



# L22: Botanically-Derived Skin Surface Lipid Mimetic

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## Abstract

L22® [INCI: Jojoba Oil/Macadamia Seed Oil Esters, Squalene, Phytosteryl Macadamiate, Phytosterols] is a unique lipid complex, derived from botanical sources consisting of jojoba (*Simmondsia chinensis*), macadamia (*Macadamia integrifolia*), and olive (*Olea europaea*). This lipid complex was specifically designed to mimic the skin surface lipids found in a healthy 22-year-old.<sup>1</sup> In order to determine the effectiveness of L22 in oil-in-water emulsions, multiple small, Investigational Review Board (IRB) approved, randomized, double-blinded, vehicle controlled clinical studies (12 to 15 subjects each) were carried out under controlled environmental conditions for skin hydration, firmness, and elasticity, as well as barrier function. The results showed that L22 provided short term skin hydration in normal, healthy skin; long term skin hydration and increased firmness and elasticity in aged, sun-damaged skin; and increased barrier recovery in skin that had been delipidized by using acetone. The skin hydration and barrier recovery produced by L22 were amplified when ceramides were present. These studies show that L22 possesses attributes that would be beneficial in many skin care treatment and maintenance products.

## Skin Lipid Components<sup>1</sup>

- Triglycerides
- Sterols
- Wax Esters
- Squalene
- Sterol Esters

## References / Footnotes

1. Cotterill JA, Cunliffe WJ, Williamson B, and Bulusu L. Age and Sex Variation in Skin Surface Lipid Composition and Sebum Excretion Rate. *British Journal of Dermatology* 1972; 87: 333-40.
2. Tewameter is a product of Courage + Khazaka Electronic GmbH, (Köln, Germany).
3. Corneometer is a product of Courage + Khazaka Electronic GmbH, (Köln, Germany).
4. Cutometer is a product of Courage + Khazaka Electronic GmbH, (Köln, Germany).

## For More Information...

For more information on L22 visit [www.lipids22.com](http://www.lipids22.com) or scan the QR Code below.

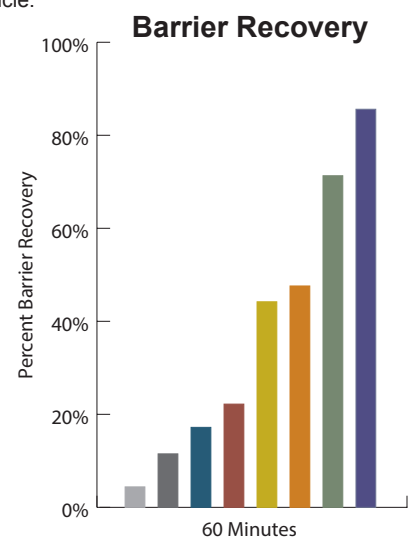


## Improved Barrier Recovery

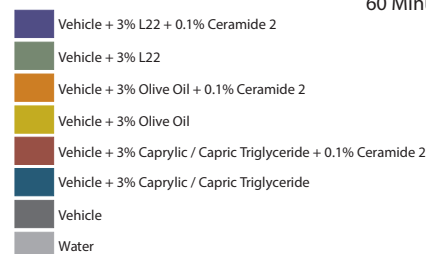
**Objective:** To determine if L22 improves the recovery of skin barrier function better than other common emollients with skin-lipid-like components.

**Design:** In two separate studies, subjects' forearms were exposed to acetone to partially extract the natural skin lipids. One application of each lotion test article was made (3 mg/cm<sup>2</sup>) to randomized locations on the forearms of fourteen (Figure 1) or fifteen (Figure 2) male and female subjects.

