

International Journal of Cosmetic Science (2003,25,45-53)

Multi center comparison of skin hydration in terms of physical, physiological and product dependent parameters by the capacitive method (Corneometer CM 825)

Members of the DGK (German Society for Scientific and Applied Cosmetics) Task Force "Skin Hydration"

U. Heinrich*, U. Koop**, M.-C. Leneveu-Duchemin**, K. Osterrieder^{****}, S. Bielfeldt^{***}, C. Chkarnat+, J. Degwert++, D. Häntschel++, S. Jaspers**, H.-P. Nissen+++ , M. Rohr[†], G. Schneider**, H. Tronnier*

*Institut für Experimentelle Dermatologie, Universität Witten/Herdecke, Witten, Germany,

Beiersdorf AG, Hamburg, Germany, ^{*} proDERM, Hamburg, Germany, ⁺Cosmital, Marly, Switzerland,

⁺⁺Skin Investigation and Technology, Hamburg, Germany, ⁺⁺⁺Derma Consult, Alfter, Germany,

[†]Institute Dr. Schrader, Holzminden, Germany

^{****}Freelance Statistician, 11 Observatory C., Ithaca, N.Y, 14850, USA

Keywords: skin hydration, capacitance, Corneometer, efficacy tests

Synopsis

A multi center study for measuring skin hydration with 349 volunteers was carried out in six different laboratories. The purpose of the study was to investigate physical, physiological and product dependent parameters of three test emulsions (base, base+moisturizer and base+moisturizer+lipids) in a double blind study.

A comparison between analogous and digital sensor technology of the Corneometer CM825 was examined. Here a clear relationship between both sensor types could be highlighted.

A vital point of the study was the division of the test subjects according to their skin type. To get more objective limits for three different skin types – very dry, dry and normal skin - visual expert evaluation, self assessment and hydration measurements were analysed by means of statistical methods. The moisture-related skin types were determined as follow: very dry skin was characterized with Corneometer units below 30, dry skin between 30-40 and normal skin higher than 40 (arbitrary units).

The efficacy of the three test emulsions was examined in relation to the mentioned skin types. Analyzing the measured data of all test centers, a clear dependency of skin physiology (skin type) and product efficacy became evident. The drier the skin, the higher the increase of hydration. The product performance of the three test emulsions compared to the untreated control resulted in a significant increase of skin hydration in all measuring centers. The evaluation of a product ranking showed a good differentiation between the basic emulsion and the two other products. An increase of efficacy by adding lipids could be observed in four of six centers.

The important influence of the skin type of the volunteers on the degree of product performance, as demonstrated in this study, should be especially considered when drawing up guidelines for efficacy testing.

Correspondence to: Mrs. PD Dr. Ulrike Heinrich, Institut für Experimentelle Dermatologie, Universität Witten/Herdecke, Alfred-Herrhausen-Str. 44 (FEZ), 58455 Witten/Ruhr, Germany
Tel. +49-2302-2826-300, Fax +49-2302-2826-326, e-mail: ulrike.heinrich@uni-wh.de