for cosmetic purposes. However, such treatment may fail if skin penetration is insufficient reducing drug delivery or if compliance is reduced by discomfort.

**Objectives:** To evaluate the efficacy and the safety of microspicules containing epidermal growth factor (MS-EGF) used to treat periorbital wrinkles.

**Methods:** Twenty health volunteers were enrolled in a randomized, controlled, split-face study. One periorbital area was treated daily with soluble MS-EGF and the other with EGF cream, for 4 weeks; all subjects underwent 8 weeks of follow-up. Efficacy was assessed using a wrinkle severity rating scale (WSRS), subjective satisfaction scores, digital skin image analysis, examination of skin replicas, and ultrasonic measurement of dermal depth and density.

**Results:** Both the MS-EGF and EGF alone yielded positive effects on digital skin image analysis, skin replica examination, and ultrasound. However, the MS-EGF group exhibited significant improvements in dermal depth and density, and on replica analysis, compared to the EGF-only group ($P < 0.05$). In addition, the MS-EGF group showed a significantly greater change in WSRS score compared to baseline than the EGF-alone group. Both treatments were well-tolerated: no significant side-effect was noted.

**Conclusion:** The MS-EGF formulation may represent an effective and biocompatible advance in the treatment of periorbital wrinkles.

**Keyword:** Epidermal growth factor, Micro-spicule, Wrinkle

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**P006**

Skin Micro-Relief profiles as a cutaneous ageing index

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**Background:** The objective measurement of cutaneous topographical information is important for quantifying age-dependent changes

**Objectives:** To develop methods measuring micro-relief patterns of targeted skin area and subsequently deduce the degree of aging from the profiles

**Methods:** Fifty one subjects were volunteered and the silicon replicas were obtained from their forearm, dorsum of hand and finger. The cutaneous profiles were measured from the surface and sectioned plane using dermoscopy and scanning electron microscope (SEM).

**Results:** Along with dermoscopy, the width of furrows and average area of each polygon were positively correlated with age on dorsum of hand ($r= 0.55, r= 0.61, p< 0.01$). The data from the SEM presented that the number and width of furrows on dorsum of hands were negatively and positively correlated with age, respectively ($r= -0.75, r= 0.62, p< 0.01$). The cutaneous age could be statistically estimated through the stepwise linear regression: age = 57.40 - 9.47 * (number of furrows on dorsum of hands) * (width of furrows on dorsum of hands).

**Conclusion:** The analysis technique may allow a better understanding of the age related alterations on the skin surface. It could be applied to routine diagnosis by a clinician or verification of efficacy of anti-aging products.

**Keyword:** Micro-relief, Skin aging, Silicon replica, Dermoscopy, Scanning electron microscopy

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**P007**

Mitochondrial DNA common deletion by oxidative stress in human skin dermal fibroblasts

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**Background:** Reduced cell spreading is a prominent feature of aged dermal fibroblasts in human skin in vivo. Mitochondrial DNA (mtDNA) common deletion has been reported to play a role in the human aging process.

**Objectives:** To investigate the relationship between age-related reduced cell spreading and mtDNA common deletion.

**Methods:** To examine mtDNA common deletion in the dermis of aged human skin, the epidermis was removed from full-thickness human skin samples using cryostat. To examine the relationship between age-related reduced cell spreading and mtDNA common deletion, we modulated the shape of dermal fibroblasts by disrupting the actin cytoskeleton.
Results: Reduced cell spreading was associated with a higher level of mtDNA common deletion and was also accompanied by elevated levels of endogenous reactive oxygen species (ROS). Boosting cellular antioxidant capacity by using antioxidants was found to be protective against mtDNA common deletion associated with reduced cell spreading.

Conclusion: mtDNA common deletion is highly prevalent in the dermis of both naturally aged and photoaged human skin in vivo. mtDNA common deletion in response to reduced cell spreading is mediated, at least in part, by elevated oxidative stress in human dermal fibroblasts. These data extend current understanding of the mitochondrial theory of aging by identifying the connection between mtDNA common deletion and age-related reduction of cell spreading.

Keyword: Cell shape, Mitochondrial common deletion, Reactive oxygen species, Human skin connective tissue aging

P008

Analysis of sub-toxicity in human keratinocytes by quantitative measurement of mechanical property changes

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Background: Chemical agents that can potentially cause skin irritation are normally assessed in vitro by performing cell viability or cytokine expression assays. However, these methods do not always provide decisive translational results and are not sensitive enough to detect toxicity.

Objectives: We investigate the mechanical properties of keratinocytes as novel endpoints for safety assessment of chemical agents (sodium lauryl sulphate) using human keratinocytes.

Methods: Cell proliferation, membrane integrity, release of cytokines, and cell morphology were observed using biological methods. Changes in stiffness and surface roughness as biomechanical parameters were investigated by atomic force microscopy.

Results: Cell viability decreased to 96.26 ± 3.87%, 97.78 ± 2.16%, 81.18 ± 1.19%, and 42.38 ± 2.13 at SLS concentrations of 5, 10, 25, and 50 μM, respectively. When the SLS concentration was increased from 0 to 10 μM, stiffness decreased from 0.067 ± 0.008 to 0.025 ± 0.004 at the center, 0.101 ± 0.008 to 0.028 ± 0.003 at the periphery, and 0.076 ± 0.013 to 0.026 ± 0.003 at the junction.

Conclusion: Physiological changes were seen at a relatively high dose of SLS (≥ 25 μM), while the mechanical properties of keratinocytes responded linearly to SLS, even at low doses (≤ 10 μM). These results indicate that the mechanical properties of keratinocytes can be used as sensitive endpoints for in vitro cytotoxic testing of potential chemical irritants.

Keyword: Keratinocytes, Irritants, Mechanical properties, Safety assessment, Atomic force microscopy

P009

Efficacy of Tranexamic acid on senile purpura

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Background: Senile purpura is a common, chronic skin condition affecting more than 10 percent of individuals over the age of 50. Despite being a benign condition, purpura lesions are frequently a source of significant visual and social concern. To date, there are no known effective treatments for this condition except for avoidance of physical injury.

Objectives: The purpose of the study was to evaluate the efficacy in improving the skin's appearance in patients with senile purpura.

Methods: 20 patients were enrolled in the study. Patients were instructed to take medication 3 times in a day, tranexamic acid 250mg(Transamin®), for 3 weeks. We took pictures of their lesions on the arms at baseline, and at 1 and 3 weeks. We assessed patient’s satisfaction and clinical improvement assessed by a physician.

Results: The mean number of their lesions was 7 on the arm, both at baseline. Although the new lesions presented, the existing lesions markedly faded or disappear after 1 week in 19 patients. In 20 patients, the mean number of