

R E P O R T S

(at International Meetings)

Dobrev H. Fluorescence diagnostic imaging in patients with acne. *VII Spring Symposium of the European Academy of Dermatology and Venereology (EADV)*, May 13-16, 2010, Cavtat, Croatia. (Poster)

Aims: Orange-red fluorescence in the follicle openings induced by appropriate ultraviolet A light originates from porphyrins, the metabolic products of Propionibacteria found in the pilosebaceous units. This study was aimed to investigate the relationship between the intensity of follicular fluorescence with the extent of acne and the amount of sebum secretion.

Methods: A total of 25 patients (5 male and 20 female, aged 13-35 years; 13 with oily skin, 7 with combined skin, and 5 with normal skin) were studied. The assessment were made on facial skin divided into 5 regions: forehead, nose, and chin (T zone), and both cheeks (U zone). The severity of acne was rated on a 4-point scale (1, comedones only; 2, comedones and papules; 3, pustules and comedones/papules, and 4, nodules and cysts). Casual sebum level was measured with Sebumeter SM 815 and the follicular fluorescence was determined with Visiopor PP 34 camera and Visiopor software.

Results: Casual sebum level and the intensity of fluorescence (expressed by the % area and count of orange-red fluorescence spots) were higher at the T zone than the U zone in all patients regardless of their skin type. Sebum amount and area of fluorescence spots significantly negative correlated with the clinical grade of acne. There was a significant positive correlation between the orange-red fluorescence and the casual sebum level.

Conclusion: The orange-red fluorescence showed stronger correlation with the presence of non-inflammatory acne lesions (comedones) and high sebum amount than the presence of inflammatory acne lesions (pustules) and low sebum amount. The fluorescence diagnostic imaging could be useful in the objective evaluation and monitoring of treatment efficacy in subjects with impure, acne prone skin, and patients with acne.

Dobrev H. How do cosmetics improve the skin mechanical properties? *18th Congress of the European Academy of Dermatology and Venereology*, October 7-11, 2009, Berlin, Germany (Poster)

Aims: To study mechanisms for improving skin mechanical properties after short-term and long-term application of cosmetic products containing different active ingredients.

Methods: Skin mechanical properties were determined using a non-invasive suction device (Cutometer). A total of 52 healthy female volunteers (aged 18-64 years) divided into 3 groups were studied. The first group was measured before and 120 min after single application on volar forearm of two emulsions containing urea and complex of alpha hydroxyacids, respectively. The second group applied on the face a moisturizing cream containing plant extracts and oils while the third group applied on the face a cream containing lipophilic pentapeptides. Measurements were made on the cheeks before and after 1 and 2 months, respectively.

Results: The single application of emulsion containing urea increased mostly the viscoelastic parameters (U_v and U_v/U_e), while the emulsion containing complex of alpha-hydroxy acids increased the elastic parameters (U_a/U_f and U_r/U_f) and decreased the viscoelastic to elastic ratio (U_v/U_e). Both products raised almost equal the final skin distension (U_f). The multiple application of moisturizing cream containing plant extracts and oils significantly increased distension (U_f), elasticity (U_a/U_f and U_r/U_f), and viscoelasticity (U_v and U_v/U_e) of the skin, while the cream containing pentapeptides increased biological elasticity (U_r/U_f), decreased viscoelasticity (U_v and

Uv/Ue) and did not alter significantly the skin distension (Uf) and brut-elasticity (Ua/Uf).

Conclusions: The study results suggest several mechanisms for improvement of skin mechanical properties. The single application of tested emulsions improves predominantly the plasticity of epidermal corneal layer by increase its hydration (urea) or decrease of intercorneal cohesion (alpha-hydroxy acids). The multiple application of moisturizing cream (plant extracts and oils) improves the plasticity of the skin by increase its water content while the cream containing pentapeptides increases skin firmness by inducing the accumulation of newly synthesized collagen.

Dobrev H., Gyurova M. Cutaneous drug reaction associated to isosorbide mononitrate: a case report. *18th Congress of the European Academy of Dermatology and Venereology*, October 7-11, 2009, Berlin, Germany (Poster)

Aims: Isosorbide mononitrate is an organic nitrate used in the treatment of angina pectoris. The aim of this study was to report the first observation of adverse skin reaction associated to isosorbide mononitrate.

Metods: A 72-year-old woman presented at the hospital with one-day history of an itching progressive eruption on her trunk and limbs appeared within one hour after taking a pill of isosorbide mononitrate. One month before she noticed similar but mild and transient eruption after taking the first two pills of isosorbide mononitrate and she stopped taking the drug. She had a personal history of myocardial infarction, arterial hypertension, duodenal ulcer, and glaucoma. Physical examination revealed an abundant confluent erythematous, maculopapular rash on the trunk, volar areas of arms, inguinal folds and the back of the knees.

