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STUDIES LIST CUTOMETER®

Bosio, Teresa Anfossi, Silvia Audi, Grivetta, Indici biofisici della cute in rapporto all'età determinati in elastometria cutanea, Incontri di cosmetologia, 06/89

L'indagine è condotta mediante l'impiego del CUTOMETER SEM 474; il principio di funzionamento dello strumento si basa sulla possibilità di misurare, mediante uno speciale sensore optoelettronico, l'altezza della cute aspirata all'interno di una sonda da una depressione di 250 mBar (2,3). I risultati di ogni singola determinazione vengono presentati sotto forma di grafico delle deformazioni cutanee dove in ordinata è indicata l'altezza in mm della cute aspirata nella sonda ed in ascissa sono indicati i tempi a cui il parametro altezza viene rilevato. Si osserva di norma il seguente comportamento: rapido e lineare incremento del parametro altezza seguito da una fase di crescita lenta fino al raggiungimento del valore della massima deformazione cutanea indotta dalla forza applicata.

S. Bonazzi, Gazzaniga, Skin plastoelasticity modifications due to application of a reconstructed moisturizing compound, 3rd international congress on cosmetic dermatology, Wien, 27.-29.10.1989

o.A., Biométrie cutanée, Actualités Pharmaceutiques, Nov. 1990

A.O.Barel, Non-invasive measurement of the viscoelastic properties of human skin with the suction method, 8th international symposium "Bioengineering and the skin", Stresa / Italia, June 1990

Elsner, Mechanical properties of human vulvar skin, 8th international symposium "Bioengineering and the skin", Stresa / Italia, June 1990

Using a newly developed suction device, the mechanical properties of forearm and vulvar skin were studied in 22 healthy women, 12 before and 10 after the menopause. The ratio between viscous deformation (U_v) and elastic deformation (U_e) and the biological elasticity, i.e. the ratio between immediate recovery (U_r) and total deformation (U_f), were both significantly lower in vulvar than in forearm skin. U_r/U_f decreased significantly with load in vulvar, but not in forearm skin, whereas U_v/U_e was not load-dependent in either site. U_v/U_e remained constant with age in both test sites, whereas U_r/U_f was significantly lower in post-menopausal women in both forearm and vulvar skin. In vulvar, but not in forearm skin, U_v/U_e was significantly correlated with body height which may be an indicator of mechanical connective tissue properties. Viscous deformation plays a lesser role and biological elasticity is decreased in vulvar compared to forearm skin. Despite differences in mechanical parameters at both sites, age-related changes seem to be similar.

Teresa Anfossi, Influence of environment factors on skin elastometric patterns, 8th international symposium "Bioengineering and the skin", Stresa / Italia, June 1990

A.B. Cua, H.I. Maibach, K.P. Wilhelm, Elastic properties of human skin: relation to age, sex and anatomical region, Dermatologica Research, 1990

Using a recently developed noninvasive, in vivo suction device for measuring skin elasticity, we evaluated age, sex, and regional differences in the visco-elastic properties of skin. A total of 33 volunteers participated in the study consisting of (a) 8 young females, (b) 9 old females, (c) 8 young males and (d) 8 old males. Measurements were performed on 11 anatomical regions; three different loads were applied: 100, 200, and 500mbar. The parameters used were: immediate distension (U_e); delayed distension (U_v); immediate retraction (U_r); and, final deformation (U_f). To compare between subjects and anatomical regions, relative parameters independent of skin thickness were calculated: U_v/U_e , the ratio between the viscoelastic properties of skin and immediate distension, and U_r/U_f , which measures the ability of the skin to regain its initial position after deformation. Generally, U_v/U_e increased while U_r/U_f decreased with aging. Responses were variable with respect to load applied. Variability, within anatomical regions was also noted. However, differences between the sexes were not statistically significant for most regions. These findings are in congruence with earlier studies suggesting the differences are mainly attributable to alterations in the elastic fiber network. This procedure provides a simple, quantitative assessment of elastic properties of the skin. Its application may help in future investigations of other connective tissue disorders.

V. Parison, Validation d'une nouvelle méthode de mesure de l'élasticité cutanée: le Cutometer. Application à l'étude de l'effet de l'hydratation sur les propriétés biomécaniques de la peau, Thèse pour le diplôme de docteur en Pharmacie, 29.11.1991

F. Mérot, J.P. Borthier, P. Denis, Ph. Masson, Incidence du diamètre de la sonde sur les mesures d'élasticité cutanée, Congres SFC-ISIPCA, Versailles (France), 16-18 Novembre 1992

Pour chaque catégorie de peau l'étirement maximal moyen augmente en fonction du diamètre de la sonde / selon la classification adoptée, l'étirement maximal moyen est significativement plus important pour la catégorie "peaux relâchées" / la disparité des résultats individuels obtenus avec les trois sondes suggère l'implémentation de structures cutanées différentes.

P. Busch, K. Schumann, H. Verbeek, Die Entwicklung der Hautkosmetik in den letzten 25 Jahren, Parfümerie + Kosmetik 02/92

Masahiro Nishimura and Takuo Tsuji, Measurements of Skin Elasticity with a New Suction Device - Relation to Age, Sex, Anatomical Region, Sun-Exposure and Comparison with Diseased Skin-, Jpn J Dermatol: 1111-1117, 1992

Using a recently developed in vivo suction device for measuring skin elasticity, we evaluated age, sex, and regional differences in the elastic properties. Skin elasticity decreased with aging at all anatomical regions. Differences between the anatomical regions in the same age groups were significant, but no significant differences were noted between the sexes. The measurements in patients with skin diseases (PSS and Ehlers-Danlos syndrome) showed interesting results. This procedure allows assessment of skin elasticity, and its application to diseased skin, particularly connective tissue disorders may be helpful for diagnosing, deciding progression and evaluating therapeutic effects.

A. Barel, P. Clarys, In Vivo Evaluation of Skin Ageing: Relations between Viscoelastic Properties and Skin Surface Roughness Parameters, 9th ISBS Meeting, Japan, October 19 +20, 1992

Ageing of the skin is clearly characterized by changes in a variety of physical parameters related to the dermis. We have studied the influence of age on the mechanical properties of the skin and on skin roughness. Both physical properties are correlated with modifications in the structure of the papillary and reticular dermis.

*P.G. Agache, D. Varchon, Ph. Humbert, A. Rochfort, **Non-Invasive Assessment of Biaxial Young's Modulus of Man in Vivo***, 9th ISBS Meeting, Japan, October 19 +20, 1992

The elastic modulus (E) is a major parameter of the skin mechanical behaviour. Unfortunately up to now only its variation could be currently estimated in vivo, and without access to absolute differences.

*K.P. Wilhelm, A.B. Cua, H.I. Maibach, **In Vivo Study on Age-Related Elastic Properties of Human Skin, Noninvasive Methods for the Quantification of Skin Functions***, 1993;190:203

*Ph. Masson, P. Blin, R. Urbaniak, F. Mérot, **Influence of Operative Procedures on Cutaneous Deformations following Measurement of Skin Elasticity by Vertical Stretching***, 18th International IFSCC-Congress, Venice, October 1994

Numerous systems are available for experimenters in order to evaluate the biomechanical properties of the skin and especially its elasticity. The principle of the cycle vertical stretching-relaxing process under partial vacuum is operated by different equipment using probes of different sizes and especially 2.8 and 13 mm providing various (cutometer 0-500 millibars) or fixed tensile strengths. Each inventor praises the merits of his own equipment and its specificity without the support of any objective and comparative analysis able to provide the possibility of justification and evaluation of the comparative advantages.

*B. Seybold, K. Seidel, K. Beck-Devalle, F. Hevert, K. Klein, T.L. Diepgen, **Distribution and Variation of Basic Physiological Characteristics of Uninvolved Skin in the General Population - a Bioengineering Study***, The 10th International Symposium on Bioengineering & the Skin, Cincinnati, Ohio, June 13-15, 1994

*O.A. Barel, P. Clarys, R. Lambrecht, **In Vivo Study of the Mechanical Properties of the Human Skin with the Suction Method (Cutometer)***, The 10th International Symposium on Bioengineering & the Skin, Cincinnati, Ohio, June 13-15, 1994

*T. Krusche, W.I. Worret, **Mechanical Properties of Keloids in Vivo During Treatment with Intralesional Triamcinolone Acetonide***, The 10th International Symposium on Bioengineering & the Skin, Cincinnati, Ohio, June 13-15, 1994

*F. Panisset, D. Varchon, P. Agache, Ph. Humbert, **Assessment of Human Stratum Corneum Tangent Modulus in Vivo***, The 10th International Symposium on Bioengineering & the Skin, Cincinnati, Ohio, June 13-15, 1994

*P. Elsner, H.I. Maibach, **Biophysical Properties of Human Male Genital Skin***, The 10th International Symposium on Bioengineering & the Skin, Cincinnati, Ohio, June 13-15, 1994

Asserin, Agache, Humbert, Checking the Mechanical Performance of a Skin Suction Meter: the Cutometer, The 10th International Symposium on Bioengineering & the Skin, Cincinnati, Ohio, June 13-15, 1994

Ch. Baudry, C. Loufrani, Les Meilleures Crèmes Hydratantes, Le Guide D'Achat, No. 273, Mai 1994

F. Deleixhe-Mauhin, C. Piérard-Franchiomont, G. Rorive, G.E. Piérard, Influence of Chronic Haemodialysis on the Mechanical Properties of Skin, Clinical and Experimental Dermatology 1994; 19: 130-133

Certain features of the skin of patients undergoing chronic haemodialysis suggest an ageing process. Seventy-two haemodialysed patients were studied by a non-invasive technique using the Cutometer SM 474 to determine biomechanical properties of the skin. Patients undergoing chronic haemodialysis showed some impairment of changes in viscous properties of skin similar

Y. Takema, Y. Yorimoto, M. Kawai and G. Imokawa, Age-related Changes in the Elastic Properties of Human Facial Skin, British Journal of Dermatology, 1994.

Using recently designed, commercially available, non-invasive instruments, we measured the thickness and elasticity of the skin of the face and ventral forearm in 170 women, and evaluated the effects of age and exposure to sunlight. Skin thickness decreased with age in ventral forearm skin, which has limited exposure to sunlight, but increased significantly in the skin of the forehead, corners of the eyes, and cheeks, which are markedly exposed to sunlight

C. Trullas, J. Coll, C. Pelejero, J. Vilaplana, S. Sirigu, C. Dederen, Cosmetological Activity of Glycolic Acid Incorporated in a New Topical Delivery System (W/O/W Emulsion), 18th International IFSCC-Congress, Venice, October 1994

The cosmetological potential of alpha hydroxyacids (AHA'S) is still evolving. The powerful research in physicochemistry has provided a promising new delivery system, the multiple emulsion W/O/W which could permit a controlled and sustained release of AHA'S , modifying their efficiency and safety. The cosmetological activity and safety of a W/O/W multiple emulsion containing 3% of glycolic acid has been assessed by bioengineering methods using several tests. A six-hour test and 30-days study for comparison of the effects of 3% glycolic acid in two delivery systems W/O/W multiple emulsion and O/W emulsion were conducted. The cutaneous biophysical variables evaluated were electrical capacitance of stratum corneum, skin surface lipids, transepidermal water loss, biomechanical properties, blood flow and skin surface topography. The safety of 3% glycolic acid in the two delivery systems was determined using patch testing and assessment of cutaneous responses by visual scoring and biophysical non-invasive methods (evaporimetry, laser doppler flowmetry, reflectance spectrophotometry).

J Ennen, S Jaspers, G Sauermann, U Hoppe, Measurement of Biomechanical Properties of Human Skin, Cosmetic and Toiletries Manufacture World-wide, Jan. 95

The biomechanics of skin comprises a complex interrelationship and interaction of three layers - epidermis, dermis, and subcutaneous tissue. Assessment of the mechanical properties of the skin by noninvasive techniques has turned out to be a difficult task. The intimate interconnection of the different tissue compartments of the skin, the anisotropy, and time dependence of the mechanical properties, as well as the regional variations in skin make biomechanical measurements more difficult than other types of skin measurement. Measurement of those parameters of skin that describe the biomechanical properties

of the skin are currently performed mainly by two different mechanical modes. Firstly, the test mode of torsion is represented by a rotating disc and guard ring torque measurement. Secondly, the mechanical test mode of elongation is represented by the instrumentation of a suction device. The mechanical parameters of extensibility and elastic recovery, both represented in a biological elastic modulus of skin, can be measured by both approaches. In this paper the characteristics, the similarities, and the differences of both bioengineering techniques of characterizing the biomechanical properties of skin are described.

Th.Krusche, W.Worret, Mechanical properties of keloids in vivo during treatment with intralesional triamcinolone acetonide, Arch.Dermatol Res 287-293, 1995

The mechanical properties of 17 keloids in 9 patients before and during treatment with intralesional triamcinolone acetonide were studied using a recently developed noninvasive suction device for measuring skin elasticity in vivo. Each keloid was treated with intralesional injections of 10 mg/ml triamcinolone acetonide without local anaesthetic at intervals of 3 weeks. A total of four measurements per keloid were performed, before treatment and 3 weeks after the first, second and third treatments. The parameters used were: immediate distension (U_e), delayed distension (U_v), immediate retraction (U_r) and final distension (U_f). Relative parameters independent of skin thickness were calculated: U_v/U_e , the ratio between the viscous and the elastic deformation of the skin, and U_r/U_f , representing the ability of the skin to return to its initial position after deformation (biological elasticity). After three injections of triamcinolone acetonide a marked decrease in U_v/U_e and a less-pronounced increase in U_r/U_f compared with baseline values was observed. These findings indicate that the main effect of intralesional steroids on the connective tissue of keloids is a decrease in viscosity due to a loss of ground substance. This method provides a noninvasive quantitative assessment of the mechanical properties of scars and is well suited to comparative studies on the efficacy of various scar therapies.

Th.Krusche, Keloidbehandlung / Neues Gerät objektiviert den Therapieerfolg, Medical Tribune Nr. 5, 03.02.1995

Cutometer, mit dem die mechanischen Eigenschaften des Keloids gemessen werden. Die Sonde saugt mit Unterdruck das Keloidgewebe an, auf dem Bildschirm erscheint die gemessene Elastizitätskurve.

G.E.Piérard, R.Kort, C.Letawe, C.Olemans, C.Piérard-Franchimont, Biomechanical assessment of photodamage, Skin Research and Technology 1:17-20, 1995

Background/Aims: Intrinsic aging and photoaging may present different biomechanical properties. Dorsal and volar forearm skin is differently exposed to UV-light. The object was to derive a cutaneous extrinsic aging score (SEAS) representative of UV aging, i.e. the global photoaging corrected for intrinsic aging.

H.Dobrev, In Vivo Noninvasive Study of the Elastic and Viscoelastic Properties of Human Skin after a Short Term Application of Topical Corticosteroids, 6th Congress of Dermatology and Venerology, Pleve, Bulgaria, May 11-13, 1995

A noninvasive, in vivo suction device for measuring skin elasticity (Cutometer SEM 474, Courage + Khazaka electronic GmbH, Köln, Germany) was used to determine the alteration in the mechanical properties of the skin after a short term application of 5 commercially available topical corticosteroids as ointments and creams. 25 volunteers (20 female and 5 male, aged 16-54 years) were investigated. The following relative parameters, independent of skin thickness, were calculated and compared: R_2 (U_a/U_f) - gross, R_5 (U_r/U_e) - net, R_7 (U_r/U_f) - biologic elasticity and R_6 (U_v/U_e) - viscoelastic/elastic ratio. Corticosteroid ointments increase the purely elastic parameters R_2 , R_5 / $p < 0.05$ /, R_7 as well as the parameter of viscoelasticity R_6 / < 0.001 /. Corticosteroid creams alter the elastic parameters weakly while increase the viscoelastic parameter R_6 significantly / $p < 0.05$ /. These effects of topical corticosteroid formulations are probably due to the hydration of the stratum corneum and softening of keratin, which

improve the epidermal mechanical properties. On the other hand as a result of dermal oedema and some biochemical effect on the ground substance perhaps, the friction between the fibres is reduced and interstitial fluid movement is facilitated through the fibrous network. The applied noninvasive method can be useful for an evaluation and comparison of local effects of the different dermatologic topicals on the elastic and viscoelastic properties of human skin.

*V.Couturaud, J.Coutable, A.Khaiat, **Skin biomechanical properties: in vivo evaluation of influence of age and body site by a non-invasive method***, Skin Research and Technology 1:68-73, 1995

The stratum corneum is covered by a network of microdepressions which have been classified by Hashimoto (1). Escande (2) introduced the concept of microdepressionary network, mDN, representing Hashimoto's primary [I] and secondary [II] lines. The primary lines are visible, and represent the deepest furrows delimiting 3- to 4-sided polygons. Their anatomic base is at the level of the dermal-epidermal junction, the furrows surrounding a group of papilla (3). The secondary lines are inside these figures and cross all or parts of their surface. Their presence is noticeable only from the stratum granulosum.

