



Moisturization Assay

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Tradename: AC Vegan Keratin OS

Code: 20964

CAS #: 68650-44-2 & 90063-40-4 & 92113-26-3 & 225234-01-5

Test Request Form #: 9299

Lot #: 9230600

Sponsor: Active Concepts, LLC; 107 Technology Drive Lincolnton, NC 28092

Study Director: Maureen Danaher

Principle Investigator: Hannah Duckett

Test Performed:

Moisturization Assay

Introduction

An *in-vivo* study was conducted over a period of 24 hours to evaluate the moisturization benefits of **AC Vegan Keratin OS**. 20 M/F subjects between the ages of 23-45 participated in the study. Results indicate **AC Vegan Keratin OS** is capable of significantly increasing moisturization.

The Moisturization Assay was conducted to assess the moisturizing ability of **AC Vegan Keratin OS**.

Materials

A. Equipment: DermaLab Skin Combo (Hydration/ Moisture Pin Probe)

Methods

The moisture module provides information about the skin's hydration by measuring the conducting properties of the upper skin layers when subjected to an alternating voltage. The method is referred to as a conductance measurement and the output is presented in the unit of uSiemens (uS). A moisture pin probe is the tool used to gather hydration values.

20 volunteers M/F between the ages of 23 and 45 and who were known to be free of any skin pathologies participated in this study. A Dermalab Corneometer was used to measure the moisture levels on the subject's volar forearms. The Corneometer is an instrument that measures the amount of water within the skin. The presence of moisture in the skin improves conductance therefore results in higher readings than dry skin. Therefore the higher the levels of moisture, the higher the readings from the Corneometer will be. Baseline moisturization readings were taken at the start of the study.

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Following initial measurements, subjects were instructed to apply 2 mg of each treatment to their volar forearm once during the 24 hour test period. Measurements were taken at four time increments after the application of test materials. The test material consisted of 5.0% **AC Vegan Keratin OS** in a base lotion.

For added perspective, measurements of an untreated test site and a site treated with a base lotion (Cetaphil Moisturizing for All Skin Types) were recorded.

Results

AC Vegan Keratin OS showed high moisturizing capabilities alone at a 5.0% concentration. Please note, each value is an average of three consecutive readings per test site.

Percent change in moisturization is calculated by the following formula:

$$\text{Percent (\%) Change} = \frac{\text{Average Moisture Value}_{T=24 \text{ hours etc}} - \text{Average Baseline Value}_{T=0}}{\text{Average Baseline Value}_{T=0}} \times 100$$

| Averages | T = 0 | T = 15 Minutes | T = 1 Hour | T = 8 Hours | T = 24 Hours |
|---|-------|----------------|------------|-------------|--------------|
| Experimental (5.0% AC Vegan Keratin OS + Base Lotion) | 97.70 | 167.60 | 165.45 | 144.60 | 101.00 |
| Base Lotion | 90.65 | 141.85 | 144.85 | 123.85 | 91.90 |
| Untreated | 86.00 | 98.50 | 100.95 | 91.95 | 84.40 |

Table 1. Average Moisture Increase and Regression Scores of Individual Test Sites

| Percent (%) Change | T = 0 vs 15 Minutes | T = 0 vs 1 Hour | T = 0 vs 8 Hours | T = 0 vs 24 Hours |
|---|---------------------|-----------------|------------------|-------------------|
| Experimental (5.0% AC Vegan Keratin OS + Base Lotion) | 71.55% | 69.34% | 48.00% | 3.38% |
| Base Lotion | 56.48% | 59.79% | 36.62% | 1.38% |
| Untreated | 14.53% | 17.38% | 6.92% | -1.86% |

Table 2. Comparative Moisture Increase and Regression Scores from Baseline

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| Percent (%) Difference | T = 0 | T = 15 Minutes | T = 1 Hour | T = 8 Hours | T = 24 Hours |
|--|--------|----------------|------------|-------------|--------------|
| Experimental (5.0% AC Vegan Keratin OS + Base Lotion) vs Base Lotion | 7.49% | 16.64% | 13.28% | 15.46% | 9.43% |
| Experimental (5.0% AC Vegan Keratin OS + Base Lotion) vs Untreated | 12.74% | 51.94% | 48.42% | 44.51% | 17.91% |
| Base vs Untreated | 5.26% | 36.07% | 35.72% | 29.56% | 8.51% |

