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## Literature List Mexameter®

*J.B. Dawson, D.J. Barker, D.J. Ellis, E. Grassam, J.A. Cotterill, G.W. Fisher, and J.W. Feather, **A theoretical and experimental study of light absorption and scattering by in vivo skin**, Vol. 25, No. 4, 695-709, Phys. Med. Biol. 1980*

A theoretical treatment has been developed for the optical properties of a layered structure which absorbs and scatters light. This theory predicts that the logarithm of the inverse of reflectance (LIR) of the surface should be a useful parameter for the examination of that structure. This approach has been applied to a study of skin in vivo. An instrument was constructed for use in clinical situations to measure the LIR spectrum of skin over the visible region of the spectrum (450-760 nm). The contributions to the observed spectra made by pigments and the skin structure were deduced by reference to the theoretical model. Numerical indices were used to quantify the changes in skin haemoglobin content following the application of vasoconstricting preparations.

*J.W. Feather, D.J. Ellis, G. Leslie, **A portable reflectometer for a rapid quantification of cutaneous haemoglobin and melanin**, Vol. 33, No 6, 711-722, Phys. Med. Biol., 1988*

A portable reflectance instrument for the rapid quantification of cutaneous haemoglobin and melanin is presented. Light emitting diodes (LEDS) are used to illuminate the skin and a silicon photodiode to detect the light diffusely reflected from the surface. Reflectance measurements are made at only three wavelengths and the problems of pigment quantification consequent upon this are discussed. In addition to quantification of haemoglobin and melanin, qualitative information on the redox state of the blood may also be obtained. Measurements made on port wine stain, which had been treated with 576 nm cw laser radiation at times between 1 and 6 months previously, provided information on the vascular response to this thermal injury.

*J.-L. Leveque, **Cutaneous Investigation in Health and Disease**, Marcel Dekker INC. New York and Basel 1989*

*R. Marks, C. Edwards, **Methods to aid the choice of shade from a range of colour disguise cosmetics**, University of Wales College of Medicine, 26 May 1993*

The range of cosmetic camouflage products for major disfiguring skin conditions are well known, and are available in a wide range of shades. They require considerable skill and training for their blending and application which also needs a finishing layer of powder for best effect. These products are admirably suited to their use on major blemishes, but would be difficult to apply by a consumer at home for minor blemishes.

*I. Tausch, J. Gaßmüller, W.J. Kessler, Beurteilung der protektiven und pflegenden Potenz von Lichtschutzpräparaten mit biophysikalischen Methoden*, Wissenschaft Dt. Derm. (43), 1995

Während einer zehntägigen UV-Bestrahlung wurden die Eigenschaften zweier Lichtschutzpräparate (LSF6,LSF20) untersucht. Als Vergleich dienten unbehandelte als auch mit der jeweiligen Grundlage behandelte Hautareale. Es wurde die Intensität des UV-Erythems mit einem Farbmeßgerät, die Hautfeuchtigkeit mittels der Corneometrie und die Hautoberflächenstruktur durch Profilometrie beurteilt. Beide Lichtschutzpräparate unterdrückten das UV-Erythem vollständig, der Feuchtigkeitsgehalt der Haut und die Faltentiefe blieben unverändert. In den Arealen, die einer zehntägigen UV-Bestrahlung ohne Lokalbehandlung ausgesetzt waren, traten deutliche Erytheme, Feuchtigkeitsverluste und eine Zunahme der Faltentiefe auf. Die Anwendung der Grundlagen allein zeigte nur bei einem Präparat eine leichte Lichtschutzwirkung. Neben den UV-protektiven Eigenschaften, die bei beiden Lichtschutzpräparaten gleich gut waren, sind die herausragenden pflegenden Eigenschaft der LSF20-Emulsion hervorzuheben.

*C. Edwards, The Mexameter MX 16 TM*, Biogeninering of the Skin: Methods and Instrumentation, CRC Press 1995

The Mexameter MX 16 TM (Courage and Khazaka Electronic GmbH, Germany) is a dual instrument incorporating a melanin index and an erythema index meter. Both of these are based on the diffuse remittance spectrometry principle, whereby a measurement is made of the absorbency of a volume of tissue at specific wavelengths, from which the concentration of absorbing pigment can be estimated and used to construct a pigment index.

*J.H. Ha, N.S. Jo, H.K. Lee, J.I. Kim, B.G. Lee, W.J. Park, The Depigmentation Effect of A New Material Extracted from Paper Mulberry and ist Comparison by Three Colorimetric Instruments*, Proceedings of the 19th IFSCC Congress, October 1996

Skin color varies depending on age, racial background, seasonal change and pigmentation disorder. Whiter skin color is a desire of oriental women. Various whitening beauty cosmetic products for inhibiting pigmentation process prevails in the market. Measuring skin color is a popular clinical tool for evaluating depigmentation effect of these products. Therefore, the cosmetic scientists need to develop new effective depigmenting ingredients as well as powerful measuring tool for skin color.

*K.-P. Wilhelm, proDERM* institut for applied Dermatological Research GmbH. Schenfeld, Germany. **Client-Server based On-Line Data Acquisition for Skin Bioinstrumentation Devices**

During dermatological safety and efficacy studies, huge amounts of data- both instrumental data as well as evaluator scores may accumulate. We have developed an integrational data with on-line data acquisition capability. The program runs in a Macintosh network. A graphical interface facilitates data entry. A multilevel password system secures unauthorised use. In order to comply with GCP/GLP requirements all data entries and any possible changes relating to experimental studies-both scores and instrumental values -are secured in a log file together with date, time, and initials of the person entering the data. The program can at present acquire data from: Chromameter (Minolta), Tewameter, Corneometer, pH-Meter, Sebumeter, Mexameter, (all Courage and Khazaka). However, the open architecture would easily allow to incorporate more instruments with a serial interface. Data can be exported in DOS, windows or Macintosh format for easy import into any spreadsheet or statistics programs. The program has been completely validated and successfully used in a contract research organisation for over 12 months. Automatic data acquisition has proven to be very useful tool to facilitate and speed up data analysis and to enhance the quality and reliability of test results.

**Clinical evaluation of a depigmenting cream: TRIO-D® in melasma of the face**, Nouvelles Dermatologiques Vol. 16 1997

To evaluate the depigmenting activity of TRIO-D® (combination of Hydroquinone-Alpha Hydroxy Acids (AHA)-ascorbic acid derivative) in melasma of the face, a doouble blind, randomized, multicentric

study versus excipient was conducted in 38 women. They were divided in two parallel groups and had applied to each hemiface, twice daily, either the verum or the excipient on the pigmented spots during 8 weeks. The objective assessment was done through the measurement and the comparison before and after treatment with the melanic index: Mexameter®. A clinical evaluation of the area and the intensity of the pigmented spots was assessed with Visual Analog Scales. The objective as well as the subjective results show a significant loss of pigmentation of the spots treated with TRIO-D® cream compared with the excipient cream since the first month of treatment. The efficacy of TRIO-D® cream is similar whatever the duration of melasma.

*B.K. Sun, H.K. Lee, J.C. Cho, J.I. Kim, Clinical Improvement of Skin Aging by Retinol Containing Products: With Non-Invasive Methods, IFSCC Conference Mexico 25-27 September 1997*

Retinol as well as RA (retinoic acid) is well known to have many beneficial effects on (photo)aged skin. But the skin irritation potential and unstable condition of the products containing them have been some problems in their cosmetic uses. So, retinol containing gel product (MDC gel) was developed for less skin irritancy and more stability in cosmetic products. To examine the clinical effects of retinol containing product, we used clinical non-invasive assessment techniques on 40 volunteers for 6 months maintaining double-blind test conditions. According to our results, the use of retinol containing product improved skin color and hydration level slightly. But there was no statistical difference. There was no erythema reaction compared to the use of RA. Especially, the skin elasticity increased above 20% and skin wrinkles of crows' feet region decreased more than 10%. Besides the instrumental analysis, a large majority of volunteers felt that their skin was improved in the case of wrinkles, elasticity, hydration and color.

*P. Grimes, Cosmetic Issues For Ethnic Women, 3rd Int.Symposium on Cosmetic Efficacy, May 1998*

*A.O. Barel, P. Clarys, R. Lambrecht, I. Manou, I. Vanbeneden, Skin Surface Color Measurements - A Comparison Between the Chromameter® and the Mexameter® MX 16. 12th ISBS, Boston, 06/98.*

The three simple reflectance meters are based on the same optical principle as developed by Diffey and coworkers (1994).

*J.W. Wiechers, V. Wortel, C. Oakley, T. Barlow, Looking at the Skin: Skin Color, Cosmetics & Toiletries, Vol. 113, August 1998*

We are living in a funny world. While half of the world's population is trying to obtain a suntan assisted by sun-care-products, the other half is looking for skin lighteners or skin whiteners to alter their complexion the other way.

*C.M. Schempp, C. Blümke, J. Schule-Mönting, E. Schöpf, J.C. Simon, Der Einfluß verschiedener Salzlösungen auf die Ultraviolett-B-vermittelte Induktion von Erythem und Pigmentierung. Hautarzt 6/98.*

Die Kombination von Salzwasserbädern mit anschließender UV-Bestrahlung wird seit langem bei der Behandlung der Psoriasis und der atopischen Dermatitis eingesetzt. Ziel der vorliegenden Studie war es, die photosensibilisierenden Eigenschaften von 2 handelsüblichen Badesalzen, Salz aus dem Toten Meer und Kochsalz zu untersuchen. Testareale der Unterarmbeugeseiten von 10 Probanden wurden für 15 min mit Salzlösungen in Konzentrationen von 1%, 3%, 5% und 15% inkubiert und anschließend mit einer erythematischen UV-B-Dosis bestrahlt. Zum Vergleich diente Leitungswasser+UVB und UVB allein.

*F. Merot, S. Rullier, P. Masson, Use of the Mexameter MX 16™ for the Assessment of the Sun Protection Factors (UVB and UVA).* Poster - 20th IFSCC Congress Cannes, 09/1998

The COLIPA method for the determination of the sun protection factor (SPF) and the method for the determination of the UVA protection factors (UVA-PF) based on the persistent pigment darkening (PPD) lean on a colorimetric approach performed with the Chromameter CR 200 or CR 300 (Minolta) which uses the L\*a\*b colour space (CIE – 1976) to define the typology of the volunteers and to calibrate the visual assessment of the observed phenomena (erythema or residual pigmentation).

*J.W. Wiechers, C.J. Oakley, V.A.L. Vorte, A. Barlow, A Comparison of Instrumental and Visual Assessment of Skin Color,* 20th IFSCC Congress Cannes, 09/1998

There is an ever-increasing interest nowadays in skin lightening studies, especially in Asia.

*G. Leone, S. Siladji, G.F. Secchi, M. Carducci, M. Fazio, A New Challenge For High SPF Sunscreens: The Outdoor Dynamic Test - Product Evaluation - 20th IFSCC Congress Cannes, 09/1998.*

*J.S. Koh, K.S. Chae, H.O. Kim, Skin Characteristics of Normal Korean Subjects According to Sex and Site using Non-Invasive Bioengineering Methods,* Korean J Dermatol., 1998 Oct; 36(5): p. 855-864

Background: During the last few years, the in vivo study of the physiological parameters of the skin by non-invasive methods has been considerably developed. So far, there have been some reports on the skin characteristics only in parts, but there has not been any criteria to classify those of normal subjects. Objective: The aim of the present study was to investigate the skin characteristics of healthy Korean subjects according to sex and sites using non-invasive methods. Methods: To determine normal levels of sebum, skin hydration, transepidermal water loss (TEWL), skin elasticity and skin color according to sex, 163 subjects (male; 124, female; 39) were used to investigate 5 different anatomical sites. 6 different instruments were used: The Sebummeter SM 410, Corneometer CM 820, Evaporimeter EP1, Cutometer SEM 474, Chromameter CR-121, and Mexameter MX 16, for evaluating sebum excretion rate, capacitance, TEWL, mechanical property and skin color respectively. Results: Differences were noticed depending on the anatomical sites and sex. Most of the measuring parameters were significantly different according to sites and sex. The values of sebum levels, capacitance and TEWL were higher in the males on the cheek, forehead and crows foot, whereas in the females, higher values were observed on the dorsum of the hand. The skin elasticity varied considerably among the nine-parameters but, for the elastic ratio (R2, R5), the females showed significantly higher values than the males in all sites except the forehead. Skin lightness (L\* value) was higher in the females, whereas the males showed higher values in the category of redness (a\* value) and yellowness (b\* value). The values of the erythema index (EI) and melanin index (MI) were also higher in the males on all sites. Correlations between the skin parameters mentioned above were calculated. A negative correlation between capacitance and TEWL was observed only on the cheek (male/female,  $r = -0.2 / r = -0.4$ ,  $p < 0.05$ ). The L\* value correlated negatively with MI. Moreover the values between a\* and EI also showed significant correlations in the male (cheek and dorsum of hand,  $y = 0.2$ , forehead and crows foot,  $r = 0.3$ ,  $p < 0.05$ ). There were considerably significant correlations between the visual pigmentation score and instrumental skin parameters in the males (visual pigmentation score vs. L\* value measured by Chromameter ; cheek/crows foot,  $r = -0.3 / y = -0.4$ , visual pigmentation score vs. MI by Mexameter ; cheek/crows foot,  $r = 0.2 / r = 0.4$ , visual wrinkle score vs. sebum excretion rate measured by Sebumeter ; cheek,  $r = 0.2$ , visual wrinkle score vs. elasticity parameters measured by Cutometer ; cheek, R2/R5/R7,  $r = -0.3 / r = -0.2 / r = -0.3$ ,  $p < 0.05$ ). Conclusion: Skin physiological parameters can be evaluated by non-invasive skin bioengineering methods which show quantitative modifications in physiological conditions in relation to sites and sex.

*K. Lanzerath*, **Eine Notwendigkeit für die dermatologische Praxis? Die apparative Bestimmung von Hautparametern**, H+G Band 74, Heft 6, 1999

Transepidermaler Wasserverlust (TEWL), Corneometrie, Sebumetrie, Melanin- und Erythembestimmung – Schlagworte, die in der dermatologischen Forschung und Praxis immer mehr an Bedeutung gewinnen.

P. Clarys, K. Alewaeters, A.O. Barel, **Comparative Study of Skin Color Using Different Bioengineering Methods**, Skin Research and Technology, Vol. 5, No. 2, May 1999

This study was designed to compare two simple colour reflectance meters (DermaSpectrometer, Cortex and Mexameter, Courage-Khazaka) with the tristimulus method (Chromameter).

*A. de Castro, A.M. Vargas*, **Alternativas Naturales en el Tratamiento del Fotoenvejecimiento**, IFSCC Chile May 1999

Estudios realizados a nivel mundial ...

*A. de Castro, L. Castro, R. Brito, C. Rojas*, **Evaluacion del tratamiento del prurito con el residuo lipidico de la cebada**, Actualizaciones Terapeuticas Dermatologicas y Esteticas, Vol. 22 No. 5, Sept/Oct 1999

La piel seca y sensible está acompañada muy frecuentemente de irritación y prurito, ...

*A.M. Vargas, A. Castro*, **Proteina de Soja: Evaluacion de su Efecto Hidratante**. IFSCC May 1999

*C. Rojas, A. Castro, L. Castro, R. Brito*, **Utilizacion del Residuo Lipidico de la Cebada en el Tratamiento del Prurito**, IFSCC Chile May 1999

El prurito, picazón o cornezón, correspondiente al sensación cutánea especial...

*A. Vexler, I. Polyansky, R. Gorodetsky*, **Multi-Parametric Examination of Irradiated Skin in Breast Cancer Patients**, Skin Research and Technology, Vol. 5 No. 2, May 1999

More than 12 % of the women in Wesren Hemisphere are projected to develop carcinoma of the breast.

*C. Romera Barrero*, **Aplicabilidad del Dispositivo Mexameter MX 16 a la Evaluacion de la Actividad de Preparados Autobroncedores**, Dissertation University of Barcelona February 2000

Se han disenado diferentes equipos instrumentales para determinar el color de la piel.

*J.W. Fluhr, O. Kuss, T. Diepgen, S. Lazzerini, A. Pelosi, E. Beradesca*, **Testing for Irritation with a Multiparametric Approach: Comparison of Eight Parameters and Five Different Irritation Models**, 13<sup>th</sup> ISBS Jerusalem, March 2000 13<sup>th</sup> ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000

The assessment of irritated skin reactions by non-invasive bioengineering methods is widely used.

*E.A. Sagiv, S. Dikstein*, **The Efficiency of Humectants as Skin Moisturizers in Presence of Oil**, 13<sup>th</sup> ISBS Jerusalem, March 2000 and Skin Research and Technology, Vol. 6, No. 3, August 2000 and Skin Research and Technology, Vol.7, No.1, February 2001

The research on the treatment of "dry skin syndrome" is hampered by the lack of suitable animal models.

*A.E. Sagiv, A. Ingber, S. Dikstein, A Novel In Vivo Model in Guinea Pigs for Dry Skin Syndrome, Skin Research and Technology, Vol. 6 No. 1, February 2000*

The lack of suitable validated animal model for the comparison of the pharmacological effectiveness of known and potential moisturizers in the treatment of "dry skin syndrome" let us to develop such an in vivo model.

*P. Humbert, Melanin and Erythema Measurements by the Mexameter MX 16, Université de Franche-Comté, Laboratoire d'Ingénierie et de Biologie Cutanées, 2000*

The aim of this work was to evaluate the new probe of Mexameter MX 16, apparatus used for the measurement of melanin and erythema.

*J.W. Wiechers, C. Oakley, V. Wortel, T. Barlow, Comparison of Skin Colour Measuring Methodologies on Asian Skin, Personal Care Ingredient Asia Conference, Bangkok, March 2000*

We are living in a funny world. While half of the world's population is trying to obtain a suntan assisted by the effective use of sun-care-products, the other half is looking for skin lighteners or skin whiteners to reduce their complexion.

*A. de Castro, Measurement of the Effectivity of Natural Raw Materials: Soja Protein, Barley, Titanium Dioxide and Zinc Oxide, XXIst IFSCC Congress 2000, Berlin*

Consumer's preference for natural materials, as well some obtained by biotechnology processes instead of animal or chemical origin, in products for skin care, obeys to the fact that on one hand they are looking to avoid possible adverse reactions, and in the other hand, they constitute renewable sources of raw material.

*Y.-D. Kim, B. Rae Cho, Polyoxypropylene-Polyoxyethylene Tocopheryl Ethers: A Series of Novel Amphiphiles from Tocopherol for Functional Cosmetics, XXIst IFSCC Congress 2000, Berlin*

A series of novel nanionic compounds polyoxypropylene-polyoxyetylenetocopheryl ethers (POP-POETEs) was synthesized by 2 steps reaction of ethoxylation and proxylation of biological tocopherol for functional cosmetics.

*E. Camel, L. Arnaud-Boissel, S. Schnebert, M. Neveu, S.K. Tan, J.P. Guillot, Does Asian Skin Induce Significant Changes in Sun Protection Factor (S.P.F.) Determination, Compared to Caucasian Skin: One of the First In Vivo Correlation, XXIst IFSCC Congress 2000, Berlin*

3 groups of 20 panellists of both sexes (20-57 years old, phototype II-III) were included in the test: 2 groups of Asian panellists, defined according to their skin colour typology(1) (I.T.A.: Individual Typologic Angle) measured with a Mexameter (Courage & Khazaka) and a Minolta Chromameter CR300 (I.T.A.: 28 - 41° and 41 - 60°), and one group of clear skin Caucasian volunteers (I.T.A.: 41 - 60°). The devices used were the same for each panel, calibrated, for the Minolta Chromameter with the same procedure.

*L. Petit, Evaluation comparative de la colorimétrie par réflectance L\*a\*b\* et de la spectroscopie sélective pour chromophores cutanés. Dissertation de l'Université de Liège, Année académique 1999-2000*

Comparaisons des paramètres colorimétriques mesures par le Mexameter MX 16 et le Chroma Meter CR-200

*P. Clarys, K. Alewaeters, R. Lambrecht, A.O. Barel, Skin Color Measurements: comparison Between Three Instruments: The Chromameter<sup>®</sup>, the DermaSpectrometer<sup>®</sup> and the Mexameter<sup>®</sup>, Skin Research and Technology 2000.*

Two types of skin reflectance instruments are available nowadays for the determination of skin color: a tristimulus colorimeter (Chromameter from Minolta) using the CIE L\*a\*b\* color system and the narrow-band simple reflectance meters (DermaSpectrometer from Cortex and Mexameter from Courage-Khazaka) using the erythema/melanin indices. The purpose of this study was to compare the capabilities of the three instruments (sensitivity, repeatability and correlation) in vitro and in vivo.

*E. Azizah, T. Rosemiarti, C. Weki, R.I.S. Tranggono, Comparative Study of Several Whitening Agents in Cosmetic Products, 5<sup>th</sup> ASCS March 2001*

Melanin is the main factor determining skin color, which provide protection against UV irradiation. An abnormal increase in the amount of melanin in the epidermis is the main cause of hyperpigmentation due to several factors such as aging, pregnancies, endocrine disorders, sexual hormone treatments, sunlight bums, etc. Some pharmaceutical agents such as arbutin, kojic acid, vitamin C and its derivatives have been used as whitening agents, which control the number of melanin by inhibiting melanin production in melanocytes, because of their low toxicity to melanocytes. This study was aimed to compare several whitening agents in the same base creams. Twelve healthy volunteers were involved in the study; each received 4 different types of whitening creams. Two types of creams were used on each side of face and two others on the outer of each arm. Subject were evaluated for the number of melanin and erythema (with Mexameter MX 16), skin lightness and skin color index (with Chromameter CR 300), and skin moisture level (with Corneometer CM 820), over 12 weeks. The result obtained show that the cream contained 3% Arbutin and 0.005% Licorice Extract was better in decrease the number of melanin (3.41%), while the cream contained 3% Ascorbyl Phosphate Magnesium and 0.005% Licorice Extract was better in increase skin lightness (4.32%).

*A. Msi, T. Rosemiatri, E. Azizah, R.I.S. Tranggono, Comparison Study of Single and Multi Alpha Hydroxy Acids in Decreasing the Number of Melanin, 5<sup>th</sup> ASCS March 2001*

Alpha Hydroxy Acids (AHAs) are a group of organic acids that play a specific role in the cycle of carbohydrate and other metabolic pathways.

