

## Literature List

### VisioFace®

*M.A. Nilforoushzadeh, S. Rafiee, M. Heidari-Kharaji, T. Fakhim, N. Najar Nobari, M. Shahverdi, Z. Lotfi, S. Zare, E. Torkamaniha, S. Alavi, Investigating the efficacy of Endolift laser and Nanofat as a combination therapy for horizontal neck lines compared to Nanofat autologous alone, Skin Research & Technology, Volume 30, Issue 9, September 2024*

Background: The emergence of horizontal neck wrinkles is increasingly becoming a focal point for both cosmetic professionals and clients. Various treatment approaches must be considered to address this issue effectively, owing to its diverse underlying causes. The study explores the potential of utilizing the Endolift laser in conjunction with nanofat injection as a viable treatment option. Methods: Twenty patients with horizontal neck wrinkles involved in the study. Ten patients underwent treatment with a combination of Endolift laser and nanofat injection and 10 patients treated with nanofat injection alone. The participants were monitored for 6 months post-treatment. Biometric measurements were utilized to assess outcomes, including changes in volume, depth, and area of the wrinkles, skin elasticity, as well as the diameter and density of the epidermis and dermis in the treated area. Skin improvement was evaluated by two independent dermatologists, who compared before and after photos in a blinded manner. Patient satisfaction levels were also documented. Results: The Visioface analysis showed a notable decrease in neck wrinkle depth and area in both groups. However, the group receiving the combination treatment of Endolift laser and nanofat exhibited a significantly greater improvement compared to the group treated with nanofat alone. Skin ultrasonography results demonstrated an increase in thickness and density of the dermis and epidermis in both groups. Particularly, the group treated with Endolift laser-nanofat displayed significant enhancements in dermis and epidermis density and thickness when contrasted with the nanofat-only group. Analysis with Cutometer revealed a marked enhancement in skin elasticity in the Endolift-nanofat treated group in comparison to the nanofat-only treated group. Furthermore, in the Endolift-nanofat treated group, a substantial majority (90%) of patients exhibited improvement. Patient evaluations highlighted significant distinctions between the two groups, with 95% of patients in the Endolift-nanofat treated group demonstrating enhancement. Conclusion: Both methods notably enhance horizontal neck wrinkles; nevertheless, the combination of endolift laser and nanofat seems to be more efficient for treating horizontal neck wrinkles.

*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 ( $\Delta E$ ) and lightness ( $\Delta L$ ), 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).  $\Delta E$  and  $\Delta L$ , 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.

*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.

*L.K.W. Phoebe, K.W.A. Lee, L.K.W. Chan, L.C. Hung, R. Wu, S. Wong, J. Wan, K.-H. Yi, Use of platelet rich plasma for skin rejuvenation*, Skin Research & Technology, April 2024

Objective: Platelet-rich plasma (PRP) is recognized as a safe and effective therapy for regenerative skin healing and rejuvenation, utilizing autologous blood enriched with various growth factors. This review aims to assess the efficacy of PRP treatments for skin rejuvenation. Methods: Keywords such as "platelet-rich plasma," "rejuvenation," "skin aging," and "wrinkles" were queried on Ovid, PubMed, and MEDLINE to identify pertinent studies on PRP treatment for skin rejuvenation. Results: Analysis revealed that PRP treatment led to significant enhancements in multiple facial parameters after one to three sessions. Improvements were noted in skin pore size, texture, wrinkle reduction, pigmented spots, collagen density, hyaluronic acid levels, and protection against ultraviolet damage. Combining PRP with hyaluronic acid demonstrated a synergistic effect, particularly enhancing skin elasticity in patients with lower body mass index and firmness in individuals aged 50s and 60s. Incorporating both physical and biometric data for assessment proved superior to relying solely on physical observations for evaluating subtle skin quality and structural changes. Conclusion: This study underscores the efficacy of PRP monotherapy for skin rejuvenation and emphasizes the necessity of standardizing PRP preparation protocols in future investigations. Heightened awareness and advancements in technology have contributed to the emergence of higher-quality, less biased studies supporting PRP as a reliable and safe therapeutic option for skin rejuvenation.

*J.M. Jurek, V. Neymann, The role of the ImmunatuRNA® complex in promoting skin immunity and its regenerative abilities: Implications for antiaging skincare*, J Cosmet Dermatol. 2024;23: p. 1429–1445

Introduction: Recent advancements in cosmetic science have ushered in a new era of skincare strategies, with a focus on utilizing natural bioactive ingredients to enhance skin health and combat premature aging. The skin, as the largest organ of human body, provides as a vital protective barrier against external hazards such as environmental pollutions, toxins, and radiation. However, intrinsic and extrinsic factors, including various types of radiation, reduced air quality, and increased exposure to pollutants, lead to an imbalance in the skin's immune system, significantly reducing the skin's ability to regenerate and accelerating skin aging. Therefore, there is an emerging need to develop innovative skincare strategies that could support the skin's immune capacity by strengthening antioxidant protection, skin regeneration, and repair. Plant-derived compounds, along with naturally sourced ingredients, show promise in accelerating wound healing, especially when incorporated into cosmetic formulation. ImmunatuRNA® stands as a prime example of a biologically active complex, uniquely comprising yeast-derived RNA, marine exopolysaccharides, and natural hyaluronic acid, that exhibits high antioxidant activity and exerts beneficial modulatory effects on skin microbiota, thereby positively influencing skin immunity. Methodology: The main aim of this study was to investigate the potential of the ImmunatuRNA® complex in promoting skin regeneration and reducing signs of skin aging, both through the use of in vitro human skin cultures and the evaluation of clinical trials in healthy volunteers. Results: The results of conducted experimental studies have shown that the ImmunatuRNA® complex demonstrated significant positive effects on the immunity and repair capabilities of the skin, characterized by increased fibroblast proliferation, enhanced glycosaminoglycan synthesis, and reduced oxidative stress. Furthermore, use of the complex also significantly accelerated wound healing following mechanically-induced damage in the keratinocytes, demonstrated as reduction in wound margins measurement, new cell production, and an increase in regeneration speed. In addition, conducted clinical study on healthy human volunteers with various skin types confirmed that use of cosmetic products that incorporate the ImmunatuRNA® complex within the formulation can visibly improve skin condition, appearance, and general health, achieved by increased skin hydration and elasticity, reduced wrinkles, and enhanced skin firmness. Conclusions:

This study confirms the usefulness of the ImmunatuRNA® complex in the innovative antiaging cosmetic products that can be suitable for all skin types, including sensitive skin. The inclusion of naturally sourced bioactives, as those found in ImmunatuRNA® complex, represents a promising advancement in holistic natural skincare that consumers appreciate. The active ingredients of the complex support the skin's immunity, fostering its repair and protecting against oxidative damage, thus maintaining skin homeostasis and promoting its regenerative capacity. Further research is necessary to explore the long-term effects of ImmunatuRNA® complex on skin health and its potential applications in innovative skincare formulations.

*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 effect of the Endolift methods on the horizontal neck wrinkles was evaluated by biometric parameter changed results with Cutometer, Visioface, and the Skin Ultrasound Imaging system. Also, three blinded dermatologists and patients' satisfaction were evaluated. **Results:** The Visioface 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 procedure does not require 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 subablative 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, Subablative 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.

*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 and marionette 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 Visioface 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 severe side effect. This technique does not need general anesthesia and recovery time.

*E. Thia, H.-M. Hsueh, A. Yang, In vitro and clinical evaluation of new anhydrous niacinamide formula in reducing inflammation and treating acne-prone skin*, Poster presentation at the 33rd IFSCC congress, Barcelona, September 4-7, 2023

Acne is an ever-present skin problem, often associated with elevated sebum. It affects approximately 10% of global population, making the demand for effective anti-acne skincare remains high. This study systematically evaluated the efficacy of a novel anhydrous serum containing 6% niacinamide in reducing inflammation and treating acne-prone skin. First, minimum inhibitory concentration (MIC) assay was conducted to test *in vitro* inhibition of acne causing bacteria *Cutibacterium acnes*, followed by preliminary satisfaction survey to analyze its potential in reducing acne. The MIC was observed at 0.5% v/v and survey showed that 100% subjects agreed that the serum effectively improved acne problems only after 7 days. Within 14 days, 100% and 93% were satisfied with the formula effectiveness in soothing redness and improving sebum secretion, respectively. Then, clinical study with 22 subjects to further assess anti-acne efficacy of serum showed significant decrease in non-inflammatory lesions count by 7.64% in 72.7% subjects and inflammatory lesions count by 26.58% in 86.4% subjects after 28 days. Furthermore, Antera 3D showed significant decrease in average hemoglobin level by 5.80%, indicating improvement in redness and decrease in inflammation. Overall, this study showed that 6% niacinamide anhydrous serum has promising results in reducing acne lesion, excess sebum and inflammation.