*G.E.Piérard, Relevance, **Comparison, and Validation of Techniques***, Handbook of Non-Invasive Methods and the Skin, J. Serup G.B.E.Jemec, 1995

Measuring in an objective way is always in need of additional breakthrough. Dermometry and bioengineering have been and remain closely associated in the search for improvements of quantitative noninvasive assessments. The pre-bioengineering times and the descriptive phase of dermometry are behind us. Ingenious researches pioneered methods that may now look crude, time-consuming, and sometimes lacking in reproducibility.

*A.O. Barel, W.Courage, P.Clarys, **Suction Method for Measurement of Skin Mechanical Properties: The Cutometer®***, Handbook of Non-Invasive Methods and the Skin, J. Serup G.B.E.Jemec, 1995

The mechanical properties of the human skin have been extensively studied in the past most in vitro and less in vivo. Skin is a complex organ which as many other biologicals, presents in a combined way the typical properties of elastic solids and viscous liquids. As a consequence the mechanical properties of the skin are called viscoelastic. Typical properties of viscoelastic materials are nonlinear stress-strain properties with hysteresis (the stress-strain curves obtained on loading will not be superposed on the curves obtained by unloading). Furthermore the deformation of the skin is time-dependent with a typical phenomenon of creep. The creep is characterized as an increasing deformation of the skin in function of time when a constant stress is applied on this material. The viscoelastic properties of the skin are due to the components of the skin: collagen fibers and elastin fibers impregnated in a ground substance of proteoglycans.

*W.I. Worret, Th. Krusche, **Objektive Nachweismethoden zur Überprüfung von Narbentherapeutika***, 38. Tagung der Deutschen Dermatologen Gesellschaft, Berlin, 29. April - 03. Mai 1995

Es gibt mehrere Methoden, um hypertrophe Narben und Keloide der Hautoberfläche anzugleichen. Intraläsionale Triamcinolon-Injektionen gelten dabei als Standardbehandlung.

*Th.Krusche, W.-I.Worret, **Änderung der mechanischen Eigenschaften von Keloiden während Behandlung mit intraläsionalem Triamcinolonacetamid***, 38. Tagung der Deutschen Dermatologischen Gesellschaft in Berlin, 29.04.-03.05.1995

*P. Elsner, **Skin Elasticity***, Bioengineering of the Skin: Methods and Instrumentation, CRC Press 1995

Mechanical properties of human skin have interested dermatologists and bioengineers for a considerable time, as differences between biomechanical skin parameters at various skin sites and changes with age and disease are obvious. Objective functional assessment of skin mechanics was necessary in order to correlate mechanical properties with anatomical and biochemical findings.

*G.E. Piérard, Nikkels-Tassoudji, Piérard-Franchimont, **Influence of the Test Area on the Mechanical Properties of Skin**, Dermatology 1995, 191: 9-15*

New advances in bioengineering have provided commercially available devices for measuring the mechanical properties of skin *in vivo*. Reproducibility of data and methodological approaches have not yet been thoroughly studied. Objective: To study the reproducibility and the influence of the area of the test site on the values of biomechanical variable yielded in a normal population. Method: A 500-mbar suction was transmitted to the skin through Cutometer probes equipped with a 2- or 8-mm opening. Results: The best reproducibility was obtained for the maximum distension of skin and for the biological elasticity. The values of the standard biomechanical ratios were almost the same for both probes. Linear correlations were found between parameters of elasticity.

*N. Nikkels-Tassoudji, F. Henry, C. Letawe, C. Piérard-Franchimont, P. Lefèbre, G.E. Piérard, **Mechanical Properties of the Diabetic Waxy Skin**, S. Karger, Basel, 1995*

Background: In some diabetic patients, the skin of the hands has a waxy appearance. Objective: To study subclinical skin stiffening in diabetic patients using a noninvasive, *in vivo* suction device measuring skin extensibility and elasticity. Skin thickness was also measured by high-resolution ultrasonography. Methods: Evaluations were made on the dorsum of the hands and on the volar aspect of the forearms. Results: In type 1 diabetic patients, the extensibility of skin was decreased while values of thickness and elasticity were increased. These alterations were most prominent on the hands. Similar modifications, although less pronounced, were also found in type 2 diabetic subjects. Conclusion: The reported biomechanical changes indicate the presence of subclinical skin stiffening in many patients with diabetes mellitus. Such noninvasive biometrological evaluations could be used for monitoring, rating and correlating some diabetes-associated disorders.

*G.E. Piérard, R. Kort, C. Latawe, C. Olemans and C. Piérard-Franchimont, **Biomechanical Assessment of Photodamage**, Skin Research and Technology 1995.*

Background/Aims: Intrinsic ageing and photoageing may present different biomechanical properties. Dorsal and volar forearm skin is differently exposed to UV-light. The object was to derive a cutaneous extrinsic ageing score (SEAS) representative of UV ageing, i.e. the global photoageing corrected for intrinsic ageing.

*G.E. Piérard, C. Letawe, A. Dowlati and C. Piérard-Franchimont, **Effect of Hormone Replacement Therapy for Menopause on the Mechanical Properties of Skin**, Jags 43:662-665, 1995.*

Objective: To evaluate the effect of hormone replacement therapy (HRT) for menopause on the mechanical properties of the skin in healthy women.

Design: A group of 114 women, including 43 nonmenopausal controls, 46 menopausal women with HRT and 25 menopausal women without HRT, participated in the study. Mechanical properties of the skin were measured on the volar forearm using a computerized suction device.

*M. Viatour and G.E. Piérard, **A Computerized Analysis of Intrinsic Forces in the Skin**, BSL Clinical Experimental Dermatology Paper, 15/8/1995.*

The skin of the volar forearm is a site selected for many biometrological studies. We studied the influence of forearm position when evaluating the surface topography and mechanical properties of the skin in normal young adults. Optical profilometry of skin replicas and the suction biomechanical method (Cutometer, 2 and 8 mm probes) were used in combination with evaluation of the thickness and sliding mobility of the dermis and dermohypodermal tissues.

*K. Stephanek, J.J.levy, A.Kesckés, **The Local Reaction Followed Topical Application of Leukotriene B4 on Healthy Human Skin***, Skin Pharmacology Society: 12th Annual Meeting 1995

The arachidonic acid-derived metabolite leukotriene B4 (LTB4) seems to play an important role in the pathogenesis of several skin diseases like psoriasis, leukocytoclastic vasculitis and atopic dermatitis.

*K. Matsuzaki, N. Kumagai, S. Fukushi, O. Ohshima, M. Tanabe, H. Ishida, **Cultured Epithelial Autografting on Meshed Skin Graft Scars: Evaluation of Skin Elasticity***. Burn Science Publishers, Inc. 1995

Many patients with meshed skin graft scars complain of the scars unsightly appearance and hardness. Since 1989 we have shaved away meshed skin graft scars and then resurfaced the area with autologous cultured epithelium in nine patients. This method improved the disfigurement of meshed skin graft scars, with minimal sacrifice of normal donor skin. Furthermore, autologous cultured epithelium grafted areas had high skin elasticity compared with meshed skin graft scars, as measured with a noninvasive suction device.

*I. Diepenbrock, U. Heinrich, H. Tronnier, **Der Einfluß von Nikotin auf die Haut***, Parfümerie und Kosmetik 12/95

Die Beschaffenheit der Haut als größtes menschliches Organ ist wie keine zweite ein Gradmesser für das Alter des gesamten Organismus. Nicht selten lassen sich durch ihren Zustand Rückschlüsse auf vorhandene Erkrankungen schließen. Der Einfluß des Rauchens nun auf die Hautelastizität bestätigt um ein weiteres die oben genannte Feststellung. Aufgrund des Vergleichs von quantitativen Messungen der Hautelastizität bei Rauchern und Nichtrauchern über verschiedene Altersgruppen ließ sich eindeutig feststellen, daß die Elastin- und Kollagenfasern eine längere Zeit benötigen, um wieder in ihre ursprüngliche Ausgangslage zurückzukehren. Weiterführende Untersuchungen ergaben sogar einen verstärkten Abbau der elastischen Fasern. Auf jeden Fall läßt sich feststellen, daß die Haut bei Rauchern um durchschnittlich 11 Jahre älter ist als bei Nichtrauchern vergleichbaren Alters.

*Alessandro Teglia, Antonella Mondelli, **Influence of cosmetic treatments on the intercorrelations of skin elasticity, hydration and microrelief***, 19th IFSCC Congress Sydney, October 1996

Skin Hydration, elasticity and surface microtopography are important cutaneous parameters reflecting sensory/aesthetic qualities of the skin and have been largely adopted as indicators of the effectiveness of cosmetic treatments. Several studies have been made about the influence of environmental and biological factors on them, while little is known about their correlation. Aim of our study was to investigate their intercorrelation and possible influence of cosmetic applications on their relationship. 30 healthy volunteers were subject to the study over a period of one year. 7 skin sites for each longitudinal half of the body were taken as test areas: volar aspect of the forearm (3sites), upperarm, breast cheek, forehead. The subjects divided into two groups were properly instructed to apply twice a day a W/O emulsion (1st group) and an O/W emulsion (2nd group) on the test sites of a half of the body; contralateral untreated sites were used as controls. Biophysical measurements of skin hydration, mechanical properties and surface geometry were made at regular intervals over the test period for each volunteer. The data collected were submitted to statistical analyses for cross-correlation and differences of the means. The following variables were considered: electric capacitance EC as measure of the hydration of the horny layer; the

viscoelastic to elastic ratio U_v/U_e and the biological elasticity U_r/U_f as mechanical properties of the skin; mean roughness depth R_z and coefficient of skin extensibility LD as parameters of the skin surface microtopography. Age of the subjects was considered as biological variable. On untreated skin were observed: significant correlation of topographical and mechanical parameters with age; correlation of R_z with U_v/U_e (direct) and with U_r/U_f (inverse); correlation of LD with EC (inverse) and with U_r/U_f (direct). Correlation of mechanical properties with hydration was not significant. Treatment with W/O emulsion increases significantly hydration, elasticity and skin smoothness; intercorrelation of biophysical variables does not show important variations. The baseline correlation of microrelief parameters with age was reduced. Treatment with O/W emulsion increases moderately hydration and smoothness but does not effect the elastic properties of the skin; correlation of R_z with biological elasticity and viscoelastic component loses significance. Exposure of the skin to different type of emulsions ca effect selectively the cutaneous biophysical parameters and vary their intercorrelation.

J. Woodruff, Testing time, Cosmetics, June 1996

In his continuing series on impending EC cosmetics-legislation, John Woodruff looks at the requirements for proof of efficacy, and takes a trawl around available testing facilities.

Dr.H.Gerny, IV. Medizinische und Kosmetische Behandlungen, Kosmetik+Dermatologie, 1. Ausgabe 1996

Die Langzeitwirkung einer Pflege kann nur dann einigermaßen objektiv beurteilt werden, wenn ein klar definierter Ausgangspunkt bezüglich des aktuellen Hautzustandes und Hauttypes gegeben ist. Die Bestimmung des Hauttypes ist ein sehr komplexer Vorgang, da viele äußerliche Einflüsse auf unser Hautbild einwirken. Auch ist die Haut hormonell empfindlich und stellt ein Bild unseres Innenlebens dar.

J. Ennen, S. Jaspers G. Sauer mann, U. Hoppe, Measurement of Biochemical Properties of the Human Skin, Cosmetics and Toiletries Manufacture Worldwide

The biomechanics of skin comprises a complex interrelationship and interaction of three layers - epidermis, dermis, and subcutaneous tissue. Assessment of the mechanical properties of the skin by noninvasive techniques had turned out to be a difficult task. The intimate interconnection of the different tissue compartments of skin, the anisotropy, and time dependence of the mechanical properties, as well as the regional variations in skin make biomechanical measurements more difficult than other types of skin measurement. Measurement of those parameters of skin that describe the biomechanical properties of the skin are currently performed mainly by two different mechanical modes. Firstly, the test mode of torsion is represented by a rotating disc and guard ring torque measurement. Secondly, the mechanical test mode of elongation is represented by the instrumentation of a suction device. The mechanical parameters of extensibility and elastic recovery, both represented in a biological elastic modulus of skin, can be measured by both approaches. In this paper the characteristics, the similarities, and the differences of both bioengineering techniques of characterizing the biomechanical properties of skin are described.

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.

*F. Henry, G.E. Pierard, **Biomechanical Properties of Striae Distensaie of Pregnancy.** Skin Research and Technology, Vol.2 No. 4 Nov.1996*

Background and Objective: Striae Distensae of pregnancy is a common finding. There is currently a lack of information about the rheological properties of such lesions. The purpose of this study was to compare the mechanical properties of striae distensae before and after delivery.

Patients and methods: A total of 79 primigravid entered the study. Rheological properties of the skin were evaluated in vivo using a CUTOMETER equipped with a 2-mm probe.

Results: Mechanical properties of striae distensae developing during pregnancy resembled those of the surrounding skin. By contrast, significant differences were yielded during post-partum. Extensibility of striae distensae was increased although parameters of elasticity remained normal.

Conclusion: Rheological properties of striae distansae of pregnancy vary in time. This might reflect the changes in hormones and in the mechanical stresses normally setting the skin under tension.

*H. Dobrev, **Age-Related Changes in Skin Mechanical Properties.** 5th National Conference of Gerontology and Geriatry, October 1996*

*A.O. Barel, **Mechanical Function of the Skin: State of the Art.** Skin Research and Technology, Vol.2, No.4, Nov 1996.*

*J. Habig, E. Vocks, F. Kautzky, M. Dahm, S. Borelli, **Influence of single UVA and UVB irradiation on surface structure and viscoelastic properties of the skin in vivo.***

The present study was designed to evaluate the effects of single irradiation either with UVA (dosage:50J/cm²), or UVB(dosage 1MED) on surface structure and viscoelastic properties of the skin. Biophysical measurements by means of profilometry and cutometry were carried out on normally sun-protected skin areas directly before and 24 hours after irradiation. UVA induced neither immeasurable changes in skin surface structure (expressed by the profilometrically calculated parameters of roughness Ra and RxDIN and the parameter Wt reflecting depths of furrows) nor in its viscoelastic properties (expressed by the cutometrically calculated ratio Uv/Ue reflecting viscosity and the ratio Ur/Uf reflecting biological elasticity). However, a single dry-thermogenic dose of UVB radiation was followed by significant increase in the depths of furrows, increase in viscosity and decrease in biological elasticity.

*J.Habig, E.Vocks, F.Kautzky, M.Dahm, S.Borelli, **Einfluß einmaliger UVA- und UVB-Bestrahlung auf Oberflächenbeschaffenheit und viskoelastische Eigenschaften der Haut in vivo,** Hautarzt 47, 1996*

The present study was designed to evaluate the effects of single irradiation either with UVA (dosage: 50J/cm²) or UVB (dosage: 1 MED) on surface structure and viscoelastic properties of human skin. Biophysical measurements by means of profilometry and cutometry were carried out on normally sun protected skin areas directly before and 24 hours after irradiation. UVA induced neither measurable changes in skin surface structure (expressed by the profilometrically calculated parameters of roughness Ra and RzDIN and the parameter Wt reflecting depths of furrows) nor in its viscoelastic properties (expressed by the cutometrically calculated ratio Uv/Ue reflecting viscosity and the ratio Ur/Uf reflecting

biological elasticity). However, a dry thermogenic dose of UVB radiation was followed by significant increase in the depth of furrows, increase in viscosity and decrease in biological elasticity.

*J.R.Mekkes, D.N.H.Enomoto, R.Hoekzema, J.D.Bos, C.de Borgie P.M.M.Bossuyt, **Quantification of cutaneous sclerosis in patients with generalized scleroderma with a skin elasticity meter**, American Academy of Dermatology, 55th Annual Meeting March 1997*

A skin score, a subjective assessment of skin elasticity, is widely used in patients with systemic sclerosis. Although this scoring method is regarded as validated and accepted tool, the interobserver and intraobserver reproducibility are relatively poor. Aim of the study: To investigate whether the recently developed SEM 474 cutometer, which exerts a controlled vacuum force to the skin, can measure skin elasticity more objectively.

*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.

*M.Kläsgen-Radez, **Putting Claims to the Test**, SPC Oktober 1997*

The pressure is on to substantiate your product claims or drop them altogether. Michael Kläsgen-Radez of Courage + Khazaka explains how high-tech equipment is making this possible in skin care.

