

Abstracts

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Elucidation of Menstrual Cycle-Related Discomfort in Everyday Life and Efficacy of a “Rescue Fragrance”

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It is well known that many women experience discomfort caused by dramatic fluctuations in hormone balance throughout the menstrual cycle. This study investigated the physiological basis of these discomforts and found a method for relieving them. Discomfort was measured using the Menstrual Distress Questionnaire (MDQ). The group with the highest MDQ scores (> 42) experienced severe discomfort. The high MDQ scoring group (MDQ-H group) showed a reduced response of the hypothalamic-pituitary-adrenal axis to psychological stress. The skin of the MDQ-H group also showed a diminished response to a cold stimulus. A search for agents to relieve this discomfort revealed the essential oil of sweet orange to be effective in normalizing the endocrine system, and a “rescue fragrance” containing sweet orange oil was developed. The rescue fragrance improved the stress responsiveness of the hypothalamic-pituitary-adrenal axis and skin. We found that long-term continuous application of the fragrance reduced psychological stress, improved MDQ scores and improved the condition of the skin surface.

Modulation of the Emotional Condition in Human Beings via Application of Emollients and Skincare Formulations: A Psycho-physiological Study

Wolf Eisfeld, Daniela Prinz, Markus Dierker, Catherine Weichold, Ralf Stürmer, Florian Schaefer, Wolfram Boucsein (Germany)

As a consumer’s decision to buy a personal care product is to a large extent based on subconscious factors, classical claim substantiation therefore should be extended to include the decisive emotional components. Consequently,

a tailor-made technology based on the measurement of involuntary psycho-physiological parameters was developed. Introduced as “Objective Emotional Assessment” (OEA), it has proven suitable for obtaining psycho-physiological profiles of consumer products. The present paper describes an experimental setting where the OEA methodology was applied to cosmetic emollients in a pure form as well as to emollient-containing formulations. In the first part of the study, a variety of light emollients of different chemistry was applied to the volar forearms of panelists and rubbed into the skin. During this procedure psycho-physiological responses were recorded. To prove that the effects found are still present in formulations, in a second stage of the study a base cream formulation was prepared into which selected emollients from the first stage had been incorporated and was subsequently tested likewise using OEA. In both parts of the study, a very good differentiation of the various emollients was achieved, with the panelists showing a clear preference for a newly designed branched ester, pro-pylheptyl caprylate, which proved to elicit an overall very positive emotional response. It thus could be demonstrated via the OEA methodology that emollients both as single ingredients and as components in a skin care formulation are able to act as positive emotional stimuli and can elicit an overall enhancement of the physiological condition in terms of “wellbeing”. OEA has proven again to be a highly suitable approach to detect involuntary, subconscious consumer responses, and is able to find subtle effects of selected cosmetic ingredients even against the strong background of a base formulation.

Oxothiazolidine, a Skin Penetrating Active Ingredient Offering a New Approach to Photoaging Prevention

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Oxothiazolidine is an antioxidant molecule that combines reactive oxygen species scavenging and reactive carbonyl

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species scavenging including oxidative stress downstream products scavenging. Interestingly, oxothiazolidine has the unique property to form taurine, an amino acid naturally present in the skin, upon reaction with some reactive oxygen species. Interest in the use of oxothiazolidine for photoaging prevention was addressed because reactive oxygen species formation is primarily responsible for ultraviolet radiation-mediated photodamage. Since deeply penetrating ultraviolet wavelengths such as UVA may generate reactive oxygen species in deep layers of the skin, the oxothiazolidine bioavailability was determined. Here, we show that oxothiazolidine crosses the stratum corneum to access viable layers of the epidermis and permeates into the dermis, enabling deep-sited scavenging of reactive oxygen species (and their by-products). The photoprotective properties of oxothiazolidine were studied *in vitro* in a three-dimensional model and *ex vivo* in human skin explants. Immunohistological studies have shown that topical oxothiazolidine limits UVB-induced apoptosis in the epidermis and UVA-induced inflammation (monitoring of cyclooxygenase isoform 2 expression in the dermis). Oxothiazolidine preserved collagen VII in the dermal-epidermal junction and decorin expression in the dermis after UVA irradiation, thus confirming its ability to protect deep-sited targets from oxidative stress. Production of matrix metalloproteinase 1, a major collagen-degrading enzyme activated by UVA, was also reduced by oxothiazolidine treatment. Taken together, these results strongly support the usefulness of oxothiazolidine for topical photoprotection.

Advances in Hair Styling Technology for Clear Hair Gels

Michael Philbin, Solomon Jacobson, Paul James, Stephanie Murphy, Crystal Priester, Norman Rackison (USA)

New technologies were investigated to develop a fixative polymer that provides improved performance in hair styling and long-lasting high humidity style retention from a hair gel formulation. Blends of polyvinylformamide (PVF) and polyvinyl alcohol (PVOH) gave enhanced clarity in carbomer-containing hair gel systems while providing comparable stiffness, significantly superior high humidity hold, and reduced flaking on hair compared with polyvinylpyrrolidone (K value 90) styling gel formulations currently used in the market.

Novel Broad Spectrum Associative Thickeners Based on Phosphoric Acid Esters

Peter Klug, Franz-Xaver Scherl, Dennis Miller (Germany)

Surfactant systems such as shampoos or shower gels require thickening. Some formulations need associative thickeners, as they cannot be viscosified effectively by addition of salt and/or hydrophobic surfactant. Associative thickeners based on phosphoric acid esters were studied in a model surfactant system. Viscosity was measured as a function of concentration. Frequency sweeps (oscillating measurements) were used to determine the elasticity. The thickening performance increases with the length of the hydrophobic chain. At constant viscosity, the elasticity also increases with chain length. Performance is comparable with that of carboxylic acid ester based associative thickeners, and in some cases better. Combinations with anionic polyelectrolytes show synergistic effects on viscosity and yield stress. The thickeners have excellent stability in cosmetic formulations at pH values down to as low as pH 3.