pigmented dermatoses.

A. Castro de Castro, **Evaluacion in vivo de despigmentantes de origen natural y/o biotecnologicos,** Actualizaciones Terapéuticas Dermatológicas y Estéticas, Vol. 25, No. 3

Teniendo presente la alta incidencia de hiperpigmentaciones, y la necesidad de obtener un producto seguro, efectivo y sin reacciones adversas, nos propusimos evaluar in vivo la accion despigmentante de una sustancia obtenia por Biotecnologia mezclada con extractos naturales, que denominamos “N-M” contra otras ya conocidas de origen quimico y vegetal, que correspondian al Extracto de Glycirrhiza Glabra, Acido Kojico, Hidroquinona y Extracto de Fagus Sylvatica.

C.M. Schempp, B. Winghofer, K. Müller, J. Schulte-Mönting, M. Mannel, E. Schöpf, J.C. Simon, **Effect of oral administration of Hypericum perforatum extract (St. John's Wort) on skin erythema and pigmentation induced by UVB, UVA, visible light and solar simulated radiation**, Phytother Res. 2003 Feb;17(2): p. 141-6

Hypericin from St John's wort (Hypericum perforatum L.) is a photosensitizing agent that may cause a severe photodermatitis when higher amounts of St John's wort are ingested by animals. Although Hypericum extracts are widely used in the treatment of depressive disorders, only a little information on the photosensitizing capacity of St John's wort in humans is available. In the present

prospective randomized study we investigated the effect of the Hypericum extract LI 160 on skin sensitivity to ultraviolet B (UVB), ultraviolet A (UVA), visible light (VIS) and solar simulated radiation (SIM). Seventy two volunteers of skin types II and III were included and were divided into six groups, each consisting of 12 volunteers. In the single-dose study the volunteers (n = 48) received 6 or 12 coated tablets (5400 or 10 800 microgram hypericin). In the steady-state study the volunteers (n = 24) received an initial dose of 6 tablets (5400 microgram hypericin), and subsequently 3 x 1 tablets (2700 microgram hypericin) per day for 7 days. Phototesting was performed on the volar forearms prior to medication and 6 h after the last administration of Hypericum extract. The erythema-index and melanin-index were evaluated photometrically using a mexameter. After both single-dose and steady-state administration, no significant influence on the erythema-index or melanin-index could be detected, with the exception of a marginal influence on UVB induced pigmentation ($p = 0.0471$) in the single-dose study. The results do not provide evidence for a phototoxic potential of the Hypericum extract LI 160 in humans when administered orally in typical clinical doses up to 1800 mg daily. This is in accordance with previous pharmacokinetic studies that found hypericin serum and skin levels after oral ingestion of Hypericum extract always to be lower than the assumed phototoxic hypericin threshold level of 1000 ng/mL.

A. Castro, **Quantitative measurement of skin color changes with visual assessment correlation,**

The findings confirmed the suitability of developed clinical trial protocol for skin whitening efficacy evaluation using the Mexameter MX 16 as a tool for the quantitative measurement of skin color changes. The procedure of standardization used in the study is simple and workable in a clinical setting. Factors of importance include the control of test site as well as environmental controls.

R. Huei Chen, W. Yuu Chen, **Skinhydration 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.

N. Koshti, S. Naik, **An absorbing matter,** SPC Asia, November 2002

The harmful effects of solar UV radiation on skin and hair are well documented. The damage to white skin can be extremely severe. It starts with erythema, goes on to sunburn and can ultimately end in skin cancer. The damage to hair, particularly blonde, is significant, too. Solar UV radiation makes hair brittle, rough and difficult to comb. Human hair has been shown to lose tensile strength as a result of cleavage of the disulphide bond of hair keratin upon exposure to UV radiation.