*H. Drobrev, **In Vivo Study of Skin Mechanical Properties in Scleredema of Buschke**. Derma 1029. October 1997*

A non-invasive, in vivo suction device was used to investigate the mechanical properties of the skin in a patient with scleredema of Buschke. Clinical scoring of skin induration and measurements of skin elasticity were performed over 9 anatomic regions on admission and after 3 (on discharge), 17 and 28 months. Immediate distension, final distension and immediate retraction were significantly decreased, while the viscoelastic to elastic ratio was significantly increased in the patient as compared to the healthy controls. Delayed distension and biological elasticity were preserved. Low value of skin distensibility correlated with a severe skin induration ($p < 0.001$). The changes were more expressive with the 8 mm-diameter measuring probe than the 2 mm-diameter probe. The method applied can be used for objective and quantitative assessment of skin involvement in scleredema of Buschke.

*B.C.Murray, R.R.Wicket, **Correlations between Dermal Torque Meter®, Cutometer®, and Dermal Phase Meter® measurements of human skin**, Skin Research and Technology 1997-3*

The Dermal Torque Meter® (DTM) and the Cutometer® are instruments that measure mechanical properties of skin. The NOVATMDermal Phase Meter® (DPM) measures the stratum corneum (SC) hydration level. The objectives of this study were to determine which parameters of the DTM data curves

were most sensitive to changes in SC hydration level, which of the two instruments (Cutometer or DTM) was most sensitive, and what correlations existed between the Cutometer and DTM data.

*H.Blitz, M.Schidelko, H.P.Nissen, H.Driller, **Skin mechanics measured in vivo: A new and accurate model more sensitive to age and moisturising treatment***, Australian Journal of Dermatology: Abstracts 19th World Congress of Dermatology, Sydney, June 1997

Measurements of skin mechanics are required to better understand the condition of human skin and loss of elasticity in the epidermis. The study presents a new method which shows that cosmetic products are capable to induce significant changes in the mechanical properties of human skin after an application twice a day for one week.

*H. Dobrev, **In Vivo Study of Skin Mechanical Properties in Patients with Systemic Sclerosis***. 5th Nat.Congress of Theumatology in Sofia, November 1997.

Background: Measurements of skin elasticity are more sensitive than the skin severity score and very appropriate for an evaluation of sclerodermatous skin.

*H. Dobrev, **Changes of Skin Mechanical Properties after Single Application of Different Moisturizers***. 1st Balkan Congress of Medicine, October 1997

*H. Dobrev, **Use of Cutometer to Assess Dermal Oedema in Erysipeals of the Lower Legs***. 1st Balkan Congress of Medicine, October 1997

*H. Dobrev, **In Vivo Study of Skin Mechanical Properties in Erysipelas of the Lower Legs***. 1st Balkan Congress of Medicine, October 1997

*H. Dobrev, **Value of the Non-Invasive Skin Bioengineering Investigations in Patients with Scleroderma (Review)***. 5th National Congress of Rheumatology, November 1997

*S.A.Barkovic, Y. Appa, G. Payonk, **A Clinical Evaluation of a Glycolic Acid Hand Treatment with Retinyl Palmitate and an SPF 15 on Photoaged Hands***, AAD, Orlando, March 1998

*T. Fischer, C. Greif, W. Wigger-Alberti, P. Elsner, **Instrumentelle Methoden zur Bewertung der Sicherheit und Wirksamkeit von Kosmetika***, Kursprogramm Sicherheitsaspekte in der Kosmetik, Basel, Mai 1998

Durch die Erfordernisse eines Wirksamkeits- und Sicherheitsnachweises für Kosmetika gewinnen nichtinvasive biophysikalische Meßmethoden zunehmend an Bedeutung. Neben der Bestimmung des transepidermalen Wasserverlustes und der Messung der Hautfeuchtigkeit, des Oberflächenfettes, des pH-Werts, und der Elastizität kommen der Bestimmung des Oberflächenreliefs, der Farbe und der Hautdurchblutung große Bedeutung zu. Mit diesen Methoden können u.a. die hautfeuchtigkeitfördernden, glättenden und straffenden Wirkungen von Topika sowie der Grad der

Irritation durch Externa valuiert werden. Zur Messung der Vergleichbarkeit dieser unterschiedlichen Funktionsparameter sind standardisierte Meßbedingungen erforderlich.

J. Hart, Ch. Polla, Oat Fractions. Cosmetics & Toiletries March 1998

Clinical and in vitro studies demonstrate the ability of specific topically applied oat fractions (oat β -glucan, hydrolyzed oat protein and oat extract) to provide targeted benefits in the skin care and hair care.

W. John Kitzmiller, L. Singer, D. Page, M. Visscher, R.R. Wickett, Use of Noninvasive Biophysical Techniques to Compare Effects of Laser Resurfacing and Dermabrasion on Perioral Skin. 12th ISBS, Boston, 06/98.

R. Lambrecht, P. Clarys, B. Gabard, A.O. Barel, Relation Between Capacitance Measurements and Biomechanical Skin Properties Under Different Hydration Conditions. 12th ISBS, Boston, 06/98.

Ph. Humbert, H. Zahouani, N. Bizouard, J. Asserin, J.Arnaud-Battandier, Evaluation of Efficacy of an Anti-Aging Cream Containing Anti-Glycation Agents and Vitamins Using a Non-Invasive Method. 12th ISBS, Boston, 06/98.

P.Y. Rizvi, St. Kaplan, B.M. Morrison, Seasonal Skin Changes as Measured by Biophysical Instruments. 12th ISBS, Boston, 06/98.

P.Y. Rizvi, Seasonal Skin Changes as Measured by Biophysical Instruments. Poster 12th ISBS Boston, 06/98.

H. Tronnier, Neuere Wirkstoffe in der Kosmetik. Kosmetische Medizin Nr. 2-1998

Eine Reihe neu oder wieder entdeckter Wirkstoffe für die Kosmetik wird vorgestellt und kritisch beleuchtet. Manches ist an Wirkungen an der Haut nachgewiesen, anderes bisher nur in Modellen und dann einfach auf die Haut übertragen worden. Für den Wirkungsnachweis bedeutet das aber speziell in der Kosmetik, daß dieser zur Bewertung prophylaktischer Maßnahmen, die ja erst nach Jahrzehnten zum Tragen kommen, natürlich kaum geführt werden kann, und hier ein Rückgriff auf eine Beeinflussung von Mechanismen, die zu einer Alterung, vor allem einer vorzeitigen führen, erfolgen muß.

Y. Yazan, M. Seiller, S. Avcier, M. Demirel, Comparison of Glycolic, Lactic and Glycolic + Lactic Acids in Multiple Emulsion Systems. 20th IFSCC Congress Cannes, 09/1998

Y. Nishimori, H. Tsuruoka, K. Matsumoto, M. Kawai, A. Pearse, C. Edwards, R. Marks, A new Approach for the Improvement of Photoaged Skin Through Collagen Fiber Bundle Reconstruction Mechanism. 20th IFSCC Congress Cannes, 09/1998.

Many anti-wrinkle and anti-photoaging cosmetics contain retinoic acid (RA) or RA-derived chemicals to induce the production of connective tissue components. However, this approach does not always produce

longlasting or satisfactory results. Investigations of injured skin reveal that the ultrastructural condition of dermal connective tissue, especially dermal collagen fiber bundles, is an extremely important factor affecting both the mechanical properties and surface profiles. Photoaging is skin injury caused by solar radiation. Our research indicates that restoration of the ultrastructural changes of their dermal collagen fiber bundles is more important than simple promotion of the production of connective tissue components.

*D. Black, A. Del Pozo, S. Diridollou, J.M. Lagarde, Y. Gall, **Assessment of Emollient Effects on the Stratum Corneum of Winter Dry Skin Using A Multiple Measurement Approach.** Stratum Corneum II Symposium, Cardiff, 09/98.*

A randomised single-blind study was carried out on 13 female volunteer subjects aged 21-43, (mean 35 yrs), with the aim of assessing the effects of a glycerine/vaseline based emollient cream on the stratum corneum of winter dry skin.

*C. Greif, W. Wigger-Alberti, M. Arens-Corell, P. Elsner, **Beurteilung einer Körperlotion für trockene und empfindliche Haut.** Kosmetische Medizin Nr. 5, 1998.*

In einer offenen kontrollierten Anwendungstudie über 3 Wochen wurde an 30 Probanden eine Body Milk auf Hautverträglichkeit und Wirksamkeit getestet. Dazu wurden folgende hautphysiologische Parameter erfaßt: Hautfeuchtigkeit, transepidermaler Wasserverlust, Hautelastizität, pH-Wert sowie Hauttemperatur.

*C. Greif, W. Wigger-Alberti, M. Arens-Corell, P. Elsner, **Beurteilung einer Körperlotion für trockene und empfindliche Haut.** Allergologie 3, 03/1999*

*M. Förschle, I. Frei, **Elastisch und geschmeidig.** Kosmetik International 6/99*

*W. Voss, G. Schlippe, M. Breuer, **Tests on Cosmetics Scientific Standards.** SÖFW-Journal 4/99*

In general, body care articles and cosmetics have only a low allergy potential. The probability that toxic-irritative reactions will arise after proper use is even lower. But especially with patients with sensitive skin, unclear skin reactions, which can frequently be confused with allergies, can arise. The cosmetics manufacturers, however, would like to produce safer products and naturally want to avoid that type of problem from the start.

*R. Jermann, R. Voegeli, J. Meier, **Wirkstoffe und Marktsystem der Pflegekosmetik – Rückblick, Veränderungen und zukünftige Trends.** SÖFW-Journal-Jubiläumsausgabe 1999*

Die Pflegekosmetik weist eine eher junge Geschichte auf, die weniger als 100 Jahre zurück geht. Pentapharm ist seit über 20 Jahren Hersteller von Pflegewirkstoffen für die Kosmetikindustrie. Vor allem in dieser Zeit hat sich sowohl bei den Produkten der Pflegekosmetik wie auch bei den Wirkstoffen viel verändert. Dieser Artikel zeigt im ersten Teil die Entwicklungen des ganzen Marktsystems der Pflegekosmetik mit all den Einflüssen von außen.

*U. Heinrich, B. Meick, H. Tronnier, **Neue Wege bei Behandlung von Cellulite.** Pharmazeutische Zeitung Sonderdruck 45/94, 139. Jahrgang, 1999*

Das Körperbewußtsein der Verbraucher ist in den vergangenen Jahren deutlich gestiegen. Dabei werden neben reinigenden und pflegenden Anwendungen auch zunehmend Maßnahmen ergriffen, um die Körpersilhouette zu verbessern. Die Cellulite – ein weit verbreitetes Phänomen – nimmt dabei eine zentrale Stellung ein. Das sichtbare Bild der Cellulite beruht auf einer Zunahme von Fettpolstern in der

Subcutis (Unterhautfettgewebe), einer Bindegewebesschwäche sowie einer Minderung der Durchströmungsverhältnisse in den Blut- und Lymphbahnen. Die Ursache ist somit eine zum Teil anlagebedingte Schwächung des Bindegewebes mit gleichzeitigen Auftreten von vergrößerten Fettzellkammern infolge von Übergewicht, unausgewogener Ernährung, Bewegungsmangel, etc.

*L.M.Harnisch, M.K. Raheja, L.K.Lockhart, A.Pagnoni, **Substantiating Antiaging Product Claims.** C&T, Vol. 114, No. 10, October 1999.*

*H.Dobrev, **In vivo Study of Skin Mechanical Properties in Psoriasis Vulgaris.** Acta Derma, 3/1999*

*H.Dobrev, **Non-invasive Monitoring of the Mechanical Properties of Keloids during Cryosurgery.** Acta Derm Venereol, 1999*

*M. Puschmann, A. Melzer, H.P. Nissen., **Hautglättende, hautelastische und hautschützende Wirkung einer Urea-Ceramid-Kombination.** Kosmetische Medizin Nr. 4, 1999-11-22*

Sebostase ist ein häufiges dermatologisches Krankheitsbild. Sie wird durch exogene Faktoren, (Klima, Waschgewohnheiten) und/oder konstitutionelle Faktoren wie Alter und atopische Hautdiathese hervorgerufen. Eine auffällige Häufung derartiger Symptome findet sich in der kalten Jahreszeit. Hier ist das Klima (Temperatur, Luftfeuchtigkeit) sowohl im Freien als auch in den Gebäuden als wichtiger Kofaktor anzusehen. Zur Therapie trockener Haut werden traditionell Salben/Fettsalben, Ölbäder sowie harnstoffhaltige Zubereitungen eingesetzt.

*H.Fadhli, C.Edwards, S.Gaskell, R.Marks, **Differences between normal skin and Unaffected Psoriatic Skin are Demonstrated by Cutometer and Uniaxial Extensometry, and Confirmed by Measurement of Elastic Fibre Content.** 13th ISBS Jerusalem, March 2000.*

*F.Henry, O.Martalo, G.E.Pierard, **Liminar Perception Threshold of Cutaneous Distension.** 13th ISBS Jerusalem, March 2000.*

*L.F.Gouveia, J.Tavares, L.Rodrigues, **Mathematical Modelation of Cutometer Acquired Signals.** 13th ISBS Jerusalem, March 2000.*

*H.E.Packham, **Skin Bioengineering as a Contribution to Product Performance and Safety,** C&T, 2000*

*H. Dobrev, **Photoaging and Skin Elasticity,** Research Reports of the Union of scientists in Bulgaria, 19. May 2000*

*S.Diridollou, A.Pavy-Le Traon, A.Maillet, F.Bellossi, D.Black, F.Patat, J.M.Lagarde, M.Beron, Y.Gall, **Characterisation of Gravity-Induced Facial Skin Oedema Using Biophysical Measurement Techniques.** Skin Research and Technology, Vol. 6, No. 3, August 2000*

In humans, the microgravity environment can be expected to induce swelling of facial tissues and shrinking of the tissues in the lower limbs, together with a loss in body weight. To evaluate fluid shifts in skin, the head-down bed-rest model was used. The aim of the present study was to evaluate the appearance of facial oedema in subjects undergoing antiorthostatic bed-rest at an angle of -10° .

S.Sakai, S.Sasai, Y.Endo, K.Matue, H.Tagami, S.Inoue, **Characterization of the Physical Properties of the Stratum Corneum by a New Tactile Sensor**. Skin Research and Technology, Vol. 6, No. 3, August 2000.

The physical properties of the stratum corneum (SC) change with its water content which is regulated by the presence of water solutes (natural moisturizing factors) and lipids in the SC, and are considered to be responsible for the induction of desquamation, skin surface roughness and fine wrinkles.

L.F.Gouveia, J.Tavares, L.Rodrigues, **Mathematical Modulation of Cutometer acquired signals**. Skin Research and Technology, Vol. 6, No. 3, August 2000

A.Morita, K.Kobayashi, I.Isomura, T.Tsuji, J.Krutmann, **Ultraviolet A1 (340-400nm) Phototherapy for Scleroderma in Systemic Sclerosis**. AAD 2000

The presence of an inflammatory infiltrate consisting of helper T cells and a dysregulated matrix metabolism leading to excessive deposition of collagen are two pathogenetic factors responsible for the developments of fibrosis and sclerosis in patients with systemic sclerosis. In previous studies, ultraviolet A1 (UVA1) radiation phototherapy was shown to deplete skin-infiltrating T cells through the induction of T-cell apoptosis and to up-regulate the expression of matrixmetalloproteinase-1 (collagenase-1) in dermal fibroblasts.

D.Schmid, A.Lang, T.Allgäuer, Ch.Bayerl, E.G.Jung, **Beurteilung der Veränderung der Hautbeschaffenheit durch die Heilpflanzensäfte Brennnessel und Löwenzahn**. Akt.Dermatol. 2000.

Wir führten eine Anwendungsbeobachtung über die Beeinflussung von objektiven und subjektiven Parametern der Hautbeschaffenheit durch die Kombination der Heilpflanzensäfte Brennnessel und Löwenzahn bei gesunden Probandinnen durch. Zehn Probandinnen (Versuchsgruppe) nahmen über 6 Wochen die Kombination der Heilpflanzensäfte oral ein, gleichzeitig erhielten sie eine standardisierte Körperpflege mit Basiscreme DAC, weitere 10 Probandinnen (Kontrollgruppe) benutzten lediglich die standardisierte Körperpflege mit Basiscreme DAC.

J.Grudeva-Popova, H.Dobrev, **Biomechanical measurement of skin distensibility in scleredema of Buschke associated with multiple myeloma**. Clinical and Experimental Dermatology, 2000

H.Dobrev, **Evaluation of the photoprotective activity of topical indomethacin, betamethasone valerate and emollients by means of non-invasive measurements of the skin elasticity**.