Results: Routine laboratory investigations were within normal levels. Skin biopsy obtained from the abdomen revealed the presence of reduced epidermal layers, mild spongiosis and perivascular infiltrates composed of lymphocytes, histiocytes, and plasmatic cells in the upper dermis. The diagnosis drug-induced cutaneous reaction was made. Isosorbide mononitrate was discontinued. Therapy with systemic corticosteroids and antihistamines was applied and a rapid improvement of the skin eruption was observed. The patient had no relapses over a follow-up period of 6 months.

Conclusions: This case demonstrated a temporal relationship between drug intake and the onset of clinical symptoms. The use of the Naranjo probability scale indicated a highly probable relationship between the skin rash and isosorbide mononitrate therapy in our patient. Although adverse cutaneous reactions caused by isosorbide mononitrate appear to be uncommon (under 1%), dermatologists and cardiologists should be aware of this rare but potentially serious adverse event.

Zissova L., **Dobrev H.**, Gyurova M. A case of combined manifestation of corynebacterial infection of the skin. *17th Congress of the European Academy of Dermatology & Venereology (EADV)*, September 17-21, 2008, Paris, France.

Background: Corynebacterium species are thought to be causative agents of erythrasma, trichomycosis, pitted keratolysis, and pseudochromhidrosis. They may exist independently or in combination.

Objective: To report a case of combined manifestation of corynebacterial infection of the skin.

Case report: A 56-year-old woman was referred to the dermatology clinic on the occasion of recurrent painful boils in the groin region. She had complaints of malodorous underarm sweating, formation of yellow flakes on the hairs, and yellow discoloration of her white underclothing for 10 years. Physical examination revealed several nodules and pustules in the groin and single inflamed lesion under the left breast. There were well defined brown-red patches covered with fine scales in the axilla and inguinal regions as well as yellowish irregular thickening of hair shafts in the armpits.

Palms and feet were moist but the skin was apparently normal. Culture of exudate from pustule detected coagulase-negative staphylococci. A potassium hydrochloride preparation of scrapings of skin lesions from both folds was positive for *Corynebacterium*. Culture test was negative. Microscopic examination of the hairs of the axillary region showed that their shafts were surrounded by sheaths. When examined under Wood's light, infected hairs demonstrated a marked yellow fluorescence. Wood's light examination of inguinal regions was negative. Trichomycosis axillaris, erythrasma, pseudochromhidrosis, and hidrosadenitis suppurativa were diagnosed. The patient was treated per orally with ciprofloxacin 500 mg twice/day and itraconazole 100 mg twice/day for 10 days, and topically with fusidic acid, tetracycline, and ketoconazole cream for 3 weeks with excellent results. Shaving, antiperspirants, and intermittent application of topical and systemic antibiotics were used subsequently to prevent and treat the condition.

Discussion: Trichomycosis is a superficial infection of the hair shaft caused by *Corynebacterium tenuis* while erythrasma is a chronic superficial infection of the skin caused by *Corynebacterium minutissimum*. Both diseases affect moist and intertriginous regions of the body such as axillary and inguinal folds. Pseudochromhidrosis refers to the coloring of sweat due to surface bacteria. Our case demonstrates the possibility of coexistence of several skin manifestations of corynebacterial infection. Because of that we suggest closer examination of sweat gland-bearing areas of the patients. Treatment is somewhat easy but the recurrence is common.

Dobrev H., Atanassova P., Sirakov V., Zissova L. Postherpetic neuralgia and abdominal-wall pseudohernia in a patient with rheumatoid arthritis. *17th Congress of the European Academy of Dermatology & Venereology (EADV)*, September 17-21, 2008, Paris, France.

Background: Postherpetic neuralgia is a common complication while the postherpetic abdominal-wall pseudohernia is a quite rare complication of herpes zoster.

Objective: To report two chronic complications of herpes zoster in a patient with rheumatoid arthritis (RA).

Case report: A 75-year-old woman was admitted to the dermatology clinic on the occasion of neuralgia following cutaneous herpes zoster appeared 6 weeks before. She had a history of RA for 45 years and long-term treatment with glucocorticoid, antimalarial, and non-steroidal anti-inflammatory drugs.

Physical examination revealed confluent ulcers began to fill with granulation tissue, crusts, scars and skin discoloration in the area of the left T12-L2 dermatomes and reducible, painless swelling of the left flank, 20 cm x 20 cm in size, without palpable defect in the abdominal wall. There were typical joint deformity, and positive rheumatoid factor. On neurological examination superficial abdominal reflexes were diminished in the left side and hypesthesia of the overlying skin was present. Needle electromyography revealed denervational changes limited to the left-side muscles corresponding to affected dermatomes (T12-L2). Thoraco-abdominal computed tomography did not reveal the presence of existing hernia. There was an abdominal distension and the left abdominal wall was thinner than the right side. The patient was treated with an oral preparation containing benfotiamine and vitamins B6 and B12, carbamazepine, amitriptyline, gabapentin, and local lidocaine. Skin rash left with scarring and pigmentary changes, and the abdominal wall swelling had completely resolved within 8 months. However the pain still persists.

