Tests on cosmetics – Update 2014

Authors: Werner Voss, M.D., Gerrit Schlippe, M.D., Ilsabe Bunge, M.D., Ph. D., Dermatest GmbH, Muenster, Germany

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Abstract

Dermatological reports in accordance with scientific criteria are of decisive value for the safety and efficacy of cosmetics. The latest alterations in European legislation emphasise this fact. Whether a cosmetic product is well tolerated or causes irritations or allergic reactions must be proven by dermatological tests. The following effects of skin care products can be studied in a quantitative way: protection against sun radiation, moisturisation/hydration of the skin, reduction of skin roughness, reflection of light from the skin surface, water loss changes with the function of cosmetic treatments, effects of cosmetic products on skin temperature, skin pH, skin topography, e.g. skin roughness, skin friction, analysis of cell layers of the *stratum corneum* and the *stratum spinosum*. The value of dermatological reports directly depends on the respectability of the commissioned dermatologists. Pitfalls occur whenever non qualified scientific results are generously used for advertising campaigns such as 'dermatologically tested', 'allergy tested', 'hypo-allergen' etc. Additionally many reports are scientifically insufficient. Dermatological reports on cosmetics therefore must be valid in scientific methods and practical execution. We report on more than 35 years of practical testing.

Introduction

There are many tests on cosmetics, which are necessary for:

- Tolerability
- Non sensitisation
- Proof of efficacy
- Claim substantiation; and
- The fulfillment of the EU cosmetic regulations.

Today epidermal moisture, skin roughness and the fat content of the skin can be measured, as well as the interactions between cosmetics and the molecular reactions of the skin. We can test products on human 3-D skin models, we can determine DNA and RNA changes and in this way we can test single ingredients for their specific efficacy. Methods such as cutometry, sebumetry, profilometry of the skin, interleukin-determination, RNA and DNA amplification should be routine test methods in established laboratories. These methods should be wisely combined with dermatological expert knowledge and *in vivo* in-use tests, if necessary.

The cosmetic industry is booming and so are the claims concerning the effectiveness of cosmetic products. Advertising, standards and authority: these terms have become part of the common discussion in cosmetics and personal care products. The industry has moved towards a stronger stance in protecting the consumer through better tests for *in vivo* and *in vitro* safety tests, claim substantiation assays and a full Product Information File (PIF). An obligatory compilation of technical documentation is required for each cosmetic product to be placed on the market and the PIF must be amalgamated according to the EU Cosmetic Regulation 1223/2009/EC. On the 11th of July 2013 the regulation became the only legislative tool for the European cosmetic industry. Each cosmetic product must have an individual PIF and each PIF requires a 'responsible person' at the address specified for the product and company. This responsible person has to create and authorise this document and ensure that it is readily accessible in an electronic format.

Additionally a cosmetic product - beyond any purely cosmetic effect - today has to fulfill many claims and demands. Above all, it has to be benign, with no unwanted side-effects. Not only have the demands changed, there is a greater awareness of extreme skin conditions in the population. There are growing groups with dry skin (Figure 2), sensitive skin and seborrhoic skin, that all have to be considered. It is a well known fact that specific skin conditions respond differently to variable cosmetic supports.

Cosmetics are principally concerned with form rather than function and their formulation has always been an exciting challenge for cosmetic chemists and has become more so in recent years. A fundamental first step in formulation is to ensure that every