H.Dobrev, **Photoaging and Skin Elasticity**. National Session of Young Scientists, May 2000

H.Dobrev, Changes in Skin Elasticity after an Application of Emulsions containing urea and alphahydroxy acids. 7th National Congress of Dermatology and Venereology, May 2000

H.Dobrev, Influence of telegraphmatherapy on the skin physiology. 7th National Congress of Dermatology and Venereology, May 2000

H.Dobrev, Treatment of psoriasis vulgaris with hydrocolloid occlusive dressins in combination with betamethasone dipropionate 0.05% cream. 7th National Congress of Dermatology and Venereology, May 2000

H.Dobrev, Use of Cutometer to assess epidermal hydration. Skin Reserach and Technology 2000.

H.Song, The Effects of Inositol Extracted from Rice on the Skin. Personal Care Ingredients Asia, March 2001

A.O.Barel, R.Lambrecht, P.Clarys, Mechanical Function of the Skin: State of the Art. Skin Bioengineering. Vol 26, March 2001

The in vivo mechanical properties of the human skin have been studied extenively. The skin is a complex five-layered structure organ, which as many other biological materials presents the typical properties of elastic solids and various liquids in a combined way known as viscoelastic properties. Typical mechanical properties of viscoelastic material are nonlinear stress-strain properties with hysteresis (the stress-strain curve obtained during loading will not be superposed by the curve obtained during unloading).

D.Iliev, U.Hinnen, P.Elsner, Skin Bioengineering Methods in Occupational Dermatology. Skin Bioengineering Vol. 26, March 2001

Measruing biophysical properties of the skin is not only useful to study cutaneous physiology and pathology but may also be of value for the prediction of eczema risk, for the detection of subclinical eczema and for therapy control in occupational dermatology.

R.R. Wickett, Stretching the Skin Surface: Skin Elasticity. C&T, March 2001.

This contribution to the series "From Test to Claim" deals with the instrumental measurement of skin elasticity, discussing measuring conditions, relevant parameters to record, data analysis and the type of conclusions that could be drawn from such measurements. In particular, this paper will review the use of the Dermal Torque Meter (DTM) and the Cutometer to measure the elasticity of the stratum corneum.

D.Khazaka, News in the Field of Elasticity Measurement. Cosmetic Science Conference 2001

H.Dobrev, Evaluation of the inhibitory activity of topical indomethacin, betamethasone valerate and emollients on UVL-induced inflammation of means of non-invasive measurements of the skin elasticity. Photodermatology, Photoimmunology & Photomedicine, January 2001.

Topical indomethacin has been reported to inhibit ultraviolet light-induced erythema. The objective of this study was to verify this assertion and to compare indomethacin 10% ointment to betamethasone valerate

0.1% ointment, water-in-oil emulsion and oil-in-water emulsion by means of non-invasive skin elasticity measurements.

K.Tsukahara, Y.Takema, S.Moriwaki, T.Fujimura, S.Mayama, G.Imokawa, Carbon dioxide laser treatment promotes repair of the three-dimensional network of elastic fibres in rat skin, British Journal of Dermatology, Vo143, 2001.

We have previously reported that ultraviolet (UV) B irradiation induces a loss of linearity in the three-dimensional structure of dermal elastic fibres, which results in the reduction of elastic properties of the skin and leads to wrinkle formation. We further reported that repair of wrinkles by all-trans retinoic acid is accompanied by recovery of the linearity of elastic fibres. Carbon dioxide lasers are widely used for treating wrinkles in cosmetic surgery.

S.Sustmann, Body care for dry skin. Scientific Study Eubos Med – 2001

The test product EUBOS DERMAL BALSAM is very well-tolerated by the skin. Evidence of the suitability of the product for dry skin conditions with an impaired barrier function was provided by studies on the regeneration of damaged skin as well as the positive effect on skin moisture, tautness, and roughness.

S.Sustmann, Face care for sensitive and particularly dry skin. Scientific Study Eubos Med – 2001

The test products EUBOS sensitive moisturizing cream and EUBOS sensitive regenerating cream are characterized by excellent skin compatibility particularly with sensitive and dry skin. The very good skin compatibility is confirmed by both the subjective assessment of the subjects and the objective assessments made in a controlled test program.

H. Dobrev, A Study of Human Skin Mechanical Properties by Means of Cutometer, Folia Medica, XLIV 3/2002

M. Aalberts, Functional changes in the bovine cervix during pregnancy, Thesis 2001-2002, Utrecht University, Faculty of Veterinary Medicine

P.M. Van Zuijlen, Perspectives On Burn Scar Evaluation and Artificial Skin. Dissertation 2002

G. Maramldi, M. A. Esposito, Potassium Azeloyl Diglycinate: A Multifunctional Skin Lightener, Cosmetics & Toiletries, March 2002, Vol. 117, Nr. 3

Skin lightening and sebum normalization are among the useful cosmetic functions of potassium azeloyl diglycinate, a soluble derivative of azelaic acid.

T. Gambichler, P. Altmeyer, S. Rotterdam, M. Herde, M. Stücker, K. Hoffmann, Bioengineering der Haut, Kosmetische Medizin, 4/2002, 23. Jahrgang

Nicht-invasive Untersuchungstechniken (Bioengineering) am Hautorgan werden in der Dermatologie und Kosmetologie zunehmend eingesetzt. Gegenüber der bloßen klinischen Untersuchung bietet der Einsatz von Bioengineering-Methoden viele Vorteile. Es lassen sich morphologische und funktionelle Parameter der Haut objektiv darstellen und standardisiert messen, die der bloßen klinischen Untersuchung bzw. sensorischen Wahrnehmung oft unzugänglich sind.

H. Zahouani , J. Asserin, Ph. Humbert, Mechanical Properties of the Skin During Friction Assessment, CRC Press 2002, pp. 49-58.

Previous studies on the tribology of human skin have attempted to demonstrate a correlation between certain tactile sensations and the friction between the skin surface and variety of probes. In addition, friction measurements have been used to provide in vivo information about the effects of age, hydration, dermatitis, and cosmetic products on both the interfacial and bulk properties of skin.

H.S. Yoon, S.H. Baik, C.H. Oh, Quantitative measurement of desquamation and skin elasticity in diabetic patients, Skin research and Technology, Vol. 8, No. 4, Nov. 2002

Diabetes mellitus is responsible for many cutaneous alterations. Xerosis and sclerotic change of the skin are the most common findings. Recently non-invasive computerized devices have been developed and used for determining the desquamation rate and measuring the mechanical properties of the skin. Using these devices, the necessity to characterize the conditions of the skin in the healthy as well as the diseased state is increasing.

P. Humbert, P. Creidi, B. Chadoutaud, J.C. Choulot, P. Msika, Photoageing: clinical and biometrological results of a double-blind randomized trial evaluating a new cosmetic product containing avocadofurane plus pentapeptides and retinol (abstract), 11th Congress of the European Academy of Dermatology and Venereology, Prag 2002.

The role of metallo matrix proteinases (MMPs) in cutaneous ageing is now well established. Moreover the decrease of TGF-beta has been more recently discovered. Two new molecules have been developed in this field: pentapeptides which inhibit the production of MMP1, -3, -9 by UV exposure on fibroblast cultures and pure heptadecadienylfuran (Avocadofurane) which increases the collagen synthesis via a specific stimulation of TGF beta.

J-H. Park, S-W. Son, Y-M. Yoon, M-H. Lee, Y-S. Lee, H-C. Kim, H-S. Oh, C-H. Oh, Objective evaluation for xerosis by morphological study in atopic dermatitis, 2002 U.S. Symposium of the International Society for Bioengineering and the Skin, Baltimore Oct. 24-26, 2002

It is essential to be able to measure and record the severity of atopic dermatitis for routine clinical practice and research. Many clinical severity scales have been proposed, but not yet objective. Of severity scoring systems currently available for atopic dermatitis, the SCORAD index has been the most extensively tested.

Oba A., Gomi T., Nishimori Y., Graves C., Pearse A., Edwards C., A Non-invasive Method for Measuring Invisible Subcutaneous UV Damage, 22nd IFSCC Congress, Edinburgh, 25.09.2002

Repeated exposure to UV radiation can induce subcutaneous damage leading to permanent structural degradation and formation of visible wrinkles. In the early stages when damage is slight, the body is capable of repairing itself, and intervention with certain drugs or treatment products may slow or even reverse the process of photoaging. This is not possible, however, when damage is severe and extensive.

H. Zahouani, C. Pailler-Mattei, R. Vargiolu, M.A. Abellan, Assessment of the elasticity and tactile properties of the human skin surface by tribological tests, 22nd IFSCC Congress, Edinburgh, 25.09.2002

The current paper describes the assessment of the visco-elasticity and tactile properties during a static and frictional contact of a spherical indenter on an inner human forearm. The current techniques that simultaneously measure the normal load F_z between the contacting surfaces and the friction force F_x , can be used to determine the normal and lateral stiffness, the Young modulus, static and dynamic friction forces F_z , F_d and respective friction coefficients: μ_s , μ_d .

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.

H. Dobrev, **Study of Human Skin Fatigue**, Medicine and Stomatology Session, 18 October, 2002 House of Scientists, Plovdiv, Bulgaria

P. Msika, F. Perin, P. Beau, et. al., **AvocadoFurane, Pentapeptides and Soy Isoflavones: A Clinical Study against Hormonal Aging, Bioengineering and The Skin**, International Congress 27-28th June 2002, Paris

A patented association containing a new inducer of collagen synthesis via TGF-beta (Avocadofurane), an MMP’s inhibitor (Pentapeptides) and soy isoflavones was evaluated in postmenopausal skin aging. 30 women were engaged in two clinical studies (age < 50, no hormonal replacement therapy) and have applied twice daily the product for 1 year.

U. Berndt, P. Elsner, **Hardware and Measuring Principle: The Cutometer**, In P. Elsner, et . al. (Edts): *Bioengineering of the Skin*, CRC Press, 2002, Chapter 7

H. Dobrev, **Mechanical Properties in Other Dermatological Diseases**, In P. Elsner, et . al. (Edts): *Bioengineering of the Skin*, CRC Press, 2002, Chapter 7

Hristo Dobrev, **In vivo study of skin mechanical properties in Raynaud’s phenomenon**, 14th International Congress for Bioengineering and the skin, May 21-24, 2003

Mechanical properties of the skin in patients with suspected secondary Raynaud’s phenomenon significantly differ from these in patients with primary Raynaud’s phenomenon and resemble those in patients with edematous phase of scleroderma. Our findings suggest that the non-invasive measurements of skin elasticity could be helpful in identifying patients with Raynaud’s phenomenon at risk of developing systemic sclerosis.

Thomas Förster, Henkel KgaA, **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.

M. Takahashi, M. Egawa, T. Hirao, **The frictional feel analyzer**, *Skin Research and Technology*, Vol. 9, Nr. 2, May 2003, “Abstract Nr. 18”.

Sensory evaluation is important in the testing of cosmetic products. Several devices for the measurement of sensory properties have been developed in recent years. The objective here is to measure skin surface friction using these devices and to examine the correlation with other physiological parameters in order to evaluate the feasibility of using physical measurement to predict tactile sensation.

D. Brokken, LJM Schlangen, PM van Kemenade, A mechanical model for the skin suction experiment, Skin Research and Technology, Vol. 9, Nr. 2, May 2003, "Abstract Nr. P72".

The skin suction experiment is one of the most widely used methods in dermatology and cosmetology to evaluate the mechanical properties of the skin. Usually, the skin is sucked into an aperture repeatedly by applying an intermittent partial vacuum (P).

I. Sadiq, T. Stoudemayer, A. Kligman, Blue light visualizes the degree of solar elastosis in photodamaged human facial skin, Skin Research and Technology, Vol. 9, Nr. 2, May 2003, "Abstract Nr. P74".

We have utilized the short wavelength visible light (blue light) to visualize the fluorophores and chromophores of photo-aged facial skin. Topographic details of the surface can also be seen with great clarity.

H. Dobrev, In vivo study of skin mechanical properties in Raynaud's phenomenon, Skin Research and Technology, Vol. 9, Nr. 2, May 2003, "Abstract Nr. P76".

Raynaud's phenomenon is usually the first symptom on patients with systemic sclerosis and may precede skin changes by several months or years. Non-invasive measurements of skin elasticity are very sensitive and appropriate for objective and quantitative evaluation of sclerodermatous skin.

HK Lee, SY Ahn, JH Bae, SJ Moon, IS Chang, Comparisons of skin characteristics between men and women using non-invasive methods in young healthy Asians, Skin Research and Technology, Vol. 9, Nr. 2, May 2003, "Abstract Nr. P84".

Objective: 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.

M. Jouandeaud, M. Dana, B. Closs, A new generation of tensor actives, Household and Personal Products Industry, June 2003

After age 50, or thereabouts, women experience a slackening of the skin and a loss of elasticity and tone. Cutaneous aging results primarily in the appearance of more or less marked wrinkles, which are accentuated on the photo-exposed body areas such as the face, the neck or hands. In order to "erase" the effects of age, consumers are eager to test an entire range of anti-wrinkle substances, or take more drastic measures such as undergoing plastic surgery.

L.P.L. van de Vijver, E. Boelsma, R.A. Bausch-Goldbohm, L. Roza, Subjective skin condition and its association with objective skin measurements, Cosmetics & Toiletries, Vol. 118, No. 7, July 2003

From a group of 302 volunteers, the authors obtained both self-reported subjective evaluations of skin condition and objective measurements of skin conditions, and then looked for correlations between the subjective and objective skin measures.

L.J.M. Schlangen, D. Brokken, P.M. van Kemenade, Correlation between small aperture skin suction parameters: statistical analysis and mechanical model, Skin Research and Technology, Vol.9, No. 2, May. 2003

Skin suction experiments are widely used in order to evaluate the effects of skin treatments, both for cosmetic and for dermatological purposes. Classically, the elevation of the skin is measured at different discrete time instances after the pressure has been changed. Relations between the classical parameters- U_v , U_r , U_e and U_f -have been investigated and used in order to develop a new model for interpreting the mechanical properties of the skin.

P-A. Wendling, G. Dell'acqua, Skin biophysical properties of a population living in Valais, Switzerland, Skin Research and Technology 2003, 9, 306-311

On average we observed low values of skin capacitance that identify subjects with dry skin. Measures of skin visco-elasticity ratios were also particularly low, while skin pH and sebum content were in the normal range. Age was correlated with a decrease of skin elasticity and sebum content, but there was no correlation with hydration or pH.

H. Dobrev, Application of Cutometer Area Parameters for Study Human Skin Fatigue, Department of Dermatology and Venereology, Medical University, Plovdiv, Bulgarien.

The hallmark of age-related changes of skin mechanical properties is the decrease in its elastic properties (1-2). This results in bigger fatigue of adult skin than young skin after applying multiple stress at one and the same anatomic region.

M. I. Nogueira de Camargo Harris Propriedades biomecânicas da pele, Pele : estrutura, propriedades e envelhecimento, Editora Senac, Sao Paulo, 2003.

A biometrologia cutânea, ramo da ciência que avalia quantitativamente as propriedades biomecânicas da pele, tem encontrado na cosmetologia um importante aliado, pois o apelo mercadológico dos produtos destinados aos cuidados com a pele e com os cabelos tem-se baseado cada vez mais em evidências científicas e técnicas sensíveis, precisas e validadas, ao invés de serem fundamentadas em especulações.

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

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

H. P. Dobrev Mechanical Properties in Other Dermatological Diseases, Bioengineering of the Skin: Skin Biomechanics, chapter 19, ed. by P. Elsner, E. Berardesca, K.-P. Wilhelm u. H. I. Maibach, Dermatology: Clinical & Basic Science Series, CRC Press LLC, Florida/ USA, 2002.

Human Skin, as a complex multi-layered organ, has three major mechanical properties: Stiffness, i.e., resistance to change of shape; elasticity, i.e., ability to recover the initial shape after deformation; Viscoelasticity, i.e., time-dependent deformation with a “creep” phenomenon and nonlinear stress-strain properties with “hysteresis”.

These properties are altered in dermatological diseases, which are accompanied with pathological induration or softening of the skin. Noninvasive bioengineering measurements allow quantifying the alterations of skin mechanics *in vivo*.

R. Randall Wickett **Standardization of Skin Biomechanical Measurements**, Bioengineering of the Skin: Skin Biomechanics, chapter 15, ed. by P. Elsner, E. Berardesca, K.-P. Wilhelm u. H. I. Maibach, Dermatology: Clinical & Basic Science Series, CRC Press LLC, Florida/ USA.