A.C. Dweck, **Tamanu Oil (Calophyllum inophyllum),** International Journal of Cosmetic Science, 2002, 24

Tamanu Oil has been used traditionally in the South Pacific as a local medicine for a variety of purposes. The chemistry is complex and unusual, perhaps helping to explain some of the impressive physiological actions possessed by this plant. One of the many possible reasons for such incredible results and diversity of uses is Tamanu's unique absorption properties. This enables the oil to reach all three layers of the skin: epidermis, dermis and hypodermis. Tamanu oil has been proved to have cicatrizing, antibacterial, anti-neuralgic and anti-inflammatory properties. This combined with it's unique absorption ability has resulted in Tamanu being used as a treatment for ailments ranging from scars, cuts, burns, rashes, stings, psoriasis, eczema and sores to rheumatism, neuralgia and sciatica.

L. Maeyama, **Synergistic whitening complex with Waltheria indica extract and ferulic acid,** Personal Care, November 2002

Melanins are black polymeric pigments that determine skin and hair color. An abnormal increase in the amount of melanin in the epidermis is the reason for hyperpigmentation such as cloasma, freckles, etc. melanin is synthesized by specialized cells, the melanocytes, which are located in the basal layer of the epidermis. Stored in melanosomes (granules in the melanocytes), the melanins are distributed to keratinocytes surrounding the melanocytes.

L. Maeyama, **Whitening complex with waltheria indica extract and ferulic acid,** Cosmetics & Toiletries, Vol. 117, No. 10, October 2002

Waltheria indica extract, ferulic acid and certain other ingredients act synergistically in a whitening complex that inhibits tyrosinase and provides mild exfoliation.

L.M. Rodrigues, P.C. Pinto, P. Lamarao, **After-sun claims substantiation: experimental criteria to assess the in vivo effects of sun care products under controlled-using conditions,** Cosmetics & Toiletries, Vol. 117, No. 10, October 2002

The authors describe a practical method of substantiating claims of "after-sun" products. Ten healthy women 35-65 years old were irradiated on both legs (antero-lateral) in a laboratory for six sequential days using an indoor solarium-type UV source. Efficacy assessment endpoints were defined from the product's typical claims.

G. Yener, T. Incegül, **Importance of protection from harmful effects of solar radiation by using solid lipid micropheres of UV filters,** Journal of Cosmetic Science, Vol. 53, No. 5, September/October 2002

Sun protecting substances are capable of protecting humans from harmful effects of solar radiation such as aging and skin cancers. Due to the depletion in ozone layer, research regarding to sun protection has become a major concern. Since these preparations are often applied an large skin areas even low penetration rates can cause significant amount of chemical UV absorber to enter the body. Sun protecting preparations need to achieve a controlled release.

L.R. Caspar, P.M.B.G. Maia Campos, **Evaluation of the protective effect of alpha-tocopherol acetate in a sunscreen, preventing erythema and transepidermal waterloss**, Posters of the 22nd IFSCC Congress, Edinburgh 23.-26. Sep. 2002

The recent rapid growth of sunscreens marketing indicates that even though a suntan is still desired, people are nevertheless quite conscious of accompanying dangers like actinic changes (wrinkling, premature ageing of the skin, irregular thinning of the epidermis, hyperpigmented macules), development of premalignancies (solar keratoses) and skin cancer (melanomas, basal and squamous cell carcinomas) occurring as a result of excessive ultraviolet (UV) radiation.

J.W. Wiechers, F.J. Groenhof, V.A.L. Wortel, Ri.M. Miller, N.A. Hindle, A. Drewitt-Barlow, **Octadecenedioic Acid for a More Even Skin Tone,** Cosmetics & Toiletries July 2002, Vol. 117, No. 7

Octadecenedioic acid, a new nature-derived ingredient made via biofermentation from oleic acid, bas demonstrated efficacy in a variety of applications, including skin toning, dandruff reduction and deodorancy.