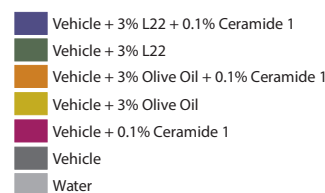
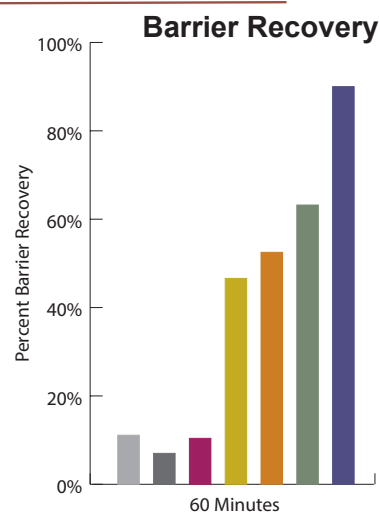
**End Point:** Transepidermal water loss (TEWL) was measured using a Tewameter TM300<sup>2</sup> at baseline on normal/untreated forearm skin, 30 minutes after acetone extraction, and 60 minutes after test article application. The percent barrier recovery (i.e., reduction in TEWL as compared to the same site after acetone treatment but prior to test article treatment) was then determined for each test article.



**Figure 1.** The test article containing 3% L22 increased barrier recovery statistically significantly better than the lotions containing 3% Olive Oil or Caprylic / Capric Triglyceride Oil ( $p < 0.001$ ) and the vehicle ( $p < 0.001$ ) 60 minutes after the test article.



**Figure 2.** The test article containing 3% L22 increased barrier recovery statistically significantly better than the test article containing 3% Olive Oil ( $p < 0.001$ ) and the vehicle ( $p < 0.001$ ) 60 minutes after the test article application. L22 displayed an enhanced effect with the inclusion of Ceramide 1.

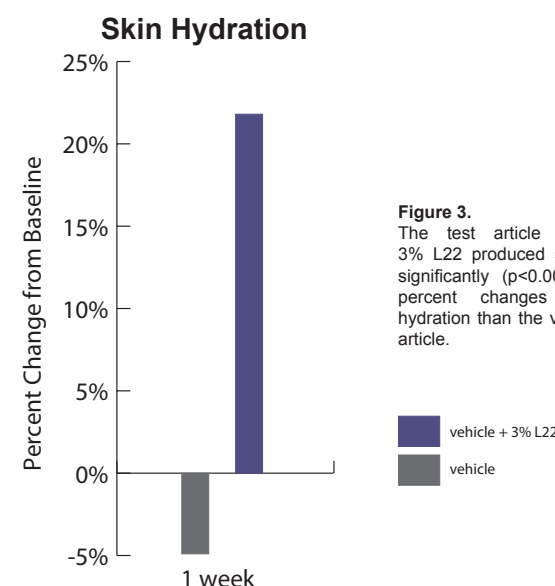


## Increased Skin Hydration, Elasticity, and Firmness

**Objective:** To determine if L22 improves skin hydration, elasticity, and firmness in skin that is aged and sun-damaged skin.

**Design:** One application of each lotion test article was made (2.7 mg/cm<sup>2</sup>) to the forearms of thirteen male and female subjects between the ages of 60-80 years.

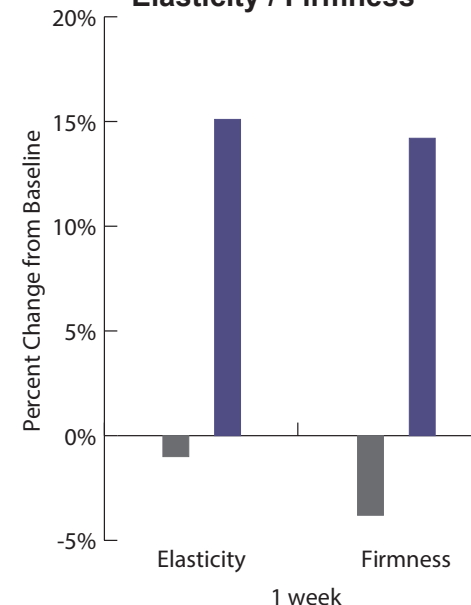
**End Point:** Skin hydration (Figure 3) and skin elasticity / firmness (Figure 4) were measured using a Corneometer® CM 825<sup>3</sup> and MPA Cutometer<sup>®4</sup>, respectively, at baseline and after one week of twice-daily test article use. Percent change was determined for each parameter for each test article.



**Figure 3.** The test article containing 3% L22 produced statistically significantly ( $p < 0.001$ ) higher percent changes in skin hydration than the vehicle test article.



## Elasticity / Firmness



**Figure 4.** The test article containing 3% L22 produced statistically significantly ( $p < 0.001$ ) higher percent changes in skin elasticity and firmness than the vehicle test article.