Standardization of measurement methods has been a goal of many researchers working on noninvasive measurement of skin function. For example, Pierard stated, “optimization of noninvasive biophysical measurements should benefit from strict standardization of measurements and frequent calibration of devices.” While no absolute standards for skin measurements have been published, helpful guidelines have been published for measurement of transepidermal water loss (TEWL) and the electrical properties of skin for assessment of skin hydration.

U. Berndt, P. Elsner **Hardware and Measuring Principle: The Cutometer®**, Bioengineering of the Skin: Skin Biomechanics, chapter 07, ed. by P. Elsner, E. Berardesca, K.-P. Wilhelm u. H. I. Maibach, Dermatology: Clinical & Basic Science Series, CRC Press LLC, Florida/ USA.

The biomechanical properties of human skin are a complex combination of elastic and viscous components. Elasticity correlates with the function of elastin fibers; viscosity is controlled by the collagen fibers and the surrounding intercellular ground substance, which consists primarily of water and proteoglycans. The cutometer allows the measurement of the viscoelastic properties of the skin in vivo, which provides valuable information on physiological and pathological changes of human dermis as well as on the efficacy of topical treatments. It is recognized as a standard tool in dermatological and cosmetic research.

A. O. Barel **Product Testing: Moisturizers**, Bioengineering of the Skin: Skin Biomechanics, chapter 21, ed. by P. Elsner, E. Berardesca, K.-P. Wilhelm u. H. I. Maibach, Dermatology: Clinical & Basic Science Series, CRC Press LLC, Florida/ USA.

The presence of an adequate amount of water in the stratum corneum is important for maintaining the following properties of the skin: general appearance of a soft, smooth, flexible, and healthy-looking skin; and an intact barrier function allowing a slow rate of transepidermal water loss (TEWL) under dry external conditions, which are frequently encountered

H. Dobrev (Department of Dermatology and Venereology, Med. Uni. Plovdiv, Bulgaria), **Impact Of Three Different Emulsions On Skin Hydration And Elasticity.**

The well-hydrated skin is smooth, soft and elastic. Therefore, the restoration and maintenance of skin water content is the main goal of skin care products. Currently, two kind of moisturizers are used [1, 2]: Emollients (lipids), which reduce the loss of water from the skin by simple occlusion of its surface and by improvement of water-holding capacity of stratum corneum in result of restoration of the lipid layers around the corneocytes.

Humectants (urea, glycerin, lactic acid, pyrrolidone carboxylic acid, hyaluronic acid), which bind or attract water in or to the corneal layer.

Hristo Dobrev, **Comparative Study Of The Mechanical Properties In Erysipelas Of The Lower Legs Using Suction Method And Share Wave Propagation Method**, EADV Plovdiv Bulgaria, 13th Congress “The Renaissance Of Dermatology”, Florence 2004.

Inflammatory dermal edema in erysipelas alters skin mechanics. The aim of this study was to compare the informativeness of two different methods for evaluation of skin mechanical properties.

Hristo Dobrev, Application Of Cutometer Area Parameters For Study Human Skin Fatigue, Department of Dermatology and Venereology, Med. Uni. Plovdiv, Bulgaria.

The hallmark of age-related changes of skin mechanical properties is the decrease in its elastic properties [1-2]. This results in bigger fatigue of adult skin than young skin after applying multiple stress at one and the same anatomic region. Skin fatigue can successfully be evaluated with a suction skin elasticity meter (Cutometer) using measurements with several repetitions of the measuring cycle [3].

Dr. M. Fröschle, Dr. R. Plüss, A. Peter, F. Etzweiler, Phytosteroids for skin care, Personal Care, Vol. Sept. 2004.

Healthy skin is a largely self-regulating system. In order to keep metabolic processes functioning efficiently, the relevant biological precursors and activators must be available to the skin cells for metabolism. If, due to age-related changes, the body no longer provides a sufficient amount of certain substances, an additional external supplement can proactively support the biological processes and thus counteract the advance of the ageing process.

F. M. Hendriks, D. Brokken, C.W. J. Oomens, F. P. T. Baaijens, Influence of hydration and experimental length scale on the mechanical response of human skin in vivo, using optical coherence tomography, Skin Research and Technology 10, pp. 231-241, 2004.

Human skin is a complex tissue consisting of different layers. To gain better insight into the mechanical response was studied with experiments of various length scales. Also, the influence of (superficial) hydration on the mechanical response is studied.

Prof. Dr. med. H. Tronnier, PD Dr. Ulrike Heinrich, Beautytek-Studie: Gutachten über einen Wirksamkeitsnachweis einer kosmetischen Behandlung, Dermatologin, Institut für experimentelle Dermatologie i. A. für medilab GmbH & Co., Würzburg, Mai 2004.

Unter Bezugnahme auf unseren Forschungsauftrag 19/2/04 vom 20.02.2004 sowie unter Bezugnahme auf Ihr Schreiben vom 29.09.2003 erstatten wir Ihnen nachfolgend ein Gutachten über einen Wirksamkeitsnachweis einer kosmetischen Behandlung. *

G. Guglielmini, M. Cucchiara, Cosmetic treatment for heavy legs, Research and development Laboratories, Pero, Italien, poster presentation, IFSCC Orlando USA, 2004.

Heavy legs is a really widespread problem. It hits the 50% of the adults of more than 50 years old, with a prevalence for female sex, interested 4 times more than the male one. Subjects perceive some symptoms associated to a sense of tiredness and to a sensation of pain for lower limbs...

Manoj Kumar, Biotechnology for Personal Care: A Case Study of Silk-Elastin Protein Polymer, Biochemistry Department, USA, poster presentation, IFSCC Orlando USA, 2004.

Designer Proteins are in need as active ingredients to perform a variety of functions and to impart desired characteristics to personal care product formulations. Advances in genetic engineering offer a unique opportunity to design specific, targeted properties, and production of consistent fermentation based protein polymers with desired properties that are important to provide specific benefits.

J. C. Leverett, J. Gour, J. Mayne, Immunofluorescent Imaging Of Dermal Proteins Using Laser Scanning Confocal Microscopy, IFSCC Orlando 2004, Podium Proceedings.

More powerful tools are needed in order to develop the next generation of functional cosmetics. Today's highly evolving field demands a greater understanding of the root causes of actinic and age related

damage that until recently were seen as merely surface phenomenon. By understanding these causes, better solutions can be discovered which will produce a more profound effect for the consumer.

H. Dobrev, Application of Cutometer area parameters for the study of human skin fatigue, Skin Research and Technology 2005-11, May, pp. 120-122.

The hallmark of age-related changes of skin mechanical properties is the decrease in its elastic properties. This results in larger fatigue of adult skin than young skin after applying multiple stress at one and the same anatomic region.

*R. Debowska, K. Rogiewicz, T. Iwanenko, I. Eris, Folic Acid (Folacin) – New Application of a Cosmetic Ingredient, Kosmetische Medizin 3/2005, pp. 16-22. **

Many years of trials and research tests proved that a lot of well-known vitamins could be successfully used in cosmetology. The available data indicate that one of them – folic acid plays an important role in life process of mitotically active tissues and its deficiency increases background level of DNA damage.

C. Vincent, M. Szubert, I. Eris, K. Rogiewicz, Efficacy of Dr. Irena Eris Anti-Cellulite Body Cream, Poster presentation Centre For Science And Research Dr. Irena Eris, 2005.

Cellulite is a skin problem which characterizes non-inflammatory lesions of subcutaneous tissue (lipodystrophy), leading to changes in smoothness of skin surface. Epidemiological data indicates that cellulite is problem for 80-95% of women population. The pathogenesis of cellulite covers complex of different factors: genetics, hormonal and life style.

*Karl Lintner, Claire Mas Chamberlin, Philippe Mondon, Olivier Peschard, IgG fragments regulate IL6 production in keratinocytes: potential use in anti-age treatments, Sederma S.A.S., Le Perray, 78612 France, Presentation at the ISCC in Florence 2005. **

Cytokines play a fundamental role in inter-cellular communication. Their secretion rate and cellular concentrations are well regulated and in an equilibrium state (“homeostasis”) in healthy, young skin. Ageing leads to changes in these equilibriums. DHEA clearly controls IL6: the age-related decrease in DHEA (by a factor of >2 after age 50) is accompanied by increased IL6 levels. Cytokine IL6 is also known to be strongly induced in skin by UV rays.

*Patrícia M. B. G. Maia Campos, Mirela D. Gianeti, Gisele M. S. Gonçalves, Lorena R. Gaspar, Assessment of in vitro antioxidant and in vivo anti-ageing effects of cosmetic products containing vitamin C and its derivatives on human skin, Presentation at the ISCC in Florence 2005. **

The objective of this study was to determine the *in vitro* antioxidant activity of vitamin C (AA) and its derivatives, magnesium ascorbyl phosphate (MAP), ascorbyl tetra-isopalmitate (ATIP) as well as their *in vivo* anti-ageing effects by using Cutaneous Bioengineering Techniques on human skin. The study of antioxidant activity *in vitro* was made with an aqueous and a lipid system, the luminol-chemiluminescence, and malondialdehyde assay, respectively.

*Sungyeon Ahn, Jihyun Bae, Seunghun Kim, Haekwang Lee, Seongjoon Moon, Ihseop Chang, Oksub Lee, CORRELAT ION BETWEEN CUTOMETER® AND QUANTITATIVE EVALUATION USING MOIRE TOPOGRAPHY IN AGE-RELATED SKIN ELASTICITY, Presentation at the ISCC in Florence 2005. **

As aging occurs, our skin gets more wrinkles, becomes drier and loses its elasticity. Validating the evaluation of skin elasticity is especially important, because it is not as visible as other signs of aging such

as wrinkles. Here, we identified the correlation between age and the parameters given by Cutometer®, and we present the parameters of that reflect the decreases in skin elasticity in terms of ages. (U_r/U_f , U_a/U_f , U_r/U_e , U_a , $r = -0.687 \sim -0.725$). Also we developed an evaluation method to quantify the sensory value of viewing. A five-grade standard of Moire topographic photo scale on face was prepared using sensory evaluation of 20 to 61 year-old women.

Paola Granata , Roberto Maffei Facino , Adriano Ghirardini , Enzo Berardesca , Grazia Primavera , Manuela Carrera, **TYROSYL-HISTIDINE DIPEPTIDE: A NEW APPROACH AGAINST PREMATURE AGING**, Presentation at the ISCC 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.

Katsuhiko Yagi, Katsuki Ogawa, Tetsuya Kanemaru, Kyoko Joichi, Naomi Kunizawa, and Ruriko Takano, **OPTICAL REJUVENATING MAKEUP USING AN INNOVATIVE SHAPECONTROLLED HYBRID POWDER**, Presentation on the IFSCC in Florence 2005. *

For women, the sagging on the face skin that is noticed with aging is one of the important problems that should be solved. Although conventional cosmetics that can prevent sagging are only skin-care products, no makeup cosmetics that can correct the appearance of sagging have been developed. The vital factors of an optical rejuvenating makeup were found to recover the skin tension and to lighten up the face shadow appeared on the sagging skin. Therefore, the hybrid powder consisting platy barium sulfate on the surface of titanium dioxide coated mica having red interference light was developed. The panel test resulted that almost all panels could realize the rejuvenating effect of the foundation containing the powder. The image analysis showed that the finishing of the foundation was 12-years-younger than no makeup face.

Jin-Hui Kim, Gwan-Sub Sim, Jin-Hwa Kim, Dong-Hwan Lee, Young-Ho Cho, Bum-Chun Lee, Hyeong-Bae Pyo, **Effects of *Draconis sanguis* on antioxidant and MMP-1 expression in human dermal fibroblast**, Presentation on the IFSCC in Florence 2005. *

UV irradiation stimulates the production of free radicals and reactive oxygen species (ROS) and overexpression of matrix metalloproteinases (MMPs) in the human skin. These cause various types of cell damages and destruction of connective proteins such as collagen in the skin. In order to develop new anti-photoaging agents, we examined the antioxidant activity and the inhibitory effect of MMP-1 (collagenase) with the extracts of oriental herbs.

F. Distante , V. Pagani , B. Green , A. Bonfigli , J. W. Fluhr, **OBJECTIVE EVALUATION OF PLACEBO EFFECT IN COSMETIC TREATMENT**, Presentation on the IFSCC in Florence 2005. *

Product's packaging and efficacy claims may stimulate pleasant emotions during cosmetics' use thus enhancing their perceived benefits. Aim of the study: To objectively evaluate the influence of packaging

and strongly claimed attributes on cosmetic efficacy both by non-invasive bioengineering techniques and by self-assessment. The selected cosmetic product was a marketed antiaging gluconolactone-based formulation. The packaging was either a fancy refined jar or an unbranded plain container.

Sonnen-Apotheke, Kötzing, 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.

A. O. Barel, K. Henau, P. Clarys, In vitro calibration and validation of the reviscometer using silicone polymers as simple skin model systems, Presentation on the ISBS Meeting 2005 in Philadelphia, USA, abstract.

In vitro determination of the mechanical properties and isotropy of various polymers used as skin model systems can be determined using the shear wave propagation method. The Reviscometer (Courage-Khazaka, Cologn, Germany) measures the resonance running time (RTT) between 2 sensors which are placed with constant pressure on the surface of the material. The RTT times are expressed in arbitrary units related to time.

P. Clarys, K. Henau, A.O. Barel, Investigation of intrinsic and photoaging of human skin using the reviscometer and the cutometer, Presentation on the ISBS Meeting 2005 in Philadelphia, USA, abstract.

In vivo and mechanical isotropy/ anisotropy properties of the skin can be determined using the shear wave propagation method (Reviscometer, Courage-Khazaka). The wave travelling time from transmitter to receiver (Resonance Running Time, RTT), expressed in arbitrary time units, is inversely proportional to the stiffness of the skin.

M. Jouandeaud, C. Lenaers, S. Mazalrey, J. Dorotyn, B. Closs, Synthesis capacities of human fibroblasts compared to those of fibroblasts from striae, Presentation on the ISBS Meeting 2005 in Philadelphia, USA, abstract.

The deterioration of the fibril network of the skin is due mainly to aging and other types of modifications such as hormonal modifications. One of the problems often encountered as a result of a modification of the skin fibrous network is striation.

D. Schmid, F. Suter, F. Züllli, Soothing Factor from Opuntia Cactus for Sensitive Skin, SÖFW-Journal 11-2005, pp. 14-18.

Sensitive skin tends to be more susceptible to some environmental factors. People with sensitive skin report exaggerated reactions such as redness, itching or rashes when their skin is in contact with certain cosmetics, plants or fabrics, hot or cold, or insect bites. Normally, people with sensitive skin show quicker an erythematous reaction against ultraviolet irradiation.

H. Dobrev, The Effects of topically applied Matrixyl, natural grape seed and avocado oils on skin surface, hydration and elasticity, EADV, May 2005, Sofia, Bulgaria (abstract). *

Background: Matrixyl is a lipophilic pentapeptide that stimulates the collagen synthesis by fibroblasts in the skin. The grape seed extract is rich in flavonoids which are powerful antioxidants. Avocado oil consists predominantly of unsaturated fatty acid glycerides, vitamins and minerals, and has good emollient properties.

L. K. Smalls, R. R. Wickett, M. O. Visscher, Effect of dermal thickness, tissue composition, and body site on skin biomechanical properties, Skin Research & Technology 2006, 12, pp. 43-49. *

The epidermis, the fibrous collagen and elastin network of the dermis, and the hypodermis give rise to the biomechanical properties of the skin. Measurements of these properties have been used extensively to evaluate treatments for the repair of facial actinic damage and the effects of aging and to assess the effectiveness of facial resurfacing treatments (1-3).

F. Khatyr, C. Imberdis, D. Varchon, J.-M. Lagarde, G. Josse, Measurement of the mechanical properties of the skin using the suction test, Skin Research & Technology 2006, 12, pp. 24-31. *

The mechanical behaviour of skin in vivo is both viscoelastic (1,2) and anisotropic (3-5). Currently, the suction test is the only real test that is in use in both research laboratories and dermatology departments. This is mainly because of the availability on the market of perfectly operational apparatuses such as the Dermaflex A (Cortex Technology, Hadsund, Denmark) (6) and in particular the Cutometer SEM575 (Courage Khazaka, Köln, Germany) (7).

F. Guillaumie, B. M. Malle, K. Schwach-Abdellaoui, T. C. Beck, A New Sodium Hyaluronate for Skin Moisturization and Antiaging, Cosmetics & Toiletries Vol. 121, No. 4, April 2006, pp. 51-58.

In response to growing concerns about animal-derived sources for hyaluronic acid, some researchers have turned to biotech methods to produce this skin moisturizing agent.