*K.Y. Roh, D. Kim, S.J. Ha, Y.J. Ro, J.W. Kim, H.J. Lee, Pigmentation in Koreans: Study of the Differences from Caucasians in Age, Gender and Seasonal Variations, British Journal of Dermatology 3958, 2001*

Human skin color shows variations throughout life and many extrinsic and intrinsic factors influence melanogenesis.

*K. Jones, S. Orndorff, Aloesin: A Potent Skin Whitener, Cosmetic Science Conference 2001, Düsseldorf*

Aloesin, [2-acetyl-8-glucopyranosyl-7-hydroxy-5-methylchromone], a compound isolated from the Aloe plant, is a potent regulator of melanogenesis via competitive inhibition of tyrosinase. The IC<sub>50</sub>, a concentration producing 50% inhibition, of aloesin in a purified mushroom tyrosinase assay was 0.193mM and 0.167mM in the B16 FI murine melanoma cell. Aloesin inhibited tyrosinase in a human primary melanocyte in vitro assay, IC<sub>50</sub>=1.03 mM compared to kojic acid, IC<sub>50</sub>=1.11 mM, whereas arbutin showed no significant activity at any concentration tested. In a seven-week human clinical trial, using an overnight hydrophilic patch, a statistically significant decrease in melanin was seen from week three through week seven. Recovery of pigment in the skin occurred within two weeks after treatment ended. Aloesin has an excellent safety profile, showing no skin irritancy or allergenicity in humans, no cell toxicity and no mutagenicity or genotoxicity in the Ames assay.

*J.F. Hermanns, L. Petit, T. Hermanns-Lê, G. Piérard, **Analytic quantification of phototype-related regional skin complexion***, Skin Research and Technology, Vol. 7, No. 2, August 2001

Narrow-band spectrophotometry that yields melanin (M) and erythema (E) indexes is a convenient method for assessing skin colour. The objective of the study was to assess the phenotype-associated body site differences in skin complexion.

*H. Lambers, H. Pronk, **Biophysical Methods for Stratum Corneum Characterization***, in T. Förster (Editor): Cosmetic Lipids and the Skin Barrier, 2001 by Marcel Dekker

There is no doubt that the application of cosmetic lipids has many positive effects on the structure and function of the skin. These effects are pleiotropic, caused either by direct interaction with the epidermis, particularly the stratum corneum, or indirectly, by influencing the physiologic, homeostatic condition of the skin.

*A. Castro, **Avaliacao in vivo de Despigmentares de Origen Natural e/ou Biotecnologicos***, Cosmetics & Toiletries (Portugese), Vol. 13 No 6, p. 80, 2001

*E. Camel, L. Arnaud-Boissel, S. Schnebert, M. Neveu, S.K. Tan, J-P. Guillot, **Does Asian Skin Induce Significant Changes in Sun Protection Factor (SPF) Determination Compared to Caucasian Skin: One of the First In-Vivo Correlations***, IFSCC Magazine January/March 2002, Vol. 5, No. 1

The aim if this study was to compare the SPF of three sunscreens (SPF 6/8 – 15/20 – 25/30) and 2 standards (FDA, COLIPA fla P2), according to COLIPA recommendations, in panels of Asian (Singapore) and Caucasian (France) volunteers.

*J.W. Wiechers, F.J. Groenhof, V.A.L. Wortel, Ri.M. Miller, N.A. Hindle, A. Drewitt-Barlow, **Octadecenedioic Acid for a More Even Skin Tone***, Cosmetics & Toiletries July 2002, Vol. 117, No. 7

Octadecenedioic acid, a new nature-derived ingredient made via biofermentation from oleic acid, has demonstrated efficacy in a variety of applications, including skin toning, dandruff reduction and deodorancy.

*MegaSun beauty & care, **Sonnen ohne Risiko***, Kosmetische Medizin, 4/2002, 23. Jahrgang

Sonne gilt für große Bevölkerungsteile als die Universal-Arznei aus der „Himmelsapotheke“. Doch der Dermatologe rät: Was für die Risiken und Wirkungen von Arzneimitteln gilt, gilt auch für die Solarien-Besonnung: Die Dosis ist entscheidend. Auf der Pressekonferenz am 16.10.2002 in Hamburg präsentierte die KBL-Solarien AG den Medien sowie dem Fachhandel ein auf streng wissenschaftlicher Basis entwickeltes Gerät zur individuellen Hauttypbestimmung, um Solarstrahlen für gesunde und natürliche Bräune optimal zu dosieren – das megaSun care Terminal.

*N. Koshti, S. Naik, **An absorbing matter***, SPC Asia, November 2002

The harmful effects of solar UV radiation on skin and hair are well documented. The damage to white skin can be extremely severe. It starts with erythema, goes on to sunburn and can ultimately end in skin cancer. The damage to hair, particularly blonde, is significant, too. Solar UV radiation makes hair brittle, rough and difficult to comb. Human hair has been shown to lose tensile strength as a result of cleavage of the disulphide bond of hair keratin upon exposure to UV radiation.

*A.C. Dweck, **Tamanu Oil (Calophyllum inophyllum)***, International Journal of Cosmetic Science, 2002, 24

Tamanu Oil has been used traditionally in the South Pacific as a local medicine for a variety of purposes. The chemistry is complex and unusual, perhaps helping to explain some of the impressive physiological actions possessed by this plant. One of the many possible reasons for such incredible results and diversity of uses is Tamanu's unique absorption properties. This enables the oil to reach all



three layers of the skin: epidermis, dermis and hypodermis. Tamanu oil has been proved to have cicatrizing, antibacterial, anti-neuralgic and anti-inflammatory properties. This combined with its unique absorption ability has resulted in Tamanu being used as a treatment for ailments ranging from scars, cuts, burns, rashes, stings, psoriasis, eczema and sores to rheumatism, neuralgia and sciatica.

*G. Yener, T. Incegöl, Importance of protection from harmful effects of solar radiation by using solid lipid microspheres of UV filters*, Journal of Cosmetic Science, Vol. 53, No. 5, September/October 2002

Sun protecting substances are capable of protecting humans from harmful effects of solar radiation such as aging and skin cancers. Due to the depletion in ozone layer, research regarding to sun protection has become a major concern. Since these preparations are often applied on large skin areas even low penetration rates can cause significant amount of chemical UV absorber to enter the body. Sun protecting preparations need to achieve a controlled release.

*L. Maeyama, Synergistic whitening complex with Waltheria indica extract and ferulic acid*, Personal Care, November 2002

Melanins are black polymeric pigments that determine skin and hair color. An abnormal increase in the amount of melanin in the epidermis is the reason for hyperpigmentation such as cloasma, freckles, etc. melanin is synthesized by specialized cells, the melanocytes, which are located in the basal layer of the epidermis. Stored in melanosomes (granules in the melanocytes), the melanins are distributed to keratinocytes surrounding the melanocytes.

*L. Maeyama, Whitening complex with waltheria indica extract and ferulic acid*, Cosmetics & Toiletries, Vol. 117, No. 10, October 2002

Waltheria indica extract, ferulic acid and certain other ingredients act synergistically in a whitening complex that inhibits tyrosinase and provides mild exfoliation.

*L.M. Rodrigues, P.C. Pinto, P. Lamarao, After-sun claims substantiation: experimental criteria to assess the in vivo effects of sun care products under controlled-using conditions*, Cosmetics & Toiletries, Vol. 117, No. 10, October 2002

The authors describe a practical method of substantiating claims of "after-sun" products. Ten healthy women 35-65 years old were irradiated on both legs (antero-lateral) in a laboratory for six sequential days using an indoor solarium-type UV source. Efficacy assessment endpoints were defined from the product's typical claims.

*A. de Castro, Efectividad de cremas antienvjecimiento con activos naturales*, GCI Latinoamerica, Vol. 1, No. 2, Mai-August 2002,

La autora describe un estudio con el uso de una crema que contiene una mezcla de filtros solares fisicos, extractos vegetales, hidratantes, antirradicales libres, sustancias antiinflamatorias con el objetivo de comprobar la eficacia de materias primas de origen vegetal en el tratamiento y prevencion del fotoenvjecimiento.

*K. Yoshimura, K. Harii, T. Aoyama, T. Iga, Experience of a strong bleaching treatment for skin hyperpigmentation in orientals*, [www.st.rim.or.jp/~ktyoshi/list/ra-prs.html](http://www.st.rim.or.jp/~ktyoshi/list/ra-prs.html)

The protocol was composed of two steps: a bleaching step (2-6 weeks) and a healing step (2-6 weeks). 0.1-0.4% all-trans retinoic acid aqueous gel was originally prepared and applied concomitantly with hydroquinone, lactic acid ointment for bleaching. After obtaining sufficient improvement of the hyperpigmentation, corticosteroid was topically applied with hydroquinone and ascorbic acid in the healing step. Improvement was evaluated with a narrow-band reflectance spectrophotometer.

**Validation experiments**, Astron Clinica, [www.fellows.rcsed.ac.uk/personal/marcmoncrieff/ch4.pdf](http://www.fellows.rcsed.ac.uk/personal/marcmoncrieff/ch4.pdf)

This study represents the first clinical trial with the SIAscope, a system that produces information about the haemoglobin, total melanin, dermal melanin and collagen content of the epidermis and papillary dermis within the region of interest scanned. Studies have been performed that measured the theoretical accuracy of the system in determining these parameters (Cotton, 1998; Hojjatoleslami et al., 2000). It was decided that experiments should be undertaken that could determine whether the SIAscope was indeed measuring these parameters. The four sets of experiments determining each of the SIAscope parameters are described below in the style of a short paper.

*L.R. Caspar, P.M.B.G. Maia Campos, Evaluation of the protective effect of alpha-tocopherol acetate in a sunscreen, preventing erythema and transepidermal waterloss*, Posters of the 22nd IFSCC Congress, Edinburgh 23.-26. Sep. 2002

The recent rapid growth of sunscreens marketing indicates that even though a suntan is still desired, people are nevertheless quite conscious of accompanying dangers like actinic changes (wrinkling, premature ageing of the skin, irregular thinning of the epidermis, hyperpigmented macules), development of premalignancies (solar keratoses) and skin cancer (melanomas, basal and squamous cell carcinomas) occurring as a result of excessive ultraviolet (UV) radiation.

*T. Nguyen, E.K. Novak, M. Kerminani, M. Kermani, J.W. Fluhr, L.L. Peters, R.T. Swank, Melanosome Morphologies in Murine Models of Hermansky-Pudlak Syndrome Reflect Blocks in Organelle Development*, Society for Investigative Dermatology, 2002

Hermansky-Pudlak syndrome is an autosomal recessive disease characterized by pigment dilution and prolonged bleeding time.

*A. Castro, Quantitative measurement of skin color changes with visual assessment correlation*,

The findings confirmed the suitability of developed clinical trial protocol for skin whitening efficacy evaluation using the Mexameter MX 16 as a tool for the quantitative measurement of skin color changes. The procedure of standardization used in the study is simple and workable in a clinical setting. Factors of importance include the control of test site as well as environmental controls.

*A. Castro de Castro, Evaluacion in vivo de despigmentantes de origen natural y/o biotecnologicos*, Actualizaciones Terapéuticas Dermatológicas y Estéticas, Vol. 25, No. 3

Teniendo presente la alta incidencia de hiperpigmentaciones, y la necesidad de obtener un producto seguro, efectivo y sin reacciones adversas, nos propusimos evaluar in vivo la accion despigmentante de una sustancia obtenida por Biotecnologia mezclada con extractos naturales, que denominamos "N-M" contra otras ya conocidas de origen quimico y vegetal, que correspondian al Extracto de Glycirrhisza Glabra, Acido Kojico, Hidroquinona y Extracto de Fagus Sylvatica.

*R. Huei Chen, W. Yuu Chen, Skinhydration effects, film formation time, and physicochemical properties of a moisture mask containing Monostroma nitidium water-soluble mucilage*, Journal of Cosmetic Science, Vol. 54, No. 1, Jan./Feb. 2003

The objectives of the study were to explore the effects of using the water-soluble mucilage of Monostroma nitidium to replace the humectant and half of the thickening agent on the rheological properties, color, storage stability, water-holding capacity, and film formation time of moisture masks thus prepared. Results showed that moisture masks containing water-soluble mucilage were pseudoplastic fluids.

*H.K. Lee, S.Y. Bae, S.J. Moon, I.S. Chang, Comparisons of skin characteristics between men and women using non-invasive methods in young healthy Asians*, Skin Research and Technology, Vol. 9, No. 2, May 2003

Skin has different properties depending on intrinsic effects such as inherent factors, race, gender and so on. Besides, it has been known that skin may change because of the environmental stress such as UV, climate and life style. We would like to know the differences of skin characteristics between male and female. The results of this study might be applicable to the department of dermatology and cosmetology.

*H. S. Oh, M. H. Lee, S. Y. Park, H. C. Kim, New Skin colour analysis technique*, Skin Research and Technology, Vol. 9, No. 2, May 2003, Abstract No. P114

It is a very important aspect in skin color analysis that the objective evaluation of color distribution in the same image. But conventional spectrophotometers are able to analyze as an average value of region of interest (ROI) not to color distribution analysis. We tried to develop the new skin color analysis technique so as to objectively measure skin color distribution as a pixel or ROI using liquid crystal tunable filter (LCTF) and CCD camera (so called Skin Color Distribution Analyser: SCDA).

*S.T. Casares, A. Castro de Castro, L.A. Castro Sáder, Efectividad de activos naturales para evitar la formación de la piel de naranja*, XVI Congreso latinoamericano e ibérico Químicos Cosméticos Colamiq, Cartagena, 2003

La aparición de la estética piel de naranja conjuntamente con la disminución de la forma, sedosidad, y brillo de la piel de un cuerpo joven, afecta la imagen femenina de tal forma que hoy en día, se ha transformado en un verdadero problema social y psicológico, padecerla es peor que tener algún mal que genere dolor.

*L.R. Gaspar, P.M.B.G. Maia Campos, Evaluation of the protective effect of alpha-tocopheryl acetate in a sunscreen, preventing erythema formation, transepidermal water loss and sunburn cell formation*, IFSCC, Vol. 6, No. 3/2003

Nowadays, vitamin E acetate is used as an antioxidant and moisturizer in sunscreens. Although free vitamin E presents UV protection effects, little data has been forthcoming documenting the beneficial effects of vitamin E acetate on cutaneous photodamage, when combined with sunscreens. The aim of this study was to evaluate the protective effect of a sunscreen formulation with or without vitamin E acetate on erythema in hairless mice, transepidermal water loss (TEWL) and sunburn cell formation.

*L. Petit, G.E. Piérard, Analytic quantification of solar lentigines lightening by a 2% hydroquinone–cyclodextrin formulation*, JEADV (2003)17, 546–549

**Abstract:** Background: The innate melanin pigmentation of skin is modulated during lifetime by a series of factors, including ageing and chronic ultraviolet light exposure. Actinic lentigines may be of particular concern from a cosmetic point of view. Conventional hypopigmenting agents are usually deceptive. Using cyclodextrins to form inclusion compounds with these agents might represent a more active drug delivery system. Objective: To assess sensitive and objective methods predicting the effects of a 2% hydroquinone–cyclodextrin formulation on solar lentigines. Study design: Thirty Asian adults applied a 2% hydroquinone–cyclodextrin formulation once daily on solar lentigines of a forearm for 2 months. The other untreated forearm served as a control. Monthly assessments were performed using skin colorimetry and fluorescence video recording combined with image analysis. Corneometry following photodensitometry of cyanoacrylate skin surface strippings was performed after melanin staining of the samples.

*A.E. Sagiv, Y. Marcus, **The connection between in vitro water uptake and in vivo skin moisturization***, Skin Research and Technology 2003, 9, 306-311

Adding hydroxyl groups to a consecutive set of polyhydroxyalkanes increases the humectancy of the polyols in vitro. This elevation was found to be linear at low relative humidities (Relative humidity = 31,9 % and 37°C). In vivo, moisture was returned to normal within a week in all three groups. However, only glycerol managed to abolish the erythema within 7 days.

*J. Wiechers, S. Swaminathan, **The equaliser***, SPC Asia, Nov. 2003

In the quest to find the fountain of youth for skin, formulators of personal care products search for ingredients with the potential to change skin back to the way it was when we were young adults. Formulators have yet to find these magic ingredients but in their search they have devised skin-toning materials that go a long way towards biologically changing the skin.

*E. Hernandez, **Bioengineering in Dermatology and Cosmetology: Methods, Studies and Prospects***, SÖFW-Journal, 129. Jahrgang, 11-2003

One of the trends in modern dermatology and its perspectives for the near future are skin bioengineering and imaging. The 1<sup>st</sup> joint meeting of two scientific societies focusing on measurements and visualisation of skin function, structure and physiology – the International Society for Skin Imaging (ISSI) – took place in Hamburg, May 21-24, 2003. Before that, the meetings and conferences organised by these societies had been held separately.

*C.M. Schempp, B. Winghofer, K. Müller, J. Schulte-Mönting, M. Mannel, E. Schöpf, J.C. Simon, **Effect of oral administration of Hypericum perforatum extract (St. John's Wort) on skin erythema and pigmentation induced by UVB, UVA, visible light and solar simulated radiation***, Phytother Res. 2003 Feb;17(2): p. 141-6

Hypericin from St John's wort (*Hypericum perforatum* L.) is a photosensitizing agent that may cause a severe photodermatitis when higher amounts of St John's wort are ingested by animals. Although *Hypericum* extracts are widely used in the treatment of depressive disorders, only a little information on the photosensitizing capacity of St John's wort in humans is available. In the present prospective randomized study we investigated the effect of the *Hypericum* extract LI 160 on skin sensitivity to ultraviolet B (UVB), ultraviolet A (UVA), visible light (VIS) and solar simulated radiation (SIM). Seventy two volunteers of skin types II and III were included and were divided into six groups, each consisting of 12 volunteers. In the single-dose study the volunteers (n = 48) received 6 or 12 coated tablets (5400 or 10 800 microgram hypericin). In the steady-state study the volunteers (n = 24) received an initial dose of 6 tablets (5400 microgram hypericin), and subsequently 3 x 1 tablets (2700 microgram hypericin) per day for 7 days. Phototesting was performed on the volar forearms prior to medication and 6 h after the last administration of *Hypericum* extract. The erythema-index and melanin-index were evaluated photometrically using a mexameter. After both single-dose and steady-state administration, no significant influence on the erythema-index or melanin-index could be detected, with the exception of a marginal influence on UVB induced pigmentation (p = 0.0471) in the single-dose study. The results do not provide evidence for a phototoxic potential of the *Hypericum* extract LI 160 in humans when administered orally in typical clinical doses up to 1800 mg daily. This is in accordance with previous pharmacokinetic studies that found hypericin serum and skin levels after oral ingestion of *Hypericum* extract always to be lower than the assumed phototoxic hypericin threshold level of 1000 ng/mL.

*W. Manuskiatti, A. Sivayathorn, P. Leelaudomlipi, R.E. Fitzpatrick, **Treatment of acquired bilateral nevus of Ota-like macules (Hori's nevus) using a combination of scanned carbon dioxide laser followed by Q-switched ruby laser***, J Am Acad Dermatol, 2003 Apr;48(4): p. 584-591

Background: Acquired bilateral nevus of Ota-like macules (Hori's nevus) is a dermal pigmented lesion commonly seen in middle-aged women of Asian descent. The Q-switched ruby laser (QSRL) has

been used successfully to treat a variety of benign pigmented lesions. Multiple, sequential treatments are typically required for complete clearance of the dermal pigmented dermatoses. Objective: The purpose of this study was to determine the efficacy of QSRL in the treatment of Hori's nevus and the beneficial effect of epidermal ablation using the scanned carbon dioxide (CO<sub>2</sub>) laser before QSRL. Methods: A total of 13 women from Thailand with Hori's nevus were randomly treated with the scanned CO<sub>2</sub> laser followed by QSRL on one side of their face, and QSRL alone on the other side. The same fluence of QSRL was used on both sides in individual patients. The treatment response was objectively evaluated by measuring the melanin index using a Mexameter (Courage & Khazaka Electronic GmbH, Köln, Germany), and subjectively assessed by the patients before treatment and 3 and 16 months after treatment. Adverse sequelae of the treatment and the patients' tolerance were also evaluated at the same follow-up visit. Results: The 3- and 16-month posttreatment melanin index was significantly decreased compared with that of pretreatment on both treated sites and this corresponded to the patients' subjective evaluations. The response rate, defined as "the percentage of reduction in melanin index," was significantly higher on the sides treated with scanned CO<sub>2</sub> laser followed by QSRL, compared with the sides irradiated with QSRL alone at both follow-up visits. At the 3-month follow-up, the most common adverse effect was hypopigmentation, found in 15% (2 of 13) of the patients on the sites treated with QSRL alone, and on the sites treated with scanned CO<sub>2</sub> laser followed by QSRL (8%, 1/13). Erythema was observed in 15% (2/13) of the patients only on the sites that received combination treatment. However, no adverse sequelae were observed at the 16-month posttreatment follow-up. Conclusion: Epidermal ablation with scanned CO<sub>2</sub> laser before the use of the pigment-specific laser may be an effective technique for increasing therapeutic efficacy in the treatment of dermal pigmented dermatoses.

*E. Camel, L. Arnaud-Boissel, L. Basset, S.K. Tan, J.-P. Guillot, Do Skin Moisturization, pH Colour, Water Loss, Lipids or Age, Phototype and Racial Origin (Asian/Caucasian) Affect S.P.F.?, Personal Care Ingredients Asia, Guangzhou, March 2004*

The aim of these studies was first to investigate the possible reasons inducing S.P.F. variations during clinical testing, as regards specific cutaneous parameters (skin colour, hydration, barrier function, pH, surface lipids ...), and secondly to assess the effect of racial origin (Asian/Caucasian) in a large range of sunscreen products (S.P.F. 4 to 30).

*C. Stoltz, New biological results obtained in the Fight against Skin Pigmentation Disorders, Personal Care Ingredients Asia, Guangzhou, March 2004*

Skin pigmentation is an international preoccupation. Natural or photo-induced ageing, hormonal disorders (contraceptives, pregnancy, menopause, etc.), repeated exposure to the sun and irritation or inflammation reactions lead to the appearance of skin pigment problems. The complexion is not uniform and highly unattractive marks appear on the skin.