*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  $32.38\% \pm 5.67$  and elasticity of the R2:  $40.29\% \pm 8.18$ , R5:  $39.03 \pm 5.38$  and R7:  $42.03\% \pm 14.16$  were significantly improved after treatment ( $p < 0.05$ ). Also the melanin content of the skin was decreased ( $49.41\% \pm 9.12$ ). The skin layers were denser in the dermis and also in the epidermis (skin density:  $30.21\% \pm 10.16$  and skin thickness:  $41.12\% \pm 13.21$ ) ( $p < 0.05$ ). The results revealed the decrease in the percent change of the skin color ( $30.34\% \pm 9.30$ ) and wrinkle (area:  $25.84\% \pm 6.43$  and volume:  $30.66\% \pm 8.12$ ) ( $p < 0.05$ ). 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.

*M. Shahzad Khan, Q. Adnan, N. Akhtar, Profiling of phytochemicals using LC-ESI-MS<sup>2</sup>, 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<sup>2</sup>. *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<sup>2</sup> 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 ( $0.7528 \pm 0.192 \mu\text{m}$ ). 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.

*R. Di Lorenzo, L. Grumetto, A. Sacchi, S. Laneri, I. Dini, Dermocosmetic evaluation of a nutricosmetic formulation based on Curcuma, Phytother Res, 2023 May;37(5): p.1900-1910*

Endogenous and exogenous factors can alter the skin layer and appearance, determining skin aging. The extracts and isolated molecules from food matrixes can be used to formulate "healthy" antiaging cosmetics. Two different cosmetic approaches can be used to achieve the antiaging effect. It is possible to use topical products based on food extract (cosmeceutical approach) or take a food supplement and apply a topical cosmetic product based on food extract on the surface to be treated (nutricosmetic approach). This work evaluated in vivo the antiaging potential of a nutricosmetic formulation (cream + food supplement) and a cosmeceutical cream based on Curcuma. The choice of the commercial Curcuma extract to be used for experimental purposes was based on the curcuminoid content determined by an HPLC test. Curcuminoids are the bioactive compounds responsible for Curcuma's antioxidant and antiinflammatory properties. Their levels in Curcuma extracts vary according to the storage condition, variety, and pedoclimatic cultivation conditions. The Tewameter® TM300 was used to evaluate the Trans Epidermal Water Loss (TEWL), the Corneometer® CM 825 to determine the moisturizing effect, the Cutometer® to estimate the skin firmness and elasticity, the Dermascan to assess the collagen index, and the Visioface® 1000D to evaluate the wrinkles. The nutricosmetic product showed potential as moisturizing, anti-age, and anti-wrinkle action better than the cosmeceutical product alone.

*L. Rocha Mota, I. da Silva Duarte, T. Rodrigues Galache, K.M. Dos Santos Pretti, O. Chiarelli Neto, L. Jansiski Motta, A. C. Ratto Tempestini Horliana, D. de Fátima Teixeira da Silva, C. Pavani, Photobiomodulation Reduces Periocular Wrinkle Volume by 30%: A Randomized Controlled Trial, Photobiomodul Photomed Laser Surg., 2023 Feb;41(2): p. 48-56*

Objective: This study aimed to evaluate red and amber light-emitting diode protocols for facial rejuvenation at the same light dose. Background: The demand for minimally invasive cosmetic procedures to address skin aging has grown throughout the world. In vitro red and amber photobiomodulation (PBM) has been shown to improve collagen synthesis. Meanwhile, red PBM has already been studied in clinical trials; however, a comparison of the use of different wavelengths at the same light dose to reduce periocular wrinkles has not yet been performed. Methods: This split-face, randomized clinical trial recruited 137 women (40-65 years old) presenting with skin phototypes II-IV and Glogau photoaging scale types II-IV. The individuals received 10 sessions for 4 weeks of red (660 nm) and amber (590 nm) PBM (3.8 J/cm<sup>2</sup>), one at each side of the face. The outcomes, measured before and after the treatments, were the periocular wrinkle volume measured by VisioFace RD equipment; hydration measured by the Corneometer CM 825; skin elasticity measured by the Cutometer Dual MPA 580; and quality of life determined by adapted versions of validated questionnaires [Melasma Quality of Life Scale-Brazilian Portuguese (MelasQoL-BP) and Skindex-29]. Results: There was a significant reduction in wrinkle volume after red (31.6%) and amber (29.9%) PBM. None of the treatments improved skin hydration and viscoelasticity. Both questionnaires showed improvements in participants' quality of life. Conclusions: PBM, both at red and amber wavelengths, is an effective tool for rejuvenation, producing a 30% wrinkle volume reduction. The technique has strong potential in patients with diabetes or those presenting with keloids, conditions for which highly inflammatory rejuvenating procedures are not indicated. Clinical trial registration number: REBEC-6YFCBM.

*M.N. Takuathung, P. Klinjan, W. Sakuludomkan, N. Dukaew, R. Inpan, R. Kongta, W. Chaiyana, S. Teekachunhatean, N. Koonrunsesomboon, Efficacy and Safety of the Genistein Nutraceutical Product Containing Vitamin E, Vitamin B3, and Ceramide on Skin Health in Postmenopausal*

**Women: A Randomized, Double-Blind, Placebo-Controlled Clinical Trial**, J. Clin. Med. 2023, 12

Skin aging is one of the most concerning issues that occur after menopause. The Genistein Nutraceutical (GEN) product, containing genistein, vitamin E, vitamin B3, and ceramide, has been formulated as a topical anti-aging product for improving the health of postmenopausal women's facial skin. This study aimed to investigate the efficacy and safety of the GEN product on postmenopausal women's facial skin. This randomized, double-blind, placebo-controlled trial randomly assigned 50 postmenopausal women to receive either the GEN product (n = 25) or the placebo (PLA) product (n = 25), topically applied twice daily for 6 weeks. The outcome assessments included multiple skin parameters related to skin wrinkling, color, hydration, and facial skin quality at baseline and week 6. The percentage mean changes or absolute mean changes, where appropriate, in skin parameters were compared between the two groups. The mean age of the participants was  $55.8 \pm 3.4$  years. For skin wrinkling and skin color parameters, only skin redness was significantly higher in the GEN group when compared to the PLA group. Following the application of the GEN product, skin hydration increased while fine pores and their area decreased. Subgroup analysis of older women (age  $\geq 56$  years) with adequate compliance found significant differences between the two groups in the percentage mean changes of most skin wrinkle parameters. The GEN product has benefits for the facial skin of postmenopausal women, particularly those who are older. It can moisturize facial skin, lessen wrinkles, and enhance redness.

*L. Rocha Mota, I. da Silva Duarte, T. Rodrigues Galache, K.M. Dos Santos Pretti, O. Chiarelli Neto, L. Jansiski Motta, A.C. Ratto Tempestini Horliana, D. de Fátima Teixeira da Silva, C. Pavani,* **Photobiomodulation Reduces Periocular Wrinkle Volume by 30%: A Randomized Controlled Trial**, Photobiomodul Photomed Laser Surg, 2023 Feb;41(2): p. 48-56

**Objective:** This study aimed to evaluate red and amber light-emitting diode protocols for facial rejuvenation at the same light dose. **Background:** The demand for minimally invasive cosmetic procedures to address skin aging has grown throughout the world. In vitro red and amber photobiomodulation (PBM) has been shown to improve collagen synthesis. Meanwhile, red PBM has already been studied in clinical trials; however, a comparison of the use of different wavelengths at the same light dose to reduce periocular wrinkles has not yet been performed. **Methods:** This split-face, randomized clinical trial recruited 137 women (40-65 years old) presenting with skin phototypes II-IV and Glogau photoaging scale types II-IV. The individuals received 10 sessions for 4 weeks of red (660 nm) and amber (590 nm) PBM (3.8 J/cm), one at each side of the face. The outcomes, measured before and after the treatments, were the periocular wrinkle volume measured by VisioFace RD equipment; hydration measured by the Corneometer CM 825; skin elasticity measured by the Cutometer Dual MPA 580; and quality of life determined by adapted versions of validated questionnaires [Melasma Quality of Life Scale-Brazilian Portuguese (MelasQoL-BP) and Skindex-29]. **Results:** There was a significant reduction in wrinkle volume after red (31.6%) and amber (29.9%) PBM. None of the treatments improved skin hydration and viscoelasticity. Both questionnaires showed improvements in participants' quality of life. **Conclusions:** PBM, both at red and amber wavelengths, is an effective tool for rejuvenation, producing a 30% wrinkle volume reduction. The technique has strong potential in patients with diabetes or those presenting with keloids, conditions for which highly inflammatory rejuvenating procedures are not indicated.