H. Dobrev, Evaluation of the efficacy of a Rooibos Extract containing anti-wrinkle cream, EADV, May 2005, Sofia, Bulgaria (abstract and poster). *

Background: Rooibos plant possesses scientifically proven anti-oxidative, anti-allergic, anti-microbial and anti-inflammatory features. Aim: To evaluate the efficacy of a Rooibos extract containing cream on aged facial skin using in vivo skin bioengineering techniques.

S. Tamburic, Effects of Polymer Entrapment of Prunus Spinosa Fruit extract on its cosmetic efficacy, Journal of Applied Cosmetology, vol. 24, number 2, April/June 2006, pp. 1-14.

The aim of this paper was to find out whether the entrapment of herbal extract into polymeric "reservoir" systems affects its skin efficacy.

C. Lenaers, M. Dana, M. Pinel, B. Closs, Immediate and long-lasting skin tightening, Personal Care, Sept. 2006, pp. 65-67.

The use of tensor active ingredients in anti-age care products is well-known to provide the users with immediate and visible effects. Nevertheless, these tensor active ingredients provide only mechanical effects on the skin surface that are also short-term effects.

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

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

D. Schmid, C. Schürch, F. Züllli, Mycosporine-like Amino Acids from Red Algae Protect against Premature Skin-Aging, Euro Cosmetics 9-2006, pp. 18-22.

Normal skin aging is accompanied by slow and continuous structural, functional, and metabolic changes in the skin. Such changes are greatly accelerated when the skin is exposed to solar UV radiation. The solar UV spectrum which reaches the earth's surface has been divided into UVB (290 – 320 nm) and UVA (320 – 400nm).

*C. Lenaers, D. Boudier, Ch. Chauprade, D. Rondeau, B. Closs, **Wrinkle Reduction by Stimulation of the Skin's Mechanical Resistance***, *Cosmetics & Toiletries*, Vol. 121, No. 11/Nov. 2006, pp. 47-56.

Wrinkles are a symptom of structural failure in the dermis. They indicate that the skin is losing its ability to support its own weight, and that fibroblasts in the dermis are losing their capacity to attach to collagen fibers and transmit mechanical information.

*L. Rigano, C. Andolfatto, **Antiaging Effects of a Skin Repair Active Principle***, *Cosmetics & Toiletries*, Vol. 121, No. 11/Nov. 2006, pp. 57-64.

Sodium DNA is an ingredient with activity at the cellular level. This fact has led to its incorporation in numerous high-end antiaging skin care products. An explanation of that activity and results of several tests of one sodium DNA material are presented in this article.

*Hristo Dobrev, **In vivo study of skin mechanical properties in Raynaud's phenomenon***, *Skin research and Technology* 2007, pp. 91-94.

Raynaud's phenomenon (RP) is usually the first symptom in patients with systemic sclerosis (SS) and may precede skin changes by several months or years. Non-invasive measurements of skin elasticity are very sensitive and appropriate for objective and quantitative evaluation of sclerodermatous skin.

*Andre Rougier, Sophie Seite, **Clinical efficacy of topically applied vitamin C associated with madecassoside on skin aging***, AB28 J AM ACAD DERMATOL

Cutaneous aging is a complex biological process that affects the different compartments of the skin. In sun-exposed areas, skin aging is caused by two distinct processes: chronological aging and sun-induced actinic damage, called photoaging. We have previously demonstrated in vivo, the beneficial effect of topically applied vitamin C in the treatment of skin aging.

*Jonathan Crowther, Paul Matts, Jennifer Jarvis, **Quantification of body skin aging requires measuring multiple parameters***, AB29 J AM ACAD DERMATOL

Background: Changes in skin with increasing age result in alteration of its physical and chemical characteristics. In areas of the body where skin is subjected to mechanical stress from repeated bending (knees, elbows) or to environmental stressors, such as repeated exposure to UV radiation (hands, décolletage), these differences may become more obviously expressed.

*Tilmann Reuther, Ammal Atwan, Martina Kerscher, **Evaluation of skin elasticity using an approach with repeated deformation of the skin***, AB15 J AM ACAD DERMATOL

One prominent feature of aged skin is the decreased capability of relaxation in particular after repeated deformation. Measuring of this phenomenon appears to be an interesting approach for assessing skin aging. However, comparatively little data dealing with this topic is available. Therefore the aim of the present study is to evaluate skin elasticity after repeated deformation as a measure of skin aging with respect to age and skin thickness.

Rungisima Wanitphakdeedecha, Woraphong Manuskiatti, Sasima Eimpunth, Sadwalak Hunnangkul,

The effects of single application of mucopolysaccharide polysulphate (MPS), AB96 J AM ACAD DERMATOL

To study the efficacy on the skin hydration of mucopolysaccharide polysulphate (MPS) 0,1% after single application. Twenty female volunteers aged 30 to 45 years with dry skin, defined by the corneometer, were recruited to the study. All subjects were asked to apply 2 g of MPS cream on a selected forearm.

Rungisima Wanitphakdeedecha, Woraphong Manuskiatti, Sasima Eimpunth, Sadwalak Hunnangkul,
The effects of mucopolysaccharide polysulphate (MPS) on the hydration and elasticity of human skin), AB95 J AM ACAD

To study the efficacy of mucopolysaccharide polysulphate (MPS) in hydration and elasticity of human skin. Methods: Sixty female volunteers aged 30 to 45 years with dry skin, defined by the corneometer, were recruited to the study. The volunteers were randomly treated with MPS and placebo.

Toni Miller, Sonia Batra, Jose Ramirez, **Evaluation of the effect of a Novel Bi-Mineral Complex on photoexposed periorbital skin,** AB32 J AM ACAD

The elasticity of the skin is attributable to elastic fibers that can stretch and then recoil. The elastic fibers contain elastin – a large protein synthesized by dermal fibroblasts that forms spiral filaments comparable to springs. The spiral filaments are crosslinked together and, when the skin is stretched, this crosslinking enables the spiral filaments to spring back to their original positions.

Fernanda Distante, Valerie Pagani, Adriana Bonifigli, Luigi Rigano, Joachim Fluhr, **Objective evaluation of the placebo effect in cosmetic treatments. A randomized controlled study,** IFSCC Magazine – vol. 9, no 3/2006

A product's packaging and claimed efficacy may stimulate pleasant emotions during the use of cosmetics, thus enhancing their perceived benefits. The aim of this study was to evaluate if smart packaging and strongly claimed efficacy attributes can influence the objectively measured efficacy, allowing a true placebo effect to be associated with a given cosmetic treatment

Reto Muggli, **Systemic Evening Primrose Oil for Irritated Skin Care,** Cosmetics & Toiletries magazine, Vol. 122, No. 2/February 2007

Dry skin is a common complaint from men and women alike and its incidence and severity increase with age. This condition is the result of an impaired barrier function, increased transepidermal water loss (TEWL) and a significantly lower level of ceramides in the horny layer that causes the skin to lose an excessive amount of water.

Kazue Tsukahara, Mitsuyuki Hotta, Tsutomu Fujimura, Keiichi Haketa, Takashi Kitahara, **Effect of room humidity on the formation of fine wrinkles in the facial skin of Japanese,** Skin Research and Technology 2007, 13, pp. 184 – 188

Changes in humidity are commonly known to influence the condition of the skin. Previous studies of the skin dealt with variations in relative humidity (RH) either through statistical analysis or by maintaining room humidity at a constant level; however, the range of humidity and the length of acclimation varied in each study.

Laurence Ambroisine, Khaled Ezzedine, Anissa Elfakir, Sophie Gardinier, Julie Latreille, Emmanuelle Mauger, Michel Tenenhaus, Christiane Guinot, Relationships between visual and tactile features and biophysical parameters in human facial skin, Skin Research and Technology 2007; 13: pp. 176 – 183

Skin properties, such as colour, hydration and texture, can be studied on a qualitative basis by a clinical assessment or on a quantitative basis using techniques that measure biophysical properties of the skin. The aim of this study was to explore the links between facial skin features and a range of skin biophysical parameters using multivariate methods.

Dr. Horst Frank, Dr. E. Schubert, Dr. H. Konrad, Dr. A. Eggert, Biokybernetik - ein sanfter Weg zur Gewebestraffung und Körperformung, Ästhetische Dermatologie 2/2007, pp. 44 – 47

Dysformien, Alterungsprozesse, Schönheit und ewige Jugend. Die Angst des Menschen vor dem Altern ist sicherlich der wichtigste Beweggrund, „forever young“ zu sein. Daran hat sich über die Jahrhunderte nichts geändert. Das heute vorherrschende gesteigerte Körperbewußtsein in Verbindung mit einer erfreulich gesteigerten Lebenserwartung und einer bis ins hohe Alter erhaltenen körperlichen und geistigen Fitness lassen diesen Wunsch jedoch immer mächtiger werden.

Kunio Shimada, Koji Awai, Hirofumi Irie, Ceramide Polymer improves skin texture, Personal Care, May 2007, pp. 47-50

Anti-ageing cosmetics are increasingly demanded today. Many consumers, especially women, care about keeping their skin young by controlling wrinkles and freckles and keeping their skin soft, firm, smooth and beautifully white. Ingredients for controlling the ageing of the skin are demanded and are actively studied.

Kazue Tsukahara, Mitsuyuki Hotta, Tsutomu Fujimura, Keiichi Haketa, Takashi Kitahara, Effect of room humidity on the formation of fine wrinkles in the facial skin of Japanese, Skin Research and Technology 2007; 13; pp. 184-188

Changes in humidity are commonly known to influence the condition of the skin. Previous studies of the skin dealt with variations in relative humidity (RH) either through statistical analysis or by maintaining room humidity at a constant level: however, the range of humidity and the length of acclimation varied in each study.

Isaak Wontroba, Der Einfluss von linear polarisiertem Licht auf Hauttemperatur, Hautwasserabgabe und sudomotorische Aktivität, Digitale Dissertation FU Berlin, pp. 1-37

Zur Untersuchung, welche Auswirkungen inkohärentes polarisiertes Licht (VIP = visible incoherent polarized light) auf die menschliche Haut zeigt, sind in unterschiedlichen Messreihen an insgesamt 48 Probanden Veränderungen von Evaporation und Temperatur über der Haut des Unterschenkels in einem Messzylinder (Tewameter) untersucht worden. Verwendet wurde eine im Rahmen der VIP-Lichttherapie eingesetzte Lichtquelle der Firma Bioptron.

Farina Hashmi, James Malone-Lee, Measurement of skin elasticity on the foot, Skin Research and Technology 2007; 13, pp. 252-258

The Cutometer 580 MPA is a device that is designed to measure the viscoelastic properties of skin in response to the application of negative pressure. The aim of this study was to test the Cutometer 580 MPA for the repeatable, quantitative measurement of the specific indices of elasticity of pedal skin.

Sungyeon Ahn, Seunghun Kim, Haekwang Lee, Seongjoon Moon, Ihseop Chang, Correlation between a Cutometer and quantitative evaluation using Moire topography in age-related skin elasticity, Skin Research and Technology 2007; 13; pp. 280-284

As aging occurs, our skin gets more wrinkles, becomes drier and loses its elasticity. Validating the evaluation of skin elasticity is especially important, because it is not as visible as other signs of aging such as wrinkles. So it is needed that the method for measuring skin elasticity is able to reflect perception about the change of the skin state.

Gabriele Betz, University of Basel, Institute of Pharmaceutical Technology, Basel Switzerland, In Vivo Comparison of Various Liposomal Formulations for Cosmetic Application, IcoS, June 2007, Istanbul Türkiye, pp. 14-16

Liposomal formulations have been used for skin moisturization, due to the occlusive effect of a phospholipid film deposited on the skin surface. Furthermore, interactions between liposomal lipids and Stratum corneum lipids may affect positively the structure of the Stratum corneum. Phospholipids themselves are hygroscopic and bind water.

C. Orlandi, R. Loubies, S. Baeza, C. Reyes, X. Worstman, Clinical Experience of the Treatment with Pro-Xylane TM, Isobioline TM and Phytocomplex TM on Chilean Women with Hormonal Aging, 21st World Congress of Dermatology, Buenos Aires, Argentina

An open and prospective study was performed in order to evaluate the action of a formulation with pro-xylane, isobioline and phyto-Complex in 59 patients with hormonal aging during a period of twelve weeks. An open and prospective study was performed in 59 patients, between 50 and 65 years of age (average 55 years old), with hormonal aging in order to evaluate the action of a formulation with –xylane, isobioline and phyto-complex.

P. Msika, S. Bredif, S. Garnier, J. Legrand, Oligosaccharidic and Peptidic Extract from Maca Root: A new Cell Energizer With Clinical Anti-Aging Properties, 21st World Congress of Dermatology, Buenos Aires, Argentina

Purpose of the study: Maca (*Lepidium meyenii*) was an integral part of the diet and commerce of residents of Andes region. The Incas found maca root so potent that they restricted Maca use to their Royalty. Now days, maca powder is used worldwide as nutraceutical ingredient. We have developed and patented an oligosaccharidic and peptidic extract obtained by a biotechnological process from maca flour.

C. Oresajo, M. Yatskayer, H. Fares, T. Stephens, I. Hansenne, A Twelve-Week, Clinical Evaluation of the Skin Firming Benefits of a Topical Product Containing Hyaluronic Acid and Oligo Peptides on the Face, Neck, Upper Chest and Hands, 21st World Congress of Dermatology, Buenos Aires, Argentina

Purpose of the study: The objective of this study was to assess the efficacy and safety of a test product on subjects with mild to moderate photodamage on the face, neck, upper chest and hands. Methods: 69 female volunteers between the ages 35 to 65 years with mild to moderate photodamage on the face and hands (scores 3-8 on a 10cm scale) were enrolled in 12-week single-center study.

S. Cho, DH. Lee, CH Won, S. Lee, MJ Lee, JH Chung, A Randomized, Double-Blind Clinical Trial on the Clinical Efficacy of Oral Supplementation with Chlorophyll Extracts on Skin Aging, 21st World Congress of Dermatology, Buenos Aires, Argentina, 2007

Chlorophyll, a polyene photoreceptor of plants, is known to have anti-inflammatory effects. Though its beneficial roles on aged skin were reported, there have been few systematic studies. The aim of this study is to evaluate the efficacy and tolerability of dietary chlorophyll extract supplementation on aging skin.

Thirty healthy females (aged more than 45) were randomised to take low-dose or high-dose dietary supplementation containing chlorophyll extracts for 12 weeks

Arturo Puig, Jos´w Maria Garca Anton, Montserrat Manges **A new Decorin-like Tetrapeptide for Optimal Organization of Collagen Fibers**, IFSCC Magazine – vol. 10, no 4/2007

Decorin interacts with collagen via its protein core and influences collagen fibrillogenesis, thus regulating excessive bundle-like aggregation of collagen. As skin ages, there is a lack of functional decorin which results in disrupted collagen fibers and a reduction in the tensile strength of the skin. Therefore, a substitute for decorin would make up for the non-functional decorin that is present as we age

Christian Oresjo, Margarita Yatskayer, Angelike Galdi, Nathan S. Trookman, et al. **Multi-Center, Clinical Evaluation of a Broad Spectrum Sunscreen Moisturizer Containing a new Photostable UVA/UVB Complex for Treatment of Photodamaged Facial Skin**, www.lorealusa.com; Poster

Photoaging is the result of chronic cumulative exposure to UV radiation. UVB radiation changes throughout the year and according to location, whereas UVA radiation is less variable. UVA rays are lower in energy than UVB, however they are twenty times more abundant. Efficient and stable broad spectrum protection is therefore needed year round for adequate protection against photoaging.

Viele Blender – Gesichtscremes mit UV-Schutz. Auf den Lichtschutz in Gesichtscremes kann man sich oft nicht verlassen. Sieben Produkte sind deshalb „mangelhaft“ und nur drei insgesamt „gut“.
Test 1/2008, pp. 28 - 31

Eine gute Gesichtscrème soll die Haut in erster Linie mit zusätzlicher Feuchtigkeit versorgen, damit sie frisch, glatt und gesund bleibt. Der Trend geht allerdings dahin, diese Cremes mit Lichtschutzfiltern anzureichern, um die Haut vor vorzeitiger Alterung und Fältchenbildung zu schützen. Ein Ansatz, den viele Hautärzte unterstützen.

Small Proteoglycans in the skin: New Targets in the fight against skin aging
Gilles Pauly, Jean-Luc Contet-Andonneau, Philippe Thoussou, tous Donoux et al.

Datum Unbekannt

Proteoglycans take an important part in tissue homeostasis. In the skin, Proteoglycans are present in the extracellular matrix of dermis, particularly with lumican which plays an important role in dermal homeostasis. In the epidermis, several small proteoglycans such as the syndecans are synthesised and play an important role in keratinocyte activation.