*H. Lautenschläger, Individuell den Sonnenschutz messen, Kosmetik International, Vol. 8, 2004.*

Die Sonne aktiviert unseren Stoffwechsel und fördert unser Wohlbefinden (siehe Ki 7/04, S. 77). Allein die richtige Dosis entscheidet über die heilende oder schädigende Wirkung. Ein Übermaß an Sonnenlicht führt zu Sonnenbrand und kann bei langfristiger Lichtschädigung das Risiko für Hautkrebs erhöhen. Die Abnahme der Ozonschicht wird für den deutlichen Anstieg von Hautkrankheiten, Hautkrebs und Allergien der Atemwege verantwortlich gemacht.

*S. Savic, S. Tamburic, M. Savic, N. Cekic, J. Milic, G. Valuta, Vehicle-controlled effect of urea on normal and SLS-irritated skin, International Journal of Pharmaceutics, Oct. 2004.*

It is known that, depending on the concentration, treatment with urea could improve skin barrier function, despite its penetration-enhancing properties. This controversial skin effect of urea has been explored systematically in this study in terms of the effect of vehicle on the performance of urea. In the first part, a series of four semi-solid emulsions with 5% (w/w) urea, varying in the type of emulsion, nature of emulsifier and polarity of oil ingredients, have been evaluated with regard to their skin hydrating and transepidermal water loss (TEWL)-modifying properties.

**K. L. Gebhard, Evaluation und Standardisierung von Hauttestungen zur Diagnostik der irritativen Kontaktdermatitis**, Digitale Bibliothek der Universität Marburg, 2004

Ziel der vorliegenden Arbeit ist es, durch Variation verschiedener Applikationszeiten, Konzentrationen und Vorbehandlungen (VB) der Teststellen zu evaluieren, ob der bisher übliche 24-stündige epikutane Irritationstest auf 4 Stunden verkürzt werden kann. Hierzu wurde an 36 hautgesunden Probanden ein epikutaner Natriumlaurylsulfat-Test (NLS-Test) auf die oberen Rückenpartien appliziert. Folgende Variablen wurden hierzu angewendet: a) Applikationszeiten: 4 und 24 Stunden b) Messzeitpunkte: 4, 24 und 72 Stunden c) Testkonzentrationen: 0,5%, 1%, 2%, 5% NLS-Lösung in aqua dest. d) Fünf verschiedene VB der Teststellen.

**C. Vincent, M. Szubert, K. Rugiewicz, I. Eris, The assessment of efficacy, tolerability and cosmetic features of Diosperin K 1% PROLONGATUM cream containing complex of diosmine, hesperidine and vitamin K**, Poster Presentation, Centre for Science and Research Dr. Irena Eris, 2005

Face redness and couperoses can cause very negative visual effect and influence on patients' quality of life. Such type of skin requires special regime. Application of very gentle cleaners, sun protective products and appropriate cosmetic creams can improve the skin condition and minimize the red face effect.

**J.W. Fluhr, M. Breternitz, M. Flach, P. Elsner, Acute experimentally induced barrier disruption by tape stripping is influenced by pressure, time and anatomical location: Integrity and Cohesion assessed by sequential tape stripping**, Presentation on the ISBS Meeting 2005 in Philadelphia and Skin Research and Technology 2005, 11 (abstracts)

Tape stripping is a well-known procedure in stratum corneum physiology research. Adhesive films are pressed to the surface of SC and then removed. The superficial layers of SC adhere on the film and are accessible for further investigations. Although this method is widely used, only few information about standardization are known.

**M. Ardigò, P. Jacovelli, G. Leone, M. Eitaro, E. Berardesca, Microscopic melanocytic patterns in vitiligo treated and untreated patients analyzed with reflectance confocal microscopy and image analysis**, Presentation on the ISBS Meeting 2005 in Philadelphia and Skin Research and Technology 2005, 11 (abstracts)

Vitiligo is common cutaneous disorder characterized by a loss of melanocytes at dermal-epidermal junction, which results in the complete absence of melanin and the consequent clinical presentation as achromic patches. Histological features and laboratory data support apoptotic mechanism of disappearing of melanocytes, rather than necrosis. Based on recent morphologic findings *in vivo* a new theory is suggested proposing melanocytorrhagy as the primary defect. Confocal scanning laser microscopy of live human skin is a new technique that allows to investigate the correlation between *in vivo* cellular and morphologic features to histology by the effect of wavelength on imaging and the role of melanin as a contrast agent. In this technique melanin provided strong contrast by increased backscattering of light such that the cytoplasm in heavily pigmented cells imaged brightly. Also keratinocytes show reflectance properties (less than melanocytes) because of the requirement of melanin from melanocytes. Dynamic processes can be easily evaluated and more 'specimens' can be analyzed in comparison with biopsies (not well tolerated by vitiligo patients). The purpose of our study was the morphological and functional evaluation of vitiligo lesions vs normal skin and the effect of UVB radiation on vitiligo. 20 subjects (phototype 11-V) affected by diffuse vitiligo, in treatment with UVB-narrow band phototherapy and 10 healthy controls entered the study. Uninvolved and lesional skin were evaluated by *in vivo* confocal microscopy (Vivascope 1500, Lucid, USA). Objective quantification of pigmentation assessed by reflectance spectrophotometry (Mexameter, Courage and Khazaka, Germany) on affected and healthy skin was done; spectrophotometric analysis and binary transformation of confocal image were also performed. Differences in melanocytes density, morphology and distribution were observed in correlation with different

levels of repigmentation and phototype. In conclusion, *in vivo* confocal microscopy potentially offers dermatologists an instant and non invasive diagnostic tool. Apparently normal skin of vitiligo patients disclosed abnormalities in number, morphology and distribution of melanocytes compared to normal individuals. Affected skin presents modification in morphology and number of melanocytes as a response to the UVB radiation.

*P. Granata, R. Maffei Facino, A. Ghirardini, E. Berardesca, G. Primavera, M. Carrera, **Tyrosyl-Histidine Dipeptide: A new Approach against Premature Aging***, Presentation at the IFSCC in Florence 2005

Oxidative fragmentation of polyunsaturated fatty acids in the skin generates cytotoxic aldehydes, mainly 4-hydroxy-*trans*-2-nonenal (HNE), involved in premature skin aging and photo-aging, due to the formation of collagen and elastin cross-links, skin enzymes inactivation, accumulation of lipid peroxidation products. Since histidine-containing dipeptides have been recently shown to possess carbonyl quenching activity, we developed a series of different dipeptides with the aid of combinatorial chemistry and each of them was subjected to antioxidant and anti-carbonyl assays, in a cell-free model using the ORAC assay (Oxygen Reactive Antioxidant Capacity) for anti-lipoperoxidant activity, HPLC analysis for the evaluation of the HNE quenching ability and LC-MS/MS for the characterization of the site and of the mechanism of adduction.

*G. Oberto, A. Berghi, F. Portolan, E. Bauza, C. Dal Farra, N. Domloge, **Cotton Honeydew Oligosaccharides for Hair Care Cosmetics***, Presentation at the IFSCC in Florence 2005

Cotton honeydew extract is a unique composition of oligosaccharides, including fructose, glucose, inositol, melezitose, saccharose, trehalose, and trehalulose. The interaction of these oligosaccharides provides a stimulating effect on keratin synthesis, which allows for protection against nutrient deprivation and osmotic stress. Consequently, we were interested in studying the effect of these oligosaccharides on human hair, using scanning electron microscopy.

*P. Tengamnuay, T. Rojanadilok, **Comparative Efficacy Evaluation of Some Commercial Skin Whitening Lotions***, Presentation on the IFSCC in Florence 2005

To have a white, smooth skin appears to be the most desirable feature among women, especially those from Asian countries like China, Japan, Korea and Southeast Asia. As a result, a great number of whitening products is available on the market. The active whitening ingredients in these products range from conventional UV filters to highly sophisticated combination of various skin-whitening agents.

**Dermokosmetik**, Beratung in der Apotheke, PTA Nr. 11, Oktober 2005

Eine gute Unterstützung bei Promotionaktionen zum Thema „Hautpflege“ sind Hautanalysegeräte. Sie erleichtern den Einstieg in die Beratung, individuell auf den Hauttyp und Hautzustand der Kundin oder des Kunden abgestimmt.

*R. Ismail, S. Ahmad, **Sodium lactates in skin lightening formulations: its synergy with other skin lightening agents***, Presentation on the IFSCC in Florence 2005

In many Western countries, skin lighteners and related products sold in the market are aimed to prevent and treat melasma, freckles and age spots. However in Asia, skin-lightening products are primarily used to achieve the beauty ideal of a white and flawless skin, although they also treat problem areas.

*S. Savic, S. Tamburic, S. Vesic, G. Vuleta, C. Müller-Goymann, Effect of Vehicle Composition on In vitro/ in vivo Hydrocortisone Penetration*, Presentation at the 14<sup>th</sup> EADV Congress, London, Oct. 2005

Diffusion/penetration properties of locally applied drugs are affected by both the status of the stratum corneum (SC) and by the composition and colloidal structure of the vehicle.

*E. Berardesca, N. Cameli, G. Primavera, M. Carrera, Clinical and Instrumental Evaluation of Skin Improvement after Treatment with a New 50% Pyruvic Acid Peel*, Dermatol Surg 2006

Pyruvic acid is an  $\alpha$ -keto acid that presents keratolytic, antimicrobial, and sebostatic properties as well as the ability to stimulate new collagen production and elastic fibers formation. Because of its low  $pK_a$  and its small dimension, it penetrates rapidly and deeply through the skin, so far as to be considered a potent chemical peel agent. It has proven its efficacy for the treatment of many dermatological conditions such as acne, superficial scarring, photodamage, and pigmentary disorders. Pyruvic acid application usually induces intense burning, and the postpeeling period is characterized by erythema, desquamation, and, sometimes, crusting.

*Y.J. Kim, M.Y. Kim, P.K. Lee, H.O. Kim, Y.M. Park, Evaluation of natural change of skin function in split-thickness skin grafts by noninvasive bioengineering methods*, Dermatol Surg. 2006 Nov;32(11):1358-63

Background: Autologous split-thickness skin grafts (STSGs) are considered the mainstay for the treatment of large full-thickness wounds. There have been few studies reporting the natural change of the skin function in STSGs after procedure, however. Objective: The objective was to evaluate the natural change of the skin function in STSG using noninvasive bioengineering methods. Methods: Eighteen patients were eligible for the study. The skin functions of the graft and the control site were evaluated by an evaporimeter, corneometer, mexameter, and cutometer at Postoperation Days 0.5, 1, 2, 3, 6, 9, and 12 months. Results: Transepidermal water loss (TEWL) of the graft was maintained around that of the normal skin. The values of the skin hydration testing generally decreased during the follow-up period. Erythema was highly maintained for the whole period. For the pigmentation, the ratio tended to increase after 6 months. The skin pliability of the graft was abruptly decreased at 0.5 month, and it recovered from 3 to 12 months. The value did not reach that of the normal skin, however. Conclusion: Our results showed that the STSGs had changed within the frame of the skin function, including the TEWL, epidermal hydration, color, and pliability, throughout 1 year after surgery. The authors have indicated no significant interest with commercial supporters.

*W. Geissel, Gesunde Haut durch gute Beratung*, Igel Plus: Juni 2006, p. 18-19

Wird ein Mensch in der Sonne überhaupt braun und wenn ja, wie schnell und wie intensiv? Bekommt er schnell einen Sonnenbrand? Mit einer kurzen Anamnese lässt sich der Hauttyp eines Menschen grob in die Phototyp-Skala einordnen, sagt PD Joachim Fluhr von der Klinik für Dermatologie der Universität Jena.

*D. Khazaka, Objective Measurement at all Stages of the treatment*, 5<sup>th</sup> Asia Pacific Conference on Antiaging Medicine, Bali, September 2006

The days are over when a dermatologist only looked at the skin to make a diagnosis and to decide about the following treatments and to recommend skin care products to use. For almost 20 years now there is scientific equipment available to measure different parameters on the skin, such as hydration and sebum level, pH, elasticity, pigmentation skin texture and wrinkles and many more.



*E.S. Park, J.I. Na, S.O. Kim, C.H. Huh, S.W. Youn, K.C. Park, Application of a pigment measuring device - Mexameter® - for the differential diagnosis of vitiligo and nevus depigmentosus, Skin Research and Technology 2006, 12, p. 298-302*

Vitiligo, an acquired pigmentation disorder, is characterized by a loss of melanocytes and results in white skin patches. Nevus depigmentosus (ND) is frequently confused with vitiligo, and is defined as a congenital non-progressive hypopigmented lesion that is stable in terms of size and distribution throughout life (1).

*T. Sherwood, Just Below the Surface, GCI Magazine (Dec. 2006), p. 34-35*

In order to substantiate claims, manufacturers and brands must prove that their products do what they claim with the safety of the consumer in mind. The Cosmetic, Toiletry and Fragrance Association (CTFA) recently introduced its new commitment code for cosmetic companies, promoting industry self-regulation regarding product safety.

**Beurteilung von frühkindlichen Verbrennungen – Objektivität optimiert Therapie;** aesthetic Tribune, Ausgabe 8, Dezember 2006

Die Beurteilung von Narben erfolgt im Allgemeinen visuell und palpatorisch durch den Arzt. Darin liegt allerdings auch ein grosses Fehlerpotential begraben, da jeder Untersucher die Narbe subjektiv beurteilt. Was leistet die objektive Einschätzung mittels Apparaten? Zur Beurteilung von Narben hat sich die Vancouver Scar Scale (VSS) etabliert. Mit ihr werden Hautrötung, Pigmentierung, Erhabenheit und Elastizität beurteilt. Allerdings spielen hier zahlreiche subjektive Einflussfaktoren durch den Untersucher mit, sodass diese Methode insbesondere den wissenschaftlichen Ansprüchen nicht genügt. Dr. Jörn Lohmeyer von der Plastischen, Hand- und Wiederherstellungschirurgie und Intensivstation für Schwerebrandverletzte in Lübeck stellte Methoden vor, Narben nach frühkindlichen Verbrennungsunfällen mit objektiven Kriterien zu beurteilen.

*J.-L. Levy, L. Agopian, B. Chadoutaud, P. Msika, Effect of a new cosmetic formulation on reducing cutaneous pigmentation, AB174 J. Am. Acad. Dermatol.*

Intracellular signal transduction pathways regulating melanogenesis imply PKC, camp through the activation of PKA and NO. A new whitening formulation that targets these three different pathways, has been tested on melasma with image analysis and a particular interest on the quality of life (QoL) of the volunteers.

*H. Pham, P. Grimes, A. Parikh, B. Jones, Efficacy of a skin lightening regimen to improve melasma, AB170 J. Am. Acad. Dermatol.*

Melasma is a common disorder of hyper-pigmentation. It is characterized by symmetrical brown-grey pigmentation affecting the cheeks, forehead, upper lips and chin. It impacts all women, although the disease is more commonly observed in darker racial ethnic groups. The condition is more common in areas with intense ultraviolet light exposure.

*E. Berardesca, Bioengineering as a Tool in Occupational Dermatology, Dermatologie in Beruf und Umwelt, Jahrgang 55, Nr. 2/2007, p. 67*

Bioengineering techniques have been proven to be helpful in monitoring changes in skin physiology and quantifying skin disease. Detection of subliminal or non visual changes is a challenge in order to predict potentially pathological conditions such as irritation or pre-clinical dermatitis.

*M. Andreassi, R. Bilenchi, G. Mariotti, M. Centini, L. Andreassi, C. Anselmi, **Phytic Acid: a Novel Topically Active Antioxidant Suitable for Cosmetic Preparations**, 21<sup>st</sup> World Congress of Dermatology, Buenos Aires, Argentina*

Many substances with antioxidant activity are present in the human skin, and their concentrations are generally higher in the epidermis than in the dermis. Under the effect of an oxidative stress, such as that caused by ultraviolet (UV) rays, these substances are strongly depleted, especially in the external epidermal layer

*B. Piot, J. De Rigal, C. Yarhi, D. Compan-Zaouati, M. Lefebvre, **The skin sebaceous function: in Asian and Caucasian climate influences**, 21<sup>st</sup> World Congress of Dermatology, Buenos Aires, Argentina*

Objective of the study: The first objective was to compare the sebaceous function in Asian and Caucasians, female, in real life conditions, using both instrumental measurement and visual evaluation by expert. A second objective was to investigate climate induced changes in the sebaceous function on a separate group of Japanese women, using the same methodology.

*A.V. Anstey, A. Carter, K. Wyness, M. Kalavala, C. Edwards, **A Study to Assess the Use of TL01 Dose Response Curves to Inform an Incremental Regimen for Narrow Band UVB Phototherapy in Psoriasis**, 21<sup>st</sup> World Congress of Dermatology, Buenos Aires, Argentina, 2007*

Variation in narrow-band UVB (nbUVB) psoriasis treatment regimens between phototherapy units affects the starting dose, the dosage increments and the ceiling dose. In the UK it is now standard practice in most units to determine the minimal erythema dose (MED) on unaffected skin before phototherapy commences, which informs the starting dose selected for each patient. A dose-response curve for each patient can easily be constructed from the MED dose series without additional UVB irradiation.

*C.G. Sason, V.M. Verallo-Rowell, **The Efficacy and Safety of Illuminants Anti-Perspirant with Gigawhite Versus Vehicle for Axillary Hyperpigmentation: a Double Blind, Parallel Group, Randomized Clinical Trial**, 21<sup>st</sup> World Congress of Dermatology, Buenos Aires, Argentina, 2007*

Axillary Hyperpigmentation is a significant cosmetic concern of people with skin of color, most especially those of women. The objective of this study was to determine the efficacy and safety of illuminants Anti-perspirant with Gigawhite in the treatment of axillary hyperpigmentation. This study utilized a double blind randomised parallel group design.

*N. Chua-Vivar, E.J. Masa, E. Handog, MS. Obleplass, **A Prospective Randomized, Double-Blind, Placebo-Controlled Trial on Efficacy of 10% Vitamin C Solution, Applied Using Iontophoresis Technology, in The Treatment of Melasma in Filipino Women**, 21<sup>st</sup> World Congress of Dermatology, Buenos Aires, Argentina, 2007*

Background/Objective: Melasma is one of the major cosmetic concerns among Asians and Hispanics. Among management options, hydroquinone has gained wide application despite the increasing incidence of adverse effects associated with its use, even in preparations of lower potency. Iontophoresis, a modality for enhancing drug penetration, is considered safe, effective, non-invasive and in combination with whitening agents is purported as safer alternatives in treating melasma.

*P. Msika, J.L. Levy, L. Agopian-Simoneau, B. Chadoutaud, **Effect of a New Cosmetic Formulation on Reducing Cutaneous Pigmentation: A Clinical And Biometrological Approach**, 21<sup>st</sup> World Congress of Dermatology, Buenos Aires, Argentina, 2007*

Intracellular signal transduction pathways regulating melanogenesis imply PKC, camp through the activation of PKA and NO. A new whitening formulation, that targets these three different pathways, have been tested on melasma, with image analysis and a particular interest on the Quality of Life (QoL)

of the volunteers. The tested product was a cosmetic cream containing protein kinase C (PKC) and protein kinase A (PKA) inhibitors, vitamins E and C.

*C. Grolsman, C. Selem, S. Pérez Damonte, N. Delic. P. López, **Etidronic Acid a New Concept of Action for an Active Ingredient of Conventional Use**, 21<sup>st</sup> World Congress of Dermatology, Buenos Aires, Argentina, 2007*

Study Purpose: The aim of this study is the Etidronic Acid use (EA). This active ingredient is a biphosphonate, the 1-Hydroxyethylidene-1, 1-di-phosphonic Acid. This active ingredient is well known in the medical field and its application in different treatments. EA is also listed as an ingredient of several cosmetic formulations such as soap bars and shampoos.

*R. Yankova, **Skin Photoirritation and Provoked Pigmentation Rates Related to Topical Anti-Acne Agents**, 21<sup>st</sup> World Congress of Dermatology, Buenos Aires, Argentina, 2007*

To investigate the skin photoirritation and pigmentation due to anti-acne topical treatments we enrolled fifty volunteers in a study to evaluate the UV erythema after applying ten anti-acne formulations. 3%, 5% and 10% benzoyl peroxide gel, 0,01 %, 0.025% and 0.05% tretinoin cream, 3% tetracycline hydrochloride ointment, 1% clindamycine phosphate lotion, 1,2% zinc acetate dihydrate + 4% erythromycin lotion, and 20% azelaic acid cream.

*U. Eich, **Thermische Verletzungen im Kindes- und Jugendalter**, Dissertation Universität zu Lübeck 06.06.2007*

Einführung: Jedes Jahr verunglücken circa 7100 Kinder im Alter von 0 bis 20 Jahren durch thermische Unfälle, sodass sie stationär in einem der 44 Betten für Kinder in einem Schwerbrandverletzentzentrum in Deutschland behandelt werden müssen[86]. Thermische Verletzungen entstehen im Kleinkind- und Vorschulalter vorwiegend (etwa 85%) in Form von Verbrühungen, d.h. bei Kontakt mit heißen Flüssigkeiten[18, 20, 84]. Der Inhalt einer Tasse mit heißem Wasser genügt, um bis zu 30% der Körperoberfläche eines Säuglings- oder Kleinkindes zu verbrühen[27]. Verbrennungen treten hingegen häufiger bei Schulkindern auf und werden vornehmlich durch Hausbrände, Grillunfälle und Experimentieren mit dem Feuer hervorgerufen[11, 43, 62]. Bei circa 3000 Kindern verbleiben nach der Therapie einschränkende Narben[43, 62]. Diese sind häufig hypertroph, verursachen Schmerzen und Juckreiz und können zu funktionellen Einschränkungen führen[32]. Gut sichtbare Narben, insbesondere an Gesicht und Händen, können zudem auch psychosoziale Probleme im Leben der Kinder nach dem Unfall hervorrufen[51].