A. de Castro, **Efectividad de cremas antienvejecimiento con activos naturales,** GCI Latinoamerica, Vol. 1, No. 2, Mai-August 2002,

La autora describe un estudio con el uso de una crema que contiene una mezcla de filtros solares fisicos, extractos vegetales, hidratantes, antirradicales libres, sustancias antiinflamatorias con el objetivo de comprobar la eficacia de materias primas de origen vegetal en el tratamiento y prevencion del fotoenvejecimiento.

K. Yoshimura, K. Harii, T. Aoyama, T. Iga, **Experience of a strong bleaching treatment for skin hyperpigmentation in orientals,** www.st.rim.or.jp/~ktyoshi/list/ra-prs.html

The protocol was composed of two steps: a bleaching step (2-6 weeks) and a healing step (2-6 weeks). 0.1-0.4% all-trans retinoic acid aqueous gel was originally prepared and applied concomitantly with hydroquinone, lactic acid ointment for bleaching. After obtaining sufficient improvement of the hyperpigmentation, corticosteroid was topically applied with hydroquinone and ascorbic acid in the healing step. Improvement was evaluated with a narrow-band reflectance spectrophotometer.

Validation experiments, Astron Clinica, www.fellows.rcsed.ac.uk/personal/marcmoncrieff/ch4.pdf

This study represents the first clinical trial with the SIAscope, a system that produces information about the haemoglobin, total melanin, dermal melanin and collagen content of the epidermis and papillary dermis within the region of interest scanned. Studies have been performed that measured the theoretical accuracy of the system in determining these parameters (Cotton, 1998; Hojjatoleslami et al., 2000). It was decided that experiments should be undertaken that could determine whether the SIAscope was indeed measuring these parameters. The four sets of experiments determining each of the SIAscope parameters are described below in the style of a short paper.

T. Nguyen, E.K. Novak, M. Kerminani, M. Kermani, J.W. Fluhr, L.L. Peters, R.T. Swank, **Melanosome Morphologies in Murine Models of Hermansky-Pudlak Syndrome Reflect Blocks in Organelle Development**, Society for Investigative Dermatology, 2002
Hermansky-Pudlak syndrome is an autosomal recessive disease characterized by pigment dilution and prolonged bleeding time.

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.

E. Camel, L. Arnaud-Boissel, S. Schnebert, M. Neveu, S.K. Tan, J-P. Guillot, **Does Asian Skin Induce Significant Changes in Sun Protection Factor (SPF) Determination Compared to Caucasian Skin: One of the First In-Vivo Correlations,** IFSCC Magazine January/March 2002, Vol. 5, No. 1

The aim if this study was to compare the SPF of three sunscreens (SPF 6/8 – 15/20 – 25/30) and 2 standards (FDA, COLIPA fla P2), according to COLIPA recommendations, in panels of Asian (Singapore) and Caucasian (France) volunteers.

J.F. Hermanns, L. Petit, T. Hermanns-Lê, G. Piérard, **Analytic quantification of phototype-related regional skin complexion,** Skin Research and Technology, Vol. 7, No. 2, August 2001

Narrow-band spectrophotometry that yields melanin (M) and erythema (E) indexes is a convenient method for assessing skin colour. The objective of the study was to assess the phenotype-associated body site differences in skin complexion.

A. Castro, **Avaliacao in vivo de Despigmentares de Origen Natural e/oU Biotecnologicos**, Cosmetics & Toiletries (Portugese), Vol. 13 No 6, p. 80, 2001