Influence of age and regional differences on skin elasticity as measured by the Cutometer

Skin research and technology, vol. 14 / 2008

The medical properties of the skin are due to the thickness and quantitative properties of the epidermis, dermis and subcutis. During aging, quantitative and qualitative changes occur in the skin. Loss of elasticity, reduction in the epidermal thickness and collagen content, increased wrinkling and pigment lesions

Was können Kosmetika leisten?

Beautyforum 05 / 2008

Messung der Hautelastizität; Ein wichtiges Kapitel sind Problemhäute, die aus Barriere- und Verhornungsstörungen resultieren. In diesen Fällen bietet hinsichtlich der Wirkstoffe und Transportsysteme

die Korneotherapie von Prof. A Klingman gute Ansatzpunkte (s. auch *Ästhetische Dermatologie* 2007 (3), 8-16)

Cosmetic effectiveness of topically applied hydrolysed keratin peptides and lipids derived from wool

Skin and Research Technology Vol14, No.2 May 2008

Wool is primarily (ca. 85%-95%) composed of keratin proteins that combine to give it desirable properties such as strength, insolubility and moisture regain. Different classes of keratin proteins are represented in the complex macromolecular structure, each of which has specific functions and characteristics. Protein hydrolysates from various sources have long been used in skin and hair personal care products and are known to confer improved compatibility, feel moisturisation and help maintain the natural structure...

THE EFFECTS OF TOPICALLY APPLIED MATRIXYL, NATURAL GRAPE SEED AND AVOCADO OILS ON SKIN SURFACE, HYDRATION AND ELASTICITY

H. Dobrev

Department of Dermatology, Medical University, Plovdiv, Bulgaria

Background: Matrixyl is a lipophilic pentapeptide that stimulates the collagen synthesis by fibroblasts in the skin. The grape seed extract is rich in flavonoids which are powerful antioxidants. Avocado oil consists predominantly of unsaturated fatty acid glycerides, vitamins and minerals, and has good emollient properties.

Correlating Age and Quantifying Product Efficacy on Human Skin Using Novel Viscoelastic Parameters

Di Qu , Jesse Leverett , o. Freis , M. Sabadotto , G. Paul Seehra , John Scimeca , Bill Luke , G. Pauly , A. Rathjens

Biological age and anti-aging product efficacy were evaluated in human skin *in vivo* using novel viscoelastic parameters. The Cutometer SEM 575 (CK Electronics) was employed to collect the mechanical responses of the skin. Measurements were conducted on the inner forearm skin of sixty-nine healthy female volunteers age 18 to 60 years. Cutometer data were then analyzed using an automated technique of inflection point and area analysis to obtain novel viscoelastic parameters termed total viscoelastic recovery (R/R), elastic recovery (R/R), and "viscous" recovery (R/R). Our results showed strong correlation of age with two skin viscoelastic parameters – viscoelastic and elastic recovery. Age did not seem to affect the viscous component although a slight declining trend was observed.

Standard curves were constructed based on those parameters to provide linear age –elasticity functions for quantification of product efficacy. A 6 week anti-aging product efficacy trial was then conducted on 30 volunteers to evaluate the biomechanical properties of skin. At the end of the trial, significant improvement in viscoelastic and elastic parameters were observed when compared to baseline. Average elastic improvement at 6 weeks corresponded to approximately a 15-year shift using our previously characterized standard curves relating skin viscoelasticity and age.

A nonlinear elastic behavior to identify the mechanical Parameters of Human skin *in vivo*; A. Delalleau, G. Josse , J.-M. Lagarde , H. Zahouani and J.-M. Bergheau; *Skin Research and Technology* 2008 ;14

Background/purpose: Various analyses have been performed to identify the mechanical properties of the human skin tissue *in vivo*. They generally use different approaches and hypotheses (behavior laws as well as mechanical tests) and the obtained results are consequently difficult to analyze and compare.

In this paper, an inverse method that can be adapted to any kind of mechanical test and behavior law is presented.

Use of Cutometer to Assess Skin Water Content, Daniela BL Terci, Douglas Terci, Diogo Terci, Adriano Pinheiro, *ifsc Barcelona 2008*

Assessing the skin water content (skin hydration) is one of the first and most important measurements to test the efficacy of cosmetics on the skin surface. The quantity of literature worldwide dealing with this subject indicates the significance of this measurement.

Development of Thermotropic Gel Patch Technology improving skin moisture and resilience physiochemically : An innovative skin shielding and drug-delivering challenger;

Tae Hwa Jeong¹, Kwan Young Jeong¹, Sang Keun Han¹, Seong Jong Lee¹, Seh Hoon Kang¹ and Seong Geun Oh; *Ifsc Barcelona 2008*

Sol-Gel transition has been vigorously investigated in various chemical synthesis to manufacture powders, polymers, and encapsulating materials. Starting from pharmaceutical industries, Sol-Gel transition and its applications have been focused to enhance the time-releasing patterns of drugs such as insulin and to maintain their effective periods much longer than conventional methods. Therefore, many researchers in pharmaceutical fields have paid their attention to develop bio-compatible polymers which show Sol-Gel transitions to be transformed nearby human's body temperature, as well as bio-degradable ones.

Development of a noble solid lipid emulsion technology using silicone-based waxes and its cosmetic applications improving instant skin resilience and skin protection. Sang Jun Kim¹, Tae Hwa Jeong¹, Eun Ah Ko¹, Seh Hoon Kang¹, Kwan Young Jeong¹, Sang-Keun Han¹, Seong Jong Lee¹ and Seong Geun Oh; *Ifsc Barcelona 2008*

Recently, women make more effort for their beauty. Because the entry of women in public affairs has been extended. And their appearances can affect their social images. Moreover, many skin problems are caused by the stress of social activities and environmental problems. Especially, the problems with skin aging are appearing a lot by the increase in UV exposure. In these situations, many cosmetics for anti-aging are gaining popularity. The wax formulations of cosmetics are effective on skin protection and moisturization.

In Vivo Assessment Of Ectoin: A Randomized, Placebo-Controlled Clinical Trial;

Heinrich U, Garbe B, Tronnier H.; *Ifsc Barcelona 2008*;

The objective of this study was to determine the anti-aging properties of Ectoin with special regard to its compatibility and efficacy. For this purpose 104 voluntary female participants were included in a monocentric, randomized, double-blind application test. Moisturizing properties, skin surface structure and skin elasticity were tested, comparing Ectoin (2%: Treatment B) to a reference emulsion (Treatment A) versus an untreated control. None of all treated participants showed side effects during the study. The gained results of this study display that the natural cell protection concept of Ectoin is transferable to skin care.

Advanced Glycation End Products Crosslinks Breaker: A New Approach for Improvement of Aged Skin; Akihiro Tada, Akiko Kanamaru, Midori Oyobikawa, Tetsuo Maeda, Hiroshi Oshima; *Ifsc Barcelona 2008*

The reaction between proteins and glucose was first reported by Maillard [1], who observed, while cooking food, glucose and other reducing sugars reacting with protein amino acids to form adducts that

after dehydration and rearrangement became stable brown pigments. This reaction between reducing sugar and proteins has been named non-enzymatic glycation. These glycation products undergo further complex reactions to become irreversibly cross-linked, forming a broad range of heterogeneous fluorescent and yellow-brown products called advanced glycation end products (AGEs).

Biotechnological Process For The Synthesis Of Omega 9 Compound For Enhancement Of Anti-elastase Activity With Firmness And Restructuring Efficacy; *Lucie Couturier, Florent Yvergnaux ; Ifscc Barcelona 2008*

Inhibition of human neutrophil elastase is an important target due to the enzyme's involvement in tissue destruction of a number of skin disease states [1]. Elastase itself cleaves collagens, as well as elastin and other proteins with important biological functions. A variety of different types of inhibitors and inhibitor formulations have been devised for treatment of these targets [2,3]. Oleic acid is a highly selective non-toxic inhibitor of elastase. To enhance the vectorization of Omega 9 into the skin, especially in the dermis where elastase acts, Omega 9 type compound has been synthesised through a biotechnological process, miming a structural lipid analogue of the skin.

Bi-Functional Study of Ion Calcium in the Skin

Silvia H.Pérez Damonte1, Claudia Liliana Selem, Claudia Groisman; 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.

Hagen Tronnier, Mathilde Wiebusch, Ulrike Heinrich; **Skin-Physiological Test in Weightlessness in the ISS Space Station;** *IFSCC Magazine – vol. 11, no 3/2008*

A prolonged stay in weightlessness includes several medical alterations of the human body and also results in impairment of the skin. The stratum corneum, epidermal barrier as well as other skin compartments are affected in terms of their susceptibility to dryness, desquamation and pruritus. This can lead, for example, to wound healing disorders. Skin physiological tests were performed on the skin of an astronaut during and after the the ASTROLAB-Mission within the Skin Care program initiated by the ESA.

H. Tronnier, M. Wiebusch, U. Heinrich; **Change in Skin Physiological Parameters in Space - Report on and Results of the First Study on Man;** *Skin Pharmacol Physiol 2008;21: S.283-292*

Astronauts often show skin reactions in space. Systematic tests, e.g. with noninvasive skin physiological test methods, have not yet been done. In an interdisciplinary cooperation, a test series with skin physiological measurements was carried out before, during and after a long-term mission in the International Space Station. The hydration of the stratum corneum (Corneometer), transepidermal water loss (Tewameter), and the surface structure of the skin (SkinVisiometer) were measured. In order to record cutaneous states, the suction elasticity was measured (Cutometer), and an ultrasound measurement with 20 MHz (DermaScan) was also made. In addition, one measuring field of the two inner forearms was treated with a skin care emulsion. There were indications of a delayed epidermal proliferation of the cells, which would correspond to the clinical symptoms. Hydration and TEWL values are improved by respective skin care. On the cutaneous level, the elasticity measurements and the ultrasound picture showed results which correspond to a significant loss of elasticity of the skin. Further examinations are necessary to validate these preliminary results.

M. Paye, S. Mac-Mary, A. Elkhyat, C. Tarrit, P. Mermet, P.H. Humbert; Use of the Reviscometer for measuring cosmetics-induced skin surface effects; Skin Research and Technology 2007; 13; pp. 343-349

The Reviscometer RVM 600 that measures resonance running time (RRT) has been shown to be inversely related to the skin stiffness. However, very few publications describe the use of this instrument for testing the effect of cosmetic products. Slight xerotic skin condition was induced by using an alkaline soap for 1 week. Skin has then been rehydrated with a lotion or further dehydrated and dried with sodium lauryl sulfate.

Hagen Tronnier, Mathilde Wiebusch, Ulrike Heinrich; First Skin-Physiological Tests in Weightlessness in the ISS Space Station; IFSCC Magazin – vol. 11, no 3/2008

A prolonged stay in weightlessness induces several medical alterations of the human body and also results in impairment of the skin. The stratum corneum, epidermal barrier as well as other skin compartments are affected in terms of their susceptibility to dryness, desquamation and pruritus. This can lead, for example, to wound healing disorders. Skin physiological tests were performed on the skin of an astronaut during the ASTROLAB-Mission within the Skin Care program initiated by the ESA. The skin was analysed before, partly during and after the mission. In addition, the tests were repeated after one year.

BASF Beauty Care Solutions; Lys'lastine, the face designer; Cosmetics & Toiletries 9/2008, vol.123, no 9;

Major discoveries about elastin.

Elastin naturally brings to mind the skin's youthful appearance and level of elasticity, both of which are symbolic values that make this molecule a choice ingredient in anti-age strategies.

Nevertheless, the real scientific aspects of elastin are surprisingly not very well known including information about its structure, its function, and aging process.

del Pozo A¹, Solans M¹, Fernandez C¹, Dolz M², Corrias F³, Herráez M³, Díez-Sales O.; Efficacy evaluation and characterization of chitosan nanoemulsions with Spirulina hydro-glycolic extract; Ifsc Barcelona 2008 (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 [1]. Lecithins (phosphatidylcholines) have been used in several studies as surfactants for topical nanoemulsion vehicles. These surfactants are able to form nanoemulsions without co-surfactants.

John Staton – Dermatest, Australia; Tools for anti-ageing claim support; Personal Care, Nov. 2008; S.19-22

Anti-ageing covers a substantially broad area of claims associated with both the prevention and the treatment of chronological and environmental effects on the condition of human skin. A large number of instrumentally based clinical methods are available for the substantiation of claims related to anti-ageing. This article describes the most common of these and considers only those which are essentially non-invasive.

J. Vokurkova, H. Buckova, P. Sin; **FP1585 TREATMENT OF GIANT CONGENITAL MELANOCYTIC NEVI AND CUTOMETRIC MEASUREMENT OF THE SKIN VISCOELASTICITY AFTER REPEATED EXPANSIONS AND SURGERY;** Abstract; EADV Paris 09/2008

Introduction: All types of surgical procedures _ neonatal dermabrasion, partial excisions, expansion and reexpansion of skin flaps etc. are used in children with diagnosis a Giant Congenital Melanocytic Nevi. Scar maturation after a surgery and especially after a transfer of expanded flap has its biological rules. However, it differs in individual patients in as much as one year. For objective examination of scar maturity and evaluation of its elasticity, it is possible to apply measurement with the Cutometer device. According to the measurement results, an algorithm may be evaluated for individual surgical procedures and especially for the best timing of re-expansion or if to continue in dermabrasion method.

C. Huh, M. Choi, S. Lee, S. Kim, Y. Park, B. Kim, H. Park, S. Choi, S. Youn, K. Park; **FP0723 Low dose 1064nm Q-switched Nd:YAG laser for the treatment of melasma;** 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.

H. Tronnier, M. Wiebusch, U. Heinrich; **FP0374 SKIN PHYSIOLOGICAL PARAMETERS IN SPACE - RESULTS OF THE EUROPEAN LONG-TERM MISSION IN THE ISS (ASTROLAB);** Abstract; EADV Paris 09/2008;

Background: Since in weightlessness many astronauts report skin problems like dryness, itching, tendency to get injured, impaired wound healing etc., a "Skin Care" program was initiated for the ASTROLAB Mission of ESA (European Space Agency). It was carried out by a consortium with different tasks. Methods: In a non-invasive skin-physiological test program, the following measurements were recorded:

1. The effect of a skin care treatment and
2. Further effects of weightlessness on the skin.

A. Fourtanier, B. Ladan, C. Camus, N. Dami, V. Delvigne, R. Bazin, M. Hughes, A. Green; **COMPARISON OF FACIAL SKIN PARAMETERS IN CAUCASIAN AUSTRALIAN AND EUROPEAN WOMEN;** Abstract; EADV Paris 09/2008

The aim of this study was to compare two Caucasian female populations aged 40 to 69 years with very different lifestyles and cosmetic habits: one (n= 67) living in a temperate climate in Europe (Paris 55° N); the other (n= 80), living in subtropical Australia (Nambour, 26° S). Using a patented proprietary skin evaluation tool (Diagnô Expert®) in each location, we compared the skin properties of women classified into three age groups : 40 to 49, 50 to 59, 60 to 69. This tool combines several techniques including a capacitance method (Corneometer®) for hydration and a suction method (Cutometer®)for assessment of mechanical properties. The greatest wrinkle-depth , the intensity of the darkest pigmented spot (selected clinically) and sebaceous activity were measured on images acquired by camera with an adapted magnification (x10 and x60) and analyzed by a specific software.

V. Delvigne, C. Camus, M. Isono, G. Yang, M. Daveno, D. Amar2, B. Lavaud, C. Hoang Van Chu, V. Delvigne, R. Bazin; **FP0207 COMPARISON OF SKIN PROPERTIES IN VARIOUS POPULATIONS USING A NEW MULTI -CRITERIA MEASURING DEVICE;** Abstract; EADV Paris 09/2008;

Purpose of the study: To assess a new testing battery device for evaluating skin condition in relation to age and skin ethnicity and skin type.

Methods: Facial skin data have been recorded in female volunteers by the same operator in 5 different countries from December 2003 to April 2004. Study volunteers included various ethnic skin types i.e. caucasian (Paris, France), hispanic (Mexico city, Mexico), asian (Tokyo, Japan and Hong-Kong, China) and African American (Chicago, USA). At least one hundred women per city were involved and split into 4 natures of skin (normal, dry, oily and combined) and 5 age groups (20- 29 years, 30 - 39 years, 40 -49 years, 50 -59 years and over 60 years).

U. Heinrich, B. Garbe, H. Tronnier, W. Stahl, C. Moore, M. J. Arnaud; FP0324 SUPPLEMENTATION WITH GREEN TEA EXTRACT IMPROVES SKIN PHYSIOLOGICAL PARAMETERS; Abstract; EADV Paris 09/2008;

Background: The objective of the study was to determine changes in skin parameters during the intake of a beverage rich in green tea extract. The detection of hydration properties, transepidermal water loss (TEWL), changes of skin surface (SELS), skin elasticity, skin thickness and density as well as serum analyses were determined during the study.