*V. Rego Moraes, M. Oliveira Melo, P.M.B.G. Maia Campos,* **Evaluation of Morphological and Structural Skin Alterations on Diabetic Subjects by Biophysical and Imaging Techniques**, Life 2023, 13, 579

Diabetes causes increased production of advanced glycation end products (AGEs), which may lead to irreversible damage to collagen fibers, and early and more accentuated signs of skin aging. Thus, the objective of this study was to evaluate diabetic skin's mechanical and morphological characteristics and compare these to healthy skin. Twenty-eight female participants aged between 39 and 55 years were enrolled: half had type 2 diabetes, and the others were healthy. Wrinkles, transepidermal water loss (TEWL), stratum corneum water content, skin color, elasticity, morphological and structural characteristics of epidermis and dermis echogenicity were evaluated using biophysical and skin imaging techniques. Higher TEWL values were observed in participants with diabetes, who also showed lower skin elasticity and wrinkles with greater volume, area, and depth. In addition, the Reflectance Confocal Microscopy (RCM) imaging analysis showed that all participants with diabetes presented polycyclic papillae and deformed and amorphous collagen fibers. The obtained data showed significant differences between healthy and diabetic skin and could help develop more specific topical treatments to improve the treatment of skin conditions in people with diabetes. Finally, RCM is an advanced imaging technique that allows for a more profound analysis of diabetic skin, which could assist in the evaluation of dermocosmetic treatments to improve the skin

alterations caused by this disease.

*C. Uhl, G. Khazaka, Ins Bild gesetzt – Bilddiagnostische Testverfahren in der Dermatologie, Medical by Beauty Forum, 2, 2023*

Hautveränderungen sind für Dermatologen mit dem bloßen Auge gut erkennbar. Die Unterschiede über einen gewissen Zeitraum objektiv zu erfassen und die Gründe für Hautveränderungen sind es meist nicht. Dafür gibt es verschiedene bilddiagnostische Testverfahren, die wir hier vorstellen.

*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.

*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.

*M.A. Nilforoushza deh, 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 the quality 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) subcision in 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.

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.

D. Collins, C. Lévénez-Bougaran, S. Sato, T. Scavuzzo, G. Tonet, Giada, S. Costanzo, A. Marelli, A.-M. Vincent, M. Le Meur C. Courtet, **ECollaboration: a collection of eco-conscious formulations enabled by a sustainable approach to innovation**, 32<sup>nd</sup> IFSCC Congress London, September 2022

Since first gaining global notoriety in the early 2000s, natural beauty has evolved to become the most relevant trend in the beauty & personal care industry. As a consequence, consumers around the world are attracted to cosmetic formulations which rely on a holistic approach to sustainability, combining performance with minimal impacts to the environment. Dow has developed a collection of cosmetic formulations covering both skin and hair applications by focusing on the three key pillars of natural beauty: ecology, economic development, and eco-conscious mindset. To highlight the formulations benefits, different methods have been used. For hair care products, curl retention test under high humidity conditions and combing test using Dia-Stron equipment on both wet and dry hair were conducted. Regarding skin care, sensory performance was evaluated by panelists with customization of the experimental procedure to fit product format. Finally, long lasting benefit for color cosmetics formulations was evaluated with in-vitro film durability test. The ECollaboration Concepts Collection features a total of 8 formulations designed to reach at least 90% of natural origin content. The idea is to both inspire and help brand owners to develop formulations fitting with natural cosmetic trends without compromises on performance. Innovative and eco-conscious formats have been developed, including a solid deodorant, a solid body moisturizer and a powder shampoo, which combine water-poor formulations with zero-waste packaging. ECollaboration brings together formulations where natural beauty and efficiency are in synergy. Dow ingredients are key products to consider when formulating natural cosmetics without compromise on performance.

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<sup>®</sup>, Corneometer<sup>®</sup>, Sebumeter<sup>®</sup>, Cutometer<sup>®</sup>, and VisioFace<sup>®</sup>. 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.

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. In 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 Visioface-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 Visioface-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.

*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, J 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<sup>®</sup>, Corneometer<sup>®</sup>, and Sebumeter<sup>®</sup>. Skin spots were analyzed through computerized analysis of high-resolution images by VisioFace<sup>®</sup>. Results: SO extract exhibited promising antioxidant ( $88 \pm 0.0096\%$ ) and tyrosinase inhibition potential ( $90.6 \pm 0.0015$  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.

*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.

*M. Mendes Fossa Shirata, P.M. Berardo Gonçalves Maia Campos, Sunscreens and Cosmetic Formulations Containing Ascorbyl Tetraisopalmitate and Rice Peptides for the Improvement of Skin Photoaging: A Double-blind, Randomized Placebo-controlled Clinical Study, Photochem*

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

*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.

*V.H. Pacagnelli Infante, E. Bagatin, P.M.B.G. Maia Campos, Skin photoaging in young men: A clinical study by skin imaging techniques, Int J Cosmet Sci, Volume 43, Issue 3, June 2021, p. 341-351*

Objective: Differences in skin physiology and lifestyle among people can influence the skin damage caused by solar radiation. Photoprotection habits play an important role to prevent skin photoaging. Thus, the objective of the present study was to evaluate the skin changes resulting from solar exposure in young men by skin imaging techniques. Methods: Twenty-three male, aged 18–28 years, with and without photoprotection habits participated in the study. Instrumental measurements in terms of dermis thickness and echogenicity (20 MHz ultrasound – DermaScanC<sup>®</sup>), morphological and structural skin characterization (Reflectance Confocal Microscopy – VivaScope<sup>®</sup> 1500) and high-resolution imaging (Visioface<sup>®</sup>) were performed in the malar region of the face. Results: Pigmentation disorders, telangiectasia, wrinkles and lower dermis echogenicity were observed in the skin of subjects without photoprotection habits. Reflectance Confocal Microscopy

images showed an irregular honeycomb pattern (35%), polycyclic papillae (40%) and coarse collagen fibres (35%), which are related to photoaging. Conclusion: Sun exposure without photoprotection results in a loss of dermal echogenicity and changes in the epidermis structure and collagen fibres regardless of chronological age. Thus, the study adds data for a discussion about correct photoprotection habits among young people and can help to increase the use of sunscreens for male public.

*M.A. Nilforoushzadeh, S. Zare, S. Farshi, M. Mahmoudbeyk, M. Nouri, F. Jaffary, N. Nikkhah, **Clinical, biometric, and ultrasound assessment of the effects of the autologous fibroblast cells transplantation on nasolabial fold wrinkles**, J Cosmet Dermatol, 2021 Apr 27*

Background: Feeling beautiful and staying young have always been important to the people. Therefore, an extensive body of research has focused on the efforts made to remove the skin problems, especially wrinkles. Fibroblast cells of the skin are the various autologous cells currently used in repairing several wounds, scars, and skin aging. Thus, the present study was conducted to assess the efficacy of the transplantation of the fibroblast cells in eliminating the facial wrinkles using the biometric assessment and to optimize the application of this technique in this treatment. Methods: The present study was conducted on 22 male and female patients aged between 35 and 60 years old. Samples were collected from the retro-auricular region, and the fibroblast cells were isolated and cultured. Subjects received three injections with autologous fibroblasts at 2-week intervals. The patients were followed up for 6 months, and structural changes in their wrinkles were assessed by the sonography and the VisioFace software, cutometer, tewameter, and colorimeter. Results: The results obtained using the VisioFace software showed the significant phenotypic changes in the patients after the nasolabial injections ( $81.42 \pm 23.97$  vs.  $60.91 \pm 21.91$ ,  $p = 0.0001$ ). The results showed a significant increase in the total skin density ( $13.73 \pm 6.30$  vs.  $26.27 \pm 7.93$ ,  $p = 0.0001$ ), dermis density ( $11.28 \pm 5.21$  vs.  $31.88 \pm 7.96$ ,  $p = 0.0001$ ), epidermis density ( $27.68 \pm 23.15$  vs.  $49.21 \pm 45.68$ ,  $p = 0.046$ ), and dermis thickness ( $798.09 \pm 133.51 \mu\text{m}$  vs.  $905.59 \pm 240.67 \mu\text{m}$ ,  $p = 0.036$ ) compared to pre-treatment. Conclusion: The findings of the study revealed that the injection of autologous fibroblasts can be effective in restoring the aging skin, especially in the nasolabial region, and can be used as a safe rejuvenating strategy.

*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.

*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.