*R. Debowska, C. Vincent, K. Bazela, M. Kruszewski, B. Winkler-Spytkowska, A. Maciejczyk, K. Rogiewicz, I. Eris, **The repair effect of Folacin on skin damage due to radiotherapy**, Kosmetische Medizin 2/2007*

Zusammenfassung: Obwohl medizinische und pharmakologische Fortschritte unübersehbar sind, ist die Behandlung bösartiger Tumore nach wie vor mit einem hohen Risiko unerwünschter Nebenwirkungen verbunden. Insbesondere bei der Strahlentherapie sind allgemeine Nebenwirkungen (Krankheitsgefühl und Unwohlsein) und lokale Nebenwirkungen wie kutane Strahlenschäden zu beobachten. Kutane Strahlenschäden bedürfen einer entsprechenden Behandlung und Pflege sowohl während der Radiatio als auch nach Beendigung der Strahlentherapie. Viele Patienten greifen dabei nach kosmetischen Produkten, die die vorher geschädigte wieder in eine gesunde Haut zurückführen sollen. Ziel dieser Studie war es, Wirksamkeit, Tolerabilität und kosmetische Qualität einer Folacinhaltigen Creme während und nach Strahlentherapie zu untersuchen. In vitro wurden Experimente an primären Fibroblastenkulturen vorgenommen: Der Alkalincomet-Assay wurde verwendet, um die Reparaturwirkungen von Folacin auf Röntgenstrahlen-induzierte DNA-Schaden zu erfassen. Bei 41 Patienten mit Strahlentherapie führten wir in vivo Untersuchungen durch. Über nichtinvasive Verfahren wurden die Parameter Erythem, Feuchtigkeit der Haut und Talgbildung an den bestrahlten Körperregionen (Wangen, Hals oder Brust) jeweils 2, 4 und 8 Wochen nach Behandlung mit der Creme erfasst. Die

Repairrate von DNA-Schäden war nach 15–30 min post radiationem höher bei Folat-behandelten primären Fibroblastenkulturen als bei Kontrollen. Unsere Daten sprechen für eine Folsäure-modulierte Reparatur der DANN mit einer rascheren Verknüpfung der Strangbrüche. Wir stellten eine wirksame Verbesserung der Hautparameter durch Folin-haltige Creme unter Radiotherapie fest. Die Anwendung des Verums verminderte i. Vgl. zu Kontrollen Rötung und Couperose, verbesserte aber auch Hautfeuchte und Sebumgehalt. Die Creme wurde sehr gut durch die Patienten toleriert und ihre kosmetischen Eigenschaften waren überzeugend.

*S.H. Lim, S.M. Kim, Y.W. Lee, K.J. Ahn, Y.B. Choe* **Change of biophysical properties of the skin caused by ultraviolet radiation-induced photodamage in Koreans**, Skin Research and Technology 2008; 14, p. 93-102

Ultraviolet (UV) irradiation affects the function and complexion of the skin by inducing changes in physical properties through formation of erythema, proliferation of epithelial cells, DNA damage, activation or inactivation of various enzymes and proteins, and free radical formation. In this study, the authors intended to observe the overall course of changes in barrier function and reflectance of the skin induced by photodamage, and healing reaction in the course of time, and alteration of skin complexion

*N. Akhtar, G. Ahmed, M. Ahmed, N. Ranjha, A. Mahmood*, **Grapefruit Extract Cream: Effects on Melanin and Skin**, Cosmetics and Toiletries Magazine, Vol. 123, No. 1/January 2008, p. 55-68

Emulsions are thermodynamically unstable systems defined as microscopic dispersions of liquid droplets contained within another liquid, with a diameter ranging from 0.5 to 100 µm. Emulsions usually consist of mixtures of an aqueous phase with various oils or waxes.

*H. Oshima, H. Takiwaki*, **Evaluation of dark circles of the lower eyelid: comparison between reflectance meters and image processing and involvement of dermal thickness in appearance**, Skin and Research Technology, Vol 14, No. 2, May 2008

Dark circles of the lower eyelid (DCLE) are areas of darkened skin that may indicate hyperpigmentation and /or stasis in the lower eyelids and may represent a beauty problem in severe cases. Furthermore, a concave sunken eye area changes light reflection to create shadowing and accentuate dark circles (1).

*A. del Pozo, M. Solans, C. Fernandez, M. Dolz, Corrias, M. Herráez, O. Diez-Sales*, **Efficacy evaluation and characterization of chitosan nano emulsions with Spirulina hydro-glycolic extract**, IFSCC Barcelona 2008 Presentation and Poster

Nanoemulsions represent an interesting prospect for use as vehicles in the development of formulations to deliver active ingredients to the human body. Particularly, nanoemulsion formulations have been shown to be superior for transdermal and dermal delivery of hydrophilic and lipophilic compounds, compared to conventional vehicles, such as hydrogels and emulsions. Lecithins (phosphatidylcholines) have been used in several studies as surfactants for topical nanoemulsion vehicles. These surfactants are able to form nanoemulsions without cosurfactants. In this context, less surfactant is associated with lesser irritation.

*B. Sommer*, **Regenerationsergebnisse nach Nervenverletzungen an der oberen Extremität – Einflussfaktoren und die Optimierung klinischer Untersuchungsmethoden**, Dissertation aus der Klinik für Plastische Chirurgie der Universität zu Lübeck, Lübeck 2008

Klinik der Nervenverletzungen: In der Handchirurgie nimmt die Verletzung peripherer Nerven der oberen Extremität mit 10% aller zu versorgenden Fälle einen wesentlichen Stellenwert ein. Durch motorische und sensible Ausfälle im entsprechenden Versorgungsgebiet des Nerven kommt es zum Verlust von sensomotorischen Fertigkeiten, die zu Bewältigung von Situationen im Berufsleben als auch im häuslichen Lebensumfeld von zentraler Bedeutung sind. Der hohe Anteil der postoperativen Arbeitslosigkeit [51] hat in den letzten Jahren den wirtschaftlichen Einfluss auf das Gesundheitssystem nach

Verletzungen der oberen Extremität immer mehr in den Fokus neuer Studien gerückt [34,94]. Insbesondere Nervenverletzungen haben einen nachhaltigen Einfluss auf den sozioökologischen Status des Patienten und können zu erhöhten Behandlungskosten vor allem im Bereich Rehabilitation und sekundärer Rekonstruktion führen [34]. Trotz der hohen klinischen Relevanz können Nervenverletzungen im Rahmen vermeintlicher Bagatellverletzungen leicht übersehen werden (Abb. 1).

*G.W. Nam, E.J. Kim, H.K. Lee, S.M. Ahn, S.H. Kim, S.J. Moon, I.S. Chang, **New approach to a non-invasive visualization of whitening effects in UV-induced pigmentation using In vivo reflectance confocal microscopy**, IFSCC Barcelona 2008*

Hyperpigmentation on face is a highly anxiety-producing symptom, especially for women from the aspect of beauty. Pigmentation of the skin is related to the amount of melanin that provides protection against UV radiation. *In vivo* reflectance confocal microscopy is a non-invasive imaging tool allowing visualization of the skin without tissue alteration, by placing a microscopy directly on the living skin.

*S.H. Pérez Damonte, C.L. Selem, C. Groisman, **Bi-Functional Study of Ion Calcium in the Skin**, IFSCC Barcelona 2008*

The Calcium ion has an important function in the skin. Its gradient plays a role in regulating epidermal growth and differentiation *in-vivo*. In the intact epidermis, the extra cellular calcium content is low in both, malpighi and spinosum strata, but increases from the inner to the outer layer of the stratum granulosum [1]. Also, the calcium ion participates in the formation of the epidermal desmosomes, fibroblasts and keratinocytes, which provide the integrity and firmness of the skin [2]. All of these factors are important for the correct function of the epidermal barrier.

*S.H Pérez Damonte, A.M. Martín, M. E. Daraio, **Safety Assessment for Nickel in Cosmetics**, IFSCC Barcelona 2008*

Many environmental chemicals produce contact hypersensitivity or local inflammatory responses in the skin. Nickel released from metal objects is well known as a sensitizing agent in humans. Since the initial damage caused by nickel remains to be the leading cause of skin disorders such as allergic contact dermatitis worldwide, the aim of this study is to investigate if the content of nickel in cosmetics could produce such reactions.

*J.-H. Hyun, H.-C. Gyu, J.-K. Young, J.-S. Kim, B.-J. Park, **Anti-acne activity of Thyme oil and its applications for cosmeceutical acne care: An innovative Anti-acne challenger**, IFSCC Barcelona 2008*

The skin disease which acne occurs in papule, pustule, cystoma and tuber for teenagers and young generation. The origin of acne takes part in various factors. The main factors are 1) increased Sebum 2) cornification of sebaceous glands 3) Propionibacterium 4) inflammation.

*L. Barbosa-Barros, C. Barba, L. Coderch, A. de la Maza, O. López, **Relevance of Lipid Self-Assembly in Nanostructures on the Skin Properties**, IFSCC Barcelona 2008*

Phospholipid systems show high morphological diversity as a function of its structure and composition [1]. This fact plays an important role in the applications of aggregates such as micelles, bicelles and vesicles, which are extendedly used in skin research [2]. Thus, investigations that help clarifying the relation of structural parameters with the effect of the phospholipid aggregates in the skin are needed. Liposomes and micelles have often been used for skin treatment [3-4], although their application is debated due to some aspects. Liposomes seem to be too large to penetrate into the narrow interlamellar spaces of stratum corneum (SC) lipids [5]. Concerning to the micelles, the usual presence of surfactant in their composition supposes a problem due to the well-known irritating effect of these solubilising agents on the skin [6]. In this line, the use of bicelles (discoidal micelles constituted by phospholipids) for skin treatment may report advantages comparing to the use of liposomes and micelles: the size of bicelles is small enough for passing through the SC lipid lamellae and their composition

consists exclusively of lipids.

*B. Sadr, S. Davoudi, A. Firooz, S. Keshavarz, M. Shohrati, M. Naghizadeh, Comparison of erythema and melanin level in sulfur mustard-induced chronic skin lesions with normal skin*, Abstract; EADV Paris 09/2008

Background: Sulfur mustard gas is a chemical agent that has been used in many wars, especially in Iran-Iraq war. This chemical agent affects many organs including lungs, eyes and skin and causes numerous acute and chronic lesions including erythema and hyperpigmentation, respectively. Objective: This study was conducted to evaluate erythema and melanin in subjects with a history of exposure to sulfur mustard.

*C. Huh, M. Choi, S. Lee, S. Kim, Y. Park, B. Kim, H. Park, S. Choi, S. Youn, K. Park, Low dose 1064nm Q-switched Nd:YAG laser for the treatment of melisma*, Abstract; EADV Paris 09/2008

Background : Melasma is a common acquired pigmentary disorder that is known for its recalcitrance to the conventional treatment. Although Q-switched Nd: YAG laser (QSNYL) is widely used for the treatment of melasma, little has been published regarding its effect. Objectives: In this study, we would like to know the effect of low dose 1064nm QSNYL (MedLite C6, HOYA Conbio, CA) on the treatment of melasma objectively.

*B. Nedelec, J.A. Correa, G. Rachelska, A. Armour, L. LaSalle, Quantitative Measurement of Hypertrophic Scar: Intrarater Reliability, Sensitivity, and Specificity*, Journal of Burn Care & Research May/June 2008

The comparison of scar evaluation over time requires measurement tools with acceptable intrarater reliability and the ability to discriminate skin characteristics of interest. The objective of this study was to evaluate the intrarater reliability and sensitivity and specificity of the Cutometer, the Mexameter and the DermaScan C relative to the modified Vancouver Scar Scale (mVSS) in patient-matched normal skin, normal scar (donor sites), and hypertrophic scar.

*B. Nedelec, J.A. Correa, G. Rachelska, A. Armour, L. LaSalle, Quantitative Measurement of Hypertrophic Scar: Intrarater Reliability and Concurrent Validity*, Journal of Burn Care & Research May/June 2008

Research into the pathophysiology and treatment of hypertrophic scar (HSc) remains limited by the heterogeneity of scar and the imprecision with which its severity is measured. The objective of this study was to test the interrater reliability and concurrent validity of the Cutometer measurement of elasticity, the Mexameter measurement of erythema and pigmentation, and total thickness measure of the DermaScan C relative to the modified Vancouver Scar Scale (mVSS) in patient-matched normal skin, normal scar, and HSc.

*Y.H. Li, J.Z. Chen, H.C. Wei, Y. Wu, M. Liu, Y.Y. Xu, G.H. Dong, H.D. Chen, Efficacy and safety of intense pulsed light in treatment of melasma in Chinese patients*, Dermatol Surg, 2008 May;34(5): p. 693-700

Background: Melasma is commonly seen in the Asian population. Traditional therapies are less effective and may cause adverse effects. Objective: The objective was to study the efficacy and safety of a new intense pulsed light (IPL) device in the treatment of melasma in Chinese patients. Methods: Eighty-nine women with melasma were enrolled in this open-labeled study. Subjects received a total of four IPL treatments at 3-week intervals. Changes in facial hyperpigmentation and telangiectasis were evaluated using an objective, skin colorimeter (Mexameter, Courage & Khazaka), the melasma area and severity index (MASI), and a global evaluation by the patients and blind investigators. Results: Sixty-nine of 89 patients (77.5%) obtained 51% to 100% improvement, according to the overall evaluation by dermatologists. Self-assessment by the patients indicated that 63 of 89 patients (70.8) considered more

than 50% or more improvement. Mean MASI scores decreased substantially from 15.2 to 4.5. Mexameter results demonstrated a significant decrease in the degree of pigmentation and erythema beneath the melasma lesions. Patients with the epidermal-type melasma responded better to treatment than the mixed type. Adverse actions were minimal. Conclusion: IPL treatment is a good option for patients with melasma. Adverse actions of IPL were minimal and acceptable.

*D. Khazaka, C. Uhl, More than 2 decades of bioengineering for efficacy testing and product recommendation*, Household and Personal Care TODAY, No. 1/2009

Due to high competition in the cosmetic and growing customer expectations, in the past two decades there has been a continuous development of new cosmetic products with more efficient ingredients covering new effects on the skin. Simultaneously to this, there was an increasing demand for new measuring techniques to substantiate the new product claims. The field of skin bioengineering has consequently been immensely enriched in the last years by inventing new physical and optical measurement methods for all kind of skin parameters.

*M. Yamaguchi, Y. Tahare, T. Makino, T. Shimizu, A. Date, Comparison of Cathepsin L activity in cheek and forearm stratum corneum in young female adults*, Skin Research and Technology 2009; 15; 370-375

Noninvasive determination of skin surface proteolytic activity may be useful for the diagnosis of human disease and the potential of skin. The cathepsin family is one of the metabolizing enzymes of the skin cell and it includes aspartic protease cathepsin D and cysteine proteases cathepsin B, H, and L. Cathepsin L is a lysosomal cysteine protease with a major role in intercellular protein catabolism.

*Y.-H. Li, Y. Wu, H.-C. Wie, Y.-Y. Xu, L.-L. Jia, J. Chen, X.-S. Yang, G.-H. Dong, X.-H. Gao, H.-D. Chen, Protective effects of green tea extracts on photoaging and photomunosuppression*, Skin Research and Technology 2009; 15; 338-345

It is well known that solar ultraviolet radiation (UVR) causes many detrimental events, e.g. sunburn, immunosuppression, skin carcinogenesis as well as photoaging. Acute UVR results in epidermal thickening and expression of proliferation and differentiation markers, such as Ki-67 and cytokeratins (CK)-1, 6 (3, 4).

*A. Khaiat, P. Belinski, H. Lasser, Y. Kamron, Unique technology for safe and effective skin whitening*, Personal Care, September 2009

Melanin, the dark pigment in the skin, is produced in the basal layer of the epidermis by specialized cells, the melanocytes, and transported, following its complete formation, to the upper layers of the epidermis where it enters into skin cells (keratinocytes) to give them their typical colour. Ageing-associated accumulation of melanin in the upper layer of the skin is the main cause for pigmentation disorders, which is observed in Asian skin as uneven hyperpigmentation at younger ages.

*W. Pratchyapruit; Grading of improvement and relapse in melasma of thai females after 8 weeks-treatment with a combined cream of hydroquinone, steoid and tretinoin*; ISBS Barcelona, 2009

Melasma is a common skin problem in any races including Asians. It commonly occurs in Thai females, age 30-40 years and females outnumber males about 13:1. In addition to multiple etiologic factors, the environmental factor of Thailand as a tropical and sunny climate country constitutes a definite factor responsible for improvement and relapse of pigmentation after any treatments. At present, the topical treatment consisting of hydroquinone (HQ), steroid and tretinoin together with sunlight protection is a standard treatment for melasma.

*J. Fluhr, Objektive Messmethoden bei dermatologischen Erkrankungen*, 18th Congress of EADV Berlin, 2009

Der Kurs unter Leitung von Priv. Doz. Dr. Fluhr, Berlin, Prof. Jemec, Kopenhagen (Dänemark) und Prof. Berardesca, Rom (Italien) ist darauf ausgelegt, das Basisverständnis für biophysikalische Messungen der Haut zu vermitteln. Diese Messungen sollen dann für die quantitative Bewertung der Schwere und Verlaufs von spezifischen Hauterkrankungen herangezogen werden. Über die letzten drei Dekaden wurden multiple nicht-invasive Instrumente für die quantitative oder semi-quantitative Erfassung von hautphysiologischen Parametern entwickelt und validiert.

*J.S. Choi, J.H. Moon, J.Y. Lee, C.H. Seo, A.Y. Jun, E.H. Choi, K.U. Jang, Effect of Intradermal Injection of Placenta Hydrolysate to Postburn Hyperpigmented Skin*, J Korean Burn Soc, Dec 2009

The skin hyperpigmentation or hypermelanosis caused by burns results in social withdrawal due to cosmetic problem and depression as a psychiatric aspect. The treatment of the skin hyperpigmentation includes sunscreen, whitening material, skin massage, laser therapy and plastic surgery Placenta extract can be used to reduce and inactivate the synthesis of the important enzyme (tyrosinase) that compose melanin. This study was performed to estimate the effect of intradermal injection of placenta extract (placenta hydrolysate) for the postburn hyperpigmentation. Total 10 subjects who have postburn hyperpigmentation were selected. Two sites of skin area from each subject were randomly selected as possible as symmetrical body area, the one site was to be "Treated site" with placenta extract, the other site was untreated "control site".

*Y. Tian, T. Hoshino, C.J. Chen, Y.E.S. Yabe, W. Liu, The evaluation of whitening efficacy of cosmetic products using a human skin pigmentation spot model*, Skin Research and Technology 2009, 15; p. 218-223

To establish a pigmentation spot model on human skin and to assess whitening efficacy for whitening products by this established pigmentation spot model. Twenty subjects between 20 and 45 years old with skin phototype III or IV were selected. Three consecutive daily UV exposures were performed on buttocks of the subjects as follows: Day 1 = 1 minimal erythema dose (MED), Day 2 = 0,5 MED and Day 3 = 0,5 MED.

*M. Mangués, J.M. Garcia-Anton, A. Calvillo, C. Carreño, Assessment of new skin brightening agents*, Personal Care, November 2009, p. 31–36

Exogenous causes, particularly chronic ultraviolet light exposure, are a common factor in pigment abnormalities such as melasma, solar lentigines (or age spots), freckling, mottled pigmentation, and ephelides. There are numerous internal and external stresses that affect human skin pigmentation. Exposure to certain drugs and chemicals as well as the existence of certain disease states can result in hyperpigmentation. Post-inflammatory pigmentation, another skin hyperpigmentation disorder, usually develops after resolution of inflammatory skin eruptions like acne, contact dermatitis or atopic dermatitis.

**Positiver Effekt der Mani Bio-Olivenölcreme**, [www.mani.at/pages/gesundbheit/studie-zur-oliven-creme.php](http://www.mani.at/pages/gesundbheit/studie-zur-oliven-creme.php)

Motivation der Studie war herauszufinden, ob die Mani Bio-Oliven Crème anti-inflammatorische (entzündungshemmende) Eigenschaften hat und zur schnelleren Wundheilung beiträgt. Bei Behandlung von leichten Verbrennungen mit dieser Creme ist aufgefallen, dass der Schmerz schnell nachlässt und die Haut sich schneller regeneriert. Aus diesem Grund hat die Firma Bläuel in Zusammenarbeit mit alchemia-nova und Unterstützung der österreichischen Forschungsförderungsgesellschaft mbH beschlossen, diesen Erfahrungswert zu überprüfen. Eine Studie von alchemia-nova kann in diesem Auftragsumfang auf keinem Fall einer klinischen ähnlich kommen und eine Bewertung auf heilende Eigenschaften kann nicht zu medizinischen Zwecken erfolgen.



*M. Tilaar, W.L. Who, A.S. Ranti, S.M. Wasiaatmadja, M. Suryaningsih, Hibiscus rosasinensis extract – Its whitening and moisturizing properties;* Household and Personal Care TODAY, No. 4/2009

The demands on whitening skin care products have shown tremendous growth in recent years, along with the expectation of its safety and efficacy. With the influence of back to nature trend, people prefer the products containing natural ingredients as they have perception that those kinds of products tend to be safe and compatible with their skin. As an answer for customer needs, Martha Tilaar Innovation Centre has conducted so many researches on potential plant extracts, which can deliver the whitening effect. Several aspects should be considered when utilizing botanical materials in cosmetic, such as, the quality of the plant materials, process, biological activity, and safety consideration.

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

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

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

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

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

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

*A.S. Ranti, M. Tilaar, W.L. Wih, M. Suryaningsih, Whitening agent derived from combination of plants,* Personal Care September 2010, p. 21-23

Whitening products have shown tremendous growth in recent years. This is especially true of tropical places like Indonesia where the local women strive to have a lighter skin complexion. There are many harsh whitening products in the market; however, consumers are now shifting towards the safer, naturally derived whitening agents. Several aspects should be considered when utilizing plant materials in cosmetic, such as, the quality of the plant materials, process, its stability, biological activity, and safety consideration. The aim of this study is to look for a whitening agent from an Indonesian botanical resource. This paper will describe a stable natural complex ingredient (SWC now referred to as the new whitening agent) extracted with ethanol from several plants.

