

Floraesters K-20W Jojoba: A Natural Multifunctional Ingredient

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Floraesters K-20W[®] Jojoba: A Natural Multifunctional Ingredient

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Abstract

Floraesters K-20W[®] Jojoba [INCI: Hydrolyzed Jojoba Esters (and) Water (Aqua)], a unique oil-free emollient derived from jojoba (*Simmondsia chinensis*), serves several functions within a multitude of finished product categories. The film-forming and substantive nature of hydrolyzed jojoba esters makes Floraesters K-20W Jojoba an ideal candidate for both leave-on and rinse-off products intended to have long-lasting effects. A series of small, Investigational Review Board (IRB) approved, randomized, double-blind, vehicle-controlled clinical studies were carried out under controlled environmental conditions. The data demonstrated that Floraesters K-20W Jojoba was able to provide the following formulation benefits: water resistance in sunscreen applications; tan longevity in sunless tanning applications; firmness, elasticity, and enlarged pore reduction in face mask applications; as well as skin hydration in each of these categories due to its synergistic relationship with glycerin. Floraesters K-20W Jojoba also improved conditioning in rinse-out hair care applications. These studies confirm that Floraesters K-20W Jojoba is a multifunctional ingredient useful to any formulator.

Sunscreens

Objective:

Determine the water resistance potential between a sunscreen with and without Floraesters K-20W Jojoba.

Design:

The Minimum Erythema Dose (MED) is the lowest UV dose required to produce perceptible erythema. The MED for each subject was measured and used to determine the proper UV exposure during testing of the sunscreen formulas. The static SPF value was calculated using the MED of sunscreen protected skin (MEDp) relative to the MED of unprotected skin (MEDu) on each subject using the following equation: MEDp/MEDu. For the 40-minute immersion test, subjects sat with the testing site submerged in a water bath for two 20-minute immersion periods prior to UV exposure, and SPF was calculated in the same manner as above.¹

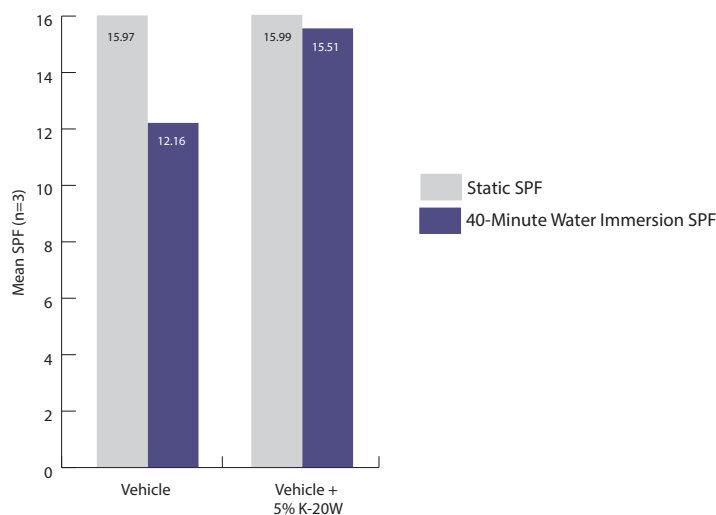
Subjects:

n = 3 (male and female)

Results:

After 40 minutes of water immersion, the sunscreen formula containing 5% Floraesters K-20W Jojoba had a 28% higher SPF and maintained an SPF rating of 15 (which was not seen in the vehicle formula). (Figure 1)

Figure 1. Static and 40-Minute Water Immersion SPF



Sunless Tanners

Objective:

Determine the potential of Floraesters K-20W Jojoba to increase skin color retention when incorporated into a sunless tanning formulation with 5% dihydroxyacetone (DHA).

Design:

One application of each of the sunless tanners was made to randomized locations on the lower backs of subjects. Melanin measurements (*i.e.* skin color) via Mexameter MX 18² were conducted at baseline, and 24, 48, 72, and 96 hours, post sunless tanner application.

