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Application of biophysical and skin imaging techniques to evaluate the film-forming effect of cosmetic formulations.

de Melo MO, Campos PMBGM. *Int J Cosmet Sci.* 2019 Aug 30. doi: 10.1111/ics.12577.

ABSTRACT

OBJECTIVE: Products with film-forming effect, or "second skin", which guarantees an immediate protective effect after application, is a highlight, especially when composed of natural ingredients. Thus, the objective of this study was to evaluate the immediate film-forming effect on skin of a gel and emulsion formulations added with *Kappaphycus alvarezii* and *Caesalpinia spinosa* extracts through biophysical and skin imaging techniques, especially with the Reflectance Confocal Microscopy (RCM). **METHODS:** The measurements were done in the forearm region before (baseline) and 1 hour after of application of the developed formulation and its control. The parameters related to the stratum corneum water content, transepidermal water loss (TEWL), cutaneous microrelief and morphological and structural characteristics of the epidermis were analyzed through the following biophysical and skin imaging techniques: Corneometer® CM 825, Tewameter® TM 300, Visioscan® VC98 and Vivascope® 1500, respectively. A sensorial analysis was also performed to study how the formulations were perceived on the skin. **RESULTS:** The obtained results showed that the active ingredient under study allows the film formation on the skin surface, leading to a reduction of TEWL and skin desquamation. The obtained images from RCM showed a reduction of furrows on the skin surface and a film formation after a single application of the formulations. However, these effects were more pronounced in the emulsion formulation, which suggests a synergistic effect of the active ingredient under study with the emollients of formulation composition. This result was also observed in the sensorial analysis, as both formulations added with the active substance were well evaluated. **CONCLUSION:** The presence of *Kappaphycus alvarezii* and *Caesalpinia spinosa* extracts in the studied cosmetic formulations, enabled a film formation on a skin surface, bringing benefits as a reduction of transepidermal water loss and skin desquamation, as well as a furrows reduction and an improvement of stratum corneum after one hour of application. Finally, the skin imaging techniques can be suggest as an excellent tool to evaluate a film forming effect of cosmetic formulations. This article is protected by copyright. All rights reserved. © 2019 Society of Cosmetic Scientists and the Société Française de Cosmétologie. **KEYWORDS:** Biophysical techniques; Claim substantiation; Emulsions; Film Formation; Formulation/stability; Reflectance Confocal Microscopy PMID:31469171 DOI:10.1111/ics.12577