Discussion: In our knowledge, this is the first observation of postherpetic abdominal-wall pseudohernia associated with rheumatoid arthritis. This rare motor complication appears to be self-limited with a good prognosis for recovery, while postherpetic neuralgia may require a combination of treatment modalities for adequate pain relief. Older age, female sex, greater rash severity, and greater acute pain severity are considered as risk factors associated with severe postherpetic neuralgia. In addition, patients with RA, mainly those treated with oral corticosteroids, are also at

increased risk of chronic herpes zoster complications.

Dobrev H., Gyurova M., Mitkov M. Metformin-induced leukocytoclastic vasculitis: a case report. *V. Spring Symposium of the European Academy of Dermatology and Venereology (EADV), May 22-25, 2008, Istanbul, Turkey.*

Aim: To describe the third observation of leukocytoclastic vasculitis (LV) related to metformin.

Case summary: A 46-year-old man presented with 2-days history of an asymptomatic progressive purpuric eruption on his lower limbs that began 9 days after starting medication with metformin and gliclazide. He had positive family history of diabetes and a 20-years history for chronic hepatitis B infection resulting in hepatic cirrhosis. Physical examination revealed slightly indurated purpuric papules and extensive confluent petechiae and ecchymoses on the feet, legs and thighs. Laboratory investigations showed low platelet count (54,000-104,000/microliter) and slightly elevated levels of serum glucose and aminotransferases. The test for HBsAg was negative. Skin biopsy obtained from the right lower leg revealed the presence of infiltration of lymphocytes and neutrophils in the papillary dermis, and perivascular polymorphonuclear infiltrates with formation of nuclear dust, fibrinoid necrosis of the small vessel walls and extravasation of erythrocytes in the middle dermis. The diagnosis druginduced LV was made. Metformin and gliclazide were discontinued and replaced with injections of insulin. Therapy with systemic corticosteroids was applied and a rapid improvement of the skin eruption was observed. The patient had no further episodes of skin rash over a follow-up period of 18 months.

Discussion: According to the literature, biguanides (metformin) have been twice reported to induce LV whereas sulfonylureas (glibenclamide, glimepiride) have been reported to cause thrombocytopenia. This case demonstrated a temporal relationship between the initiation and discontinuation of metformin and gliclazide, and the onset and resolution of symptoms. Since the biopsy established LV, we consider metformin as most likely causative agent in this case. A rechallenge was not tried for ethical reasons. The concomitant long-term chronic hepatitis B infection could be responsible for hepatic cirrhosis and thrombocytopenia rather than for the LV. Using the Naranjo probability scale we calculated a probable relationship between LV and metformin therapy in our patient.

Conclusion: Metformin may cause leukocytoclastic vasculitis and the dermatologists and endocrinologists should be aware of this rare adverse event.

Acknowledgement: We wish to thank Prof. John Horn, Department of Pharmacy, School of Pharmacy, University of Washington, Seattle, for helpful comments.

Dobrev H., Gyurova M., Abadjieva Ts. Pemphigus benignus chronicus familiaris (Morbus Hailey-Hailey). A case report. *3rd Eastern European Conference on Rare Diseases and Orphan Drugs "Rare Diseases - prevention, diagnosis, treatment"*, March 1-2, 2008, Plovdiv, Bulgaria

Introduction Familial benign chronic pemphigus (Hailey-Hailey disease; HHD) is a rare autosomal dominant dermatosis characterized clinically by recurrent erythematous plaques and blisters occurring mainly in the intertriginous areas and histologically by suprabasilar and widespread acantholysis. It was recently discovered that the skin lesions are due to a secondary defect in keratinocyte adhesion resulted from a primary genetic defect in a calcium pump protein. The cause remains uncertain but some external factors such as heat, friction, and infection may exacerbate the disease. Therapeutic options are limited and the quality of life may be significantly affected.

Case report We present a 59-year-old woman with a 29-year history of HHD involving cervical, axillary, inframammary and groin folds. The diagnosis was made clinically and confirmed by

histopathologic study and negative immunofluorescence findings. Cultures for bacteria and fungi were performed with positive results for staphylococcus aureus and candida albicans. A treatment with topical soothing compresses followed by steroid-antibiotic and steroid-antimycotic creams and oral antibiotic was applied with clinical improvement in 2 weeks and total remission in 4 weeks. There was no relapse during a 6-month follow-up period.

Discussion The present case suggests that this combined therapy is effective against the skin eruptions in cases in which bacterial and mycological infections have triggered the relapse of HHD.