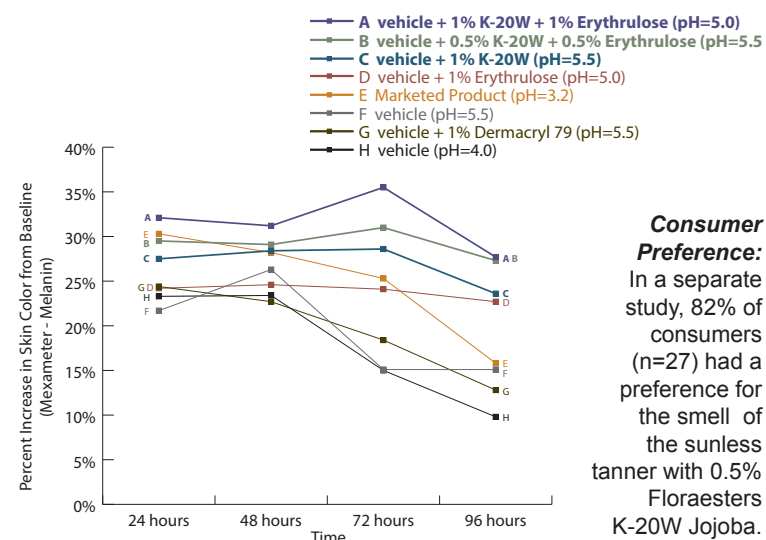
Subjects:

n = 15 (male and female)

Results:

Floraesters K-20W Jojoba enhanced skin color retention in a sunless tanner containing 5% DHA better than the vehicle test articles at 24, 48, 72, and 96 hours. All test articles containing Floraesters K-20W Jojoba produced statistically significantly ($p < 0.05$) higher percent changes in skin color than the vehicles at the 72 and 96 hour time points. (Figure 2)

Figure 2. Color Retention



Consumer Preference:

In a separate study, 82% of consumers (n=27) had a preference for the smell of the sunless tanner with 0.5% Floraesters K-20W Jojoba.

Face (Sheet) Masks

Objective:

Determine the potential of Floraesters K-20W Jojoba to increase skin elasticity and firmness, and reduce enlarged pore and fine line counts, when incorporated into a face (sheet) mask.

Design:

Subjects applied the face mask once daily for two weeks. Skin firmness and elasticity measurements via Cutometer², and fine line and enlarged pore counts via the BTBP Clarity Pro Advanced and Facial Stage DM-3⁴ were conducted at baseline and after two weeks of product use.

Subjects:

n = 16 (female)

Results:

The face mask containing Floraesters K-20W Jojoba increased skin firmness and reduced pore size / fine line counts statistically significantly ($p < 0.05$) more than the vehicle face mask. (Figures 4 and 5)

Figure 4. Enlarged Pores and Fine Line Counts

Skin Health Parameter	Face Mask	Mean Difference (count)	% of subjects that showed a decrease
Enlarged Pores	Vehicle + 1% K20W	-115	80%
	Vehicle	-21	56%
Fine Lines	Vehicle + 1% K20W	-5	67%
	Vehicle	2	40%

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Shampoos / Conditioners

Objective:

Determine the potential of Floraesters K-20W Jojoba and Floraesters K-100 Jojoba to condition hair as measured by wet comb force.

Design:

One application of each shampoo or conditioner was made to damaged (i.e. double-bleached) hair tresses. Comb force measurements were made before and after treatment using the Test Resources Q Series (100Q) Universal Testing Machine.³

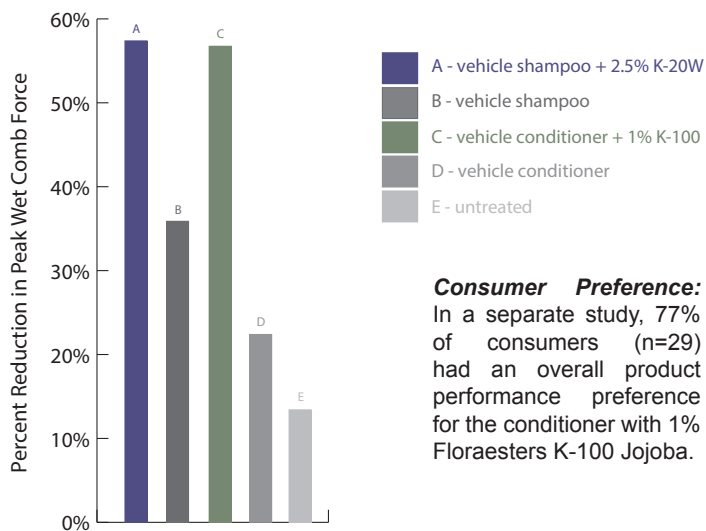
Subjects:

n = 3 (tresses)

Results:

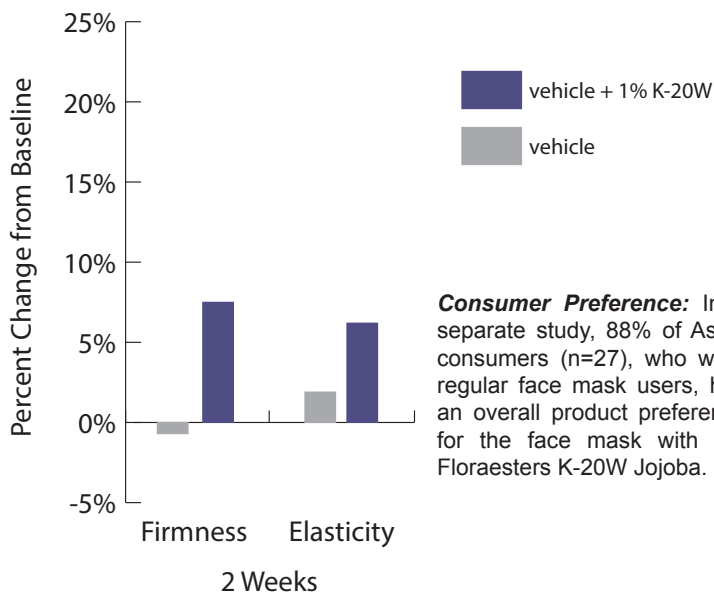
The rinse-out shampoo containing 2.5% Floraesters K-20W Jojoba and conditioner containing 1% Floraesters K-100 Jojoba reduced wet comb force 22% and 34% more than the vehicle formulas (p<0.05), respectively; and resulted in a statistically significant (p<0.05) decreases in wet comb force. (Figure 3)

Figure 3. Wet Comb Force



Face (Sheet) Masks

Figure 5. Skin Elasticity and Firmness



Increased Skin Hydration

Objective:

Determine the potential of Floraesters K-20W Jojoba to increase skin hydration in finished product applications.

Design:

For the sunscreens, toners (water-based), and sunless tanners, one application of each finished product was made to the outer leg of subjects with dry legs. Skin hydration measurements (via Corneometer CM 825²) were taken at baseline, and at the time point specified below. For the face masks, skin hydration measurements were captured before and after two weeks of once-daily face mask use.

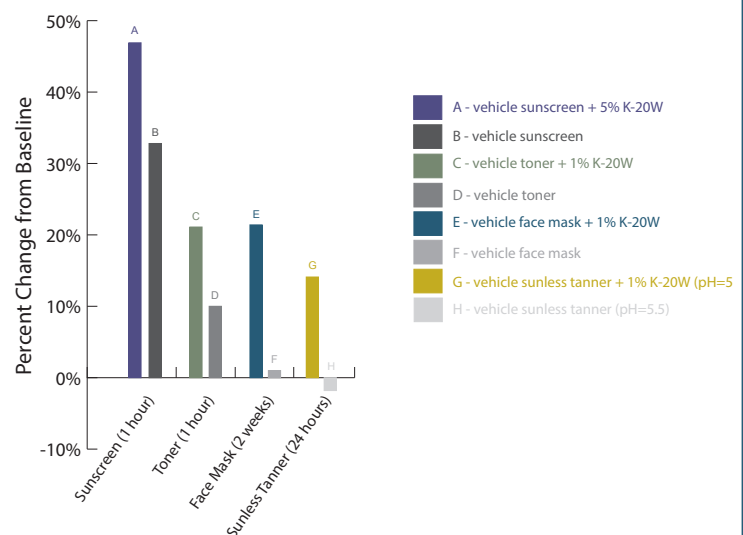
Subjects:

n = 15-20 (female)

Results:

The finished products containing Floraesters K-20W Jojoba increased skin hydration statistically significantly (p<0.05) more than the finished products without. (Figure 6)

Figure 6. Skin Hydration



Conclusions

Floraesters K-20W Jojoba is multifunctional within a variety of finished product applications and provides the following benefits:

- water resistance
- color retention (on skin and post-hair dye⁵)
- hair conditioning (i.e. reduced wet comb force)
- increased skin elasticity and firmness
- reduced pore size and fine lines
- increased skin hydration
- improved barrier function⁶

References / Footnotes


1. SPF testing was conducted according to the US FDA Final Rule; 21 CFR Parts 201 and 310 by Suncare Research Laboratories, LLC (Winston Salem, NC).
2. Mexameter, Cutometer, and Corneometer are products of Courage + Khazaka Electronic GmbH, (Köln, Germany).
3. The Test Resources Q Series (100Q) Universal Testing Machine is a product of TestResources, Inc (Shakopee, MN).
4. The BTBP Clarity Pro Advanced and Facial Stage DM-3 are products of BrighTex Bio-Photonics, LLC (San Jose, CA).
5. See Claim Sheets CS15-074, CS15-075, and CS15-076.
6. See Claim Sheet CS11-035.

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SAMPLELABEL



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HMIS: 0,1,0

INCI: HYDROLYZED JOJOBA ESTERS,
WATER (AQUA)

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