E. Azizah, T. Rosemiarti, C. Weki, R.I.S. Tranggono, **Comparative Study of Several Whitening Agents in Cosmetic Products**, 5th ASCS March 2001
Melanin is the main factor determining skin color, which provide protection against UV irradiation. An abnormal increase in the amount of melanin in the epidermis is the main cause of hyperpigmentation due to several factors such as aging, pregnancies, endocrine disorders, sexual hormone treatments, sunlight bums, etc. Some pharmaceutical agents such as arbutin, kojic acid, vitamin C and its derivatives have been used as whitening agents, which control the number of melanin by inhibiting melanin production in melanocytes, because of their low toxicity to melanocytes. This study was aimed to compare several whitening agents in the same base creams. Twelve healthy volunteers were involved in the study; each received 4 different types of whitening creams. Two types of creams were used on each side of face and two others on the outer of each arm. Subject were evaluated for the number of melanin and erythema (with Mexameter MX 16), skin lightness and skin color index (with Chromameter CR 300), and skin moisture level (with Corneometer CM 820), over 12 weeks. The result obtained show that the cream contained 3% Arbutin and 0.005% Licorice Extract was better in decrease the number of melanin (3.41%), while the cream contained 3% Ascorbyl Phosphate Magnesium and 0.005% Licorice Extract was better in increase skin lightness (4.32%).

*A. Msi, T. Rosemiatri, E. Azizah, R.I.S. Tranggono***, Comparison Study of Single and Multi Alpha Hydroxy Acids in Decreasing the Number of Melanin**, 5th ASCS March 2001

Alpha Hydroxy Acids (AHAs) are a group of organic acids that play a specific role in the cycle of carbohydrate and other metabolic pathways.

K.Y. Roh, D. Kim, S.J. Ha, Y.J. Ro, J.W. Kim, H.J. Lee, **Pigmentation in Koreans: Study of the Differences from Caucasians in Age, Gender and Seasonal Variations**, British Journal of Dermatology 3958, 2001

Human skin color shows variations throuhout life and many extrinsic and intrinsic factors influence melanogenesis.

K. Jones, S. Orndorff, **Aloesin: A Potent Skin Whitener**, Cosmetic Science Conference 2001, Düsseldorf

Aloesin, [2-acetonyl-8-glucopyranosyl-7-hydroxy-5-methylchromone], a compound isolated from the Aloe plant, is a potent regulator of melanogenesis via competitive inhibition of tyrosinase. The IC50, a concentration producing 50% inhibition, of aloesin in a purified mushroom tyrosinase assay was 0.193mM and 0.167mM in the B16 FI murine melanoma cell. Aloesin inhibited tyrosinase in a human primary melanocyte in vitro assay, IC50=1.03 mM compared to kojic acid, IC50=1.11 mM, whereas arbutin showed no significant activity at any concentration tested. In a seven-week human clinical trial, using an overnight hydrophilic patch, a statistically significant decrease in melanin was seen from week three through week seven. Recovery of pigment in the skin occurred within two weeks after treatment ended. Aloesin has an excellent safety profile, showing no skin irritancy or allergenicity in humans, no cell toxicity and no mutagenicity or genotoxicity in the Ames assay.

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.

C. Romera Barrero, **Aplicabilidad del Dispsitivo Mexameter MX 16 a la Evaluacion de la Actividad de Preparados Autobroncedores**, Dissertation University of Barcelona February 2000

Se han disenado diferentes equipos instrumentales para determinar el color de la piel.

E.A. Sagiv, S. Dikstein, **The Efficiency of Humectants as Skin Moisturizers in Presence of Oil,** 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000 and Skin Research and Technology, Vol.7, No.1, February 2001

The research on the treatment of “dry skin syndrome” is hampered by the lack of suitable animal models.

P. Humbert, **Melanin and Erythema Measurements by the Mexameter MX 16**, Université de Franche-Comté, Laboratoire d´Ingéniérie et de Biologie Cutnaées, 2000

The aim of this work was to evaluate the new probe of Mexameter MX 16, apparatus used for the measurement of melanin and erythema.

J.W. Wiechers, C. Oakley, V. Wortel, T. Barlow, **Comparison of Skin Colour Measuring Methodologies on Asian Skin,** Personal Care Ingredient Asia Conference, Bangkok, March 2000

We are living in a funny world. While half of the world’s population is trying to obtain a suntan assisted by the effective use of sun-care-products, the other half is looking for skin lighteners or skin whiteners to reduce their complexion.