Dobrev H. Evaluation of dry skin: a comparison between visual score, corneometry and image analysis. 16th Congress of the European Academy of Dermatology & Venereology (EADV), May 16-20, 2007, Vienna, Austria.

Aim: The aim of the present study was to determine the correlation between three methods for assessment of dry skin.

Methods: Fifty healthy subjects aged 46±10 years were studied. The dryness of the volar forearm skin was evaluated using a 0-4 point visual scale. Skin hydration was determined by measurements of skin capacitance (Corneometer CM825). Images of skin surface obtained by camera Visioscope were analysed using software SELS (Surface Evaluation of the Living Skin).

Results: Subjects were rated into five groups according to their visual score. Corneometry and Visioscope examination succeeded with the differentiation between the groups. A significant inverse correlation was found between the visual scores and skin capacitance values, texture parameters (NRJ, ENT, and HOM), and the parameter wrinkles (SEw). Visual scores positively correlated with the parameters surface, volume, scaliness (SEsc), roughness (Ser), smoothness (SEsm), and the roughness parameters (R1-R5).

Conclusions: All the three methods applied are a reliable tool to assess the dry skin and to demonstrate the efficacy of topical products.

Acknowledgements: The author thanks Courage+Khazaka, Cologne, Germany for supplying the skin camera Visioscope and software SELS.

Dobrev H., Anavi B., Yankova R., Arnaudova M., Gyurova M., Shalamanova G. Malignant melanoma in a patient with Jadassohn-Lewandowsky syndrome. 16th Congress of the European Academy of Dermatology & Venereology (EADV), May 16-20, 2007, Vienna, Austria.

Aim: To report a rare observation of malignant melanoma in a patient with hidrotic ectodermal dysplasia.

Methods: We present a case of 41-year-old male patient. The disease manifested at birth with total alopecia followed by marked palmolantar hyperkeratosis and nail dystrophy. Sweating, teeth, general and mental health were normal. The condition has been managed with etretinate and subsequently with acitretine for more than 24 years. The family history was negative.

Results: Two non-healing ulcers appeared on the left foot at about 4 years ago. Bleeding granulations surrounded by hyperpigmented spots developed within the ulcers during the last several months. The skin biopsy indicated malignant melanoma and the immunohistochemistry proved positive for S-100 protein marker. Chemotherapy and partial amputation of the feet were conducted.

Conclusions: The role of genetic factors, chronic trauma and long term therapy with retinoids in the development of malignant melanoma is discussed.

Dobrev H., Chalakova N., Atanassova P., Sirakov V., Dimitrov Z. Postherpetic abdominal-wall pseudohernia. 16th Congress of the European Academy of Dermatology & Venereology (EADV), May 16-20, 2007, Vienna, Austria.

Aim: To report a rare complication of herpes zoster.

Methods: We present a 76-year-old male with cutaneous herpes zoster in the area of the left T11-L1 dermatomes. Two weeks after the onset of rash he noticed a protrusion of the left abdominal wall, which became more prominent on standing, coughing and straining.

Results: Physical examination revealed grouped cloudy-filled vesicles and blisters on an erythematous base in the affected dermatomes and a reducible, painless swelling of the left flank, 15 cm x 10 cm in size. There was an area of reduced muscle tone but no palpable defect in the abdominal wall. On neurological examination superficial abdominal reflexes were diminished in the left side and hypesthesia of the overlying skin was present. Needle electromyography revealed denervational changes limited to the left-side muscles corresponding to affected dermatomes (T11-L1). Abdominal ultrasonography showed a bulge filled with small bowel. Thoraco-abdominal computed tomography did not reveal the presence of existing hernia. There was an abdominal distension and the left abdominal wall was thinner than the right side. Two months later the swelling was gradually resolved.

Conclusions: Anterior root involvement resulting in paresis of abdominal wall muscle is a rare complication of herpes zoster with a good prognosis for recovery.

Dobrev H. Treatment of acne with a new topical preparation. Clinical and instrumental study. 15th Congress of the European Academy of Dermatology & Venereology (EADV), October 4-8, 2006, Rhodes, Greece.

Background: Sepicontrol A5 is a cosmetic active ingredient designated to improve the appearance of oily, acne prone facial skin.

Aim: To evaluate the sebum regulation activity, clinical efficacy and safety of a 3% and 4% Sepicontrol A5 containing cream and gel in subjects with mild to moderate acne.

Methods: A total of 19 volunteers were enrolled in this open-labelled study. The test cream and gel were applied to the face and acne lesions respectively, twice daily for a period of 7 weeks. Counting of acne lesions and acne score method were used for clinical assessment before and after 2, 4 and 7 weeks of treatment. Casual sebum level on the forehead and cheeks was determined with a photometric device (Sebumeter). The activity of sebaceous gland on the forehead was recorded using sebum collector foils (Sebufix), which were then evaluated with skin camera Visioscope and software SELS. In addition, subjective evaluation questionnaire regarding the physical characteristics, tolerance and efficacy of the products and quality of life questionnaires were filled in by the volunteers.

