Barrier Function Properties of Jojoba Derivatives Post-Shaving
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Abstract
Jojoba (Simmondsia chinensis) oil has historically been shown to have beneficial skin effects. Barrier function and skin irritation are significant considerations in creating products used during or immediately after shaving the face, legs, and armpits; thus prompting our research to explore the benefits of jojoba derivatives. Multiple small, IRB approved, randomized, double blind, vehicle-controlled studies (14 to 15 subjects each) were carried out under controlled environmental conditions in order to evaluate the effectiveness of jojoba derivatives on restoring barrier function and decreasing irritation. The jojoba-derived ingredients were incorporated into a lotion, wipe, or shaving cream system, and applied post-dry shave (i.e. lioon and wipe) or during the shaving process (i.e. shaving cream). Barrier function was transepidermal water loss (TEWL) and irritation by erythema measurements, were conducted before and after shaving/treatment. The jojoba-derived ingredients restored barrier function and decreased irritation at all measured time points.

Wipe: Improved Barrier Function
Objective: Determine the effect of hydrolyzed jojoba esters on barrier function when added to a baby wipe solution.

Test Articles: Floraesters K-100 Jojoba, Floraesters K-20W Jojoba, and bisabolol.
Design: Nonwoven wipes (45g/m² spunlace) were soaked in 2.5g of test solution for 24 hours. The forearms of 14 healthy subjects were dry shaved to create skin irritation. Measurements were made at baseline (pre-shave, no treatment), post-shave (post-test article treatment), and 4, 24, 48, and 72 hours post initial test article application. Test article applications were made following post-shave, 4, 24, and 48 hour measurements.

End Point: Reduced erythema (redness) as measured by the Mexameter MX 18 (Figure 2).

Shaving Cream: Skin Hydration
Objective: Determine the skin hydration potential of hydrolyzed jojoba esters and jojoba esters when added to a shaving cream.

Test Articles: Floraesters 30 and Floraesters K-100 Jojoba.
Design: Measurements were made at baseline (pre-shave, no treatment), 15 minutes post-shave, and 60 minutes post-shave on the forearms of 15 healthy female subjects. Test article applications were made following baseline measurements, but prior to shaving.

End Point: Increased skin hydration as measured by the Corneometer CM 825 (Figure 6).

Conclusions
The data indicate that jojoba-derived ingredients can have a profound effect on the skin's barrier function. These jojoba derivatives improved barrier function, increased skin hydration, and decreased barrier dysfunction caused by shaving. It was not surprising that these jojoba derivatives also reduced erythema since Habashy et. al. were able to show in 2005 that jojoba seed oil was anti-inflammatory in a number of standard models for inflammation.19

References / Footnotes
1. Floraesters K-100 Jojoba [INCI: Hydrolyzed Jojoba Esters (and) Jojoba Esters (and) Water (Aqua)] was supplied by Floratech.
2. Floraesters K-20W Jojoba [INCI: Hydrolyzed Jojoba Esters (and) Water (Aqua)] was supplied by Floratech.
3. Alpha-Bisabolol Natural was supplied by BASF Corporation.
4. Texemio is a product of Courage + Khazaka Electronic GmbH, (Koln, Germany).
5. Mexameter is a product of Courage + Khazaka Electronic GmbH, (Koln, Germany).
6. Floraesters 20 (INCI: Jojoba Esters) was supplied by Floratech.
7. Floraesters 30 (INCI: Jojoba Esters) was supplied by Floratech.
8. Floraesters 60 (INCI: Jojoba Esters) was supplied by Floratech.
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