*L. Zenjari, F.Z. Elfetoiki, F. Hali, H. Skalli, S. Chiheb, **Oral tranexamic acid in the treatment of lichen planus pigmentosus: A prospective study of 20 cases**, Ann Dermatol Venereol, 2020 Dec;147(12): p. 818-822 (Article in French)*

Introduction: Lichen planus pigmentosus is a variant of lichen planus that is particularly difficult to treat. The aim of this study was to evaluate the efficacy and safety of tranexamic acid in lichen planus pigmentosus. Patients and methods: This prospective study, conducted at the University Hospital of Casablanca from August 2017 to June 2019, included 20 patients with histologically confirmed lichen planus pigmentosus. The exclusion criteria were pregnancy, breastfeeding, known hypersensitivity to tranexamic acid, and thromboembolic disease. Evaluation was carried out by means of clinical examination and measurement of the affected area using the Visioface® RD hardware package at 6 and 12 months (M6 and M12). Results: Eighteen women and 2 men with an average age of 49 years (range: 26-65 years) were included. All patients were phototype 3 or 4. The average disease duration was 2.9 years (range: 2 months-15 years). Pigmented, slate-grey, well-delineated macules were observed in all patients on the face (n=19), neck (n=14) or arms (n=2). Pruritus was present in 9 patients. All patients received oral tranexamic acid 250mg/d for 4 to 6 months with external photoprotection that was prolonged beyond 6 months. At M6, partial improvement was noted in 10 patients, 3 patients showed no improvement, and 7 patients were lost to follow-up. Pruritus disappeared in all patients and no relapse was seen at M12. Discussion: Our study suggests that tranexamic acid could be an effective treatment for lichen planus pigmentosus with a good safety profile. However, the limitations of the study are the limited population and the high number of patients lost to follow-up at M6. Larger-scale studies are needed to provide more detailed results.

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

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

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

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

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  $73.08 \pm 0.0078$  mg GAE/g and  $52.63 \pm 0.0060$  mg QE/g CT extract respectively. As compared to placebo (base), CT emulgel was found to be significantly ( $P < .05$ ) 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.

K. Žmitek, J.o Žmitek, M. Rogl Butina, T. Pogačnik, **Effects of a Combination of Water-Soluble Coenzyme Q10 and Collagen on Skin Parameters and Condition: Results of a Randomised, Placebo-Controlled, Double-Blind Study**, Nutrients 2020, 12, 618

Skin is a complex and dynamic organ that provides a protective interface between the external environment and the body; changes in skin appearance are often the first visible signs of aging. It is well established that nutrients and other bioactive substances have important roles in the structure and functions of human skin; however, the effects of dietary supplementation of such bioactives are much less investigated. The objective of this randomised, double-blind placebo-controlled study was to investigate the effects of liquid food supplement, characterised by a combination of water-soluble coenzyme Q10 (Q10Vitalfi) and collagen, on dermal density and other skin parameters in comparison to placebo. The trial was performed on 34 healthy women aged 40–65 that received either the test product ( $n = 17$ ) or the placebo ( $n = 17$ ) for twelve weeks. Measurements and assessments of skin parameters were performed at baseline and after 12 weeks of intervention. We observed improved dermis density, reduced periorbital wrinkle area and the total wrinkle score, and improved skin smoothness. On the other hand, changes in skin hydration, dermis thickness, transepidermal water loss (TEWL) and viscoelasticity were not significant

D.S. Kim, K.U. Song, H.K. Lee, J.H. Park, B.J. Kim, K.H. Yoo, J.H. Shin, **Synergistic effects of using novel home-use 660- and 850-nm lightemitting diode mask in combination with hyaluronic acid ampoule on photoaged Asian skin: A prospective, controlled study**, J Cosmet Dermatol, Jul 2020

Background: Recently, light-emitting diode (LED) devices are among those mostly preferred for esthetic application because they improve the appearance of photoaged skin characterized by wrinkles, sagginess, pigmented lesions, and others. In addition, the use of hyaluronic acid (HA) for skin rejuvenation is already well proven. Aims: This study aims to evaluate the synergistic effects of using home-use LED mask device with HA ampoule. Methods: The total number of recruited subjects was 48:24 in Group A treated with both home-use LED mask device and HA ampoule and 24 in Group B treated with HA ampoule only, for 4 weeks. To assess the efficacy of the treatment, the following were used: Antera 3D CS, EOS 800D with Image-Pro Plus, DUB-USB, VisioFace Quick, and Visioscan VC98. Results: After treatment, the volume measurement (mm<sup>3</sup>) for prejowl sulci and nasolabial fold flattening as well as the area measurement (pixel) for lower chin firmness improvement was significantly reduced, and the number of pores (ea) for enlarged pores as well as the desquamation index (%) for the amount of corneocytes significantly decreased in both Group A and Group B. Moreover, the percentage of skin density significantly improved. Furthermore, Group A showed a significantly faster and higher rate of improvement than Group B. Conclusion: The use of 660- and 850-nm home-use LED mask device can generate synergistic effects on home-use topical applications like HA on photoaged face, and such device can be safely and efficiently used daily in personal environments.

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.

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.

A. Tito, C. Zappelli, M. Angelillo, M.G. Colucci, F. Apone, **New ingredient from *Rosa rugosa* delays skin ageing**, Personal Care Europe, April 2020

Skin ageing is an inevitable physiological process, determined by several concomitant factors, resulting in a thinner and drier skin, in the formation of fine wrinkles, and a gradual dermal atrophy. During this process the skin cells become senescent, they slow down their metabolism and the production of structural matrix components. The Growth Differentiation Factor 11 (GDF11) has been recently identified as a pro-youth factor in several cell types, and in particular it was shown its involvement in the restoration of a young phenotype in skin fibroblasts, by stimulating important ExtraCellular Matrix proteins. Furthermore, its key role in modulating mitochondrial functions in skin cells during ageing has been highlighted. In the present article, we describe the characterisation of a plant extract, obtained from *Rosa rugosa* tissue cultures, able to produce a 'rejuvenating' effect in aged skin fibroblasts by inducing GDF11 expression and synthesis. The extract was also capable of increasing the expression of PGC1- alpha, the master regulator of the mitochondrial biogenesis, and other important genes involved in the pathway, leading to an improvement of cell metabolism and longevity.

S. Laneri, R. di Lorenzo, A. Sacchi, I. Dini, **A New Protocol to Evaluate Waterproof Effect of Lip Gloss**, Biomed J Sci & Tech Res 19(5)-2019

A new method to evaluate lip gloss and lipstick waterproof level according to the COLIPA Guidelines for Evaluating Sunscreen Product Water Resistance in 2006 is proposed, moreover the changes in color ( $L^*$  value) by Skin Colorimeter<sup>®</sup> CL 400 Courage & Khazaka was measured. Tests were carried out on 20 volunteers validating the efficiency of the used method by comparing non-waterproof lip gloss/lipstick and waterproof product results. The results indicated that the lip gloss/lipstick were waterproofs when their mean % WPR was lower than 50% and they were removed after two successive immersions in water for 20 minutes at  $29^{\circ}\pm 2^{\circ}\text{C}$ . Methods used to evaluate lip gloss and lipstick waterproof level has proved effective for assessing the desired goals.

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

Objective: The current research work was initiated to develop anti-aging phytocosmetic

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

**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<sup>®</sup>, Sebumeter<sup>®</sup>, and VisioFace<sup>®</sup> at regular interval for 90 days. Results: Total phenolic content and total flavonoids content of *C tamala* leaves extract were found to be  $73.08 \pm 0.0078$  mg GAE/g and  $52.63 \pm 0.006$  mg QE/g CT extract respectively. As compared to placebo (base), CT emulgel was found to be significantly ( $P<0.05$ ) 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.

**V.R. Moraes, P.M.B.G. Maia Campos, Characterization of Nondiabetic and Diabetic Type 2 Skin in the Aging Process Using Biophysical and Skin Imaging Techniques**, presentation at the 25<sup>th</sup> IFSCC Conference Milan, October 2019

The aging process is a biological, multifactorial and complex phenomenon that includes intrinsic and extrinsic factors. The intrinsic factors are correlated with genetic and metabolism and the extrinsic factors are caused by sun exposition, pollution and other. Both processes results in skin aging, where signs as wrinkles, expression lines, changes in dermal thickness can be observed. Advanced glycation end products – AGEs, are originated from non enzymatic reactions which involves the reduction of sugars and amino groups of proteins and aminoacids. Collagens are essential proteins since they are responsible for the extracellular matrix structure. The AGEs cause modifications on the matrix, once the skin collagen deteriorates by crosslinking process. People with Diabetes have more AGEs in the tissue due to the high glucose concentration, which can cause skin damages. Thus, diabetic patients are more predisposed to signs of early aging than healthy people. In this context, it is very important the better comprehension of the diabetic skin in comparison to the non diabetic one. Thus, the aim of this study was to evaluate the clinical changes in the diabetic type 2 skin by biophysical skin imaging techniques.