Results: Both products were well tolerated and accepted. A visible improvement was reported in 89% and good to very good clinical response was evaluated in 84% of the subjects. The count of acne lesions decreased significantly by 59% (non-inflammatory -61%, inflammatory -55%) and the mean clinical assessment scores decreased by 33%. There was a significant reduction in the casual sebum level by 12% and the area covered with oily spots by 27%. The DLQI and CADI mean scores decreased by 46 and 41% respectively.

Conclusion: The offered topical products successfully improve the state of oily acne prone facial

skin and raise quality of life of the patients.

Acknowledgements: The author would like to thank Courage+Khazaka, Cologne, Germany for supplying the skin camera Visioscope, tests Sebuffix and software SELS, and Solvex Cosmetic Products, Plovdiv, Bulgaria for supplying the preparations.

Dobrev H. CAPI TEXT v.1 - Data analysis software for nailfold skin capillaroscopy
15th Congress of the European Academy of Dermatology & Venereology (EADV), October 4-8, 2006, Rhodes, Greece

Background: Nailfold skin capillaroscopy is a simple non-invasive method used for study disorders with disturbed microcirculation such as Raynaud's phenomenon, acrocyanosis, perniones, connective tissue diseases, psoriasis, diabetes mellitus, neuropathy and vibration disease.

Purpose: To develop data analysis software aimed to assist the documentation and analysis of the performed capillaroscopies.

Software description: The program is based on the module principle. Module "Nomenclatures" includes menus for patient data. Module "Examinations" includes menus for all general and specific aspects of the medical examination and capillaroscopy investigation. Module "Settings" and "Information" include menus for customize the use of the program. The result of nailfold capillaroscopy can be printed as short or detailed form. The software allows fast search using specified criteria and preparing analyses and reports.

Conclusion: Use of this newly created software will assist any practitioner, who performs nailfold skin capillaroscopy.

Acknowledgements: This work was supported by Medical University of Plovdiv, Bulgaria (Grant No 09-2001/2002). Software was created by Mr. Jurion Jeliaskov.

Dobrev H. Clinical and instrumental study of the sebum regulation efficacy of REGU-SEB.
14th Congress of the European Academy of Dermatology & Venereology (EADV), October 12-16, 2005, London, England. J Eur Acad Dermatol Venerol 2005, 19 (Suppl. 2): 252.

Background: Regu-seb is an effectively balanced combination of polyphenols containing high amounts of lignans and phytosterols of plant origin, which regulates the production of sebum to a normal level by inhibiting the 5 α -reductase.

Aim: The aim of this study was to evaluate the sebum regulation efficacy of a 2% Regu-seb containing cream in subjects with oily facial skin.

Material and Methods: A total of 20 healthy volunteers (9 male and 11 female, aged 17-50 years, 16 with oily skin and 4 with combined skin) were enrolled in the study. The test product was applied twice daily to the face for a period of 4 weeks. A clinical assessment and instrumental measurements were performed before and after the treatment period. Casual sebum level on the forehead and both cheeks was determined with a photometric device (Sebumeter). The activity of sebaceous gland on the mid forehead was recorded using sebum collector foils (Sebuffix), which were then evaluated with a skin camera Visioscope and software SELS (Surface Evaluation of the Living Skin). In addition, a subjective evaluation questionnaire regarding the organoleptic characteristics, tolerance and efficacy of the product was given to the volunteers.

Results: The product tolerability and cosmetic properties (consistency, spreadibility) were very well accepted by all of the volunteers. A visible sebum regulating efficacy was reported in 95% of them. After 4 weeks of treatment, the clinical assessment scores decreased by 33%. The results showed a significant reduction in the casual sebum level by 20% and the area covered with oily spots by 42%. The number of active sebaceous gland remained unaltered.

Conclusion: These results demonstrate with quantitative and objective methods the efficacy of a Regu-seb containing cream to reduce the greasiness and improve appearance of the oily facial skin

Acknowledgements: The author would like to thank Courage+Khazaka, Cologne, Germany for supplying the skin camera Visioscope, tests Sebufix and software SELS, and AROMA, Sofia, Bulgaria for supplying the preparation.

Dobrev H. The effects of topically applied Matrixyl, natural grape seed and avocado oils on skin surface, hydration and elasticity. III. Spring Symposium of the European Academy of Dermatology and Venereology (EADV), May 19 – May 21, 2005, Sofia, Bulgaria. Book of Abstracts: p73. (P05.4)

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.

Aim: To evaluate the effects of two 1% Matrixyl, 1% grape seed oil and 2% avocado oil containing creams on aged facial skin using *in vivo* skin bioengineering techniques.