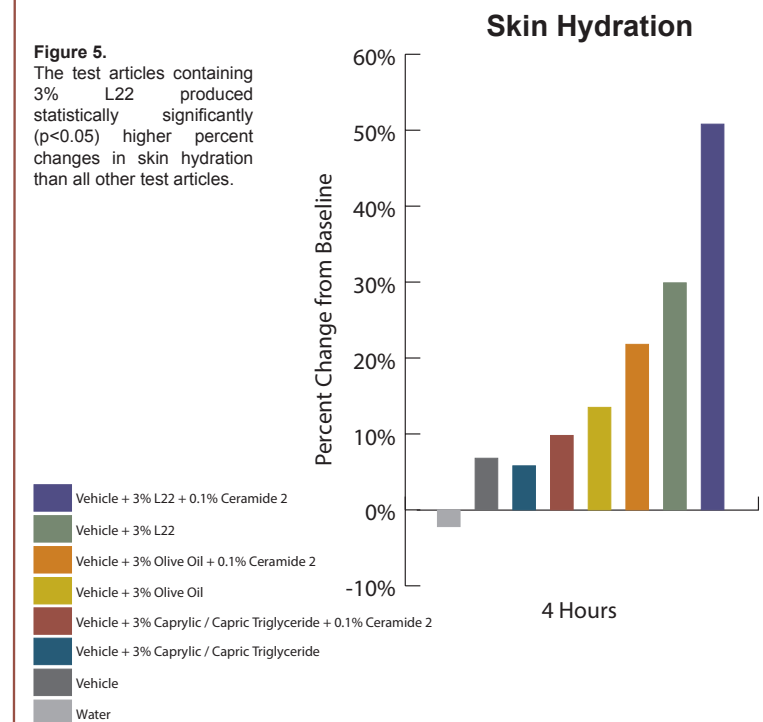


## Increased Skin Hydration

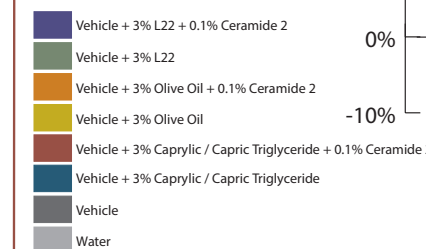
**Objective:** To determine if L22 improves skin hydration better than other common emollients with skin-lipid-like components.

**Design:** One application of each lotion test article was made (2.5 mg/cm<sup>2</sup>) to randomized locations on the legs of twelve female subjects.

**End Point:** Skin hydration (Figure 5) was measured using a Corneometer CM 825 at baseline and four hours post test article application. Percent change in skin hydration was determined for each test article.



**Figure 5.** The test articles containing 3% L22 produced statistically significantly ( $p < 0.05$ ) higher percent changes in skin hydration than all other test articles.