**V. Chowjarean, P.P. Phiboonchaiyanan, S. Harikarnpakdee, P. Tengamnuy, A natural skin anti-ageing serum containing pseudobulb ethanolic extract of *Grammatophyllum speciosum*: a randomized double-blind, placebo-controlled trial**, International Journal of Cosmetic Science 41(6), August 2019

Objective: *Grammatophyllum speciosum* is utilized to treat sore throats and bronchitis In Thai folk medicine. This study evaluated the in vitro activity and clinical efficacy of a *G. speciosum* pseudobulb decoction. Methods: Measure of in vitro anti-aging activity was performed using non-cell-based assays as well as in CRL 2097 human fibroblast cells. A prophetic patch test method was used

to determine skin irritation in 24 healthy Thai volunteers. A randomized double-blind, placebo-controlled trial was conducted with 24 subjects for 56 days after facial application to evaluate efficacy. The results were measured with Visioface® and Cutometer® MPA 580 as well as by visual observations. Results: The total content of the antioxidant polyphenols in *G. speciosum* ethanolic extract (GSE) was  $48.19 \pm 0.39$  mg EGCG equivalent per gram. The GSE possessed potent and higher anti-elastase activity more than EGCG. The extract was able to protect human fibroblasts against superoxide anion-induced cell death at the concentration of 10 µg/mL. In a clinical study, facial application of the serum containing 0.5% GSE was found to safely increase skin distensibility in healthy volunteers. Skin viscoelasticity and wrinkle volume were also significantly reduced ( $p < 0.05$ ). Conclusion: Thus, both the in vitro and the clinical studies have illustrated the anti-wrinkle/anti-aging benefits of GSE on human skin.

*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.

*M. Milani, B. Hashroody, M. Piacentini, L. Celleno*, **Skin protective effects of an antipollution, antioxidant serum containing Deschampsia antarctica extract, ferulic acid and vitamin C: a controlled single-blind, prospective trial in women living in urbanized, high air pollution area**, Clinical, Cosmetic and Investigational Dermatology 2019:12, p. 393–399

Introduction: Air pollution causes skin damage and favors skin aging processes such as dark spots and wrinkles, through oxidative stress. Pollutant substances accelerate skin aging through a specific activation of intracellular receptors called AhR (aryl-hydrocarbon receptors). *Deschampsia antarctica* aqueous extract (DAE) has shown to counteract the pollutant-induced AhR activation. Ferulic acid (FA) and vitamin C (VC) are potent antioxidant substances. A serum containing DAE/FA/VC has been recently developed. So far, no clinical data are available regarding the protective actions of this serum against the detrimental effects of air pollution on the skin. Objective: We conducted a prospective, single-blind, 28-day study to assess efficacy and protective effects against air pollution skin damage of a new serum containing *Deschampsia antarctica* extract. Materials and methods: Twenty, photo type I–III, women (mean age 42 years) with at least three dark spots on the face, living in a homogenous urbanized, high pollution area (Rome) were evaluated. The objectives of the study were to evaluate the effects of treatment on skin barrier function, assessed by transepidermal water loss (TEWL) measurement (Tewameter), the effect on dark spots, evaluated by means of colorimetry (Colorimeter CL 400), and the effect on squalene peroxide (SQOOH)/squalene (SQ) skin ratio assessed with face swabs. Results: The trial was conducted between November 20 and December 19, 2018. In comparison with baseline, the product induced a significant improvement of skin hydration (-19% of TEWL), a significant improvement of dark spots (+7%) and a significant improvement of SQOOH/SQ ratio (-16%). The product was evaluated very well by >90% of the treated subjects regarding cosmetic acceptability. Discussion: A serum containing DAE/FA/VC has shown to improve skin barrier function, to reduce dark spots and to counteract the skin oxidative stress in women living in high pollution urban area.

*F. Spada, A.H. Lui, T.M. Barnes*, **Use of formulations for sensitive skin improves the visible signs of aging, including wrinkle size and elasticity**, Clinical, Cosmetic and Investigational Dermatology 2019:12, p. 415–425

Background: Sensitive skin affects an increasingly large proportion of the population and is less tolerant to frequent and prolonged use of cosmetics. This study investigates the antiaging effects of a skin care system developed for use on sensitive skin. Methods: A total of 30 healthy Caucasian females, aged 32–72, were enrolled in this double-blind randomized placebo-controlled split-face study. A routine consisting of twice daily topical applications of the test cleanser and test moisturizer or placebo or positive control products was followed for 28 days, with parameters measured at baseline and at 7-day intervals. Objective skin assessments for hydration, transepidermal water loss (TEWL), skin surface topography, elasticity and safety assessment were conducted. Results: Wrinkle surface, length and depth significantly improved by  $34.8 \pm 4.7\%$  ( $P < 0.001$ ),  $19.0 \pm 3.2\%$  ( $P < 0.05$ ) and  $24.3 \pm 3.5\%$  ( $P < 0.05$ ), respectively, after 28 days of skin care treatment with the test cleanser and test moisturizer. R2 (gross elasticity), R5 (net elasticity) and R7 (biological elasticity) significantly increased by  $32.8 \pm 6.5\%$  ( $P < 0.001$ ),  $47.3 \pm 8.6\%$  ( $P < 0.001$ ) and  $50.6 \pm 5.1\%$  ( $P < 0.001$ ), respectively, while R6 (viscoelastic portion) significantly decreased by  $33.4 \pm 4.6\%$  ( $P < 0.001$ ) after 28 days. Skin hydration



was also found to increase significantly after 28 days by  $42.2 \pm 8.5\%$  ( $P < 0.01$ ), but there was no change in TEWL. No adverse events were reported. Conclusions: A novel skin care routine developed for use on sensitive skin significantly improves the signs of aging including hydration, wrinkle size and elasticity without significant adverse effects.

*M.M.F. Shirata, P.M.B.G.M Campos, Eficácia clínica de formulações cosméticas contendo tetraispalmitato de ascorbila e peptídeos de arroz na pele jovem com fotoenvelhecimento*, Congresso Colamiqç, São Paulo, May 21-23, 2019

Considerando que a intensidade do fotoenvelhecimento está diretamente relacionada ao grau de exposição a radiação solar, a pele de pessoas ainda jovens pode apresentar alterações decorrentes do mesmo, como hiperpigmentações e redução da elasticidade da pele. Nesse contexto, o desenvolvimento de formulações fotoprotetoras e de formulações cosméticas contendo substâncias ativas com propriedades antioxidantes, hidratantes e com potencial para atuar na derme é fundamental para a prevenção e atenuação de tais alterações cutâneas. Para a comprovação dos benefícios dessas formulações na pele fotoenvelhecida, a avaliação da eficácia clínica por técnicas de biofísica e análise de imagem permite a análise objetiva de várias características da pele além da correlação dos resultados obtidos por meio de diferentes parâmetros, o que possibilita a obtenção de resultados mais conclusivos.

*F. Wandrey, D. Schmid, F. Züllli, Stem cell activation for a V-shaped-face*, PERSONAL CARE EUROPE, April 2019, p. 35-38

As we age, the production of collagen and elastin is reduced, which results in sagging skin that can most notably be observed at the face contours of the jawline. Mesenchymal stem cells have been shown to improve collagen production and regenerate the skin, for example during wound healing. These processes are mediated by vesicles known as exosomes which are produced and secreted by these stem cells. A novel active ingredient based on goji plant stem cells was shown to improve the sternness of aged mesenchymal stem cells as well as increase exosome signalling by mesenchymal stem cells, which in turn improves extracellular matrix production in fibroblasts. The improved extracellular matrix rejuvenates the skin by improving skin density, reducing wrinkles and reshaping the face for an improved V-shape of the face.