Methods: Measurements were performed on 30 healthy female volunteers (aged 37 to 64 years) before and after once-daily applications for 2 months. Fifteen of the volunteers applied a day cream in the morning and the rest ones - a night cream in the evening. Images of the skin surface at eye corners were obtained with video camera Visioscope and then analyzed with the software SELS. Epidermal hydration and skin mechanical properties at five anatomic regions (forehead, eye corners and cheeks) were measured with a skin capacitance meter (Corneometer) and a suction device (Cutometer). In addition, a subjective evaluation questionnaire regarding the organoleptic characteristics, tolerance and efficacy of the products was given to the volunteers.

Results: The products tolerability and cosmetic properties (consistency, spreadability) were evaluated by 93-100% of the volunteers as “good” to “very good”. The products efficacy (improvement of skin flexibility, anti-wrinkle, smoothing and moisturizing effects) was rated in 67-100% of the volunteers to be “very good” or “good”. The results showed a significant increase in the average epidermal water content (day cream +10%, night cream +11%) and U_r/U_f , skin biological elasticity, (day cream +23%, night cream +16%), while the U_v/U_e , viscoelastic to elastic ratio, was reduced (day cream -3%, night cream -17%). The treatment significantly reduced the skin surface parameters volume (day cream -7%, night cream - 8%), SE_r , roughness (day cream -5%, night cream -12%) and the micro relief parameters R_t , R_z , R_m , R_a , R_p (day cream - 8%, night cream -13%), which are indicators for the number, width and depth of the facial wrinkles.

Conclusion: The association of Matrixyl, natural grape seed and avocado oils improves the hydration, elasticity and surface appearance of the aged facial skin. The marked reduction of skin viscoelasticity by night cream suggests the more pronounced stimulating effect on the collagen synthesis compared with day cream.

Acknowledgements: The author thanks Courage+Khazaka Electronic, Köln, Germany for supplying with the Cutometer MPA 580, camera Visioscope and software SELS, and AROMA, Sofia, Bulgaria for supplying with the preparations.

Dobrev H. Evaluation of the efficacy of a Rooibos extract containing antiwrinkle cream. III. Spring Symposium of the European Academy of Dermatology and Venereology (EADV), May 19 – May 21, 2005, Sofia, Bulgaria. Book of Abstracts: p84. (P08.2)

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.

Methods: Measurements were carried out on 21 healthy female volunteers (from 35 to 63 years old) before and after twice-daily applications for 4 weeks. Images of the skin surface at eye corners were obtained with video camera Visioscope and then analyzed with the software SELS (Surface Evaluation of the Living Skin). Skin mechanical properties on five anatomic regions (forehead, eye corners and cheeks) were measured with a suction device Cutometer SEM 474. In addition, a subjective evaluation questionnaire regarding the organoleptic characteristics, tolerance and efficacy of the product was given to the volunteers.

Results: The product tolerability and cosmetic properties (consistency, spreadibility) were evaluated by 95% of the volunteers as “good” to “very good”. A visible anti-wrinkle efficacy was reported in 76% of the volunteers. The results showed a significant increase in all mechanical parameters of the skin: Uf, skin distensibility (+7%), Ua/Uf, brut-elasticity (+6%), Ur/Ue, net-elasticity (+23%), Ur/Uf, biological elasticity (+12%) and Uv/Ue, skin viscoelasticity (+21%). The application of a Rooibos containing cream significantly reduced the skin surface parameters SEr, roughness (-13%), SEw, wrinkles (-5%) and the micro relief parameters Rt, Rz, Rm, Ra, Rp (an average reduction of 10%), which are indicators for the number, width and depth of the facial wrinkles.

Conclusion: These results demonstrate with quantitative and objective methods the efficacy of a Rooibos containing cream to improve skin mechanical properties and surface appearance of the aged facial skin.

Acknowledgements: The author thanks Courage+Khazaka Electronic, Köln, Germany for supplying with the camera Visioscope and software SELS, and Bodi-D, Plovdiv, Bulgaria for supplying with the preparation.

Dobrev H. Comparative study of the skin mechanical properties in erysipelas of the lower legs using suction method and share wave propagation method. 13th Congress European Academy of Dermatology & Venereology (EADV), November 17-21, 2004, Florence, Italy. J Eur Acad Dermatol Venerol 2004, 18, Suppl.2: 274-5.

Background/aim 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.

Methods Ten in-patients were studied prior to and after the treatment. Skin viscoelasticity was evaluated on the affected and unaffected lower legs using a suction device (Cutometer) equipped with two probes and resonance running time measurements (RRTM) using the Reviscometer.