J.W. Fluhr, O. Kuss, T. Diepgen, S. Lazzerini, A. Pelosi, E. Beradesca, **Testing for Irritation with a Multiparametric Approach: Comparison of Eight Parameters and Five Different Irritation Models,** 13th ISBS Jerusalem, March 2000 13th ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000

The assessment of irritated skin reactions by non-invasive bioengineering methods is widely used.

A. de Castro, **Measurement of the Effectivity of Natural Raw Materials: Soja Protein, Barley, Titanium Dioxide and Zinc Oxide**, XXIst IFSCC Congress 2000, Berlin

Consumer’s preference for natural materials, as well some obtained by biotechnology processes instead of animal or chemical origin, in products for skin care, obeys to the fact that on one hand they are looking to avoid possible adverse reactions, and in the other hand, they constitute renewable sources of raw material.

Y.-D. Kim. B. Rae Cho, **Polyoxypropylene-Polyoxyethylene Tocopheryl Ethers: A Series of Novel Amphiphiles from Tocopherol for Functional Cosmetics**, XXIst IFSCC Congress 2000, Berlin

A series of novel nanionic coumpounds polyoxypropylene-polyoxyetylenetocopheryl ethers (POP-POETEs) was syntheszed by 2 steps reaction of ethoxylation and proxylation of biological tocopherol for functional cosmetics.

E. Camel, L. Arnaud-Boissel, S. Schnebert, M. Neveu, S.K. Tan, J.P. Guillot, **Does Asian Skin Induce Significant Changes in Sun Protection Factor (S.P.F.) Determination, Compared to Caucasian Skin: One of the First In Vivo Correlation,** XXIst IFSCC Congress 2000, Berlin

3 groups of 20 panellists of both sexes (20-57 years old, phototype II-III) were included in the test: 2 groups of Asian panellists, defined according to their skin colour typology(1) (I.T.A.: Individual Typologic Angle) measured with a Mexameter (Courage & Khazaka) and a Minolta Chromameter CR300 (I.T.A.: 28 - 41° and 41 - 60°), and one group of clear skin Caucasian volunteers (I.T.A.: 41 - 60°). The devices used were the same for each panel, calibrated, for the Minolta Chromameter with the same procedure.

L. Petit, **Evaluation comparative de la colorimétrie par réflectance L*a*b* et de la spectroscopie sélective pour chromophores cutanés**. Dissertation de l'Université de Liége, Année académique 1999-2000

Comparaisons des parametres colorimetriques mesures par le Mexameter MX 16 et le Chroma Meter CR-200

P. Clarys, K. Alewaeters, R. Lambrecht, A.O. Barel, **Skin Color Measurements: comparison Between Three Instruments: The Chomameter®, the DermaSpectrometer® and the Mexameter®**, Skin Research and Technology 2000.

Two types of skin reflectance instruments are available nowadays for the determination of skin color: a tristumulus colorimeter (Chromameter from Minolta) using the CIE L*a*b* color system and the narrow-band simple reflectance meters (DermaSpectrometer from Cortex and Mexameter from Courage-Khazaka) using the erythema/melanin indices. The purpose of this study was to compare the capabilities of the three instruments (sensitivity, repeatability and correlation) in vitro and in vivo.

A.E. Sagiv, A. Ingber, S. Dikstein, **A Novel In Vivo Model in Guinea Pigs for Dry Skin Syndrome,** Skin Research and Technology, Vol. 6 No. 1, February 2000

The lack of suitable validated animal model for the comparison of the pharmacological effectiveness of known and potential moisturizers in the treatment of "dry skin syndrome" let us to develop such an in vivo model.