*M.M. Fossa Shirata, G.A.D. Alves, P.M.B.G. Maia Campos, Photoageing related skin changes in different age groups: a clinical evaluation by biophysical and imaging techniques*, International Journal of Cosmetic Science, Volume 41, Issue 3, 2019

Objectives: In view of the lack of studies about the morphological and structural changes caused by solar radiation in young people, the aim of the present study was to evaluate the photoageing related changes in the skin of different age groups by biophysical and imaging techniques. Methods: Forty four healthy female subjects were divided into two age groups: Group 1 (G1): 18-35 years old and Group 2 (G2): 40-60 years old. The skin of malar region of the face was evaluated in terms of mechanical properties, disorder in the pigmentation pattern, morphological and structural changes using the Cutometer<sup>®</sup>, Colorimeter<sup>®</sup>, Visioface<sup>®</sup> and Dermascan C<sup>®</sup> devices and reflectance confocal microscopy (Vivascope<sup>®</sup>). Results: The results showed that the main changes in the skin of G1 were related to the pigmentation pattern, the papilla format and depletion of thin collagen fibres. These alterations were also observed in the skin of G2, but with more pronounced effects. Conclusion: The knowledge about the skin changes caused by photoageing obtained in this study is very important for the development of dermocosmetic products for more effective treatments particularly focused on this type of skin. Finally, objective characterization of photoageing showed the importance of photoprotective habits since the first years of life in order to retard the appearance of skin changes caused by solar radiation.

*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.

*P.M.B.G. Maia Campos, M.O. Melo, D.G. Mercurio, Use of Advanced Imaging Techniques for the Characterization of Oily Skin*, Frontiers in Physiology, March 2019, Volume 10, Article 254

Excessively oily skin leads to clinical signs that cause discomfort to patients, such as excessive shine, enlarged pores, acne, and an imbalance of the hydrolipidic layer. In this context, a constant demand for the research and development of products that prevent these features, has been noted in the field of cosmetics and dermatology. Thus, the objective of this study is to evaluate the cutaneous characteristics of oily skin due an excessive production of sebum through biophysical and skin imaging techniques. 19 participants with different skin types were selected and the following parameters were evaluated: pore count, determination of the number of sebaceous glands and amount of sebum in infundibulum, determination of cutaneous microrelief, count of comedones, evaluation of epidermis thickness, characterization of the cellular, and comedone size and its characteristics. These evaluations were done through biophysical and skin imaging techniques. The obtained results showed that different regions of the face presented different characteristics related to oiliness, quantity, and the appearance of pores and comedones. The malar region had a lower epidermis thickness and a larger number of large pores. Moreover, in this region excessive sebum production, which can be related to pores, not comedones, was noted. The nose region presented higher sebum content in the infundibulum and lower active sebaceous glands, showing a higher activity of sebaceous production in this region. The chin region presented a positive correlation between the sebum content, roughness parameter and the number of pores and comedones. As different skin properties are related and influence the appearance of undesirable clinical signs, we identified the need for a multifactorial approach for the effective treatment of oily skin. The rational development of multifunctional cosmetic products that promote the control of oily skin, that regulate the keratinization process, improve the microrelief and leads to a better epidermis and dermis structure, will not only improve oily skin conditions but will also allow for the reduction or disappearance of clinical signs that result from excessive oiliness, all of which causes concern and results in a relentless search for cosmetic and dermatological products that address the unaesthetic nature of these conditions.

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

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

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

Background: Melasma is the most common pigmentary skin disorder, especially in females and those with darker complexion. The current study evaluated the safety and efficacy of a triple combination cream containing hydroquinone 4%+tretinoin 0.05%+fluocinolone acetone 0.01% (Januluma<sup>®</sup> 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, especially 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.

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

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

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

Acne is a chronic inflammatory disorder of the pilosebaceous follicles that affects 80% of the population. As topical agents for acneic skin treatment are often irritants, dermocosmetics, may improve therapy. Thus, we developed cosmetic formulations with nicotinamide (vitamin B3), pyridoxine tris-hexyldecanoate (a vitamin B6 derivative) and zinc-pyrrolidone carboxylic acid (PCA) in association, and evaluated their clinical efficacy, skin compatibility, and sensory properties. The formulation (vehicle) added with vitamin B3, the vitamin B6 derivative and zinc-PCA in combination was applied twice daily for six weeks on the forehead, malar and chin skin regions of sixteen subjects. Before (pre-treatment) and after treatment, these regions were evaluated using biophysical and skin imaging techniques. Inflammatory acne lesions were reduced by 60% after application of the complete formulation. Porphyrine reduction was shown in the majority of volunteers. The results shown an improvement of inflammatory acne lesions based on porphyrine reduction, lesion counts, skin compatibility and comedogenicity testing. The skin barrier function was not impaired by the experimental formulation, which demonstrates its efficacy in acne treatment without undesirable effects. The combination of Zn-PCA and vitamins B3 and B6 vehiculated in an adequate topical formulation can be considered as a safe and effective alternative treatment for mild inflammatory acneic skin.

*Y. Brenner, Ein natürlicher Wirkstoff, der den aktuellen Erwartungen des deutschen Hautpflegemarktes entspricht, SÖFW Journal 10/2018*

Der Markt für Kosmetik und Hautpflegeprodukte in Deutschland ist der Ort, an dem sich Tradition und Fortschritt treffen. Seit mehr als eineinhalb Jahrhunderten setzen Hautpflegepräparate - wie Cremes, Masken, Lotionen und Spezialbehandlungen - auf die Verwendung von Pflanzen, Wurzeln und Blüten. Kosmetikhersteller aus Bayern, Niedersachsen, dem Saarland und anderen Ländern haben seit Jahrzehnten eine Wissensbasis aufgebaut, die die belebenden Kräfte der in der Natur vorhandenen Inhaltsstoffe nutzt und sie in Verbraucherprodukten zur äußerlichen Hautpflege umsetzt.

*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.

*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.

*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.

V.H. Pacagnelli Infante, E. Bagatin, P.M.B.G. Maia Campos, **Application of Reflectance Confocal Microscopy (Rcm) in the Evaluation of Skin Photoaging on Young Men**, Poster Presentation at ISBS Conference San Diego, May 2018

Introduction: The differences on skin physiology and lifestyle between men can influence the damages of solar radiation on the skin. The aim of this study was to evaluate the skin changes resulted from solar exposure in young male using skin imaging techniques. Methodology: The malar region of 20 men (18-28 years old) were evaluated by high-resolution images (Visioface®); Skin thickness and echogenicity by ultrasound of 20 MHz (DermaScanC®) and Morphological and structural skin characterization by Reflectance Confocal Microscopy (VivaScope® 1500). Results and Conclusions: Pigmentation disturbs, telangiectasias and wrinkles were observed. A better echogenicity ratio on dermis and lower thickness of epidermis were found for participants with photoprotection habits. 35% showed an irregular honeycomb pattern, 40% polycyclic papillae, 35% coarse fibers of collagen and 10% huddles of collagen. All morphological alterations were observed for those who did not use sunscreen. The study brings relevant data of skin alterations for young men without photoprotective habits.

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

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

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

Crosslinked hyaluronic acid-based hydrogels (crossHA) have been widely used in the cosmetic industry as injectable dermal fillers. 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.

L. Rocha Mota, L. Jansiski Motta, I. da Silva Duarte, A.C. Ratto Tempestini Horliana, D. de Fátima Teixeira da Silva, C. Pavani, **Efficacy of phototherapy to treat facial ageing when using a red versus an amber LED: a protocol for a randomized controlled trial**, BMJ Open 2018;8

Introduction: The skin undergoes morphological and physiological changes with the advancing age of an individual. These changes may be caused by intrinsic and extrinsic factors that contribute to cellular ageing and consequent skin ageing. The term photoageing is used to characterise the ageing of the skin caused by solar radiation. Clinically, the skin becomes more flaccid, thicker and hyperpigmented, while there is an early appearance of wrinkles and other skin changes, such as skin cancer. Nowadays, there are numerous treatments for ageing skin, and one of them is with the use of phototherapy, which uses light-emitting diodes (LEDs). The objective of this study will be to evaluate the percentages of reduction in the volume of periorcular wrinkles when treated with red and amber LEDs. Methods and analysis: All of the participants will receive photobiomodulation to treat their

periorcular wrinkles. They will be using red and amber LEDs, with one colour being used on each hemiface. The facial side to be treated with each colour will be randomised. After an interval of 180 days, the participants will receive a cross-treatment. The primary variable of the study is the volume of periorcular wrinkles (crow's feet), which will be measured by a VisioFace equipment. The secondary variables are elasticity (measured by Cutometer) and hydration (measured by Corneometer). Quality of life and self-assessment of the participants will be measured using the adapted Melasma Quality of Life scale – Brazilian Portuguese adaption (MelasQoL-BP) and Skindex-29 questionnaires. All of the variables will be measured before and after a group of 10 sessions.

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

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

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

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

*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.