Results Affected skin was characterized by significantly lower cutometer elastic R-parameters (Ur, Ua/Uf and Ur/Uf), higher viscoelastic R-parameters (Uv, Uv/Ue, R8 and hysteresis) and higher area-parameters (F0, F2 and F4). After treatment, the indicated parameters significantly changed toward to those of the normal skin. The 8 mm-diameter cutometer probe produced more pronounced changes than the smaller 2 mm-diameter probe. The initial multidirectional RRTM values were similar on both lower legs. The treatment induced a significant decrease in multidirectional RRTM on the affected skin (-11.8%) which is due to the marked decrease in the minimum RRTM (-20.8%). The last indicates an increase in shear wave velocity predominantly in the direction of skin tension lines, i.e., increased intrinsic tension inside the skin, and suggest an improvement of skin elasticity.

Conclusion Simultaneously measurements of skin mechanical properties by means of suction method and shear wave propagation method are useful tool for objective evaluation of the skin changes in patients with erysipelas.

Acknowledgements: The author would like to thank Courage+Khazaka Electronic, Köln, Germany for supplying with the Cutometer MPA 580 and Reviscometer RVM 600.

Dobrev H. Impact of three different emulsions on skin hydration and elasticity. II. Spring Symposium of the European Academy of Dermatology and Venereology (EADV), April 29 – May 1, 2004, Budapest, Hungary. J Eur Acad Dermatol Venerol 2004, 18, Suppl.1: 53.

Background/aim Skin care products are designated to improve skin hydration and elasticity. The objective of this study was to evaluate the moisturizing and plasticising effects of three different emulsions after single application.

Material/methods Effects of two oil-in-water emulsions and a water-in-oil emulsion (Excipial) were studied on the volar forearm skin of 20 healthy volunteers. Epidermal hydration was determined using skin capacitance meter (Corneometer). Mechanical properties of the skin were evaluated using non-invasive suction device (Cutometer). Measurements were made before the application and 10, 30, 60, 90 and 120 minutes later.

Results Ten minutes after the application of oil-in-water emulsions the skin capacitance showed an increase of 32% and 29% compared to initial values and decreased after 2 hours to 26% and 17%, respectively ($P<0.001$). The application of water-in-oil emulsion gradually increased skin capacitance with a maximum of 34% after 1 hour followed by minimal decrease to 31% after 2 hours ($P<0.001$). All three emulsions significantly increased skin viscoelasticity (U_v/U_e), while the water-in-oil emulsion significantly increased the distensibility (U_f) and elasticity (U_a/U_f) of the skin, too.

Conclusion The results confirm the favorable effects of tested skin care products. Values of skin capacitance are influenced by water content and non-absorbed components of the emulsions applied.

Dobrev H. Application of Cutometer area parameters for study human skin fatigue. II. Spring Symposium of the European Academy of Dermatology and Venereology (EADV), April 29 – May 1, 2004, Budapest, Hungary. J Eur Acad Dermatol Venerol 2004, 18, Suppl.1: 53.

Background/aim The age-related decrease of skin elasticity results in bigger fatigue of adult skin than young skin after applying multiple stress at one and the same anatomic region. The aim of this study was to compare the informativeness of cutometer standard R-parameters with new area-parameters regarding the age-related changes in human skin fatigue.

Materials/methods A total of 40 healthy volunteers aged 12-82 years were studied. Mechanical parameters of the skin were determined using non-invasive suction skin elasticity meter (Cutometer). Measurements were made on temporal region and volar forearm. Skin mechanical parameters analyzed by Win-cutometer MPA software were R3, R4 and R9 (R-parameters), and F2 and F3 (area-parameters).

Results The adult skin was characterized by significantly higher values of R4, R9 and F2, and lower F3 compared to young skin. R3 was not significantly altered. There were not any sex-related differences. F2 correlated positively with parameters R3, R4 and R9, while F3 correlated negatively with R4. A positive correlation within the parameters R3, R4 and R9 was established at both anatomic regions.

Conclusion The non-invasive method applied can be useful for objective and quantitative

investigation of age-related changes in skin fatigue and evaluation of the effects of cosmetic and antiaging topical products. The mechanical parameters R4 and F3 are most indicative of human skin fatigue.

Dobrev H., L. Zisova, R. Yankova. Study of four antidandruff shampoos therapeutic effectiveness. 12th Congress European Academy of Dermatology & Venereology (EADV), October 15-18, 2003, Barcelona, Spain.

Background/Aim Treatment of seborrhoeic dermatitis (SD) is directed towards the removal of *P. ovale* and the rest microflora, reduction of skin lipids and suppression of the skin inflammation. The aim of this study was to evaluate and compare the therapeutic effectiveness of 4 antidandruff shampoos containing different active substances.

Materials/Methods A total of 44 patients (32 men, 12 women; aged 15-76 years; 29 with dandruff and 15 with SD) were studied. They were divided into 4 groups treated respectively with shampoo 1 (1% salicylic acid plus 0.5% plant tar plus 3% alcoholic extract of green microalgae), shampoo 2 (1% selenium sulfide), shampoo 3 (1% zinc pyrithione) and shampoo 4 (0.6% ketoconazole plus 1% metronidazole plus 3% sulfur). All shampoos were applied twice weekly for 4 weeks. Clinical assessment and self-assessment of the degree of scalp oiliness, scaling and itching, culture of *P. ovale* on Dixon broth (shampoo 1) and lipid measurement at four sites were made before treatment and after 2 and 4 weeks.