Methods: Hydration measurements were carried out with the Corneometer CM 825 prior to and during the study. Transepidermal water loss (barrier function of the skin) was measured with the Tewameter, skin surface (SELS) with the Visioscan and skin elasticity with the Cutometer (Courage & Khazaka Electronics, Cologne, Germany).

R. M. Debowska, A. Dzwigalowska, M. Szubert, K. Rogiewicz, I. Eris, B. Pander; FP0313 EFFICACY EVALUATION OF RE-MODELLING FACE CARE PRODUCT; Abstract; EADV Paris 09/2008

Background: Skin ageing is an important and interesting topic of study. It results from the combination of intrinsic ageing and photoageing, which is due to the environmental influence. The cosmetic industry creates and develops for the ageing population constantly improving products.

Objectives: The aim of this study was to evaluate the in vivo efficacy and beneficial effects of application of the re-modelling face cream containing an anti-wrinkle peptide, vitamin E, proteins from sweet almonds and peach oil.

R. M. Debowska, B. Tyszczyk, J. Zielinska, K. Rogiewicz, I. Eris, B. Pander; FP0312 THE EFFECTS OF AN ANTI-AGEING BODY CARE PRODUCT, CONTAINING ANTI-WRINKLE PEPTIDE, REPAIRING ENZYMES AND PLANT WAXES; Abstract; EADV Paris 09/2008;

Background: Aging is an inevitable process which concerns every organ of our body, including the skin. Every day our skin is exposed to external factors. They influence the skin's condition and its appearance. Many women concern themselves mainly with the skin on the face and neck. However, they forget about the rest of their body skin, which undergoes aging as well and thus also needs suitable care.

Objectives: The aim of this study was to evaluate the in vivo efficacy and beneficial effects of application of the body cream containing an anti-wrinkle peptide, repair enzymes, and olive, bee, cocoa and mango wax.

Di Qu, Ph. D., Chris J. Masotti, and G. Paul Seehra, Ph. D.; Novel Cutometer Analysis for Evaluation of Skin Viscoelastic Properties/ Nouveaux Paramètres pour l'Évaluation des Propriétés Viscoélastiques de la Peau ; SFIC 2008 (Kongress in Monaco) (Poster, engl. + franz.);

Quantitative evaluation of biomechanical properties of human skin *in vivo* is the subject of continuous investigation [1,2]. The Cutometer (Courage & Khazaka) has been frequently used to measure the mechanical properties of skin. Conventionally with this instrument, skin viscoelastic properties are defined by many linear parameters (Uf, Ue, Uv, Ur, and Ua) from a typical mode 1 measurement of the Cutometer. The ratios of those U values, particularly Ue/Uf (overall elasticity), Ur/Uf (pure elasticity), and Ur/Ue

(elastic-viscous ratio), are frequently reported [3,4,5]. In our extensive studies using the Cutometer we have noticed significant variability of those U parameters leading to inconsistent results.

Luigi Rigano, Mauro Pleardo, Elena Pini et al; Novel Retinol-like Actives from Parrot Feathers; IFSCC magazine – vol. 11, no 4 / 2008

Several classes of pigments are responsible for coloration in birds. Melanin pigments most commonly appear in bird feathers and bare parts. They impart black, brown and chestnut hues. Carotenoids are a second group of coloring biochemicals in birds. These two types of pigment-based coloration are found in nearly every order of extant birds. In contrast, parrots harbor bright-colored pigments in their feathers, which have different structures.

G. Boyer, L. Laquière, A. Le Bot, S. Laquière, H. Zahouani ; Dynamic indentation on human skin in vivo : ageing effects; Skin Research and Technology 2009; 15, pp. 55-67

Knowledge of the mechanical properties of the human skin is very important for cosmetic and clinical research. Objective and quantitative measurements are essential to compare studies performed by different experimenters in different centres. The aim of this paper is to present a method to measure the viscoelastic properties of human skin in vivo dynamic indentation. A complete device to assess the stiffness and damping of skin has been developed.

C. Oresajo, M. Yatskayer, R. Rizer, S. Raab, Z. Draelos; A multicenter, controlled clinical study to evaluate the efficacy and tolerance of an antioxidant composition containing vitamin C, ferulic acid, and phloretin on photodamaged skin; JAAD, March 2009, San Francisco

The purpose of this study was to evaluate the effectiveness of an antioxidant composition containing vitamin C, ferulic acid, and phloretin in improving the visible signs of photodamaged skin. A 24-week, multicenter, clinical study of 55 females 35 to 65 years of age with self-perceived sensitive skin, mild to moderate periorcular fine and coarse wrinkles, and mild to moderate hyperpigmentation on the face and back of the hands were enrolled.

R. Wanitphakdeedecha, S. Eimpunth, W. Manuskiatti; The effects of tetrahydrocurcumin in curmin cream on the hydration, elasticity, and color of human skin; JAAD, March 2009, San Francisco

An antioxidant used in cosmetic applications should have the capability to efficiently quench free radicals on the surface of the skin. Tetrahydrocurcumin (THC) plays an important role in the antioxidant mechanism resulting in the significant neutralization of free radicals in a dose-dependent manner. Recent studies revealed the superior free radical scavenging ability of THC.

N. Trookman, E. ho, R. Ford, V. Gotz; Clinical efficacy and tolerance of a novel treatment serum for photodamaged facial skin; JAAD, March 2009, San Francisco

Oxidative damage induced by environmental factors, such as chronic ultraviolet exposure, contributes to the process of photoaging and results in the formation of biochemical events which leads to increased collagen degradation and the suppression of collagen synthesis. Clinical manifestations of photodamage include a loss of skin elasticity and firmness, fine lines and wrinkles, and uneven skin tone

G. Boyer, L. Laquière, A. Le Bot, S. Laquière, H. Zahouani ; Dynamic indentation on human skin in vivo : ageing effects ; Skin Research and Technology 2009, 15; pp. 55-67

Knowledge of the mechanical properties of the human skin is very important for cosmetic and clinical research. Objective and quantitative measurements are essential to compare studies performed by different experimenters in different centres. The aim of this paper is to present a method to measure the visco-elastic

properties of human skin in vivo using dynamic indentation. A complete device to assess the stiffness and damping of skin has been developed.

Motoko Murakami, Osamu Tanno, Hiroyuki Kurokawa; Evaluation of skin mechanical properties by determining of resonant frequency and loss resistance with tactile sensor; Skin Research and Technology No 1, Feb. 2009, pp. 125+126

To clarify the characteristics of resonance frequency change and loss resistance by determining the mechanical properties of skin with a tactile sensor (Venustron Axiom Incl, Japan), which is a device used to elucidate the mechanical characteristics of skin based on implementation of a resonance circuit and piezoelectric oscillator. Thwo different experiments were performed with 30 healthy Japanese males as subjects.

K. Miyamoto, O. Kuwanzuru, N.Yoshikawa; Sudden skin appearance change in skin aging, skin elasticity tipping model as a key indicator of the skin aging progression; Journal of investigative Dermatology (2009), Volume 129

Understanding bio-elasticity of human tissues is important to maintain human health and wellness including skin substrates against aging. It has been considered signs of skin aging are appeared gradually, while we discovered sudden skin condition change occurred in the aging process. A new skin elastic model was proposed as a new skin aging progression, by characterizing multilayered skin physical properties

Diana Khazaka, Christiane Uhl; More than 2 decades of bioengineering for efficacy testing and product recommendation; Household and Personal Care TODAY, n1/2009,

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.

Bernadette nedelee, Jose A. Correa, Grazyna Rachelska, Alecis Armour, Leo 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.

Bernadette nedelee, Jose A. Correa, Grazyna Rachelska, Alecis Armour, Leo 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.

*Martin Johannes Koehler, Anja Preller, Nadja Kindler, Peter Elsner, Karsten König, Rainer Bückle, Martin Kaatz; **Intrinsic, solar and sunbed-induced skin aging measured in vivo by multiphoton laser tomography and biophysical methods**; Skin Research and Technology 2009; 15; 357-363;*

In aging skin, the decreasing dermal collagen content due to diminished collagen synthesis is responsible for some of the clinically most evident signs of intrinsic aging skin such as thinning, loss of elasticity and fine wrinkling. Extrinsic skin aging is mainly a consequence of cumulative ultraviolet (UV) exposure of the skin, but can be accelerated by nicotine abuse and environmental hazardous compounds

*David Boudier, Catherine Lenaers, Claire Sabbadini, Delphine Creel, Brigitte Closs; **Certified Organic Actives For Cosmetic Formulations**; HAPPI, May 2009, pp. 70-77;*

With more consumers interested in following a healthy and eco-conscious lifestyle, demand for natural and organic beauty care products has grown tremendously in the past couple of years. Indeed, it is more than a trend, consumers today expect their cosmetics to be natural. Silab has more than 20 years of experience in the field of natural active ingredients. Most recently, we have developed a range of certified organic active ingredients that respond to the main cosmetic claims: anti-aging, anti-free radicals, moisturizing and soothing.

*D. Schmid, F. Suter, F. Züllig; **Soothing Factor from Opuntia Cactus for Sensitive Skin**; SÖFW-Journal 131/11-2005, pp. 2-5;*

Sensitive skin tends to be more susceptible to some environmental factors. People with sensitive skin report exaggerated reactions such as redness, itching or rashes when their skin is in contact with certain cosmetics, plants or fabrics, hot or cold, or insect bites. Normally, people with sensitive skin show quicker an erythematous reaction against ultraviolet irradiation. Skin that is sensitive to sun, typically shows allergic reactions, induced by ultraviolet radiation alone or in combination with chemical ingredients in skin care products.

*G. Sliwinski, A. Schneider, M. Schulz, M. Wolf, A. Fiolka, M. Meyer, H. Feussner, Z. Sliwinski, R. Poll, c. Thiele; **Physical Organ Phantoms for Training in Minimal Invasive Surgery (MIS)**; O. Dössel and W.C. Schlegel, WC 2009, IFMBE Proceedings 25/VI, pp. 120-123, 2009;*

In surgical training realistic phantoms of organs are necessary. Today's system only meet the requirements of a simulation of a medical intervention very limited. As of now it is only possible to learn the basis skills on such systems. Complicated and complex procedures have to be practised in experiments on animals or under supervision on the patient. As of now the physical organ phantoms do not display the requested features.

*Krueger N., Luebberding S., Oltmer M, Streker M, Kerscher M.; **Age Related Changes in Skin Mechanical Properties – Quantitative Evaluation Of 120 Female Subjects In A Trial With A Strict Design**; University of Hamburg, Department of Chemistry, Division of Cosmetic Science*

One of the most important functions of the skin is the protection against mechanical exposure. The mechanical properties of the skin depend on the thickness and qualitative characteristics of the epidermis,

dermis and subcutis. During the aging process the three layered skin system changes strongly accompanied by changes in its mechanical properties, resulting in higher vulnerability and other skin diseases.

N. Waranuch, M. Sirada, K. Ingkaninan, W. Wisuitiprot; The correlation between Cutometer's parameters of skin elasticity and ages of Thai female volunteers; ISBS Besancon, 2009

Skin elasticity is one of aging signs that can be measured using several equipments. Cutometer is one among those used to quantify skin elasticity. Skin property can be demonstrated in term of Cutometer's parameters; U_a/U_f : gross elasticity, U_r/U_e : net elasticity, U_v/U_e : ration of viscoelastic to elastic distension and U_r/U_f : relative elastic parameters. However, the correlations of its parameters with skin properties reported in many publications are often in disagreement. Besides, a report on Asian population is limited.

A.O. Barel, R. Clysen, P. Clarys; Evaluation of the elastic properties of the skin using the suction method (Cutometer). Which parameters to use for claims in anti-aging treatments? ISBS Barcelona, 2009

In cosmetic claims concerning the efficacy of anti-aging products and treatments, general terms such as elasticity, firmness, tonus etc. are used. Based on the suction method, the Cutometer (Courage-Khazaka, Germany) evaluates quantitatively the elastic and viscoelastic properties of the skin. In the Strain versus Time mode (which is mostly used) the vertical deformation of the skin due to vacuum, is measured in function of time and various linear skin deformation parameters are recorded.

N. Krueger, S. Luebberding, M. Oltmer, M. Streker, M. Kerscher; Age-related changes in skin mechanical properties. Quantitative evaluation of 120 female subjects in a trial with a strict design. ISBS Barcelona, 2009

The most commonly used method to determine the mechanical ability of skin is the creep test using suction chamber devices. Until now there is no scientific consensus upon which skin deformation parameters are particularly suitable to describe age related changes in human skin mechanics. The aim of this study was to examine common mechanical skin parameters to find those best representing the influence of aging.

M Lanctin, A. Nkengne, G. Stamtas, F. Le Goff, A. Papillon, C. Bertin ; Changes on body skin as a function of age ; ISBS Besancon, 2009

Facial skin aging has been a great concern in cosmetodermatology and many publications have documented the age-related transformations of skin. However to our knowledge, few studies have been conducted to systematically investigate the changes of skin attributes in different body sites. This study was designed to assess the link between age and skin body attributes such as hydration, firmness, color, stretch marks and cellulite. The study involved 150 healthy women Caucasian volunteers aged between 18 and 70 years of age and with a Body Mass index (BMI) between 20 and 26 kg/m².

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

The fight against skin aging is truly international, although the symptoms may differ throughout the world. Whereas Caucasians notice wrinkles as one of the first signs of their passing years, Asians observe skin discolourations. All of us want to have a skin with a perfect colour (a uniform complexion without any discolouration) and a perfect smooth surface (without any wrinkles or other signs of roughness). Hence, there must be products to achieve these effects as well as ways to measure whether these products are successful.

*K.P. Wilhelm, G. Springmann, S. Bielfedt; **Functional food, food supplements and the skin**, ISBS Besancon, 2009*

Functional food and food supplements are foods or dietary products that should provide a health benefit beyond basic nutrition. The worldwide market for these products is estimated to be in excess of \$ 100 billion. Such products are regulated in Europe under the food (supplement) legislation. However there is a potential distinction and separation between food supplements and drugs. While initially functional food and food supplements were mainly provided as a “soft alternative” to pharmaceutical drugs to improve health parameters that could be early linked to nutrition i.e. lower cholesterol levels, prevent osteoporosis, induce natural sleep etc.

*K.A. Tadini; **Acetyl hexapeptide-3 in a cosmetic formulation acts on skin anisotropy – clinical study**; ISBS Besancon, 2009*

Acetyl hexapeptide-3 has been used in anti-aging topical formulations since it has demonstrated effects in improving the skin appearance. However, there are few scientific studies about its effects on epidermis and dermis, when vehiculated in topical formulations, mainly using objective measurements, which are an important tool in clinical efficacy studies. Thus the aim of this study was to determine the clinical efficacy of the acetyl hexapeptide-3 using biophysical techniques. Formulations with and without acetyl hexapeptide-3 were applied to the ventral forearm and the face area of human volunteers. Skin conditions were evaluated after 2 and 4 week period daily applications, by analyzing the stratum corneum water content

*Dal Belo, Gaspar, Maia Campos, Marty; **Skin Penetration of Epigallocatechin-3-Gallate and Quercetin from Green Tea and Ginkgo biloba Extracts Vehiculated in Cosmetic Formulation**; NCBI 2009;*

Green tea (*Camellia sinensis*) and Ginkgo biloba extracts in cosmetic formulations have been suggested to protect the skin against UV-induced damage and skin ageing. Thus, it is very important to assess the human skin penetration of their major flavonoids to verify if they penetrate and remain in the skin to exert their proposed effects. The aim of this study was to evaluate the human skin penetration of epigallocatechin-3-gallate (EGCG) and quercetin from green tea and G. biloba extracts vehiculated in cosmetic formulations. This study was conducted with fresh dermatomed human Caucasian skin from abdominal surgery mounted on static Franz diffusion cells.

*Gaspar LR, Camargo FB Jr., Gianeti MD, Maia Campos PM; **Evaluation of dermatological effects of cosmetic formulations containing Saccharomyces cerevisiae extract and vitamins**; NCBI 2009,*

Saccharomyces cerevisiae extract (SCE) is used in cosmetics since it can act in oxidative stress and improve skin conditions. This study investigated dermatological effects of cosmetic formulations containing SCE and/or vitamins A, C and E. The formulation studied was supplemented or not (F1: vehicle) with vitamins A, C and E esters (F2) or with SCE (F3) or with the combination of vitamins and SCE (F4). Formulations were patch tested on back skin of volunteers. For efficacy studies, formulations were applied on volunteers and transepidermal water loss (TEWL), skin moisture (SM), skin microrelief (SMR) and free radicals protection were analysed after 3h, 15 and 30 days of application.