*N. Lall, N. Kishore, B. Fibrich, I.A. Lambrechts, In vitro and In vivo Activity of Myrsine africana on Elastase Inhibition and Anti-wrinkle Activity*, Pharmacogn Mag, 2017 Oct-Dec;13(52): p. 583-589

Background: Myrsine africana (MA) is a plant traditionally used in South Africa to treat various diseases. Objective: The ethanolic extract of MA, was used for in vitro and in vivo studies to determine its elastase inhibitory activity. Materials and Methods: MA and its isolated compound, myrsinoside B, were tested in vitro for their elastase inhibitory activity. The MA extract was also evaluated for mutagenicity using two strains of Salmonella typhimurium (TA 98 and TA 100), microbial count, metal analysis, and stability. In vivo studies included irritancy and wrinkle reduction trials using Visioscan and Visioface. Results: The leaf extract showed good elastase inhibition with a 50% inhibitory concentration (IC<sub>50</sub>) of 28.04 µg/ml. Myrsinoside B inhibited the elastase enzyme at an IC<sub>50</sub> of 4.68 ± 0.34 µg/ml. No colony growth observed during mutagenicity studies and it was concluded that MA ethanolic extract is a nonmutagen. MA extract was found to be a nonirritant during the patch test clinical trial. MA was found to contain negligible amounts of microorganisms and heavy metals. Gel cream containing MA crude extract was found to be stable for 2 years when kept at temperatures below 30°C. In clinical trials (in vivo), it was found that the test product containing 5% ethanolic extract of MA was effective in reducing wrinkles after application 2 times a day for 14 days and 28 days compared to the placebo aqueous cream. Conclusion: MA is effective in reducing the appearance of wrinkles. Summary: This is a first time report of the elastase inhibitory potential of Myrsine africana and myrsinoside B and the anti-wrinkle potential of Myrsine africana. Myrsine africana ethanolic extract effectively inhibited the elastase enzyme. Myrsine africana was effective in in vivo studies to reduce the appearance of wrinkles after 14 days.

*N. Cameli, Platelet-rich plasma injections show efficacy in facial skin biostimulation*, Dermatologic Surgery, June 2017, Volume 43, Issue 6, p. 826–835

Background: Platelet-rich plasma (PRP) is an emerging treatment in dermatology recently proposed for skin rejuvenation. Objective: To evaluate the efficacy and safety of autologous pure PRP dermal injections on facial skin rejuvenation, investigating the cellularity of PRP samples. Materials and Methods: Twelve patients underwent 3 sessions of PRP injection at 1-month intervals. The clinical and instrumental outcomes were evaluated before (T0) and 1 month (T1) after the end of treatment by means of transepidermal water loss, corneometry, Cutometer, Visioscan, and Visioface. A flow cytometry characterization on PRP and peripheral blood (PB) samples was performed. Results: Clinical and patient evaluation showed improvement of skin texture. Skin gross elasticity, skin smoothness parameters, skin barrier function, and capacitance were significantly improved. No difference between PRP and PB lymphocyte immunological asset was observed. A leukocyte population (mainly CD3<sup>+</sup>) and neutrophils depletion were documented in all the PRP samples. Conclusion: This instrumental study demonstrated that PRP poor in leukocytes can provide objective improvements in skin biostimulation. Flow cytometry showed no variability among the PRP samples using a reproducible separation system and a low content in proinflammatory cells. Although a pilot study, it may be helpful for future investigations on PRP cellularity.

*N. Cameli, M. Mariano, I. Cordone, E. Abril, S. Masi, M.L. Foddai, Autologous Pure Platelet-Rich Plasma Dermal Injections for Facial Skin Rejuvenation: Clinical, Instrumental, and Flow Cytometry Assessment*, Dermatol Surg. 2017 Jun;43(6): p. 826-835

Background: Platelet-rich plasma (PRP) is an emerging treatment in dermatology recently proposed for skin rejuvenation. Objective: To evaluate the efficacy and safety of autologous pure PRP dermal injections on facial skin rejuvenation, investigating the cellularity of PRP samples. Material and Methods: Twelve patients underwent 3 sessions of PRP injection at 1-month intervals. The clinical and instrumental outcomes were evaluated before (T0) and 1 month (T1) after the end of treatment by means of transepidermal water loss, corneometry, Cutometer, Visioscan, and Visioface. A flow cytometry characterization on PRP and peripheral blood (PB) samples was performed. Results: Clinical and patient evaluation showed improvement of skin texture. Skin gross elasticity, skin smoothness parameters, skin barrier function, and capacitance were significantly improved. No difference between PRP and PB lymphocyte immunological asset was observed. A leukocyte population (mainly CD3) and neutrophils depletion were documented in all the PRP samples. Conclusion: This instrumental study demonstrated that PRP poor in leukocytes can provide objective improvements in skin biostimulation. Flow cytometry showed no variability among the PRP samples using a reproducible separation system and a low content in proinflammatory cells. Although a pilot study, it may be helpful for future investigations on PRP cellularity.

*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 (Article in Portuguese)

Este artigo reporta o desenvolvimento de uma base de maquiagem para uniformizar e cobrir impert'eigos cutaneas para consumidoras de pele negra. Este articulo describir el desarrollo de una base de maquillaje para igualar y cubrir imperfecciones 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.

*N. Kanda, S. Martindale, P. Grant-Ross, C. Searing, G. Daniels, M. Varcin, Color Corrected: Perfectly Tuning to Black Skin Tones, C & T online, March 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.

*D. Whitby, Latest developments in men's skin care market, PERSONAL CARE EUROPE, Feb 2017*

One of the most dynamic sectors of the global beauty market is the male grooming sector ...

*L. Ma, Y. Tan, S. Zheng J. Li, C. Jiang, Z. Chen, X. Wang, Correlation study between image features and mechanical properties of Han Chinese facial skin, Int J Cosmet Sci., 2017 Feb;39(1):p. 93~100*

Objective: Mechanical properties are considered to be vital factors that influence skin physiology during ageing. Wrinkles and skin roughness are the two main features in aged skin. The purpose of this study is to characterize the relationship between facial skin mechanical properties and image features using quantitative methods. Methods: Two hundred and forty healthy male and female volunteers living in Shanghai, China (aged 20-70 years), were examined in this study. Facial images were photographed by VISIA-CR. Wrinkle volume of middle forehead and skin roughness of upper cheek were analysed by Skin Surface Analyzer (SSA) software. Mechanical parameters at the middle forehead and upper cheek were measured using Cutometer® MPA 580 and Reviscometer® RVM 600. Results: Skin wrinkles and roughness increased during ageing, where men have a higher level and earlier manifestation than women. Skin mechanical parameters R2, R5, R7 and RRT were found decreased with age. Moreover, mechanical parameters including R2, R7, RRT and anisotropy showed significant correlations with wrinkle volume and/or skin roughness. Conclusion: The facial image features including wrinkle volume and skin roughness are significantly correlated with skin elasticity and anisotropy, which could well describe the skin features of Han Chinese.

*N. Cameli, M. Mariano, M. Serio, E. Berardesca, Clinical and instrumental evaluation of a cross-linked hyaluronic acid filler dermal injection: effects on nasolabial folds skin biophysical parameters and augmentation from a single-dose, monocentric, openlabel trial, G Ital Dermatol Venereol. 2016 Oct; 151(5): p 507-14*

Background: When a hyaluronic acid dermal device to fill soft tissues is chosen, efficacy, safety and durability are key concerns. This is an open-label prospective study to instrumentally evaluate the effects of HA filler dermal injection on nasolabial folds skin biophysical parameters and augmentation. Methods: A single Italian site treated female subjects aged 40-55, for nasolabial folds, with a single standardized injection. The outcome was evaluated with objective quantitative measurements after 90 (T1) and 180 days (T2) from the injection comparing to baseline (TO) by means of Corneometer (skin hydration measurement), Cutometer (skin elasticity measurement), and Visioface devices for digital and UV computerized image analysis. Secondary endpoints were safety assessment, subject investigator satisfaction with the intervention. Assessment of aesthetic results included photographic documentation. Results: The computerized image analysis confirmed the clinical assessment showing statistically significant reduction in nasolabial folds both at T1 and T2. Visioface® indexes showed a marked and statistical significant response. An excellent profile of satisfaction of the product at T2 from investigators and patients was recorded. Skin hydration and elasticity did not show significant changes. Conclusions: In our study, a standardized HA filler dermal injection on nasolabial folds did not influence skin biophysical parameters such as skin hydration and elasticity. Nasolabial folds showed a persistent and significative response at T2 confirmed by instrumental evaluation. The tolerability and safety profile of the product was excellent.