## Conclusions

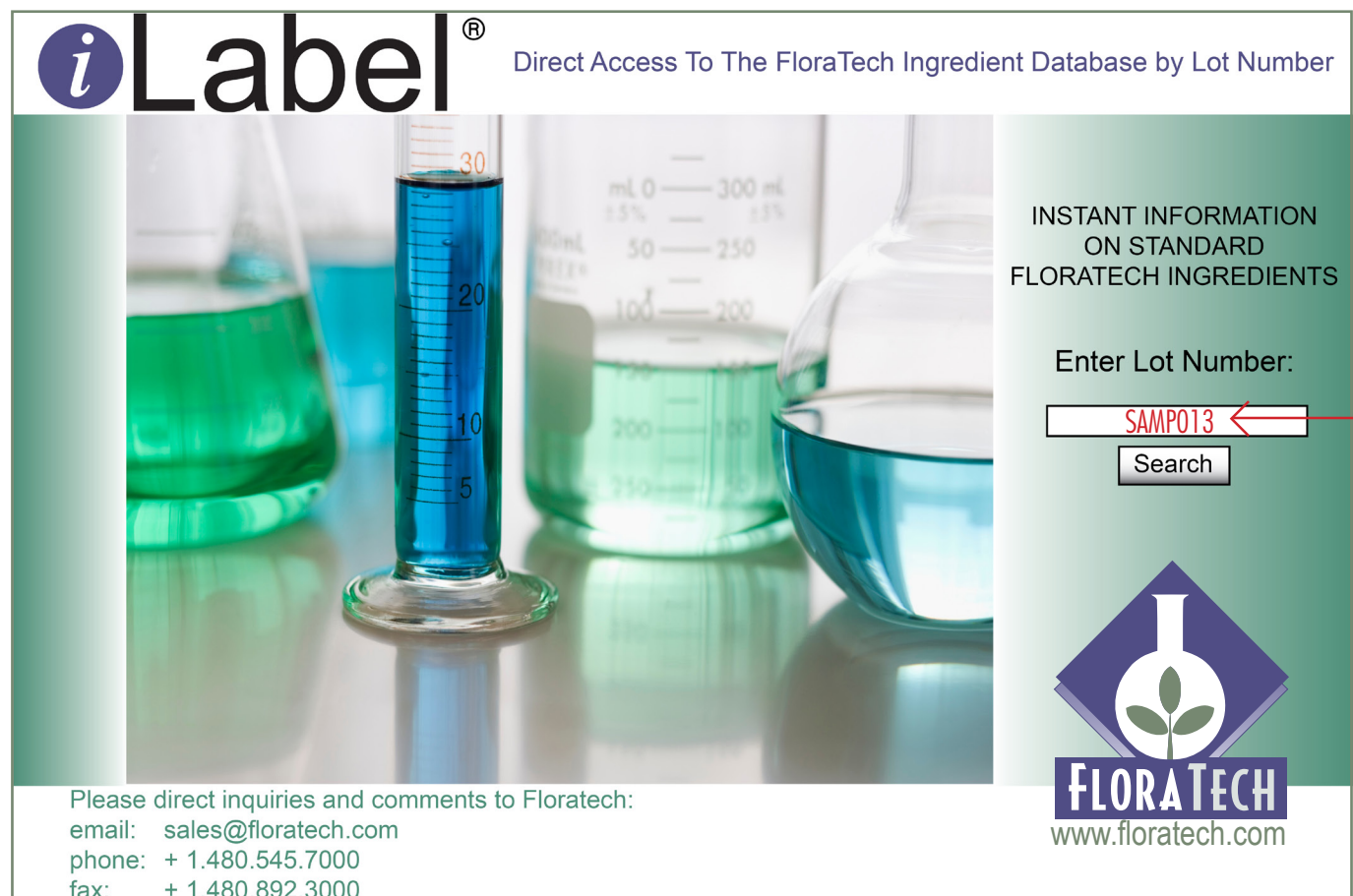
- L22 improves the recovery of skin barrier function more effectively than other skin-lipid-like emollients.
- L22 has enhanced skin barrier recovery effects when used in combination with Ceramides 1 or 2.
- L22 increases long and short-term skin hydration.
- L22 increases elasticity and firmness in aged and sun-damaged skin.

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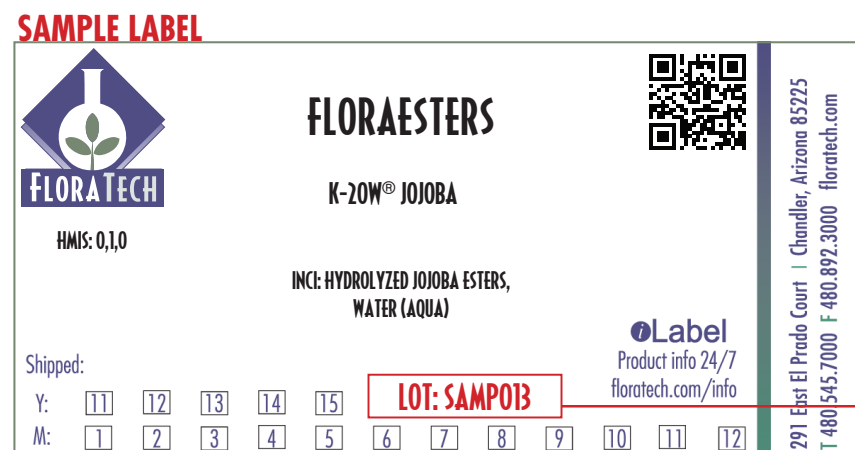
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