Results Significant improvement of the severity of scalp oiliness, scaling and itching were observed at all patients. Shampoos 2 and 3 showed no significant better clinical effectiveness. Negative cultures for *P. ovale* were found in 84% of the patients treated with shampoo 1. After treatment, patients with normal initial scalp lipid level (40-100 $\mu\text{g}/\text{cm}^2$) showed increased values, whereas patients with higher initial scalp lipid level (over 100 $\mu\text{g}/\text{cm}^2$) did not show any significant changes. Shampoo 4 most influenced scalp lipid levels - increased values up to the 148 %, and decreased values down to the 9% were observed in group 1 and group 2, respectively.

Conclusion Dandruff and scalp SD can be successfully treated with shampoos containing different active substances. In patients with dry seborrhoea an increase in scalp lipid level occurs due to the elimination of follicular occlusion and improvement of sebum delivery.

Dobrev H. In vivo study of skin mechanical properties in Raynaud's phenomenon. 1st Joint Meeting 14th International Congress of the International Society for Bioengineering and the skin (ISBS) and 8th Congress of the International Society for Skin Imaging (ISSI), May 21-24, Hamburg, Germany. Skin Res Technol 2003, 8 (2):197.

Background/Objective Raynaud's phenomenon is usually the first symptom in 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. The aim of this study was to investigate and compare the mechanical properties of the skin in patients with primary, secondary and suspected secondary Raynaud's phenomenon.

Patients/Methods A total of 63 patients were studied. They were classified as having scleroderma-type nailfold capillary abnormalities - 17 with indurative phase of scleroderma (Group 1), 9 with edematous phase of scleroderma (Group 2), 18 with suspected secondary Raynaud's phenomenon (Group 3), and as having Raynaud's phenomenon-type nailfold capillary abnormalities - 19 with primary Raynaud's phenomenon (Group 4). Thirty-nine sex- and age-matched healthy individuals with normal nailfold capillaroscopy pattern were also studied as controls. Mechanical properties of the skin were evaluated using a non-invasive suction device (Cutometer) equipped with a 2-mm probe. Measurements were performed over 5 anatomic regions: cheeks, volar forearms, wrists,

hands and proximal phalanx of the fingers. The skin mechanical parameters analyzed were distensibility (Uf), elasticity (Ua/Uf) and viscoelasticity (Uv/Ue).

Results Most demonstrative changes were observed over volar forearms. Patients included in Group 1, Group 2 and Group 3 were characterized by significantly lower Uf and higher Uv/Ue compared to patient group 4 and controls. Patient groups 1 and 2 showed significantly lower Ua/Uf, as well. There were no significant differences in skin mechanical parameters between patient group 4 and control group.

Conclusion 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.

Zissova L., H. Dobrev. Sebum excretion in seborrheic dermatitis on the scalp treated with ketoconazole 2% shampoo: a quantitative investigation. 2nd Congress of the European Confederation of Medical Mycology (ECMM) 27-29. 04. 1995., Brussels, Belgium. Abstracts: PO 7.8.

Iankova R., H. Dobrev, J. Savova. Photo-conditioned activities of some topical medicines. International Meeting on Clinical Dermatology - Hot line. 28-31. 03. 1996, Athens, Greece. Poster 23. Abstracts - p. 148.

We have termed "photo-conditioned", either sensitizing or protective, those characteristics of chemicals applied on the human skin, which are influenced by solar irradiation. In this connection five commercially available preparations: Indomethacin 10% ointment (Pharmachim) (IM), sulfanilic acid 5% in high density emulsion base (Ombroderm, Sopharma) (OD), myconazole 2% plus benzoyl peroxide 5% (Acnidazil cream, Janssen) (AD), tretinoin 0.025% (Acnoten gel, KRKA) (AT) and 0.05% (Retin A cream, Cilag) (RA) were examined for their sun protection factor (SPF) values. Fifty volunteers of skin types I, II and III took part in the essay. The SPF values were evaluated through a modification of the standard method, introduced by R. Iankova (1993). IM showed a high ability to prevent erythema (SPF 7.78; SD 0.85), far distant from OD (SPF 3.83; SD 0.93). Tretinoin both 0.025% and 0.05% did not promote any photoreactivity in the areas treated with AT (SPF 2.20; SD 1.15) and RA (SPF 2.08; SD 1.18). It did not differ from the photo-conditioned action of AD either (SPF 2.44; SD 1.10; $p > 0.05$). The data indicate a potential of IM for preventing photodamage. Likewise the results of this study demonstrate a lack of photo-induced erythema by tretinoin.