*N. Ostovari, N. Saadat, S. Nasiri, H. Moraweg, P. Toossi, The 308-nm excimer laser in the darkening of the white lines of striae alba,* Journal of Dermatological Treatment 21 (4): 229

To evaluate the true efficacy of the 308-nm excimer laser for darkening striae alba using a modified approach. Methods: ten subjects were treated using the excimer laser on the white lines of striae, while the normal skin near to and between the lines was covered with zinc oxide cream. Assessment of efficacy was performed by colorimetric scores based on Mexameter measurement and also digital photographs showing before – after laser therapy, which were compared by two independent dermatologists. The Mexameter-based data analysis showed that the excimer laser was weakly effective in the repigmentation of the lines of striae.

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

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

*H. Yim, Y.-S. Cho, C.-H. Seo, B.-C. Lee, J.-H. Ko, D. Kim, J. Hur, W. Chun, J.- H. Kim*, **The use of AlloDerm on major burn patients: AlloDerm prevents post-burn joint contracture**, BURNS, Vol. 36, Issue 3, p. 322-328

A total of 64 patients received AlloDerm graft selectively on joint areas during the study period from March, 2005 to July, 2007. From January to March, 2008, a total of 31 patients returned to our burn center to examine the functional results by measuring range of motion of joints. Additionally, the quality of grafted skin condition criteria of skin elasticity, scar thickness, trans-epidermal water loss, melanin and erythema level was measured in a total of 11 patients among them. By analyzing the limitation level of 55 joints excluding hand areas, we found that 24 joints (43.6%) showed no limitations, 12 joints (21.8%) showed limitations below 10%, 16 joints (29.1%) showed limitations between 10 and 19% and 3 joints (5.5%) showed limitations over 20%. The scar thickness of non-AlloDerm applied areas was  $2.5 \pm 0.9$  mm and AlloDerm applied areas was  $1.8 \pm 0.7$  mm ( $p = 0.396$ ). Trans-epidermal water loss for non-AlloDerm applied areas was  $20.9 \pm 7.7$  g/h/m<sup>2</sup> and AlloDerm applied areas was  $10.8 \pm 3.4$  g/h/m<sup>2</sup> ( $p < 0.001$ ). Erythema value for non-AlloDerm applied areas was  $436.1 \pm 65.8$ , whereas AlloDerm applied area was  $394.4 \pm 61.2$  ( $p < 0.001$ ). Acellular dermal matrix is a good option for treating major burns to prevent scar formation after burn and loss of joint function.

*M. Choi, J.-W. Choi, S.-Y. Lee, S.-Y. Choi, H.-J. Park*, **Low-dose 1064-nm Q-switched Nd: YAG laser for the treatment of melisma**, Volume 21 (4) Informa Healthcare, Jul. 1, 2010

Abstract Background: Melasma is a common acquired pigmentary disorder which is sometimes hard to treat with conventional methods. Various kinds of modalities have been applied for the treatment of melasma but none shows constantly good results. Objectives: In this study, we would like to know the effect of low-dose 1064 -nm Q-switched Nd:YAG laser (QSNYL) on melasma and want to evaluate the changes of skin after laser treatment. Methods: Twenty melasma patients were enrolled. Two regions were evaluated from each patient; a total of 40 sites. The 1064-nm QSNYL at fluences of 2.0–3.5 J/cm<sup>2</sup> was used to treat the whole face, including the melasma lesions. The fluence was adjusted individually and increased until erythema was developed on the laser-treated area. The treatment was performed five times with a 1-week interval. Non-invasive measuring methods, including a chromatometer, mexameter, cutometer, visioscan and a corneometer, were used before and after treatment.

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

Melanin, the substance responsible for the pigmentation of skin, is produced to protect the nucleus from harmful UV radiation and results in visible darkening of the skin. Freckles, age spots and melasmas are frequent undesired consequences of stimulated melanin production. Many cosmetic ingredients are used to lighten the skin, by inhibition of melanin production or stimulation of melanin decomposition. The use of flavonoids as cosmetic ingredients has long been known and is well established. The aim of this study was to find the ideal composition of flavonoids from various citrus fruit extracts for a skin lightening cosmetic ingredient. The subsequent liposomal encapsulation of the active ingredients enhances penetration of the active substances into deeper layers of the skin and produces

a deposition effect due to film formation on the skin surface. Various citrus extracts were analyzed by HPLC-UV, with a C18 column (Uptisphere ODB) and isocratic elution mobile phase of 75% water, 10% methanol, 10% acetonitrile and 5% acetic acid.

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

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

*M.E. Posternak, S.H. Perez Damonte, Influence of Isopropyl Myristate in the Action of Externally Applied Vitamin K<sub>1</sub> on the Skin pH and on the color of Erythema in Skins with Rosacea*, IFSCC 2010 Buenos Aires, Argentina

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

*T. Ilknur, M.Ü. Biçak, P. Eker, H. Ellidokuz, S. Özkan, Effects of the 810-nm diode laser on hair and on the biophysical properties of skin*, Journal of Cosmetic and Laser Therapy, 2010; 12: 269–275

Introduction: Laser therapy is clinically effective in hair removal; however, despite the development of various strategies, laser procedures still present a risk of adverse effects due to the overheating of the skin. *Objective*: To investigate the effects of 810-nm diode laser treatment on hair and on the biophysical properties of skin by using various non-invasive techniques on various parameters, including hair analysis, surface color changes, integrity of skin barrier, sebum production rate and pH level. *Methods*: In this randomized, right – left comparison study, 35 women with axillary hair received single-session diode laser therapy. Hair analysis and biophysical properties of the skin were assessed before treatment and at weeks 2, 4 and 6 after the therapy. *Results*: Hair density and thicknesses statistically significantly decreased after the first post-treatment evaluation. Regarding comparison of the biophysical properties of the skin, there was no statistically significant difference in the assessments, except for the increase determined during the second week in the erythema index in the laser-treated areas. *Conclusion*: The findings of this study showed that the diode laser can perform a significant reduction in the hair amount without significant epidermal damage, at least for a short period.

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

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

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

Retinyl palmitate has been used in daily use moisturizing, antiageing and protective formulations since it acts on epithelization in dry and rough skin, as well as on keratinization considered being abnormal. However, some studies report that this substance shows some photoreactivity and can form photoproducts, which can lead to the impairment of safety and efficacy of cosmetic products containing this vitamin. Consequently, cosmetic formulators have been doing many efforts to stabilize formulations containing vitamin A derivatives and other photounstable substances such as searching for new UV-filters or using photostabilizers to increase their photostability and consequently their safety and effectiveness. Thus, the objective of this research was to evaluate the influence of different photostabilizers on the photoprotective effects of a cosmetic formulation containing UV-filters and a vitamin A derivative.

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

This paper focuses on the characterization of Sphagnum Magellanicum peat, its properties and the different uses in cosmetic products. Studies were conducted to analyze the organic, inorganic and microbiological content of this material. The results determined that it is an important source of polyphenols with antioxidant capacity. It has anti-inflammatory action and is safe in contact with skin. It has germicide properties. Humic substances have a large capacity to retain multivalent ions forming metalorganic complexes acting as a natural organic sequestrant. Because the intensity of UV light absorption it can be used in the formulation of coloured sunscreen emulsions and taking into account the other properties tested in the development of others cosmetic products. Considering the results obtained we found that Sphagnum Magellanicum peat has interesting properties for being used in the cosmetic industry coupled with the benefit of this raw material which has the important property of being natural and organic.

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

Tyrostan ist ein N-Acyl Derivat von Tyrosin, gewonnen durch Kondensation von Tyrosin mit dem Kaliumersatz der Caprinsäure. Der Einsatz von Tyrostan stellt der Haut etwa 10% reines Tyrosin zusätzlich zur Verfügung, wodurch unter der Einwirkung von Sonnenlicht die Melaninproduktion stimuliert und für eine schnelle Bräune gesorgt wird. Das für die Hautbräunung verantwortliche Pigment ist das Melanin, das in den Melanozyten gebildet wird. Die Ausgangssubstanz der Melaninbildung ist die Ami-

nosäure Tyrosin. Durch die Aktivierung des Enzyms Tyrosinase werden über diverse nacheinander folgende Stoffwechselschritte die Melanine synthetisiert, wobei das UV-Licht ein wichtiger Aktivator ist. Die Bräunung der Haut bildet eine natürliche Schutzbarriere vor der UV-Strahlung der Sonne.

*M. Majeed, R. Trinidad, V. Pineda, G. Chan, T. Gabriel, J. Dayrit, C.A. Pelayo, L. Prakash, A randomized, double-blind, placebo-controlled, comparative study*, Household and Personal Care TODAY, n 3/2010, p. 44-46

Hydroquinone, which is extensively used in the treatment of hyperpigmentary disorders is associated with known side effects. Safer, natural depigmenting actives are therefore being explored. A randomized, placebo controlled study in 50 human subjects, showed that the depigmenting effects of 0,25 percent tetrahydrocurcumin cream and 4 percent hydroquinone cream were comparable in a four week trial. No adverse reactions were noted from 0,25 percent tetrahydrocurcumin cream, while mild to moderate adverse effects were observed with 4 percent hydroquinone cream. 0,25 percent tetrahydrocurcumin cream is therefore an effective and safe alternative to 4 percent hydroquinone cream in depigmenting formulations.

*S. Hibino, U. Hamada, H. Takahashi, M. Watanabe, N. Nozato, Y. Yonei, Effects of Dried Brewer's Yeast on Skin and QOL: A Single-Blind Placebo-Controlled Clinical Study of 8-Week Treatment*, Anti-Aging Medicine 2010

Objective: Brewer's yeast contains vitamins, minerals, amino acids and other nutrients, and has been reported to control intestinal function as well as to exert anti-ulceration, anti-tumor and anti-allergy effects. The present study evaluated the effects of oral treatment with dried brewer's yeast tablets (study product) on skin in a single-blind placebo-controlled design in humans. Methods: Thirty-two healthy volunteer women ( $37.0 \pm 4.8$  years) were allocated as follows: Group E-30 (n=11) were treated with 30 tablets/day of the study product (containing 7,125mg/day of dried brewer's yeast), Group E-9 (n=10) were given 9 tablets/day of the study product, and the control group (n=11) were given 30 placebo tablets/day. The treatment period was 8 weeks. Two patients prematurely discontinued the study (discontinuation rate: 5.9%) and were excluded from the analyses. The study product (Ebios Tablet®) was provided by Asahi Food & Healthcare Co., Ltd. Before and at 4 and 8 weeks after the study, subjective symptoms were evaluated using the Anti-Aging QOL Common Questionnaire (AAQol) and checking skin symptoms, skin images were analyzed with SK Info (SKI, Integral Co.) and Aphrodite-III (PSI), and skin color (CM-700d, Konica Minolta Sensing, Inc.) and elasticity (Cutometer MPA580, Courage & Khazaka electronic GmbH) were measured. Results: In Group E-30, the AAQol physical symptom "cold skin" score was significantly improved at 8 weeks ( $p < 0.05$ ). The skin symptoms "make-up runs easily" and "desiccated and gritty skin," as well as the physical symptom "menstruation-related troubles" were improved in a significant and dose-dependent way from the control group ( $p < 0.01$ ). On skin analysis, SKI demonstrated an increase in moisture content (15.4%,  $p = 0.010$ ), decrease in erythema ( $-18.3\%$ ,  $p < 0.001$ ) and increase in elasticity (13.3%,  $p = 0.003$ ), while PSI revealed an increase in hydration (Total: 14.5%, T zone: 13.7%, U zone: 18.2%,  $p < 0.01$ ) and decrease in pores ( $-32.7\%$ ,  $p = 0.022$ ). Cutometer analysis showed a dose-dependent increase in skin elasticity, while analysis of skin color showed a decrease in hemoglobin ( $-9.5\%$ ,  $p = 0.016$ ), improved lightness ( $-0.7\%$ ,  $p = 0.045$ ) and decrease in redness ( $-8.3\%$ ,  $p = 0.013$ ). During the study period, no serious adverse events were noted. Conclusion: These results suggest that treatment with dried brewer's yeast is useful in improving skin condition, e.g. moisture content and elasticity, and also QOL.

*J. Liu, W.Y. Man, C.Z. Lv, S.P. Song, Y.J. Shi, P.M. Elias, M.Q. Man, Epidermal Permeability Barrier Recovery Is Delayed in Vitiligo-Involved Sites*, Skin Pharmacol Physiol, 2010; 23: p. 193–200

Background/Objectives: Prior studies have demonstrated that both the skin surface pH and epidermal permeability barrier function vary with skin pigmentation types. Although melanin deficiency is the main feature of vitiligo, alterations in cutaneous biophysical properties in vitiligo have not yet been well defined. In the present study, stratum corneum (SC) hydration, the skin surface pH and epidermal permeability barrier function in vitiligo were evaluated. Methods: A total of 30 volunteers with vitiligo

comprising 19 males and 11 females aged 13–51 years (mean age: 27.91 ± 2.06 years) were enrolled in this study. The skin surface pH, SC hydration, melanin/erythema index and transepidermal water loss (TEWL) were measured by respective probes connected to a Courage-Khazaka MPA5. SC integrity was determined by measuring the TEWL following each D-Squame application. The barrier recovery rate was assessed at 5 h following barrier disruption by repeated tape stripping. Results: In addition to SC hydration, both melanin and erythema index were significantly lower in vitiligo lesions than in contralateral, nonlesional sites, while no difference in skin surface pH between vitiligo-involved and uninvolved areas was observed. In addition, neither the basal TEWL nor SC integrity in the involved areas differed significantly from that in the uninvolved areas. However, barrier recovery in vitiligo-involved sites was significantly delayed in comparison with uninvolved sites (40.83 ± 5.39% vs. 58.30 ± 4.71%;  $t = 2.441$ ;  $p < 0.02$ ). Conclusion: Barrier recovery following tape stripping of the SC is delayed in vitiligo. Therefore, improvement in epidermal permeability barrier function may be an important unrecognized factor to be considered in treating patients with vitiligo.

*S.-W. Hwang, J.-H. Kang, S.-Y. Jung, J.-H. Choi, J.-K. Seo, D. Lee, H.-S. Sung, Vitiligo Coexistent with Nevus Depigmentosus: This Was Treated with Narrow-Band UVB and These Lesions Were Followed Using the Mexameter®, a Pigment-Measuring Device, Ann Dermatol Vol. 22, No. 4, 2010, p. 482-485*

Nevus depigmentosus (ND) is a congenital, non-progressive, hypopigmented lesion that is usually stable throughout an affected individual's lifetime. The clinical features of vitiligo are similar to those of ND, but the two diseases have different treatment responses and prognoses. We report here on a rare case of vitiligo that was coexistent with ND. Both conditions were treated with narrow-band UVB. An 11-year-old boy presented with two distinct types of hypopigmented lesions, one on the forehead and the other on his back. The first was a hypopigmented patch with leukotrichia, and it was incidentally discovered 3 months before the child was examined at our clinic and it had rapidly increased in size. The second hypopigmented patch was detected at birth and it had slowly been increasing in size. The hypopigmented lesion on the child's forehead was diagnosed as vitiligo, and the one on his back as ND. Once- or twice-weekly narrow-band UVB treatment was initiated. Improvements in the two lesions were assessed with clinical photography and using a Mexameter® (Courage-Khazaka Electronic, Germany), which is a pigment-measuring device.

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

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

*R. Darlenski, T. Callaghan, J.W. Fluhr, **Antiaging and Antiwrinkle Products**, J.W. Fluhr (ed.), Practical Aspects of Cosmetic Testing; Springer-Verlag Berlin Heidelberg 2011*

The chronological (intrinsic) and extrinsic aging demonstrate typical macroscopic, histological and functional characteristics. The relative improvement in different parameters characterizing aging skin can be used in efficacy proof of antiaging and antiwrinkle cosmetic products. Different approaches to investigate the efficacy of antiaging products exist such as clinical evaluation and objective assessment with non-invasive methods and invasive procedures. A multiparametric approach is useful in the assessment of antiaging products efficacy. There is no uniform consensus on the protocol and the design of studies aiming efficacy proof of antiaging cosmetics.

*J.W. Shin, D.H. Lee, S.Y. Choi, J.I. Na, K.C. Park, S.W. Youn, C.H. Huh, **Objective and non-invasive evaluation of photorejuvenation effect with intense pulsed light treatment in Asian skin**, J Eur Acad Dermatol Venereol. 2011 May;25(5): p. 516-22*

Background: Intense pulsed light (IPL) has been widely used for photorejuvenation. Although previous literature has shown clinical effectiveness of IPL treatments on cutaneous photoaging, the associated changes in the biophysical properties of the skin following IPL treatments have not been fully elucidated. Objective: The aim of this study was to evaluate changes in skin biophysical properties in patients with photoaging after IPL treatments, using non-invasive, objective skin measuring devices. Patients and Methods: A total of 26 Korean women with facial dyschromias underwent three sessions of IPL treatment at 4-week intervals. Outcome assessments included standardized photography, global evaluation by blinded investigators, patients' self-assessment and objective measurements of colour (Mexameter MX18, Chromatometer), elasticity (Cutometer), roughness (Visiometer), sebum (Sebume-ter) and skin hydration (Corneometer). Results Intense pulsed light treatments produced a 15% decrease in the size of representative pigmented lesions ( $P < 0.05$ ). Conclusions: Patients' self-assessment revealed that 84% and 58% of subjects considered their pigmented lesions and wrinkles were improved respectively. Objective colorimetric measurement demonstrated significant improvements following IPL treatments that were most remarkable after one session of IPL. Moreover, skin elasticity showed significant improvements at the end of the study. Skin wrinkles as measured using Visiometer showed a mild improvement without statistical significance. Sebum secretion and water content of skin remained unchanged. Intense pulsed light provided significant improvement in the appearance of facial pigmented lesions in Korean patients. These effects appeared to be more remarkable in improving pigmentation, skin tone and elasticity.

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

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

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

Skin color, erythema and melanin are the words that are usually used by dermatologists to describe skin lesions or to record the changes of skin lesions. However, individual observation of skin color by naked eyes is considered more complex and subjective. As subjective color expression seems impossible to give a correct description, some objective measurements are needed. The limitations of

visual observations may be overcome by instrumental measurements, such as Chromameter CM2500d recommended by CIE (Commission International de l'Eclairage) and reflectance spectrophotometers (e.g. Mexameter MX18) specialized in erythema and pigmentation measurements. These two kinds of instrument are commonly used by professionals in dermatology and cosmetic surgery fields in recent years.

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

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

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

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

*C. Deep Kaur, S. Sasraf, **Skin care assessment on the basis of skin hydration, melanin, erythema and sebum at various body sites***, Academic Science, International Journal of Pharmacy and Pharmaceutical Sciences, Vol 3, Suppl 4, 2011

The aim of this work was to study skin parameters like melanin, erythema, skin hydration, and sebum score of six body sites namely volar forearm, cheek, chin, forehead, neck and post auricular skin of Asian (Indian) population with different skin colour and types to depict the formulation to be used for taking care. Initially skin colour of various volunteers was assessed by the reference of colour chart numbers and three groups each of 80 human volunteers were made. Group I was named fair which corresponded with Colour chart number 19, 20, 21; group II (medium) (22, 23, 24); group III (dark) (25, 26, 27). The measurements were taken using Mexameter (erythema and melanin), Corneometer (skin hydration) and Sebumeter (sebum score). Results depicted that facial skin had more melanin content than volar forearm; the sebum score was highest in the forehead and lowest at volar forearm, skin hydration was more in periauricular space and forehead and lowest in cheek. The volunteers of group I had high sebum and skin hydration values than group II and III. In the face, cheeks need more care and are more prone to dryness. People with darker skin, require formulations having more humectants, while people with fairer skin need to protect more from tanning and redness. Hence these studies will be helpful for deciding the criteria for type of skin and selection of formulation to people of various skin types at various body sites.

*E. Berardesca, M. Iorizzo, E. Abril, G. Guglielmini, M. Caserini, R. Palmieri, G.E. Piérard, **Clinical and instrumental assessment of the effects of a new product based on hydroxypropyl chitosan and***



**potassium azeloyl diglycinate in the management of rosacea**, *Journal of Cosmetic Dermatology*, 2011, p. 37–41

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

*B.H. Oh, Y.J. Hwang, Y.W. Lee, Y.B. Choe, K.J. Ahn*, **Skin Characteristics after Fractional Photothermolysis**, *Ann Dermatol* Vol. 23, No. 4, 2011, p. 448-454

Background: Fractional photothermolysis makes thousands of minute areas called microthermal treatment zones on the skin surface and transmits thermal injury to facilitate heat shock protein formation around the dermis. Potential side effects include acneiform eruption, herpes simplex virus outbreak, erythema, and post-inflammatory hyperpigmentation. Objective: To investigate and compare the changes in the skin of Asian patients after two different fractional photothermolysis systems (FPS) on a split face. Methods: A half-split face study was performed with 10,600 nm carbon dioxide FPS on the left and 1,550 nm erbium-doped FPS on the right side of the face. Only one session of laser irradiation and several biophysical measurements were done. Results: Although both FPS proved to be effective in treating acne scar and wrinkle patients, a slightly higher satisfaction rating was seen with the 10,600 nm FPS treatment. Both types of FPS showed a significant increase in transepidermal water loss which decreased gradually after treatment and returned to pre-treatment level after 1 week. A decreased reviscometer score was sustained for a longer period in wrinkle areas treated with 10,600 nm FPS. Conclusion: Even though the changes in skin varied according to different FPS wavelength, adverse outcomes, such as increased erythema and TEWL were entirely subdued within 3 months of treatment.

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

Background: Exposure of human skin to ultraviolet radiation (UVR) results in erythema, pigment darkening, skin cancer and photoageing. In addition to conventional organochemical and the physical-mineral type sunscreens (SS), other non-SS protective strategies have been investigated, including antioxidants (AOx) and topical DNA repair enzymes. Aim: To investigate whether AOx could improve the protection provided by a broad-spectrum sunscreen (SS) preparation. Methods: Volunteers were exposed to repetitive solar-simulated (ss)UVR at 1.5 times minimal erythema dose for four consecutive days. Thirty minutes before each exposure and 6, 24 and 48 h after the last exposure, the test materials [vehicle, SS (sun protection factor 25) alone, AOx alone and SS plus AOx] were applied to four different sites. Another two sites received ssUVR only, or SS plus AOx only, and a third site was left untreated (neither ssUVR or product). Erythema and pigmentation were measured using a Mexameter. Biopsy specimens were taken 72 h after the last irradiation. The thickness of the stratum corneum and epidermis were measured by microscopy. Expression of cytokeratins (CKs), matrix metalloproteinases (MMPs) and CD1a-positive Langerhans cells (LCs) analysed by immunohistochemical staining, and

relative expression levels were compared between all seven sites. AOx alone did not reduce erythema. Results: There was a significant reduction in pigmentation, and the product almost completely protected against LC depletion. AOx plus SS gave better protection against pigment formation and CK5/6 induction than SS alone. AOx alone protected against ssUVR-induced hyperproliferation, as shown by epidermal thickness and CK16 biomarkers, and was better than SS alone. Interestingly, although protection against induction of MMP-9, a marker of photoageing, did not reach significance when either SS or AOx were applied separately, there was complete protection against MMP-9 induction when these were combined. Conclusions: Non-SS materials such as AOx can contribute significantly to sun protection when added to a broad-spectrum SS and applied topically to human skin in vivo.