A. de Castro, L. Castro, R. Brito, C. Rojas, **Evaluacion del tratamiento del prurito con el residuo lipidico de la cebada**, Actualizaciones Terapeuticas Dermatologicas y Esteticas, Vol. 22 No. 5, Sept/Oct 1999

La piel seca y sensible está acompañada muy frequentamente de irritación y purito, …

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.

P. Clarys, K. Alewaeters, A.O. Barel, **Comparative Study of Skin Color Using Different Bioengineering Methods,** Skin Research and Technology, Vol. 5, No. 2, May 1999

This study was designed to compare two simple colour reflectance meters (DermaSpectrometer, Cortex and Mexameter, Courage-Khazaka) with the tristimulus method (Chromameter).

*A.M. Vargas, A. Castro***, Proteina de Soja: Evaluacion de su Efecto Hidratante**. IFSCC May 1999

*C. Rojas, A. Castro, L. Castro, R. Brito***, Utilizacion del Residuo Lipidico de la Cebada en el Tratamiento del Prurito,** IFSCC Chile May 1999

El prurito, picacón o cornezón, correspondente al sensación cutánea especial…

A. de Castro, A.M. Vargas, **Alternativas Naturales en el Tratamiento del Fotoenvejecimiento**, IFSCC Chile May 1999

Estudíos realísados a nivel mundial …

A. Vexler, I. Polyansky, R. Gorodetsky, **Multi-Parametric Examination of Irradiated Skin in Breast Cancer Patients,** Skin Research and Technology, Vol. 5 No. 2, May 1999

More than 12 % of the women in Wesren Hemisphere are projected to develop carcinoma of the breast.

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.

F. Merot, S. Rullier, P. Masson, **Use of the Mexameter MX 16 ™® for the Assessment of the Sun Protection Factors (UVB and UVA)**. Poster - 20th IFSCC Congress Cannes, 09/1998

The COLIPA method for the determination of the sun prootection factor (SPF) and the method for the determination of the UVA protection factors (UVA-PF) based on the persotant pigment darkeing (PPD) lean on a colorimetric approach performed with the Chromameter CR 200 or CR 300 (Minolta) which uses the L*a*b colour space (CIE – 1976) to define the typology of the volunteers and to calibrate the visual assessment of the observed phenomenons (erythema or residual pigmentation).

J.W. Wiechers, C.J. Oakley, V.A.L Vorte, A. Barlow, **A Comparison of Instrumental and Visual Assessment of Skin Color**, 20th IFSCC Congress Cannes, 09/1998

There is an ever-increasing interest nowadayss in skin lightening studies, especially in Asia.

G. Leone, S. Siladji, G.F. Secchi, M. Carducci, M. Fazio, **A New Challenge For High SPF Sunscreens: The Outdoor Dynamic Test** - Product Evaluation - 20th IFSCC Congress Cannes, 09/1998.

J.W. Wiechers, V. Wortel, C. Oakley, T. Barlow, **Looking at the Skin: Skin Color,** Cosmetics & Toiletries, Vol. 113, August 1998

We are living in a funny world. While half of the world's population is trying to obtain a suntan assisted by sun-care-products, the other half is looking for skin lighteners or skin whiteners to alter their complexion the other way.

C.M. Schempp, C. Blümke, J. Schule-Mönting, E. Schöpf, J.C. Simon, **Der Einfluß verschiedener Salzlösungen auf die Ultravioloett-B-vermittelte Induktion von Erythem und Pigmentierung**. Hautarzt 6/98.

Die Kombination von Salzwasserbädern mit anschließender UV-Bestrahlung wird seit langem bei der Behandlung der Psoriasis und der atopischen Dermatitis eingesetzt. Ziel der vorliegenden Studie war es, die photosensibilisierenden Eigenschaften von 2 handelsüblichen Badesalzen, Salz aus dem Toten Meer und Kochsalz zu untersuchen. Testareale der Unterarmbeugeseiten von 10 Probanden wurden für 15 min mit Salzlösungen in onzenbtrationen von 1%,3%,5% und 15% inkubiert und anschließend mit einer erythematogenen UV-B-Dosis bestrahlt. Zum Vergleich diente leitungswasser+UVB und UVB allein.

