

Moroccan organic argan oil improving skin barrier for dry skin

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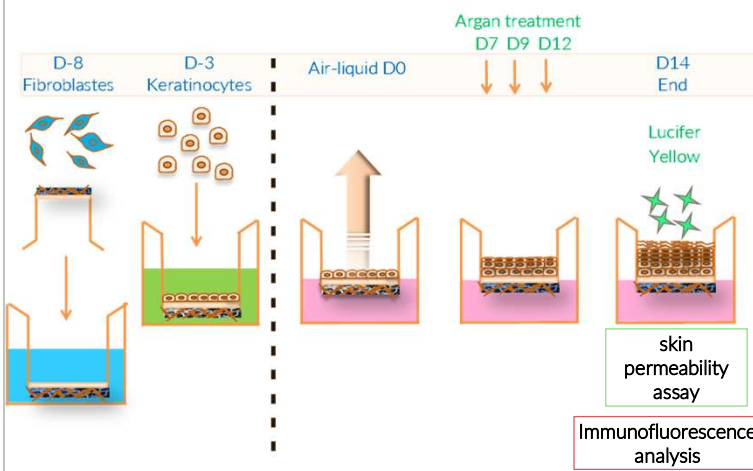
Introduction

Dry skin is an uncomfortable condition marked by scaling, itching, redness, and desquamation, commonly affects hands, arms, and legs. The skin barrier protects against extensive water loss and prevents the entry into the skin of harmful substances like irritants, allergens, and microorganisms [1]. The stratum corneum (SC) composition is the key to maintain optimal cutaneous hydration and can be compromised by a wide variety of factors, with a decrease in natural moisturizing factor (NMF), and reduction in SC water content, conducting to dry skin [2]. Filaggrin, one of the terminal differentiation markers of the epidermis, aids in SC hydration and is degraded into free amino acids as a part of NMF. This makes filaggrin one of the major factors influencing the hydration status of the SC [3].

Argan oil is a cold pressed oil, prepared by pressing the unroasted kernels of the argan tree (*Argania spinosa*) fruit. The one used in this study is a fair and organic argan oil and its picking is governed by a sustainable charter and training in good environmental practices. **Argan oil** is rich in triglycerides, particularly linoleic acid and oleic acid that helps nourishing the skin. Daily topical application of argan oil has also been shown to improve skin elasticity [4] and skin hydration by restoring the barrier function and maintaining its water-holding capacity [5]. The aim of this study was to evaluate the benefit of organic **Argan oil** on the improvement of skin barrier using a reconstructed human epidermal (RHE) model from our laboratory and assessing clinically the appearance of the skin after treatment.

Materials & Methods

Reconstructed human epidermis (RHE) treatment



Clinical test: Evaluation of aspect of skin

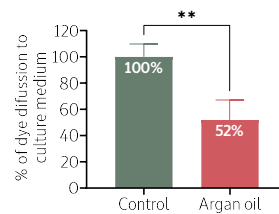
- Panel:** 15 healthy female volunteers (from 33 to 67 years old, mean 56 years old), with dry to very dry skin on half-legs
- Direction for use:** Daily application by gentle massage until full skin penetration
- Method:** Standardized image acquisitions using a clinical visible-light dermatological camera (C-cube, Pixience Inc, France) were performed before the first application of argan oil at day 0 and day 7 to determine skin microrelief and the quantity of scales.

References

- [1] Elias PM (1983) Epidermal lipids, barrier function, and desquamation. *J Investig Dermatol Suppl* 80:44s-49s
- [2] Breternitz M et al. (2008) Placebo-controlled, double-blind, randomized, prospective study of a glycerol-based emollient on eczematous skin in atopic dermatitis: biophysical and clinical evaluation. *Skin Pharmacol Physiol* 21:39-45.
- [3] Raney SG, Hope MJ (2006) The effect of bilayer and hexagonal HII phase lipid films on transepidermal water loss. *Exp Dermatol* 5:493-500.
- [4] Boucetta KQ et al. (2015) The effect of dietary and/or cosmetic argan oil on postmenopausal skin elasticity. *Clin Interv Aging* 10:339-349
- [5] Boucetta KQ et al. (2014) Skin hydration in postmenopausal women: Argan oil benefit with oral and/or topical use. *Prz. Menopauzalny* 13:280-288.

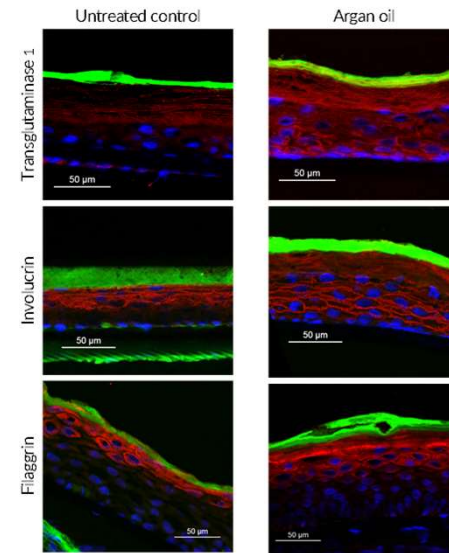
Results & Discussion

Argan oil decreases skin permeability



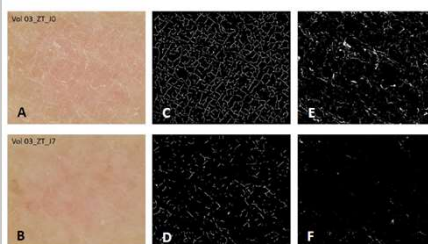
Permeability to Lucifer yellow was assessed at day 14 by its application at the surface area of RHE model. Means are reported \pm SEM (n=7) and untreated control were normalized to 100%. Statistical significance between untreated control and Argan oil treated RHE were determined using the non-parametric Mann-Whitney test, **P<0.01

Argan oil increases terminal differentiation markers of the epidermis

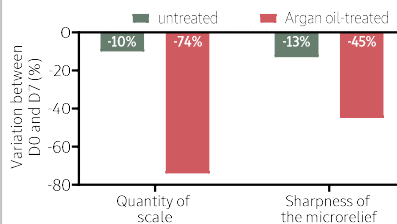


Immunofluorescence was conducted on untreated control and Argan oil treated RHE. Involucrin, transglutaminase 1 and filaggrin appear in red, nuclei in blue and Lucifer yellow in green.

Argan oil visibly improves skin aspect



C-Cube test acquisitions of the volunteer #3 who took part in the clinical study. Images A, C and E correspond to untreated area on day 0. Images B, D and F correspond to area treated with Argan oil on D7. Images C and D correspond to the visualization of the cutaneous microrelief. Images E and F correspond to the visualization of scales on the surface of the skin.



After one week, the improvement of skin hydrated aspect was visible, with a 74% reduction of the quantity of the scales and -45% of the sharpness of the microrelief on the whole panel after Argan oil treatment (Fisher test, with a threshold of 5%).

Conclusions

Argan oil is a moisturizer agent increasing FLG, IVL, TGM1 proteins involved in the maintenance of skin barrier and by the way, decreases the penetration of harmful compounds. As FLG is a molecule involved in the production of the NMF that allows hydration of the skin, **Argan oil** could help maintain skin moisture biologically through this mechanism. These results demonstrate that **Argan oil** helps to reduce the symptoms of dry skin, and visibly improve the skin.