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

This paper aims to evaluate the degree of skin irritation using specific in vivo tests. The completion of the study is to develop models with wide applicability in toxicological area. HET-CAM or chorioallantoic membrane assay is a new method accepted as an INVITTOX protocol that is a substitute of Draize test. The methods applied in present study were CAM assay on embryonated egg and CD1 Nu/Nu experimental model. The evaluation of erythema that is an important toxic effect of surfactants was done using a Mexameter MX18 (Courage Khazaka research line). The main observations were that sodium lauryl sulphate is the most toxic compound on our series but the non-ionic surfactants are not completely non-noxious. Non-invasive methods can be associated with other test such as CAM assay to evaluate irritant compounds.

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

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

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

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

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

□ –lipoic acid or the reduced form dihydrolipoate are potent scavengers of hydroxyl radicals, superoxide radicals, peroxy radicals, singlet oxygen and nitric oxide with anti-inflammatory properties Previously, we have demonstrated in vivo the effect of □-lipoic acid (0.5%) and ascorbic palmitate (0.2%) in the improvement of the skin barrier and diminished the redness in a sensitive skin. The aims of this

study were to analyze the clinical efficacy of formulations containing  $\alpha$ -lipoic at 2.5% and 5.0% by measuring in vivo the biochemical parameters of transepidermal water loss TEWL and the color of the skin initially and after the application.

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

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

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

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

*S.Y Huh, J-I Na, C-H Huh, K-C Park, The Effect of Photodynamic Therapy Using Indole-3-Acetic Acid and Green Light on Acne Vulgaris, Ann Dermatol 24(1) p. 56-60, 2012*

Background: Photodynamic therapy (PDT) using topical aminolevulinic acid (ALA) has increasingly been used for the treatment of acne vulgaris and several studies have shown its clinical efficacy. However, ALA-PDT needs a relatively long incubation period and is frequently associated with adverse effects. Indole-3-acetic acid (IAA) has been introduced as a new photosensitizer for the treatment of acne in recent study. IAA-PDT requires only a short incubation period and the procedure is relatively painless in contrast to ALA-PDT. *Objective:* To investigate the efficacy and safety of IAA-PDT in the treatment of acne. *Methods:* Twenty-five patients with facial acne lesions were enrolled in this study. IAA-PDT was performed for five sessions at 1-week intervals (week 0~4). IAA was treated with 15 minute occlusion, and green light was given for 15 minutes. Clinical efficacy was determined by evaluating acne lesion counts, severity grading, and the Dermatology Life Quality Index (DLQI) at week 0, 2, 4, and 5. Sebum secretion and erythema index was measured by Sebumeter and Mexameter, respectively, at baseline and one week after each treatment session (week 1~5). Histopathological examination was performed at baseline and week 5. Adverse effects were recorded throughout the study. *Results:* All the patients completed the study. Numbers of both inflammatory and non-inflammatory acne lesions were significantly decreased. Acne severity grade and the DLQI showed significant reduction. Sebum secretion and erythema were also reduced. Histopathological examination showed a reduction

in inflammatory reactions. No adverse effects were observed except for transient pruritus in one patient. **Conclusion:** PDT using IAA and green light was an effective, simple and safe treatment for acne.

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

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

A. Firooz, B. Sadr, S. Babakoohi, M. Sarraf-Yazdy, F. Fanian, A. Kazerouni-Timsar, M. Nassiri-Kashani, M.M. Naghizadeh, Y. Dowlati, **Variation of Biophysical Parameters of the Skin with Age, Gender, and Body Region**, The Scientific World Journal, Volume 2012

Background: Understanding the physiological, chemical, and biophysical characteristics of the skin helps us to arrange a proper approach to the management of skin diseases. Objective: The aim of this study was to measure 6 biophysical characteristics of normal skin (sebum content, hydration, transepidermal water loss (TEWL), erythema index, melanin index, and elasticity) in a normal population and assess the effect of sex, age, and body location on them. Methods: Fifty healthy volunteers in 5 age groups (5 males and females in each) were enrolled in this study. A multifunctional skin physiology monitor (Courage & Khazaka electronic GmbH, Germany) was used to measure skin sebum content, hydration, TEWL, erythema index, melanin index, and elasticity in 8 different locations of the body. Results: There were significant differences between the hydration, melanin index, and elasticity of different age groups. Regarding the locations, forehead had the highest melanin index, where as palm had the lowest value. The mean values of erythema index and melanin index and TEWL were significantly higher in males and anatomic location was a significant independent factor for all of 6 measured parameters. Conclusion: Several biophysical properties of the skin vary among different gender, age groups, and body locations.

H.J. Park, Y.W. Lee, Y.B. Choe, K.J. Ahn, **Skin Characteristics in Patients with Pityriasis Versicolor Using Non-Invasive Method, MPA5**, Ann Dermatol Vol. 24, No. 4, 2012

Background: Skin pigmentary changes of pityriasis versicolor may occur as either hyperpigmented or hypopigmented lesions, depending on the outcome of interactions between *Malassezia* yeasts and the skin, such as lipoperoxidation process, stimulus of inflammatory cell to melanocytes, and increased thickness of keratin layer. Objective: To investigate skin characteristic factors that enhance the susceptibility to *Malassezia* yeasts and provoke different color changes of pityriasis versicolor patients. Methods: To clarify these factors, we investigated the skin characteristics of pityriasis versicolor

patients, using a non-invasive method known as MPA 5<sup>®</sup> (Courage and Khazaka, Germany). A total of 90 normal healthy subjects and 30 pityriasis versicolor patients were included in this study. Results: Both hyperpigmented and hypopigmented pityriasis versicolor skin lesions showed higher humidity, increased sebum excretion rate and increased transepidermal water loss (TEWL) values than normal healthy subjects. But no significant difference of specific *Malassezia* yeasts species between hyperpigmented and hypopigmented skin lesions was evident. Conclusion: These results indicate that higher humidity and increased sebum level provide a better growing environment of *Malassezia* yeasts in the skin, leading to the assumption that interaction between *Malassezia* yeasts and skin barrier materials makes disruption of skin barrier causing increased TEWL.

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

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

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

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

*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.

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

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

**Reduced Erythema with Floraesters 20, Floraesters 30, and Floraesters 60**, Poster Floratech, In-Cosmetics, Paris 2013

A lotion containing 2% Floraesters 20, 2% Floraesters 30, or 2% Floraesters 60 decreased erythema (redness) better than the vehicle lotion at 24 hours. Baseline (pre-shave) Mexameter measurements were taken on normal forearms. The forearms were then dry shaved followed by 30 minute post-shave Mexameter measurements. The test articles were then applied to each test site (2.5mg/cm<sup>2</sup>). Measurements were repeated 4 and 24 hours post test article application. An additional test article application was made following the 4 hour measurements.

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

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

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

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

*C. Galzote, R. Estanislao, M.O. Suero, A. Khaiat, M.I. Mangubat, R. Moideen, H. Tagami, X. Wang, Characterization of facial skin of various Asian populations through visual and non-invasive instrumental evaluations: influence of age and skincare habits*, Skin Research and Technology 2013;19; 454-465

Background/purpose: We aimed to evaluate the impact of age and skincare habits on facial skin of different Asian ethnicities by comparing skin properties and skincare habits among various Asian populations of varying age groups. Methods: We evaluated approximately 100 female subjects each

from a total of eight Asian cities in China, Indian, South Korea, Japan and the Philippines grouped according to age ranging from 14 to 75 years during a summer season. Facial skin was characterized using dermatological examinations of the cheek. Information regarding personal skincare habits was collected using a questionnaire.

*M.L. Kmieć, A. Pajor, G. Broniarczyk-Dyła, Evaluation of biophysical skin parameters and assessment of hair growth in patients with acne treated with isotretinoin, Postep Derm Alergol 2013; XXX, 6: p. 343–349*

**Introduction:** Treatment of the severe forms of acne vulgaris remains a challenge. Isotretinoin is a drug often used in these cases. Retinoids affect the mechanisms that play a role in the pathogenesis of acne, reduce the production of sebum and sizes of the sebaceous glands. However, isotretinoin appears to have undesirable side effects in the skin, mucous membranes and hair. **Aim:** The aim of this study was to assess the effect of acne vulgaris treatment with isotretinoin on biophysical skin parameters: skin sebum and stratum corneum hydration levels, transepidermal water loss values, pH, erythema and hair growth parameters: total number, density and proportion of anagen hair. **Material and methods:** The study included thirty patients with acne types: papulopustular, conglobata and phlegmonosa. Patients were treated with isotretinoin at a dose of 0.5–1.0 mg/kg/day for a period of 4–7 months. The measurements of skin biophysical parameters were performed before and after the treatment using Sebumeter SM815, Corneometer CM825, Tewameter TM300, MX Mexameter MX18 and Skin-pH-Meter PH908. Hair growth parameters were evaluated with FotoFinder Dermoscope using the TrichoScan Professional V3.0.8.76 software. **Results:** The results of biophysical skin parameter measurements after the treatment showed a reduction in the severity of seborrhea. However, the skin was dry, which confirmed a lowered degree of stratum corneum hydration and an increase in transepidermal water loss values. Moreover, severity of erythema, an increase in pH value, and variations in selected hair growth parameters: decrease in total count, density and proportion of anagen hair were demonstrated. **Conclusions:** The reduction in the skin sebum levels was observed after the treatment. There was dryness of the skin, which was confirmed by biophysical skin parameter measurements. Changes in the hair growth parameters showed telogen efluxion hair loss.

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

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

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

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

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

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

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

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

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

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



X. Li, C. Galzote, X. Yan, L. Li, X. Wang, **Characterization of Chinese body skin through in vivo instrument assessments, visual evaluations, and questionnaire: influences of body area, inter-generation, season, sex, and skin care habits**, *Skin Research and Technology* 2014; 20: 14-22

Background/Purpose: The varying influence of multiple factors (e.g., aging, sex, season, skin care habits) on skin structure and function necessitates study within ethnic groups to fully characterize their skin. Methods: Men and women aged 40-50 years (n=43) and their consanguineous same sex-children, aged 18-25 years (n=43), living in Chengdu, China were enrolled in this single center, non-interventional study. Volunteers attended two study visits (summer, 2010 and winter, 2011) at which dermatologists measured transepidermal water loss (TEWL), skin hydration, sebum secretion, fine lines/roughness, melanin/erythema, temperature, and color, and clinically graded participants' skin.

C. Soica, C. Oprean, F. Borcan, C. Danciu, C. Trandafirescu, D. Coricovac, Z. Crăiniceanu, C.A. Dehelean, M. Munteanu, **The Synergistic Biologic Activity of Oleanolic and Ursolic Acids in Complex with Hydroxypropyl- $\gamma$ -Cyclodextrin**, *Molecules* 2014, 19, 4924-4940

Abstract: Oleanolic and ursolic acids are natural triterpenic compounds with pentacyclic cholesterol-like structures which gives them very low water solubility, a significant disadvantage in terms of bioavailability. We previously reported the synthesis of inclusion complexes between these acids and cyclodextrins, as well as their in vivo evaluation on chemically induced skin cancer experimental models. In this study the synergistic activity of the acid mixture included inside hydroxypropyl-gamma-cyclodextrin (HPGCD) was monitored using in vitro tests and in vivo skin cancer models. The coefficient of drug interaction (CDI) was used to characterize the interactions as synergism, additivity or antagonism. Our results revealed an increased antitumor activity for the mixture of the two triterpenic acids, both single and in complex with cyclodextrin, thus proving their complementary biologic activities.

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

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

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

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

Y.S. Cho, J.H. Jeon, A. Hong, H.T. Yang, H. Yim, Y.S. Cho, D.H. Kim, J. Hur, J.H. Kim, W. Chun, B.C. Lee, C.H. Seo, **The effect of burn rehabilitation massage therapy on hypertrophic scar after burn: a randomized controlled trial**, *Burns*. 2014 Dec;40(8): p. 1513-20

Background: To evaluate the effect of burn rehabilitation massage therapy on hypertrophic scar after burn. Method: One hundred and forty-six burn patients with hypertrophic scar(s) were randomly

divided into an experimental group and a control group. All patients received standard rehabilitation therapy for hypertrophic scars and 76 patients (massage group) additionally received burn scar rehabilitation massage therapy. Both before and after the treatment, we determined the scores of visual analog scale (VAS) and itching scale and assessed the scar characteristics of thickness, melanin, erythema, transepidermal water loss (TEWL), sebum, and elasticity by using ultrasonography, Mexameter<sup>®</sup>, Tewameter<sup>®</sup>, Sebumeter<sup>®</sup>, and Cutometer<sup>®</sup>, respectively. Results: The scores of both VAS and itching scale decreased significantly in both groups, indicating a significant intragroup difference. With regard to the scar characteristics, the massage group showed a significant decrease after treatment in scar thickness, melanin, erythema, TEWL and a significant intergroup difference. In terms of scar elasticity, a significant intergroup difference was noted in immediate distension and gross skin elasticity, while the massage group significant improvement in skin distensibility, immediate distension, immediate retraction, and delayed distension. Conclusion: Our results suggest that burn rehabilitation massage therapy is effective in improving pain, pruritus, and scar characteristics in hypertrophic scars after burn.

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

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

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

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

of HSc and D sites change markedly with time these color changes are primarily due to changes in redness of the site, not melanin in this primarily Caucasian population.

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

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

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

Background: Melasma is a commonly acquired hyperpigmentation symmetrically distributed on the face, neck, and arms. The skin-lightening properties of Rumex occidentalis make it a therapeutic alternative to the reference standard treatment of hydroquinone (HQ). Objectives: This study was conducted to evaluate the safety and efficacy of 3% R. occidentalis cream versus 4% HQ cream in the management of epidermal and mixed melasma. Methods: This was a randomized, double-blind, placebo-controlled trial. Forty-five subjects with epidermal and mixed melasma were recruited to compare 3% R. occidentalis cream, 4% HQ cream, and placebo cream applied twice daily for eight weeks. Changes in pigmentation were measured every two weeks using the Melasma Area Severity Index (MASI) and a mexameter. Adverse events were noted on every visit. Patient and investigator global evaluations were performed at the end of the study. Results: Overall mean MASI and mexameter readings in the three groups decreased from baseline to week 8. The greatest decline in score from weeks 2 to 6 was achieved by the HQ group, followed by the R. occidentalis group. By week 8, the R. occidentalis group showed a greater mean  $\pm$  standard deviation decline in MASI and mexameter readings from baseline (MASI:  $0.60 \pm 0.86$ ; mexameter:  $50.56 \pm 25.63$ ) than the HQ group (MASI:  $0.55 \pm 0.62$ ; mexameter:  $45.89 \pm 47.83$ ). Conclusions: The efficacy of R. occidentalis cream and HQ cream were assessed as similarly favorable by both study subjects and investigators. Rumex occidentalis 3% cream is a safe and effective skin-lightening agent for melasma and is comparable in efficacy with 4% HQ cream.

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

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

*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.

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

Background: For patients with full thickness skin defects, autologous Split-thickness skin grafts (STSG) are generally regarded as the mainstay of treatment. However, skin grafts have some limitations, including undesirable outcomes resulting from scars, poor elasticity, and limitations in joint movement due to contractures. In this study, we present outcomes of Matriderm grafts used for various skin tissue defects whether it improves on these drawbacks. Methods: From January 2010 to March 2012, a retrospective review of patients who had undergone autologous STSG with Matriderm was performed. We assessed graft survival to evaluate the effectiveness of Matriderm. We also evaluated skin quality using a Cutometer, Corneometer, Tewameter, or Mexameter, approximately 12 months after surgery. Results: A total of 31 patients underwent STSG with Matriderm during the study period. The success rate of skin grafting was 96.7%. The elasticity value of the portion on which Matriderm was applied was 0.765 (range, 0.635–0.800), the value of the trans-epidermal water loss (TEWL) was 10.0 (range, 8.15–11.00) g/hr/m<sup>2</sup>, and the humidification value was 24.0 (range, 15.5–30.0). The levels of erythema and melanin were 352.0 arbitrary unit (AU) (range, 299.25–402.75 AU) and 211.0 AU (range, 158.25–297.00 AU), respectively. When comparing the values of elasticity and TEWL of the skin treated with Matriderm to the values of the surrounding skin, there was no statistically significant difference between the groups. Conclusions: The results of this study demonstrate that a dermal substitute (Matriderm) with STSG was adopted stably and with minimal complications. Furthermore, comparing Matriderm grafted skin to normal skin using Cutometer, Matriderm proved valuable in restoring skin elasticity and the skin barrier.

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

Objective: To investigate the skin hydrating and anti-erythema activity of gel materials from Aloe marlothii A. Berger and A. ferox Mill. in comparison to that of Aloe barbadensis Miller (Aloe vera) in healthy human volunteers. Materials and Methods: Aqueous solutions of the polysaccharidic fractions of

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

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

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

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

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

Secretory factors of hESC-EPC improve the signs of skin aging and could be a potential option for skin rejuvenation.

*G.W. Nam, E.J. Kim, Y.C. Jung, C.B. Jeong, K.H. Shin, H. K. Lee, Differences in Skin Properties of Korean Women at the Initial Aging Phase*, Journal of Cosmetics, Dermatological Sciences and Applications, 2014, 4, p. 44-52

Many studies on aging have focused on evaluating differences between older and younger people, but only a few have focused on differences in skin properties among subjects from the same age group according to their skin aging status. In this study, we evaluated the facial skin condition and life style factors in 110 Korean women aged 25 to 35 in an attempt to evaluate factors which may affect the skin aging status in the initial aging phase. The facial skin condition of 110 healthy Korean women was assessed over two successive 6-month periods, summer and winter. Using clinical assessments including aging, wrinkles and skin's elasticity values, the subjects were divided into 7 groups. Then, various facial skin conditions and life style factors were examined between a severe aging group and mild aging group. In the severe aging group, the mean value pH was lower and the mean value of water content was slightly lower than that of women in the mild aging group. Also, the seasonal site variation in water content and sebum secretion level were significantly higher in the severe aging group than in the mild aging group. Topical sunscreen using percentage was not significantly different between the two groups. However, the number of cosmetic subject use was slightly higher in the mild aging group than in the severe aging group. The study suggested that there were several differences in skin characteristics between women in the severe aging group and in the mild aging group at the initial aging phase. Seasonal site variation between cheek and forehead was the most dominant differences. We also considered that life style factors such as cosmetic use could affect skin aging status.

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

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

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

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

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

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

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

Background/aims: The age-dependent changes in the optical reflection characteristics have been studied about skin hydration, melanin index, or skin color. However, the age-dependent changes in the optical reflection have little attention on inner skin structures. To control the factors affecting the optical reflection except for dermal matrix, subjects were selected as our guideline and we evaluated the optical reflection of subsurface on skin layers of two age groups.

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

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

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

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

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

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

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

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

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

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

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

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



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

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

*N. Cameli, E. Abril, M. Agozzino, M. Mariano, Clinical and instrumental evaluation of the efficacy of a new depigmenting agent containing a combination of a retinoid, a phenolic agent and an anti-oxidant 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 ( $\delta$ -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.

*M. Mehrbani, R. Choopani, A. Fekri, M. Mehrbani, M. Mosaddegh, M. Mehrbani, The efficacy of whey associated with dodder seed extract on moderate-to-severe atopic dermatitis in adults: A randomized, double-blind, placebo-controlled clinical trial, J Ethnopharmacol, 2015 Aug 22;172: p. 325-32*

Ethnopharmacological Relevance: Atopic dermatitis is a common chronic inflammatory skin condition that is on the rise and adversely affects quality of life of the affected individual. Dry skin and pruritus, major characteristics of this disease, are associated with the dysfunction of the skin barrier. Though mild cases of the disease can be controlled with antihistamines and topical corticosteroids, moderate-to-severe cases often require treatment with immunomodulatory drugs, which have many side effects. It is now more common to use complementary and alternative medicines in the treatment of atopic dermatitis. In traditional Iranian medicine, the use of whey with the aqueous extract of field dodder (*Cuscuta campestris* Yunck.) seeds in severe and refractory cases of atopic dermatitis is common and has no side effects. The aim of this study was to assess the efficacy and safety of whey associated with dodder seed extract in the treatment of moderate-to-severe atopic dermatitis in adults. Materials and

**Methods:** The study was a randomized, double-blind placebo control trial that was conducted on 52 patients with moderate-to-severe atopic dermatitis for 30 days. In this study patients received freeze dried whey powder with spray dried water extract of field dodder or the placebo for 15 days. At baseline (week zero), after the end of the 15 day treatment period (week three) and 15 days after stopping the drug or placebo (follow-up/week five), patients were evaluated in terms of skin moisture, elasticity, pigmentation, surface pH and sebum content on the forearm with Multi Skin Test Center® MC1000 (Courage & Khazaka, Germany) and the degree of pruritus and sleep disturbance in patients were also recorded. **Results:** 42 patients completed 30 days of treatment with the medicine and the follow-up period. At the end of the follow-up period a significant increase in skin moisture and elasticity in the group receiving whey with dodder was observed compared with the placebo group ( $p < 0.001$ ). There was a significant difference between the two groups regarding the pruritus after 15 days of receiving treatment or the placebo ( $p < 0.05$ ), and at the end of the 30-day study period the difference was clearly significant ( $p < 0.001$ ). Sleep disturbance showed significant changes at the end of follow-up period ( $p < 0.05$ ). There was no significant difference between the two groups concerning changes in skin pigmentation, however, a significant decrease was observed in the group receiving whey associated with dodder seed extract over time ( $p < 0.001$ ). There were no significant alterations in skin surface pH and the amount of sebum between the two groups. Temporary side effects were reported including anorexia and mild gastrointestinal problems in drug use. It is noteworthy that in this study despite the fact that patients received whey with dodder for just 15 days, moisture and elasticity of the skin continued to increase in the second half of the study (follow-up period). This shows that the effect of whey with dodder is not transient and this drug really helped skin barrier reconstruction and accelerated the healing process of skin. This positively influenced the skin parameters and consequently the improvement of pruritus and sleep disturbance. **Conclusions:** The results indicate that whey associated with dodder seed extract can serve as a promising alternative for the treatment of moderate-to-severe atopic dermatitis.

