Beneficial Effects of Incorporating Hydrolyzed Jojoba Esters into Skin Care Products

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Abstract

Jojoba (Simmondsia chinensis) is a perennial shrub indigenous to arid regions of Arizona, California, and Northwestern Mexico. Jojoba seed contains about 50% jojoba oil. Jojoba oil is not a triglyceride oil, as are all other known botanical oils; rather, it is approximately 99% liquid wax ester. The ester is composed of long-chain linear fatty alcohols, 20 to 24 carbons in length, and long-chain linear fatty acids, 18 to 22 carbons in length. Nearly all of the acid and alcohol moieties are ω-9 mono-unsaturated. Jojoba oil has been used in folk remedies for renal colic, sunburn, chaffed skin, hair loss, headache, wounds, and sore throats.

Small, controlled, clinical studies were undertaken to evaluate the activity of hydrolyzed jojoba esters (HJE) incorporated into different types of topical products. In the first study, subjects with dermatologist-diagnosed mild to moderate hand dermatitis used a hand sanitizer containing Floraesters® K-100 Jojoba (INCI: hydrolyzed jojoba esters (and) jojoba esters (and) water (aqua)) for 14 days. Skin biopsies were taken before and after the study showed a decrease in inflammation and barrier disruption as indicated by IL-6 and Filaggrin staining. The second study compared a hand sanitizer with and without Floraesters® K-20W Jojoba (INCI: hydrolyzed jojoba esters (and) water (aqua)). Five consecutive applications of the test articles were applied to the lower legs of subjects with dry skin. Corneometer measurements were taken 10 minutes post application and then every 30 minutes for four hours. The hand sanitizer containing K-20W was superior in promoting skin hydration. A third study compared the skin hydration potential of a standard skin care lotion containing glycerin with and without K-20W Jojoba on subjects with dry legs. The Dermal Phase Meter (NOVA) results clearly indicated a beneficial effect of the lotion containing glycerin both with and without K-20W Jojoba and 1% glycerin. One study compared a hand sanitizer with and without Floraesters® K-20W Jojoba containing 4.0% glycerin. One application of the product to 12 healthy subjects with dry lower legs followed by hourly Corneometer measurements for 8 hours. The optimum dose was determined for Floraesters K-20W incorporated into a lotion formulation.

Proposed Mechanism of Action

Increased Skin Hydration (Corneometer)

Study #3 cont.

Purpose: to evaluate the ratio of Floraesters K-20W Jojoba to glycerin for extended skin hydration in a lotion formulation.

Design: one application of the product to 10 healthy subjects with dry lower legs

End Point: extended skin hydration (via Corneometer CM 825) (Figure 6)

Conclusions

• Preliminary immunohistochemistry data suggests that hydrolyzed jojoba esters may have an inhibitory effect on the expression of IL-6 and Filaggrin in dermatic skin.

• Hydrolyzed jojoba esters potentiate the effect of glycerin on increasing skin hydration

References


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