A.O. Barel, P. Clarys, *R. Lambrecht, I. Manou, I. Vanbeneden*, **Skin Surface Color Measurements - A Comparison Between the Chromameter® and the Mexameter® MX 16**. 12th ISBS, Boston, 06/98.

The three simple reflectance meters are based on the same optical principle as developed by Diffey and coworkers (1994).

P. Grimes, **Cosmetic Issues For Ethnic Women**, 3rd Int.Symposium on Cosmetic Efficacy, May 1998

K.-P. Wilhelm, proDERM institut for applied Dermatological Research GmbH. Schenfeld, Germany. **Client-Server based On-Line Data Acquisition for Skin Bioinstrumentation Devices**

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.

Clinical evaluation of a depigmenting cream: TRIO-D® in melasma of the face, Nouvelles Dermatologiques Vol. 16 1997

To evaluate the depigmenting activity of TRIO-D® (combination of Hydroquinone-Alpha Hydroxy Acids (AHA)-ascorbic acid derivative) in melasma of the face, a doouble blind, randomized, multicentric study versus excipient was conducted in 38 women. They were divides in two parallel groups and had applied to each hemiface, twice daily, either the verum or the excipient on the pigmented spots during 8 weeks. The objective assessment was done through the measurement and the comparison before and after treatment with the melanic index: Mexameter®. A clinical evaluation of the area and the intensity of the pigmented spots was assessed with Visual Analog Scales. The objective as well as the subjective results show a significant loss of pigmentation of the spots treated with TRIO-D® cream compared with the excipient cream since the first month of treatment. The efficacy of TRIO-D® cream is similar whatever the duration of melasma.

B.K. Sun, H.K. Lee, J.C. Cho, J.I. Kim, **Clinical Improvement of Skin Aging by Retinol Containing Products: With Non-Invasive Methods,** IFSCC Conference Mexico 25-27 September 1997

Retinol as well as RA (retinoic acid) is well known to have many beneficial effects on (photo)aged skin. But the skin irritation potential and unstable condition of the products containing them have been some problems in their cosmetic uses. So, retinol containing gel product (MDC gel) was developed for less skin irritancy and more stability in cosmetic products. To examine the clinical effects of retinol containing product, we used clinical non-invasive assessment techniques on 40 volunteers for 6 months maintaining double-blind test conditions. According to our results, the use of retinol containing product improved skin color and hydration level slightly. But there was no statistical difference. There was no erythema reaction compared to the use of RA. Especially, the skin elasticity increased above 20% and skin wrinkles of crows' feet region decreased more than 10%. Besides the instrumental analysis, a large majority of volunteers felt that their skin was improved in the case of wrinkles, elasticity, hydration and color.

J.H. Ha, N.S. Jo, H.K. Lee, J.I. Kim, B.G. Lee, W.J. Park, **The Depigmentation Effect of A New Material Extracted from Paper Mulberry and ist Comparison by Three Colorimetric Instruments,** Proceedings of the 19th IFSCC Congress, October 1996

Skin color varies depending on age, racial background, seasonal change and pigmentation disorder. Whiter skin color is a desire of oriental women. Various whitening beauty cosmetic products for inhibiting pigmentation process prevails in the market. Measuring skin color is a popular clinical tool for evaluating depigmentation effect of these products. Therefore, the cosmetic scientists need to develop new effective depigmenting ingredients as well as powerful measuring tool for skin color.

C. Edwards, **The Mexameter MX 16 TM,** Biogeninering of the Skin: Methods and Instrumentation, CRC Press 1995

The Mexameter MX 16 TM (Courage and Khazaka Electronic GmbH, Germany) is a dual instrument incorporating a melanin index and an erythema index meter. Both of these are based on the diffuse remittance spectrometry principle, whereby a measurement is made of the absorbency of a volume of tissue at specific wavelengths, from which the concentration of absorbing pigment can be estimated and used to construct a pigment index.