**A. Ali, N. Akhtar, The safety and efficacy of 3% Cannabis seeds extract cream for reduction of human cheek skin sebum and erythema content, Pak J Pharm Sci, 2015 Jul;28(4): p. 1389-1395**

Escalated sebum fabrication is seen with an unattractive look and adds to the growth of acne. We aimed to investigate the efficacy and safety of 3% Cannabis seeds extract cream on human cheek skin sebum and erythema content. For this purpose, base plus 3% Cannabis seeds extract and base (control) were prepared for single blinded and comparative study. Healthy males were instructed to apply the base plus 3% Cannabis seeds extract and base twice a day to their cheeks for 12 weeks. Adverse events were observed to determine skin irritation. Measurements for sebum and erythema content were recorded at baseline, 2nd, 4th, 6th, 8th, 10th and 12th week in a control room with Sebumeter and Mexameter. Base plus 3% Cannabis seeds extract was found to be safe in volunteers. Measurements demonstrated that skin sebum and erythema content of base plus 3% Cannabis seeds extract treated side showed significant decrease ( $p < 0.05$ ) compared with base treated side. Base plus 3% Cannabis seeds extract showed safety. It was well tolerated for the reduction of skin sebum and erythema content. Its improved efficacy could be suggested for treatment of acne vulgaris, seborrhea, papules and pustules to get attractive facial appearance.

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

Atopic dermatitis is a common allergic skin disease in dogs. The aim of this study was to examine the possibility of a correlation between biophysical skin variables: skin hydration (SH), skin pH, and erythema intensity measured in 10 different body regions and both total Canine Atopic Dermatitis Extent and Severity Index (CADESI-03) and CADESI measured in a given region (CADESI L). The study was conducted using 33 dogs with atopic dermatitis. The assessment of the biophysical variables was done in 10 body regions: the lumbar region, right axillary fossa, right inguinal region, ventral abdominal region,

right lateral thorax region, internal surface of the auricle, interdigital region of right forelimb, cheek, bridge of nose, and lateral site of antebrachium. Positive correlations were found between SH and CADESI L for the following regions: the inguinal region ( $r = 0.73$ ) and the interdigital region ( $r = 0.82$ ), as well as between total CADESI and SH on digital region ( $r = 0.52$ ). Also, positive correlations were reported for skin pH and CADESI L in the lumbar region ( $r = 0.57$ ), the right lateral thorax region ( $r = 0.40$ ), and the lateral antebrachium ( $r = 0.35$ ). Positive correlations were found in the interdigital region between erythema intensity and the total CADESI-03 ( $r = 0.60$ ) as well as the CADESI L ( $r = 0.7$ ). The results obtained suggest that it may be possible to use skin hydration, pH, and erythema intensity to assess the severity of skin lesion but positive correlation was only found in < 13.3% of possible correlations and usage of these measures in dogs is limited.

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

The Fitzpatrick skin type (FST) has limited relevance and reliability among people with skin of color because individuals from a particular ethnic/racial group cluster into Fitzpatrick category. We developed a color tool to assess skin type (available at <http://www.jaad.org>). The color bar tool was validated with 2 cohorts of 120 patients consisting of non-Hispanic whites (NHWs), Hispanics, non-Hispanic blacks (NHBs), and Asians with FST I to VI skin determined using the standard survey. Between May and July 2014, a cross-sectional study compared survey responses using the color bar tool, skin tone descriptions, and adapted FST questions. Participants' melanin index was obtained using spectrophotometry (Mexameter MX18 probe; Courage + Khazaka Electronic GmbH, Koln, Germany).

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

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

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

Ethnopharmacological relevance: While rice is one of the most important global staple food sources its extracts have found many uses as the bases of herbal remedies. Rice extracts contain high levels of phenolic compounds which are known to be bioactive, some of which show cutaneous benefits and activity towards skin disorders. This study highlights an assessment of the cellular activity and clinical efficacy of rice panicle extract, providing necessary information relevant to the development of new cosmetic products. Materials and methods: Jasmine rice panicle extract was standardized, and the level of phenolics present was determined. *In vitro* anti-aging, and extract activity towards melanogenesis was conducted in B16F10 melanoma cells, and antioxidant activity was assessed in human skin fibroblast cell cultures. Topical product creams containing the extract were developed, and skin irritation testing using a single application closed patch test method was done using 20 Thai volunteers. Randomized double-blind, placebo-controlled efficacy evaluation was undertaken in 24 volunteers over an 84 d period, with the results monitored by Corneometer® CM 825, Cutometer® MPA 580, Mexameter®

MX 18 and Visioscan® VC 98. Results: Jasmine rice panicle extract was shown to have a high content of p-coumaric, ferulic and caffeic acids, and was not cytotoxic to the cell lines used in this study. Cells treated with extract suppressed melanogenesis *via* tyrosinase and TRP-2 inhibitory effects, which protect the cell from oxidative stress at doses of 0.1 mg/ml or lower. The jasmine rice panicle preparations (0.1-0.2%) were safe (MI=0), and significantly ( $p < 0.05$ ) increased skin hydration levels relative to baseline. Skin lightening, and anti-wrinkle effects related to skin firmness and smoothness were observed, in addition to a reduction in skin wrinkling. Improvements in skin biophysics of both 0.1% and 0.2% extracts were shown to be comparable ( $p > 0.05$ ). Conclusions: Jasmine rice panicle extract having high levels of phenolics shows cutaneous benefits as the basis for skin aging treatments, as indicated through *in vitro* cytotoxicity assessments and skin testing in human subjects.

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

Background: The clinical use of non-invasive instrumentation to evaluate skin characteristics for diagnostic purposes and to evaluate treatment outcomes has become more prevalent. The purpose of this study was to generate normative data for skin elasticity, erythema (vascularity), melanin (pigmentation), and thickness across a broad age range at a wide variety of anatomical locations using the Cutometer (6 mm probe), Mexameter, and high-frequency ultrasound in a healthy adult sample.

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

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

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

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

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

Background: Hyperpigmentations are disorders displayed with a change in the color of the skin, its strange shape, the lack of symmetry, and irregular placement. They appear no matter on the age, gender, and often as a congenital defect. Disorder connected with overproduction of melanin by pigmentary cells. The change of color is due to endogenous and exogenous cause. Objectives: The aim of this thesis was to conduct a research *in vivo*. This will allow to judge the effectiveness of the cosmetic product which brightens the skin with hyperpigmentation problems. The characteristics of dermocosmetics were tested on people with various etiology of hyperpigmentation. The aim of the research was to assess the effect of the active substances used daily on skin hyperpigmentation. Methods: The tests were carried out on groups of patients with hyperpigmentations. The application of the pharmaceutical and the use of specific apparatus measurements were taken on every medical checkup. A survey was

conducted to assess the changes in the face, neck, and neckline skin. The research was based on the apparatus analysis of the skin condition (MPA®, VISIA®). Results: Regular application of the pharmaceutical caused brightening of hyperpigmentations ( $P < 0.05$ ). General improvement in skin condition was also observed - the increase in skin elasticity, smoothness, and the enhancement of hydration levels. Conclusions: Dermocosmetics for people with hyperpigmentation are an essential part of their medical treatment. In case of epidermal hyperpigmentation, the recipe of individually chosen and tested combination of ingredients enables us to reach satisfactory results.

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

Background: Atopic dermatitis (AD) assessment is more difficult in patients with skin of colour (SOC). We sought to compare the reliability of commonly used outcome measures for assessing AD in SOC patients and evaluated a novel greyscale in this population. Method: Twenty-five AD patients each attended a one-day scoring exercise based in either Sydney or Melbourne, Australia. Each patient was scored by the same five physicians using the Eczema Area Severity Index (EASI), Objective-Scoring Atopic Dermatitis score (oSCORAD), Investigator's Global Assessment (IGA) and a novel greyscale. Patients also completed the Patient-Oriented Eczema Measure (POEM) and quality of life measures. A Mexameter was used for measuring baseline melanin indices. Ten random patients were rescored to test intra-rater reliability. Results: We included 11 light skinned patients (melanin index  $<200$ ) and 14 SOC patients (melanin index  $>200$ ) in the cohort. The inter-rater ICCs were: EASI 0.827 (95% CI 0.658-0.941) for light skin and 0.774 (95% CI 0.598-0.906) for SOC; oSCORAD 0.680 (95% CI 0.441-0.880) for light skin and 0.736 (95% CI 0.544-0.889) for SOC; IGA 0.803 (95% CI 0.618-0.932) for light skin and 0.696 (95% CI 0.490-0.868) for SOC; the greyscale had an ICC of 0.776 (95% CI: 0.601-0.907) when replacing the EASI's erythema scale for SOC patients. All scores showed excellent intra-rater reliability for all skin types. Erythema component analysis showed that erythema did not contribute to variability. Conclusions: EASI showed excellent reliability for patients of all skin colours, and is recommended as the optimal core measure for patients with all skin colours.

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

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

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

The objective of this study was to evaluate the efficacy and safety of using a 694-nm fractional Q-switched ruby laser to treat infraorbital dark circles. Thirty women with infraorbital dark circles (predominant color: dark/brown) participated in this open-labeled study. The participants received eight sessions of 694-nm fractional Q-switched ruby laser treatment using a fluence of 3.0-3.5 J/cm<sup>2</sup>, at an interval of 7 days. The melanin deposition in the lesional skin was observed in vivo using reflectance confocal microscopy (RCM). The morphological changes were evaluated using a global evaluation, an overall self-assessment, and a Mexameter. Twenty-eight of the 30 patients showed global improvements that they rated as excellent or good. Twenty-six patients rated their overall satisfaction as excellent or good. The melanin index indicated a substantial decrease from 240.44 (baseline) to 194.56 ( $P < 0.05$ ). The RCM results showed a dramatic decrease in melanin deposition in the upper dermis. The adverse effects were minimal. The characteristic finding of dark/brown infraorbital dark circles is caused by increased melanin deposition in the upper dermis. The treatment of these infraorbital dark circles using a 694-nm fractional QSR laser is safe and effective.

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

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

*A. Firooz, H. Zartab, B. Sadr, L. Naraghi Bagherpour, A. Masoudi, F. Fanian, Y. Dowlati, A. Hooshang Ehsani, A. Samadi, Daytime Changes of Skin Biophysical Characteristics: A Study of Hydration, Transepidermal Water Loss, pH, Sebum, Elasticity, Erythema, and Color Index on Middle Eastern Skin, Iranian Journal of Dermatology, Dec. 2016*

Background: The exposure of skin to ultraviolet radiation and temperature differs significantly during the day. It is reasonable that biophysical parameters of human skin have periodic daily fluctuation. The objective of this study was to study the fluctuations of various biophysical characteristics of Middle Eastern skin in standardized experimental conditions. Materials and Methods: Seven biophysical parameters of skin including stratum corneum hydration, transepidermal water loss, pH, sebum, elasticity, skin color, and erythema index were measured at three time points (8 a.m., 12 p.m. and 4 p.m.) on the forearm of 12 healthy participants (mean age of 28.4 years) without any ongoing skin disease using the CK MPA 580 device in standard temperature and humidity conditions. Results: A significant difference was observed between means of skin color index at 8 a.m. ( $175.42 \pm 13.92$ ) and 4 p.m. ( $164.44 \pm 13.72$ ,  $P = 0.025$ ), between the pH at 8 a.m. ( $5.72 \pm 0.48$ ) and 4 p.m. ( $5.33 \pm 0.55$ ,  $P = 0.001$ ) and pH at 12 p.m. ( $5.60 \pm 0.48$ ) and 4 p.m. ( $5.33 \pm 0.55$ ,  $P = 0.001$ ). Other comparisons between the means of these parameters at different time points resulted in nonsignificant  $P$  values. Conclusion: There are daytime changes in skin color index and pH. Skin color index might be higher and cutaneous pH more basic in the early morning compared to later of the day.

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

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

*A.I. Arshad, S.H. Khan, N. Akhtar, A. Mahmood, R.M. Sarfraz, In vivo evaluation of skin irritation potential, melasma and sebum content following long-term application of skin care cream in healthy adults using non-invasive biometrological techniques, Acta Pol Pharm. 2016 Jan-Feb;73(1): p. 219-27*

The present investigation was conducted to evaluate non-invasively, various functional skin parameters i.e. irritation potential, melasma and sebum contents following long term application of topical cream (w/o) loaded with 2% methanolic extract of *Ananas comosus* L. versus placebo control (base) in healthy adults. Healthy human volunteers (n = 11, aged 20-30 years) were recruited for investigation and written informed consent was taken from each volunteer. In this single blinded study every volunteer applied formulation on one side of face and placebo on the other side of face twice daily for a period of 12 weeks (three months). Different skin parameters i.e., skin irritancy, melasma, and sebum contents were measured on both sides of face at baseline and after two weeks interval, using photometric device Mexameter and Sebumeter in a draught free room with modulated conditions of temperature (22-25°C) and humidity (55-60%). It was evident from the results that no primary skin irritancy was observed with patch test. Besides, statistical interpretation indicates that treatment with formulation is superior to placebo because it significantly ( $p < 0.05$ ) reduced the skin irritancy, melasma and sebum secretions throughout the study and reaching maximum  $-20.76 \pm 0.89$ ,  $-54.2 \pm 0.37$  and  $-40.71 \pm 0.75\%$ , respectively, at the end of study period. Antioxidant activity of extract was 92% compared to standard antioxidant. Conclusively, active cream loaded with fruit extract was well tolerated by all the volunteers and suitable to treat contact dermatitis, greasy skin, acne and seborrheic dermatitis and augmenting beauty and attraction by depigmentation of human skin. So, in the future, there is need to clinically evaluate these formulations in patients with compromised skin functions i.e., contact dermatitis, melasma, and acne vulgaris in order to explore the actual potential of this fruit.

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

Background: Tranexamic acid (TNA) is a novel therapeutic agent for hyperpigmented skin disorders. The efficacy and safety of topical TNA in patients with melasma has not been heretofore studied. The main objective of this study is to evaluate the efficacy and safety of topical TNA combined with intense pulsed light (IPL) treatment in Asians with melisma. Methods: A randomized, split-face (internally controlled) study was conducted in 15 women who received four monthly sessions of IPL to both sides

of the face. Topical TNA or vehicle was applied to a randomly assigned side during and after IPL treatment. Patients were followed up for 12 weeks after completing the IPL treatments. Baseline and follow-up melanin index (MI; measured by Mexameter®, Courage and Khazaka, Cologne, Germany) and modified melasma area and severity index (mMASI) scores were determined. Results: Thirteen subjects completed the study without serious adverse events. MI and mMASI decreased significantly from baseline to 12 weeks after the last IPL treatment on the topical TNA side but not on the vehicle side. The efficacy of topical TNA in preventing rebound pigmentation after IPL treatment was also statistically significant. Conclusion: Topical TNA can be considered an effective and safe adjuvant to conventional treatment for melasma.

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

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

*H.J. Youn, S.Y. Kim, M. Park, W.H. Jung, Y.W. Lee, Y.B. Choe, K.J. Ahn, Efficacy and Safety of Cream Containing Climbazole/Piroctone Olamine for Facial Seborrheic Dermatitis: A Single-Center, Open-Label Split-Face Clinical Study, Ann Dermatol Vol. 28, No. 6, 2016, p. 733-739*

**Background:** Seborrheic dermatitis (SD) is a multifactorial disease; *Malassezia* species play an important role in its pathogenesis. **Objective:** We aimed to determine whether a cream containing climbazole/piroctone olamine (C/P cream), antifungal agents with expected efficacy against *Malassezia* species, could improve SD symptoms. **Methods:** We instructed 24 patients with mild-to-moderate SD to apply the C/P cream and emollient cream on the right and left sides of the face, respectively, every morning and evening for 4 weeks. The casual sebum level (measured with Sebumeter®; Courage & Khazaka Electronic GmbH, Germany) and the extent of erythema (measured with Mexameter®; Courage & Khazaka Electronic GmbH) on the face were measured at baseline and after 4 weeks. The minimal inhibitory concentration (MIC) was determined to demonstrate the antifungal activity of the C/P cream. **Results:** The casual sebum level and erythema were measured at week 4, and the median values demonstrated a quantitative improvement on the C/P cream-treated right side of the face compared to the emollient cream-treated left side. For the C/P cream, the MICs were 0.625, 5, 0.625, and 2.5 mg/ml for *Malassezia restricta*, *M. globosa*, *M. sympodialis*, and *M. slooffiae*, respectively. **Conclusion:** Based on the reduced casual sebum level and extent of erythema, the antifungal activity of C/P cream against *Malassezia* species seems useful for the treatment of mild to moderate SD.

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

**Context:** Although topical prostaglandin analogs (PGAs) have been previously associated with periocular skin hyperpigmentation, studies using objective clinical methods are lacking. Furthermore



changes in periocular skin erythema indexes associated with topical PGAs have not been reported previously. Objective: The purpose of the present study was to evaluate periocular melanin and erythema indexes in patients treated with topical PGA using an objective clinical method - Mexameter. Methods: About 45 glaucoma patients treated with topical PGA therapy, and 30 age-, and sex-matched controls were enrolled in the study. Demographic data, medical history including duration of therapy, PGA type, involved eye (unilateral, bilateral) were noted, and skin phototypes were evaluated. Melanin and erythema indexes on medial and lateral upper and lower eyelids, and normal skin from the upper cheeks were measured using Mexameter MX-18. The index of difference for lower/upper eyelid was calculated. Reading results of patients and controls were compared. Results: Melanin and erythema indexes of upper/lower eyelids, and the index of differences for upper/lower eyelids were significantly higher in patients despite similar clinical findings ( $p < 0.05$ ). Duration of therapy and type of PGA were not associated with skin changes ( $p > 0.05$ ). Conclusions: Both periocular melanin and erythema indexes increased in both upper and lower eyelids due to PGA therapy compared to controls, despite similar clinical findings. Mexametric evaluation is more sensitive than clinical evaluation, and may be used as an objective, sensitive clinical method to evaluate periocular skin changes, even smallest changes, in such patients.

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

Background: Melasma Area and Severity Index (MASI), the scoring system in melasma, needs to be refined. Aims and Objectives: To propose a more practical scoring system, named as Melasma Severity Index (MSI), for assessing the disease severity and treatment response in melasma. Materials and Methods: Four dermatologists were trained to calculate MASI and also the proposed MSI scores. For MSI, the formula used was  $0.4 (a \times p^2) l + 0.4 (a \times p^2) r + 0.2 (a \times p^2) n$  where "a" stands for area, "p" for pigmentation, "l" for left face, "r" for right face, and "n" for nose. On a single day, 30 enrolled patients were randomly examined by each trained dermatologist and their MASI and MSI scores were calculated. Next, each rater reexamined every 6th patient for repeat MASI and MSI scoring to assess intra- and inter-rater reliability of MASI and MSI scores. Validity was assessed by comparing the individual scores of each rater with objective data from mexameter and ImageJ software. Results: Inter-rater reliability, as assessed by intraclass correlation coefficient, was significantly higher for MSI (0.955) as compared to MASI (0.816). Correlation of scores with objective data by Spearman's correlation revealed higher rho values for MSI than for MASI for all raters. Limitations: Sample population belonged to a single ethnic group. Conclusions: MSI is simpler and more practical scoring system for melasma.

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

Background: Pregnant women form one of the high risk groups facing hypovitaminosis D. Low level of vitamin D will affect directly or indirectly both mother and fetus. Screening vitamin D in the first trimester of pregnancy is important to determine the necessary preventive action. Therefore, this study was aimed to determine the prevalence of hypovitaminosis D and its risk factors among pregnant women in the first trimester. Methods: A cross sectional study was carried out among first trimester pregnant women during their first antenatal visit. Samples were taken from different ethnicities in an urban district in Malaysia. A total of 396 respondents (99 % response rate) aged 18–40 years completed self-administered and guided questionnaire (characteristics and risk factors), validated semi-quantitative food frequency questionnaire for vitamin D in Malaysia (FFQ vitamin D/My), anthropometric measures (weight and height), blood test for serum 25(OH)D, skin measurement using Mexameter (MX 18) and Fitzpatrick Skin Type Chart Measurement (FSTCM). Data were analyzed to determine the association between risk factors and hypovitaminosis D. Results: The prevalence of hypovitaminosis D (serum 25(OH)D  $< 50$  nmol/L) was 90.4 % (358). The mean age of respondents was  $28.06 \pm 4.09$  years old. The independent predictors of hypovitaminosis D were Malay ethnicity (OR 33.68; 95 % CI: 12.81, 88.56), Indian

ethnicity (OR 16.86; 95 % CI: 3.78,75.20), secondary education (OR 12.12; 95 % CI: 2.71, 54.16) and tertiary education (OR 14.38; 95 % CI: 3.31, 62.45). Conclusion: Awareness should be raised among Malay and Indian pregnant women with secondary and tertiary education who consumed vitamin D (especially milk) poorly in order to prevent adverse health outcomes. Further studies need to be conducted among health care workers to determine their level of knowledge related to vitamin D, as they are front liner in detecting the hypovitaminosis D.

