Nonwoven Wipes: Skin Barrier Improvement Using Natural Jojoba Esters

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Introduction
Small, environmentally controlled, double-blind, clinical studies were conducted to explore the benefits of incorporating small amounts of hydrated jojoba esters into nonwoven wipes. In the first study, Florasters K-20W Jojino [INCI: hydrated jojoba esters (and) water (aqua)] or Florasters K-100 Jojino [INCI: hydrated jojoba esters (and) jojoba esters (and) water (aqua)] was incorporated into hydro-alcoholic wipes. After one application to the lower legs of normal subjects with dry skin, the wipes containing the hydrated jojoba esters produced statistically greater skin hydration than the vehicle wipe (as measured by a Comestomek) with peak hydration increases of approximately 30% at the 30 minute time point. In a second study carried out in a similar fashion as the first study, hydrated jojoba esters were incorporated into non-alcohol based antimicrobial wipes. These wipes were compared to a vehicle wipe as well as to currently marketed antibacterial wipes. After one application, the wipes which contained either of the hydrated jojoba esters produced statistically greater skin hydration than all other wipes, with peak hydration increases of 40 to 47%. In the third study, skin inflation was induced by dry shaving the forearm of normal subjects. Hydrated jojoba esters were incorporated into baby wipes and compared to a vehicle wipe and a wipe containing bisabolol. Multiple wipe applications were made after shaving over four days. Erythema and transdermal water loss (TEWL) measurements were taken after each wipe application. The baby wipes which contained the hydrated jojoba esters increased barrier recovery (as measured by TEWL) better than bisabolol and were as efficacious as bisabolol in reducing skin erythema. These studies indicate that hydrated jojoba esters can be delivered to the skin in multiple nonwoven wipe formulas which all produce significant benefits to the skin barrier.

Increased Skin Hydration: Non-Alcohol Based Wipes

Objective: Determine the skin hydration potential of Florasters K-20W Jojino and Florasters K-100 Jojino in conjunction with glycine when added to a non-alcohol based solution.

Design: Nonwoven wipes (45gm² spunsate) were soaked in 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 Comestomek CM 825® over four hours (Figure 1).

Increased Skin Hydration: Hydro-Alcoholic Wipes

Objective: Determine the skin hydration potential of Florasters K-20W Jojino and Florasters K-100 Jojino in conjunction with glycine when added to a hydro-alcoholic solution.

Design: Solutions contained 65% ethanol, 1% glycine, and water. Nonwoven wipes (45gm² spunsate) 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 Comestomek CM 825 over two hours (Figure 2).

Increased Skin Hydration: Non-Alcohol Based Wipes

Objective: Determine the skin hydration potential between a non-alcohol based wipe with and without Florasters K-20W Jojino.

Design: Nonwoven wipes (45gm² spunsate) were soaked in 5g of test solution for 24 hours. One application of each experimental wipe was applied to the entire left or right thigh of thirty-one healthy female subjects.

End Point: Consumer preference survey immediately following application (Figure 3).

Consumer Preference: Non-Alcohol Based Wipes

Objective: Determine the anti-irritation potential of Florasters K-20W Jojino and Florasters K-100 Jojino when added to a baby wipe solution.

Design: Nonwoven wipes (45gm² spunsate) were soaked in 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 MX 18® (Figure 5).

Barrier Function: Baby Wipes

Objective: Determine the anti-irritation potential of Florasters K-20W Jojino and Florasters K-100 Jojino when added to a baby wipe solution.

Design: Nonwoven wipes (45gm² spunsate) were soaked in 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 TM 300® (Figure 4).

Anti-Irritation: Baby Wipes

Objective: Determine the anti-irritation potential of Florasters K-20W Jojino and Florasters K-100 Jojino when added to a baby wipe solution.

Design: Nonwoven wipes (45gm² spunsate) were soaked in 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 MX 18® (Figure 5).

Conclusions
• Florasters K-20W and K-100 Jojino increased skin hydration when incorporated, in combination with glycine, into non-alcoholic nonwoven wipes and hydro-alcoholic nonwoven wipes.
• Florasters K-20W Jojino increased favorable consumer perception when incorporated into non-alcoholic nonwoven wipes.
• Florasters K-20W and K-100 Jojino increased barrier function in irritated skin when incorporated into a baby wipe.
• Florasters K-20W and K-100 Jojino decreased erythema in irritated skin when incorporated into a baby wipe.

References / Footnotes
A. Comestomek is a registered trademark of Covaresa + Khazaka Electronic GmbH (Köln, Germany).
B. Fresh Scents Wrt Oint® Antibacterial Hand and Face Wipes Pocket Size Singles were utilized. Wet Ones is a registered trademark of Playtex Inc. (Dover, DE).
C. Germ-X® Antimicrobial Soft Wipes Singles were utilized. Germ-X is a registered trademark of Vi-Jon Laboratories (St. Louis, MO).
D. Wal-Mart Equate® Antibacterial Wipes were utilized. Equate is a registered trademark of Wal-Mart Stores, Inc. (Rockdale Industries, Shelbygan, WI).
E. Tearemos is a product of Covaresa + Khazaka Electronic GmbH (Köln, Germany).
G. Mesamecer is a product of Covaresa + Khazaka Electronic GmbH (Köln, Germany).

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