I. Tausch, J. Gaßmüller, W.J .Kessler, **Beurteilung der protektiven und pflegenden Potenz von Lichtschutzpräparaten mit biophysikalischen Methoden**, Wissenschaft Dt. Derm. (43), 1995

Während einer zehntägigen UV-Bestrahlung wurden die Eigenschaften zweier Lichtschutzpräparate (LSF6,LSF20) untersucht. Als Vergleich dienten unbehandelte als auch mit der jeweiligen Grundlage behandelte Hautareale. Es wurde die Intensität des UV-Erythems mit einem Farbmeßgerät, die Hautfeuchtigkeit mittels der Corneometrie und die Hautoberflächenstruktur durch Profilometrie beurteilt. Beide Lichtschutzpräparate unterdrückten das UV-Erythem vollständig, der Feuchtigkeitsgehalt der Haut und die Faltentiefe blieben unverändert. In den Arealen, die einer zehntägigen UV-Bestrahlung ohne Lokalbehandlung ausgesetzt waren, traten deutliche Erytheme, Feuchtigkeitsverluste und eine Zunahme der Faltentiefe auf. Die Anwendung der Grundlagen allein zeigte nur bei einem Präparat eine leichte Lichtschutzwirkung. Neben den UV-protektiven Eigenschaften, die bei beiden Lichtschutzpräparaten gleich gut waren, sind die herausragenden pflegenden Eigenschaft der LSF20-Emulsion hervorzuheben.

R. Marks, C. Edwards, **Methods to aid the coice of shade from a range of colour disguise cosmetics, University of Wales** College of Medicine, 26 May 1993

The range of cosmetic camouflage products for major disfiguring skin conditions are well known, and are available in a wide range of shades. They require considerable skill and training for their blending and application which also needs a finishing layer of powder for best effect. These products are admirably suited to their use on major blemishes, but would be difficult to apply by a consumer at home for minor blemishes.

J.-L. Leveque, **Cutaneous Investigation in Health and Disease**, Marcel Dekker INC. New York and Basel 1989

J.W. Feather, D.J. Ellis, G. Leslie, **A portable reflectometer for a rapid quantification of cutaneous haemoglobin and melanin,** Vol. 33, No 6, 711-722, Phys. Med. Biol., 1988

A portable reflectance instrument for the rapid quantification of cutaneous haemoglobin and melanin is presented. Light emitting diodes (LEDS) are used to illuminate the skin and a silicon photodiode to detect the light diffusely reflected from the surface. Reflectance measurements are made at only three wavelengths and the problems of pigment quantification consequent upon this are discussed. In addition to quantification of haemoglobin and melanin, qualitative information on the redox state of the blood may also be obtained. Measurements made on port wine stain, which had been treated with 576 nm cw laser radiation at times between 1 and 6 months previously, provided information on the vascular response to this thermal injury.

J.B. Dawson, D.J. Barker, D.J. Ellis, E. Grassam, J.A. Cotterill, G.W. Fisher, and J.W. Feather, **A theoretical and experimental study of light absorption and scattering by in vivo skin**, Vol. 25, No. 4, 695-709, Phys. Med. Biol. 1980

A theoretical treatment has been developed for the optical properties of a layered structure which absorbs and scatters light. This theory predicts that the logarithm of the inverse of reflectance (LIR) of the surface should be a useful parameter for the examination of that structure. This approach has been applied to a study of skin in vivo. An instrument was constructed for use in clinical situations

to measure the LIR spectrum of skin over the visible region of the spectrum (450-760 nm). The contributions to the observed spectra made by pigments and the skin structure were deduced by reference to the theoretical model. Numerical indices were used to quantify the changes in skin haemoglobin content following the application of vasoconstricting preparations.