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

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

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

Melasma is one of the most frequently diagnosed hyperpigmentation changes on the skin of women's faces. Nearly 30% of women using oral estrogen therapy struggle with this problem. A common way of reducing melasma is the application of azelaic acid products. Aim: Comparison of efficacy of three dermocosmetic products, containing azelaic acid, in the reduction in melasma for women aged 35-55. Material and Methods: A group of 60 women diagnosed with melasma were divided into three even, twenty-person subgroups. Each subgroup was assigned one dermocosmetic product containing azelaic acid. For 24 weeks, the patients applied the assigned product twice a day. The level of the colorant within the hyperpigmentation was marked before the treatment, after 1 month, after 3 months, and after 6 months of therapy. The pigmentation was measured using Mexameter<sup>®</sup> (Courage + Khazaka electronic, Germany). In addition, during each inspection, the patients' level of hydration, elasticity, and intensity of erythema was checked using Corneometer<sup>®</sup>, Reviscometer<sup>®</sup>. Results: All dermocosmetics containing azelaic acid that were applied significantly contributed to the reduction in pigment in the pigmentary lesion. The largest decrease in the amount of pigment was observed in the first 3 months of use of the products. A combination containing 20% azelaic acid and mandelic acid, phytic acid, 4N-butyl resorcinol, and ferulic acid proved to be the most effective dermocosmetic III (Sesderma, Valencia, Spain). Conclusions: Dermocosmetics containing azelaic acid significantly contribute to the clearing of melasma. The effect depends on the treatment time, the acid concentration, and addition of other components.

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

Cigarette smoking is associated with various cutaneous disorders with defective permeability. Yet, whether cigarette smoking influences epidermal permeability barrier function is largely unknown. Here, we measured skin biophysical properties, including permeability barrier homeostasis, stratum

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

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

Pressure injury (PI) prevention has become a key nursing priority that requires clear identification of visual cues representative of PI risk. There is generalized agreement that erythema and skin wetness and/or maceration should be routinely examined by the clinician as part of PI risk assessment. Such an assessment is largely qualitative, deeply reliant on the perception and interpretation of the clinician. Consequently, skin parameters may be misinterpreted, underestimated, or even missed completely. Objective techniques are needed to augment accurate assessment of erythema and skin wetness and/or maceration. Biophysical skin analysis devices have been widely used in the cosmetic industry and clinical research to measure certain skin parameters for the purpose of skin health evaluation. This article describes 3 devices that enable noninvasive digital measurements of epidermal hydration, erythema, and epidermal lipids, respectively. The clinical application of biophysical skin analysis instruments in the assessment PI-related skin parameters could provide a feasible alternative to subjective assessment.

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

Foundations are the most commonly used decorative cosmetics on the market, and a natural-looking finish is one of their most preferred performance attributes. This puts the pressure on product developers to better match consumer skin tones;<sup>1-3</sup> 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.

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

Este artigo reporta o desenvolvimento de uma base de maquiagem para uniformizar e cobrir imperfeições cutâneas para consumidoras de pele negra.

Este artículo describe el desarrollo de una base de maquillaje para igualar y cubrir imperfecciones cutâneas para consumidoras de piel negra.

This article reports the development of a makeup base to standardize and cover skin imperfections for black skin consumers. (*Article in Portuguese*)

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

Environmental pollution has now become the talk of the world. It is very important to keep in mind that more than half of the world's population now lives in an urban area. It is assumed that by 2030, 60% of the world's population will be living in towns and cities, rising to 70% by 2050.<sup>1</sup> As skin is the first line

of defence when it comes to air pollution contact, we should be aware of the harmful effects of pollution on skin in general. Pollution, in fact, is not a problem limited to China or India only, it is almost common, for example, in London, Paris, New York and Milan as well.

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

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

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

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

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

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

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

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

of study. Results: One week after treatment, median PSI score decreased significantly ( $p = 0.002$ ). There was also a significant decrease in median TEWL ( $p = 0.012$ ) and increase in skin hydration one week after treatment ( $p = 0.010$ ). Eighty three percent of patients were satisfied with treatment result and felt convenient with applying clobetasol lotion. Limitations: Lack of a long-term follow-up. Conclusions: Psoriasis is a long-term disease, and improving adherence in the short time could improve patient's adherence to treatment in long time.

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

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

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

Background and Aim: Topical application of tretinoin (TRE) is followed by a high incidence of side effects. One method to overcome the problem is loading TRE into lipid nanoparticles. The potential safety of the nanoparticle materials has been always considered as a major concern. In this in vivo study, changes in human skin biophysical parameters including hydration, TEWL, erythema, and pH have been used to determine the safety of tretinoin loaded nano emulsion (NE) and nanostructured lipid carriers (NLC). Method: TRE loaded NE and NLC were prepared using a high pressure homogenizer. Skin biophysical parameters were measured on the volar forearms of twenty healthy volunteers, before and after applying TRE-NE and TRE-NLC lotions. All the measurements were done using respective probes of MPA 580 Cutometer®. Result: We obtained particles of nanometric size (<130 nm) with narrow distribution and optimal physical stability. None of the formulations made any statistically significant change in any of the measured skin properties. P-values were 0.646, 0.139, 0.386, 0.169 after applying TRE-NE and 0.508, 0.051, 0.139, 0.333 after applying TRE-NLC, respectively. Conclusion: Both formulations are reasonably safe to apply on human skin and topical application of TRE-NE and TRE-NLC had almost similar effects on skin biophysical parameters.

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

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

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

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

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

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

*N. Kanda, S. Martindale, P. Grant-Ross, C. Searing, G. Daniels, M. Varcin, Color, Corrected*, 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;11and 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.

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

Special support surfaces are key in pressure ulcer prevention. The aim of this study was to measure the effects of 3 different types of mattresses (reactive gel, active alternating air, basic foam) on skin properties of the sacral and heel skin after 2 hours loading. Fifteen healthy females (median age 66 years) were included. Transepidermal water loss, skin surface temperature, erythema, stratum corneum hydration, epidermal hydration, skin extensibility, elastic function, and recovery as well as skin roughness parameters were measured under controlled room conditions before loading, immediately after loading, and 20 minutes postloading in the supine position on the different mattresses. The highest increases in transepidermal water loss, skin temperature, and erythema were observed for the foam mattress after loading, indicating higher deformation and occlusion. Cutaneous stiffness decreased in all 3 groups, indicating structural changes during loading. There was a substantial decrease of mean roughness at the heel skin in the foam group, leading to a flattening of the skin surface. Study results indicate that the type of support surface influences skin structure and function during loading. The gel and air mattress appeared to be more protective compared with the foam mattress, but the differences between the gel and air were minor.

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

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

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

Fragestellung: Wie effektiv ist die Anwendung einer kosmetischen Peelingmaske in Kombination mit einem Produkte Set für zuhause bei der Reduzierung von Hyperpigmentierung bei Frauen? Methodik: In dieser Pilotstudie wurden 2x12 Probandinnen, insgesamt 24, zwischen 25 und 60 Jahren in je einem Zeitraum von 12 Wochen untersucht. Die Peelingmaske wurde 6x mit je einem Abstand von 10–14 Tagen auf dem gesamten Gesicht nach einem speziellen Behandlungsablauf angewendet. Während des gesamten Studienzeitraums wurden die Probandinnen dazu angehalten das ausgegebene Produkte Set zuhause anzuwenden. Zur Evaluation der direkten Hautreaktion wurde eine Probanden Befragung, als auch eine Experten Einschätzung, zu jeder Visite eingeholt. Zusätzlich wurde zur Effekt Feststellung die standardisierte Photographie (Visia, complexing analysis), Mexametrie und Probanden Befragungen vor Beginn der Studie, an Tag 42 und an Tag 84 angewendet. Die Verträglichkeit der

Behandlung, die Corneometrie, der transepidermale Wasserverlust, als auch der pH Wert wurden mittels biophysikalischer Messungen festgehalten. Ergebnis: Die Probanden stellten in den Befragungen eine Verbesserung der Hauttextur, Ebenmäßigkeit und des gesamt Erscheinungsbildes der Haut fest. Größtenteils sind die Hyperpigmentierungen nach Anwendung der Peelingmaske und des Produkte Sets zurückgegangen. Die Hautfarbe, gemessen an Melanin und Hämoglobin (Erytheme) ist schwächer geworden, verglichen zu den Vorab-Messungen. Die Hautverträglichkeit gemessen an den biophysikalischen Werten ist gegeben gewesen. Schlussfolgerung: Die Anwendung der Peelingmaske, wie auch der Heimpflege-Produkte war verträglich und konnte eine Verbesserung der Haut erreichen. Dies lässt darauf schließen, dass ein oberflächliches, kosmetisches Fruchtsäurepeeling, in diesem Fall in Form einer Peelingmaske, mit einem ergänzendem Produkte Set für zuhause, eine zufriedenstellende und verträgliche Alternative zu aufhellenden Produkten auf dem Markt darstellt.

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

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

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

Background and Aim: Topical application of tretinoin (TRE) is followed by a high incidence of side effects. One method to overcome the problem is loading TRE into lipid nanoparticles. The potential safety of the nanoparticle materials has been always considered as a major concern. In this in vivo study, changes in human skin biophysical parameters including hydration, TEWL, erythema, and pH have been used to determine the safety of tretinoin loaded nano emulsion (NE) and nanostructured lipid carriers (NLC). Method: TRE loaded NE and NLC were prepared using a high pressure homogenizer. Skin biophysical parameters were measured on the volar forearms of twenty healthy volunteers, before and after applying TRE-NE and TRE-NLC lotions. All the measurements were done using respective probes of MPA 580 Cutometer®. Results: We obtained particles of nanometric size (<130 nm) with narrow distribution and optimal physical stability. None of the formulations made any statistically significant change in any of the measured skin properties. P-values were 0.646, 0.139, 0.386, 0.169 after applying TRE-NE and 0.508, 0.051, 0.139, 0.333 after applying TRE-NLC, respectively. Conclusion: Both formulations are reasonably safe to apply on human skin and topical application of TRE-NE and TRE-NLC had almost similar effects on skin biophysical parameters.

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

Collagens and hyaluronic acid have long been used in pharmaceuticals and food supplements



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

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

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

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

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

predebridement measures. Conclusions: Using the protocols outlined in this study, the SD202 demonstrates high reliability for assessing skin hydration and erythema levels. It is possible that the SD202 can be used in clinical practice as an appropriate tool for skin hydration and erythema assessment.

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

Objective: A study was established to objectively assess the effects of low-intensity electromagnetic and electric stimulation plus negative pressure on mature scars. Background: Radiofrequency plus negative pressure therapy demonstrated a favorable reorganization and regeneration of the collagen and elastic fibers and was proposed for the treatment of cellulitis and skin stretch marks. Methods: Twenty-six mature scars in 20 Caucasian patients (15 females and 5 males) were enrolled in the study. The treatments were carried out with a Class I, BF-type electromedical device equipped with a radiofrequency generator, an electric pulse generator, and a vacuum pump twice a week for 3 months. Corneometry, transepidermal water loss, elastometry, colorimetry, and three-dimensional skin surface pattern were objectively assessed with Multi Probe Adapter System MPA and PRIMOS pico. A subjective assessment was carried out with the VAS and PSAS scales. Each scar was compared before and after the treatment and with the skin in the corresponding healthy contralateral anatomical area at the same times. Results: Reduction of the scar surface wrinkling and overall scar flattening were demonstrated after the treatment. The scar slightly tended to approach the color and elasticity of healthy skin too. Conclusions: The combined local treatment of mature scars with low-intensity electromagnetic and electric stimulation in association with negative pressure might suggest a favorable synergic effect on the scar collagen and elastic fiber remodeling.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Background: Acquired skin hypopigmentation has many etiologies, including autoimmune melanocyte destruction, skin aging, inflammation, and chemical exposure. Distinguishing lesions from normally pigmented skin is clinically important to precisely assess disease severity. However, no gold standard assessment method has been reported. We aimed to investigate whether spectrophotometers

are useful for assessing vitiligo and rhododendrol (4-(4-hydroxyphenol)-2-butanol) (Rhododendrol<sup>^</sup>)-induced leukoderma disease severity by quantifying skin color. Methods: Mexameter MX18 and CM-700d spectrophotometer were used for assessing vitiligo/leukoderma by measuring melanin index,  $L^*a^*b^*$  color space, and  $AE^*ab$  value, which represents the color difference between two subjects and is calculated by the values of  $L^*a^*b^*$ . Results: MX18 and CM-700d can quantitatively distinguish vitiligo/leukoderma from normally pigmented skin based on melanin index. CM-700d consistently quantified the color of vitiligo/leukoderma lesions and surrounding normally pigmented skin in  $L^*a^*b^*$  color spaces and  $AE^*ab$ .  $AE^*ab$  is well correlated with melanin index and clinical appearance. Conclusion:  $AE^*ab$  has been frequently used in aesthetic dentistry; however, current study is the first to use it in the measurement of skin color.  $AE^*ab$  seems to be a useful parameter to evaluate the color contrast between vitiligo/leukoderma and surrounding normally pigmented skin and can be used to evaluate disease severity and patient's quality of life.

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

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

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

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

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

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

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

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

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

Skin is the largest organ of the human body. As the interface between the body and the external environment, skin is the first line to protect the human body against the pathogen invasion. Meanwhile human skin harbors a variety of commensals, including bacteria, fungi and viruses. Each area of human body hosts its unique microbial community. Many factors contribute to the structure and function of skin

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

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

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



can be useful for a better diagnosis and find new strategies suitable for the treatment of hypertrophic burn scars and contribute to outpatient burn care.

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

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

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

Introduction: Burn scars frequently tend to have pathological discolorations, which is manifested in the development of persistent erythema. Affected people suffer from psychological and physiological issues when they are restricted or rejected in their daily life. In this context, medical needling seems to be an efficient therapy for erythematous scars with a relatively low risk rate of postoperative complications. Study research has already shown significant improvements in the scar quality with reference to the parameters "moisture and transepidermal water loss." Clinical data is up-to-date and provides an innovative therapy outcome of scar treatment with medical needling. Objective: The aim of our study was to examine the influence of medical needling on the pathological and persistent erythema of hypertrophic burn scars. By means of reliable measurement methods, we were able to prove positive and sustainable outcomes for normal and healthy skin. The patient cohort included 20 patients with an average age of 34.63 years. Our examinations involved scars that were at least two years old and had healed by secondary intent. Every scar showed the pathological values of persistent erythema according

to the participation requirements. **Methods:** For the practical implementation of medical needling or percutaneous collagen induction (PCI), we used a roller covered with needles of 3 mm length. The needling device is rolled over the scar alternatively in a vertical, horizontal, and diagonal orientation. Multiple micro-wounds at a close distance cause intradermal bleeding, which evokes modified skin regeneration provoked by the effects of medical needling. Every patient has been followed up for 12 months postoperatively. Further on, valid results have been evaluated objectively as well as subjectively by the patient and observer. **Results:** Our study has shown that persistent erythema of hypertrophic scars can be considered as an indication of PCI. The needling procedure influences vascularization by stimulating angiogenesis in the post-needling wound healing cascade. As the method is based on percutaneous collagen induction, the synthesis of collagen improves the vital thickness of the epidermis, which is directly associated with less transparency. Examined scars showed a significant reduction of erythema and were less reddened after treatment. Based on the outcomes of objective measurements, medical needling achieves a normalization of the skin color and an adjustment to healthy skin after repetitive treatments. **Conclusion:** Medical needling seems to be a suitable therapy approach for treating erythematous, hypertrophic burn scars.

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

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

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

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

used in topical preparations for the treatment of skin hyperpigmentation and dermatitis. Skin whitening effects can be increased by the addition of penetration enhancer.

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

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

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

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

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

Background: Sodium laurylsulphate (SLS) induced contact dermatitis is a commonly used model for testing effects of different topical formulations. Volar forearms are preferred testing site by the guidelines, but other anatomical locations were used in previous research, especially upper back, as the clinically used site for testing different antigens. Objectives: Aim of the present study was to investigate existence of anatomical variations of skin response to irritation and its' effects on response to treatment. Methods: Irritation was induced with SLS on symmetrical sites on both forearms and sides of upper back with additional sites exposed to water as controls. Half of the sites were treated with emollient cream while the other half were left untreated. Irritation was assessed using bioengineering methods and clinical scoring. Results: Upper back skin showed higher reactivity to irritants with stronger barrier disruption (measured by Tewameter,  $80.2 \pm 18.3$  vs  $48.0 \pm 24.2$   $\text{gm}^{-2} \text{h}^{-1}$ ), more pronounced erythema (measured by Mexameter,  $186.5 \pm 88.4$  vs  $92.1 \pm 58.2$  AU) and dryness (measured by Corneometer,  $-28.6 \pm 14.5$  vs  $2.7 \pm 16.9$  AU). Skin recovery rates were also influenced by anatomical location with the upper back showing faster recovery ( $316.7 \pm 223.1$  vs  $156.2 \pm 198.5$ ). Treatment didn't lead to improvement in measured parameters, regardless of anatomical location. Conclusion: Skins' reaction to irritant and recovery were dependent on anatomical location. Location where testing was conducted should always be reported as treatments tested across different locations could not be directly compared to each other.

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

Background: One objective of massage therapy applied to hypertrophic scar (HSc), is to improve the structural properties so skin possesses the strength and elasticity required for normal mobility. However, research supporting this effect is lacking. The objective of this study was to characterize the changes in scar elasticity, erythema, melanin, and thickness immediately after a massage therapy session and after a 12-week course of treatment compared to intra-individual matched control scars. Method: We conducted a prospective, randomized, single-blinded, pragmatic, controlled, clinical trial evaluating the impact of a 12-week course of massage therapy. Seventy burn survivors consented to participate and 60 completed the study. Two homogeneous, intra-individual scars were randomized to usual care control or massage therapy plus usual care. Massage, occupational or physical therapists provided massage treatment 3x/week for 12 weeks. Scar site characteristics were evaluated weekly immediately before and after massage treatment including elasticity (Cutometer), erythema and melanin (Mexameter), and thickness (high-frequency ultrasound). Analysis of covariance (ANCOVAs) were performed to test for immediate and long-term treatment effects. A mixed-model approach was used to account for the intra-individual scars. Results: Scar evaluation immediately before and after massage therapy at each time point revealed changes for all scar characteristics, but the group differences were predominantly present during the early weeks of treatment. The within group long-term analysis revealed a significant increase in elasticity, and a reduction in thickness, during the 12-week treatment period for both the control scar (CS) and massage scar (MS). The increase in elasticity reached significance at week 8 for the MS and week 10 for the CS and the reduction in thickness at week 5 for the CS and week 7 for the MS. There was no significant within group long-term differences for either erythema or melanin. There were group differences in erythema at week 8 and 11 where the CS was less erythematous than the MS. Conclusion: The immediate impact of forces applied during massage therapy may lead patients and therapists to believe that there are long-term changes in elasticity, erythema, and pigmentation, however, once baseline measures, the control scar, and time were incorporated in the analysis there was no evidence of long-term benefit. Massage therapy applied with the objective of increasing scar elasticity or reducing erythema or thickness over the long-term should be reconsidered.

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

For years now, we have accepted the idea that we can nourish our intestinal tract with dedicated bacterial ingredients from food supplements and thereby improve our general health. Books written on this subject have become bestsellers. But why should we focus only on our intestinal tract? There are so many different microbial communities that can be found on and inside our body. Especially the colonization of the skin being our largest organ, tangible to the hands, visible to the eye, and in constant contact with the outside environment has moved to the front of cosmetic research. The idea of being a complex ecosystem is adding to the existing trend of personalised cosmetics, and will confirm the customer in their feeling of uniqueness.

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

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

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

The skin plays multiple roles of protection, perception, immunity, regulation of blood and lymphatic reservoir for the whole body. Thanks to several mechanical, chemical or biological (sebum, bio-film...) 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.

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

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

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

La pele das axilas possui particularidades como: é uma região úmida, que sofre com atrito constante, pouca aeração, maior pH (altera coesão epidérmica), maior perda de color, maior temperatura e com, a função barreira prejudicada, dada à alta umidade temperatura e atrito.

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

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

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

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

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

Background: Reliable methods for the quantitative evaluation of skin of patients with ichthyosis are critically needed. Our purpose was to evaluate the biomechanical parameters of skin in a cohort of patients with clinically diagnosed lamellar ichthyosis. Materials and methods: Twenty-two patients diagnosed with lamellar ichthyosis were studied. Ichthyosis plaques located in upper distal limbs were assayed, and a nearby anatomical region without plaques from the same patient was employed as control. Skin biomechanical properties were studied through a non-invasive device (Cutometer<sup>®</sup> MPA 580). Results: Ichthyosis plaques had higher values for the Uf-Ua parameter and lower values for the Ua/Uf, Ur/Ue, and Ur/Uf parameters. Adults and children showed similar statistical differences. There were no

significant differences in data from men, whereas in women differences for all of the parameters were found. There was a significant decrease in the hydration and an increase in melanin index in the ichthyosis plaques. Conclusion: Our results suggest that analysis of parameters Uf-Ua, Ua/Uf, Ur/Ue, Ur/Uf, hydration, and melanin index could be employed for quantitative monitoring of skin. Therefore, the non-invasive method applied may be suitable for evaluation of skin of patients with ichthyosis in response to medical treatments.

*H. Cortés, J.J. Magaña, O.D.Reyes-Hernández, N. Zacula-Juárez, M. González-Torres, W. Diaz-Beltrán, M.C. León-Trejo, L. Cariño-Calvo, G. Leyva-Gómez, M. González-Del Carmen, **Non-invasive analysis of skin mechanical properties in patients with lamellar ichthyosis**, Skin Res Technol. 2019; 25: p. 375-381*

Background: Reliable methods for the quantitative evaluation of skin of patients with ichthyosis are critically needed. Our purpose was to evaluate the biomechanical parameters of skin in a cohort of patients with clinically diagnosed lamellar ichthyosis. Materials and methods: Twenty-two patients diagnosed with lamellar ichthyosis were studied. Ichthyosis plaques located in upper distal limbs were assayed, and a nearby anatomical region without plaques from the same patient was employed as control. Skin biomechanical properties were studied through a non-invasive device (Cutometer® MPA 580). Results: Ichthyosis plaques had higher values for the Uf-Ua parameter and lower values for the Ua/Uf, Ur/Ue, and Ur/Uf parameters. Adults and children showed similar statistical differences. There were no significant differences in data from men, whereas in women differences for all of the parameters were found. There was a significant decrease in the hydration and an increase in melanin index in the ichthyosis plaques. Conclusion: Our results suggest that analysis of parameters Uf-Ua, Ua/Uf, Ur/Ue, Ur/Uf, hydration, and melanin index could be employed for quantitative monitoring of skin. Therefore, the non-invasive method applied may be suitable for evaluation of skin of patients with ichthyosis in response to medical treatments.

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

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