Table 3. Moisture Difference between Test Sites at each Time

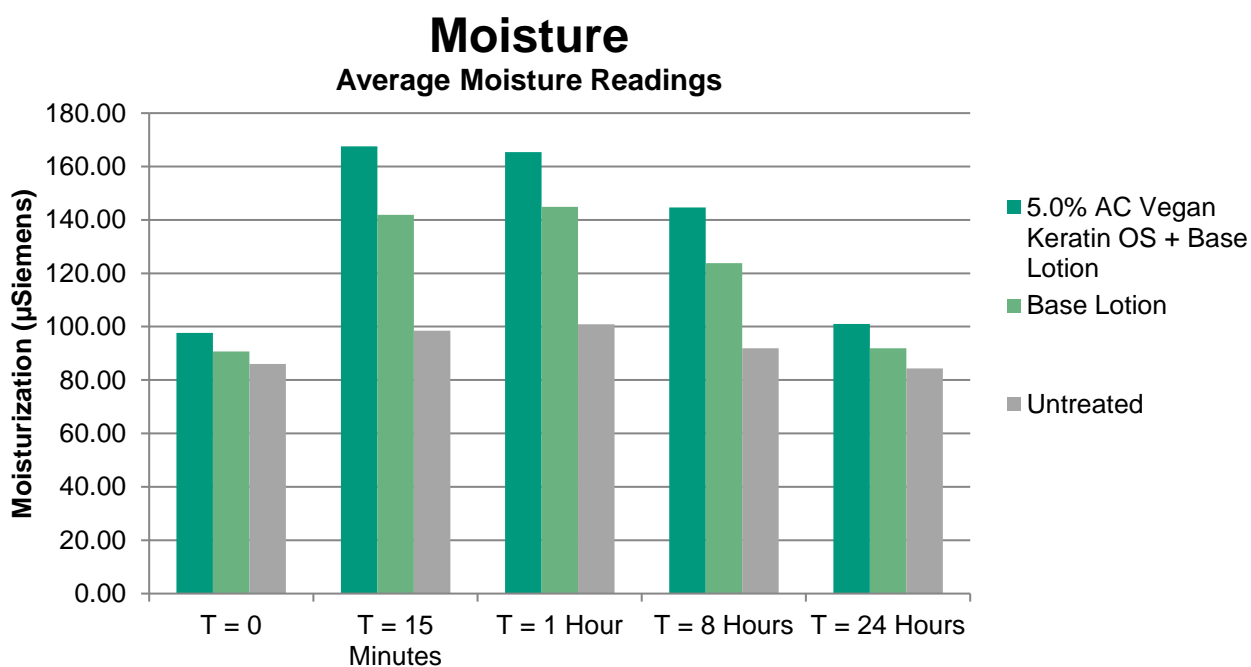


Figure 1. Average Increase in Moisturization

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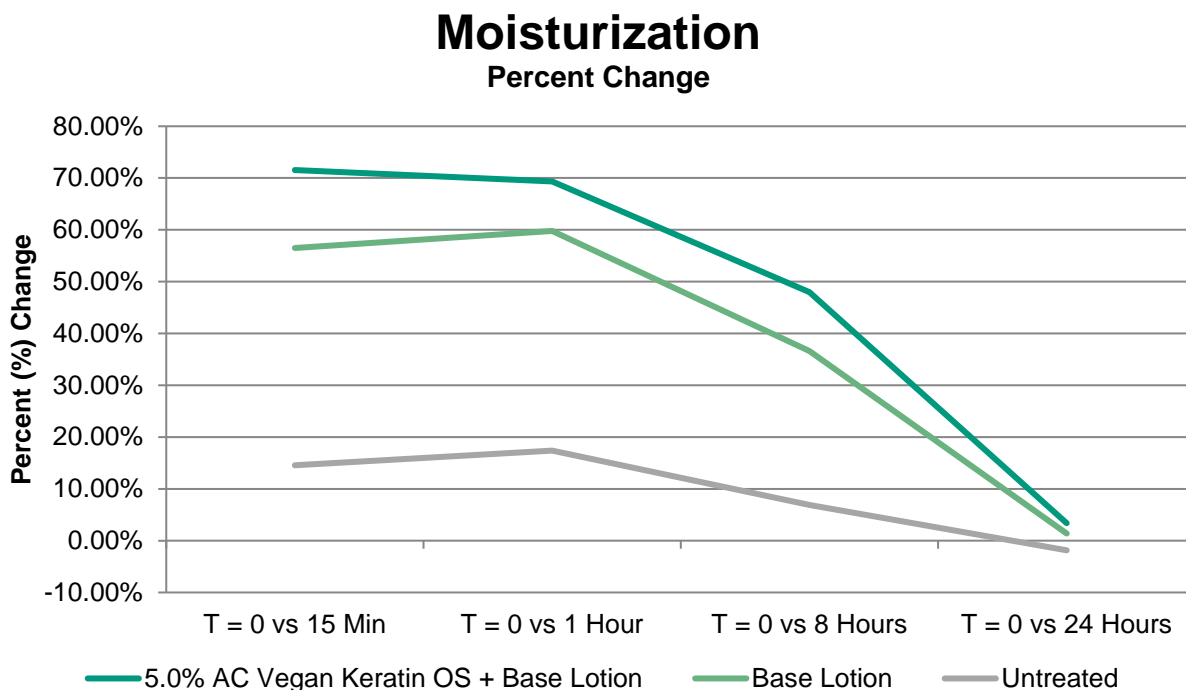


Figure 2. Percent Change in Moisturization of Each Time Point Compared to Baseline

Discussion

As evidenced in a 24 hour study of **AC Vegan Keratin OS** on the skin, it can be used to effectively increase moisture levels with better results over time. When compared to the base lotion, moisture levels of **AC Vegan Keratin OS** were 16.64% and 13.28% higher at 15 minutes and 1 hour, respectively. Moisture levels of **AC Vegan Keratin OS** were also 17.91% higher than the untreated control at 24 hours. After 8 hours, **AC Vegan Keratin OS** increased moisture levels by 48.00%, while the base lotion only increased levels by 36.62% when compared to baseline readings. Results indicate that **AC Vegan Keratin OS** in a lotion base is capable of increasing skin moisturization to a greater degree when compared to the base lotion and untreated sites alone.

With the present study, we can confirm that **AC Vegan Keratin OS** is capable of providing moisturizing and hydrating benefits when added to personal care applications at recommended use levels.