Nonwoven Wipes: Skin Barrier Improvement using Natural Jojoba Esters


For the World of Wipes
2013 International Conference

June 17th – 20th, 2013
Atlanta, GA
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

Introduction

Jojoba (Simmondsia chinensis) is a perennial shrub native to Arizona, California, and Northwestern Mexico.\(^\text{A}\) (Figures 1 and 2). The oil from this plant, jojoba seed oil, is a wax ester 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., sulfurized jojoba).\(^\text{B,C}\) 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 monounsaturated.\(^\text{D}\) 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 Floraeast K-100 Jojoba [INCI: hydrolyzed jojoba esters (and) jojoba esters (and) water (aqua)] and Floraeast 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 baby wipe systems. Incorporation of Floraeasts K-100 Jojoba and Floraeasts 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\(^\text{E}\)). These studies demonstrate how Floraeasts K-100 Jojoba and Floraeasts 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 Floraeasts K-20W Jojoba and Floraeasts K-100 Jojoba in conjunction with glycerin, when added to a non-alcohol based solution.

Design: Nonwoven wipes (45g/m\(^2\) spunlace) were soaked in the 5g of test solution for 24 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\(^\text{®}\) CM 825 over four hours (Figure 3).

Increased Skin Hydration: Hydro-Alcoholic Wipes

Objective: Determine the skin hydration potential of Floraeasts K-20W Jojoba and Floraeasts K-100 Jojoba in conjunction with glycerin, when added to a hydro-alcoholic solution.

Design: All solutions contained 65% ethanol, 1% glycerin, and water. Nonwoven wipes (45g/m\(^2\) spunlace) were soaked in 2.5g of test solution for 72 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 two hours (Figure 4).
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

Objective: Determine the consumer preference between a non-alcohol based wipe with and without Floraesters 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

Barrier Function: Baby Wipes

Objective: Determine the anti-irritation potential of Floraesters K-20W Jojoba and Floraesters 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: Increased barrier function as measured by the Tewameter TM300 \(^1\) (Figure 6).

Figure 6: Increased Barrier Recovery

Conclusions

• Floraesters K-20W and K-100 Jojoba increased skin hydration when incorporated, in combination with glycerin, into non-alcoholic nonwoven wipes and hydro-alcoholic nonwoven wipes.
• Floraesters K-20W increased consumer perception when incorporated into non-alcoholic nonwoven wipes.
• Floraesters K-20W and K-100 Jojoba increased barrier function in irritated skin when incorporated into a baby wipe.
• Floraesters K-20W and K-100 Jojoba decreased erythema in irritated skin when incorporated into a baby wipe.
iLabel® – Floratech Information Instantly

iLabel delivers valuable product information instantly. It supplies lot-specific information including certificates of analysis, material safety data sheets, product specifications and technical data.

iLabel saves time by providing instant access to global regulatory information, clinical efficacy data, and demonstration formulas featuring Floratech products.

iLabel is an easy-to-use tool that does not require registration, usernames, or passwords.

Please direct inquiries and comments to Floratech:
email: sales@floratech.com
phone: +1.480.545.7000
fax: +1.480.892.3000


REV: JUL 2014