**Nonwoven Wipes: Skin Barrier Improvement Using Natural Jojoba Esters**

Tiffany N. Oliphant, M.S., C.C.R.C. (Floratech, Chandler, AZ) and Robert A. Harper Ph.D. (Harper & Associates, La Jolla, CA)

**Email:** sales@floratech.com  **Website:** www.floratech.com

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**Introduction**

Jojoba (Simmondsia chinensis) is a perennial shrub native to Arizona, California, and Northwestern Mexico. The oil from this plant, jojoba seed oil, is a wax that has been used in the past as a folk remedy for renal colic, sunburn, chafed skin, hair loss, headache, wounds, sore throats, psoriasis, and acne (e.g., sulfonated jojoba). 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 ununsaturated. More recently, Floratech has hydrolyzed this wax ester for use in various commercial cosmetic and personal care formulations such as lotions, body washes, hand sanitizers, toners, and nonwoven wipes for make up removal and facial cleansing.

Small, vehicle controlled, clinical studies were carried out to explore the benefits associated with incorporating Floratech’s K-100 Jojoba (INCI: hydrolyzed jojoba esters (and) jojoba esters (and) water (aqua)) and Floratesters K-20W Jojoba (INCI: hydrolyzed jojoba esters (and) water (aqua)) into various nonwoven wipe solutions. These solutions included hydro-alcoholic systems, non-alcohol based antimicrobial systems, and baiy wipe systems. Incorporation of Floratech K-100 Jojoba and Floratesters K-20W Jojoba resulted in increased skin hydration, increased consumer preference, and anti-irritation properties which include decreased erythema and increased skin barrier function (as compared to the known anti-irritant bisabolol). These studies demonstrate how Floratech K-100 Jojoba and Floratesters K-20W Jojoba can provide added functionality to multiple categories of nonwoven wipes.

**Increased Skin Hydration: Non-Alcohol Based Wipes**

**Objective:** Determine the skin hydration potential of Floratesters K-20W Jojoba and Floratech K-100 Jojoba in conjunction with glycerin, when added to a non-alcohol based solution.

**Design:** Nonwoven wipes (45g/m²) were soaked in the 5g of test solution for 4 hours. One application of each experimental wipe was applied to dry lower legs of twelve healthy female subjects. End Point: Increased skin hydration as measured by the Corneometer CM 825 over four hours (Figure 3).

**Figure 3: Increased Skin Hydration**

![Increased Skin Hydration](image-url)

**Figure 4: Increased Skin Hydration**

![Increased Skin Hydration](image-url)

**Consumer Preference: Non-Alcohol Based Wipes**

**Objective:** Determine the consumer preference between a non-alcohol based wipe with and without Floratesters K-20W Jojoba.

**Design:** Nonwoven wipes (45g/m²) (spunlace) were soaked in the 5g of test solution for 24 hours. One application of each experimental wipe was applied to the entire left or right hand of thirty-one healthy female subjects. End Point: Consumer preference survey immediately following application (Figure 5).

**Figure 5: Increased Consumer Preference**

![Increased Consumer Preference](image-url)

**Barrier Function: Baby Wipes**

**Objective:** Determine the anti-irritation potential of Floratesters K-20W Jojoba and Floratech K-100 Jojoba, when added to a baby wipe solution. Design: Nonwoven wipes (45g/m²) (spunlace) were soaked in the 2.5g of test solution for 24 hours. The forearms of fourteen healthy subjects were dry shaved to create skin irritation. Measurements were made at baseline (pre-shave, no treatment), post-shave (pre-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: Decreased erythema (from 4 hours to each time point) as measured by the Mexameter MI 10 (Figure 7).

**Figure 7: Decreased Erythema**

![Decreased Erythema](image-url)

**Conclusions**

- Floratesters K-20W and K-100 Jojoba increased skin hydration when incorporated, in combination with glycerin, into non-alcohol nonwoven wipes and hydro-alcoholic nonwoven wipes.
- Floratech K-20W increased consumer preference when incorporated into non-alcohol nonwoven wipes.
- Floratesters K-20W and K-100 Jojoba increased barrier function in irritated skin when incorporated into a baby wipe.
- Floratesters K-20W and K-100 Jojoba decreased erythema in irritated skin when incorporated into a baby wipe.
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