M.A. Amirkhani, A. Shoaie-Hassani, M. Soleimani, S. Hejazi, L. Ghalichi, M.A. Nilforoushzadeh, **Rejuvenation of facial skin and improvement in the dermal architecture by transplantation of autologous stromal vascular fraction: a clinical study**, *BiolImpacts*, 2016, 6(3), 149-154

Introduction: The rejuvenation characteristics of tissue grafting has been established for many years. Recently it has been shown that stromal vascular fraction (SVF) of fat tissue contributes to its rejuvenation properties. As the SVF is a minimal processed cell population (based on FDA guidance), therefore it is a suitable cell therapy for skin rejuvenation. This clinical trial was aimed to evaluate the ultrastructural improvement of aging skin in the facial nasolabial region after transplantation of autologous SVF. Methods: Our study was conducted in 16 patients aged between 38 and 56 years old that were interested in face lifting at first. All of the cases underwent the lipoaspiration procedure from the abdomen for sampling of fat tissue. Quickly, the SVF was harvested from 100 mL of harvested fat tissue and then transplanted at dose of  $2.0 \times 10^7$  nucleated cells in each nasolabial fold. The changes in the skin were evaluated using Visioface scanner, skin-scanner DUB, Visioline, and Cutometer with multi probe adopter. Results: By administration of autologous SVF, the elasticity and density of skin were improved significantly. There were no changes in the epidermis density in scanner results, but we noticed a significant increase in the dermis density and also its thickness with enrichment in the vascular bed of the hypodermis. The score of Visioface scanner showed slight changes in wrinkle scores. The endothelial cells and mesenchymal progenitors from the SVF were found to change the architecture of the skin slightly, but there was not obvious phenotypic changes in the nasolabial grooves. Conclusion: The current clinical trial showed the modification of dermis region and its microvascular bed, but no changes in the density of the epidermis. Our data represent the rejuvenation process of facial skin by improving the dermal architecture.

J. Lozza, D. Schmid, F. Gafner, **Extremophile cells offer UV stress protection**, *Personal Care* April 2015

The high Alpine plant *Saponaria pumila* is a survival specialist. It weathered the last ice age growing on ice-free mountain peaks, so-called nunataks exposed to constantly low temperatures and high levels of UV radiation. To cope with a harsh environment *S. pumila* developed adaptation strategies, repair mechanisms and protective compounds. These precious substances have now become available for skin care. An extract made from callus cells of *S. pumila* was shown to in vitro protect dermal stem cells against UV-induced stress and to maintain their stem cell properties.

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 ( $\alpha$ -tocopheryl- $\beta$ -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.

F. Sugihara, N. Inoue, X. Wang, **Clinical Effects of Ingesting Collagen Hydrolysate on Facial Skin Properties**, *Jpn Pharmacol Ther* 2015; 43: p. 67-70

Objectives: The objective of this research was to investigate the effectiveness of daily ingestion of a specific collagen hydrolysate (CH), which contains prolylhydroxyproline (Pro-Hyp) and hydroxyprolylglycine (Hyp-Gly), on facial skin properties. Methods: In this randomized, placebo-controlled, double-blind trial, 56 women aged 30-55 years were randomized to receive 2.5 g of CH or 5 g of placebo once daily for 8 weeks, with 28 subjects assigned to each group. The hydration, elasticity and roughness properties of facial skin were measured at week 0 (baseline), week 4 and week 8. Results: Levels of skin hydration, elasticity and roughness in subjects who received CH significantly improved between baseline and weeks 4 and 8, while there was no significant improvement in subjects who received placebo. Moreover, the levels of skin elasticity, roughness and the net change of skin hydration improved significantly in the CH group compared to the placebo group by both weeks

4 and 8. Conclusion: The present results suggest that daily ingestion of 2.5 g of CH improves facial skin hydration, elasticity and roughness.

*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.

*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.

*T. Hermanns-Lê, C. Piérard-Franchimont; G.E. Piérard, Scrutinizing skinfield melanin patterns in young Caucasian women, 2013 Informa Healthcare UK*

In humans, melanocytes and their melanin production are responsible for the phototype-related skin color. Two chemically distinct types of melanins are present in the skin, namely an insoluble black-brown eumelanin and an alkali soluble red-yellow pheomelanin. The microenvironment within the melanosomes where these pigments are formed is critically important. Indeed, the varied skin hues depend largely on the chemical nature, amount and distribution of melanin pigments produced in melanosomes and transferred to keratinocytes. The overall system appears organized in each epidermal melanin (EMU) corresponding to a functional entity composed of a single melanocyte and its related neighbor keratinocytes into which melanosomes are transferred.

*T. Hermanns-Lê, K. Al Rustom, C. Piérard-Franchimont, G.E. Piérard, S. Piérard, Le "cheetah-look" Le phenotype guépard, face cache de la pigmentation mélanique innée du visage, DERM ACTU No° 131 Mai-Juin 2012*

Au niveau du visage, trois types principaux de pigmentation physiologique peuvent être distingués. On identifie d'une part des mélanoses zonales ethniques comme la pigmentation orbitaire. D'autre part, le territoire facial peut comporter des zones mélaniques discrètes limitées par des lignes de démarcation coedifiées qui donnent un effet de "tigre-look" sous éclairage en lumière ultraviolette. Enfin, des mouche-tures relativement régulières, peuvent parsemer le visage, contribuant à un "cheetah-look" très particulier sous lumière ultraviolette. La lampe de Wood est un outil ancestral permettant des observations dans un spectre relativement étroit de lumière ultraviolette. Cet équipement centenaire a fait l'objet de transformations techniques nombreuses pour aboutir à des caméras de type Visioscan et Visiopor (C+K electronic, Cologne).

*J. Smits, N. Herbst, Effects of pomegranate flower complex on the skin, Personal Care, March 2012, p. 45-50*

Today's understanding of skin ageing describes two processes – intrinsic and extrinsic skin ageing. In both cases there is an imbalance between collagen breakdown and collagen synthesis which, in the long term favours collagen breakdown. Dermal fibroblasts play a significant role in these

processes and produce both the components of the extracellular matrix (ECM) and the enzymes responsible for its breakdown and restructuring. The main components of the extracellular matrix are collagen and elastin fibres. Among other things they provide structure, softness and elasticity to the skin and absorb mechanical stresses. Matrix metalloproteinases (MMP) possess endopeptidase activity and are also responsible for the breakdown and modelling of the ECM.

*G.E. Piérard, C. Piérard-Franchimont, P. Quatresooz, **Field melanin mapping of the hairless scalp**, Skin Research and Technology 2011; p. 1-5*

Skin pigmentation may be altered in different ways by a variety of physiological and pathological conditions. The gross manifestations of such alterations are more frequent on sunexposed skin than on light-shielded areas. There are two ways in which white light is transformed into coloured light by interaction with skin chromophores. Light absorption by the skin commonly transforms light into other forms of energy. Scattering including reflection, refraction and diffraction redirect some segments of the incident light wavelengths. In clinical and experimental settings, a controlled procedure for recording optical imaging is mandatory for comparative purposes.

*E. Xhaufaire-Uhoda, G.E. Piérard, **The feline look under controlled full face visualization**, Laboratory of Skin Bioengineering and Imaging, Dpt. of Dermatopathology, University Hospital of Liège, Belgium*

Recording facial aspect with reproducibility is of importance in some fields of dermocosmetology. This study specifically focused on the field distribution of melanin over the full face of Caucasian subjects. A new optical method was used based on computer filtration (Visioface Quick). Front and profile face photographs were taken from 30 volunteers of both genders, aged 22-64 years. The 200 LED-lighting conditions and head positioning were controlled in order to get even illumination of the full face. Ephelids were particularly well evidenced. Other particular patterns of melanin distribution were present at the contours of the lips and eyelids. They presented as delimited fields of hypo- and hyperpigmentation located in specific areas.

*J. Wiechers, S. Mac-Mary, S. Vacheron, J-M. Sainthillier, E. Garcia, G. Khazaka, P. Humbert, B. Gabard, **How to measure exactly the same location on the face as a function of time with digital photography?** ISBS Besancon 2009*

The fight against skin aging is truly international, although the symptoms may differ throughout the world. Whereas Caucasians notice wrinkles as one of the first signs of their passing years, Asians observe skin discolourations.

*J.-M. Sainthillier, S. Mac, M. Pfulg, V. Gribinski, V. Guillou, J. de Rigal, C. Montastier, P. Humbert, **Comparative instrumental study of aesthetic dermatology acts and cosmetic protocols**, ISBS Besancon 2009*

Background: Mesotherapy and chemical peels are commonly performed in dermatological practice. However few data are available to compare their cutaneous effects on the face with those resulting from the repeated application of cosmetic products.

*J.-M. Sainthillier, S. Mac, P. Humbert, **La photographie numerique: un outil scientifique dans l'évaluation des traitements esthetique et correcteur**, J. Med. Esth. et Chir. Derm. Vol. XXXVI, 144, decembre 2009*

La photographie numerique et l'analyse d'image ont fait des progrès énormes ces 20 dernieres annees.