# Rinse-Off Moisturization

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**Tradename:** AC Moisture-Plex Advanced PF

**Code:** 16503PF

**CAS #:** 56-81-5 & 7732-18-5 & 28874-51-3 & 57-13-6 & 99-20-7 & 125275-25-4 & 9067-32-7

**Test Request Form #:** 3946

**Lot #:** N240531K

**Sponsor:** *Active Concepts, LLC; 107 Technology Drive Lincolnton, NC 28092*
**Study Director:** *Daniel Shill*
**Principal Investigator:** *Kayla Patterson*

**Test Performed:**
Moisturization Study: Rinse-Off

## Introduction

Dehydrated skin is more prone to various forms of UV damage. Hydration can reduce the appearance of fine lines and wrinkles by improving skin elasticity. Proper skin hydration can also reduce breakouts by regulating the oil production of skin. Skin that is properly hydrated can appear healthier and more youthful in appearance.

Accordingly, a rinse off moisturization study was conducted to assess the immediate and short-term skin hydrating properties of **AC Moisture-Plex Advanced PF** in a Cleanser formulation.

## Study Principle

Hydration measurements are made by placing a probe on the skin of preidentified test sites. The hydration probe evaluates conductance properties by alternating voltages in the upper layers of skin and provides a measurement of local hydration. The controls and test materials are applied to the skin test site once and hydration is measured at four time increments within a 24-hour period.

## Materials

A. **Equipment** DermaLab Skin Combo (Hydration Probe)
B. **Products**: Base Cleanser (Cetaphil® Daily Facial Cleanser All Skin Types)
C. **Software**: Excel Analysis ToolPak (Microsoft)

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## Methods

20 volunteers between the ages of 23 and 49, who were known to be free of any skin pathologies with Fitzpatrick skin types I to III, participated in this study (Table 1).

**Table 1.** The Fitzpatrick Classification of Skin Types Chart[1]

| Fitzpatrick Skin Type Descriptions* | |
|---|---|
| **Skin Type** | **Description** |
| I | Always burns, never tans |
| II | Burns easily, tans minimally |
| III | Burns moderately, tans to light brown |
| IV | Burns minimally, tans to moderate brown |
| V | Rarely burns, tans to dark |
| VI | Never burns, least sensitive to changes |
| *Adapted from The Surgeon General's Call to Action to Prevent Skin Cancer | |

Three randomly assigned test sites were identified on the volar forearm of participants and baseline moisture measurements were recorded. Following baseline measurements, participants applied 0.2 g of each treatment to their volar forearm once during the 24-hour test period. A dry down phase was not incorporated into the study design, prior to baseline measurements, to resemble a real-world consumer application experience. After treatment application, each test site was rinsed with warm water and patted dry with a paper towel. Moisture measurements were recorded at four time increments after the application and rinse-off of test materials. The skin test site conditions and treatments are described below (Table 2). The Base Cleanser utilized in this study was Cetaphil® Daily Facial Cleanser for All Skin Types.

**Table 2.** Descriptions of the Conditions and Treatments for each Skin Test Site

| Skin Test Site | Condition | Treatment / Test Article Application Description |
|---|---|---|
| 1 | Untreated Control | None |
| 2 | Base Cleanser | Base Cleanser |
| 3 | 2.0% **AC Moisture-Plex Advanced PF** | 2.0% **AC Moisture-Plex Advanced PF** in Base Cleanser |

An average of three consecutive moisture measurements per condition at each time point was recorded and expressed as micro-Siemens (µS) for each volunteer. Data are displayed as averages from all volunteers and analyzed using t-tests with statistical significance accepted at $p \leq 0.05$. The percent change in moisture was calculated for each test site at every timepoint relative to Baseline values, using the following equation:

$$Percent\ Change\ (\%) = \frac{Skin\ Moisture_{Measurement\ Time} - Skin\ Moisture_{Baseline}}{Skin\ Moisture_{Baseline}} \times 100$$

## Results

The data obtained from this study met criteria for a valid study as the Untreated Control and Base Cleanser performed as anticipated. Application of 2.0% **AC Moisture-Plex Advanced PF** once in a 24-hour period demonstrated effective immediate and short-term skin hydrating properties by enhancing moisturization throughout the study duration.

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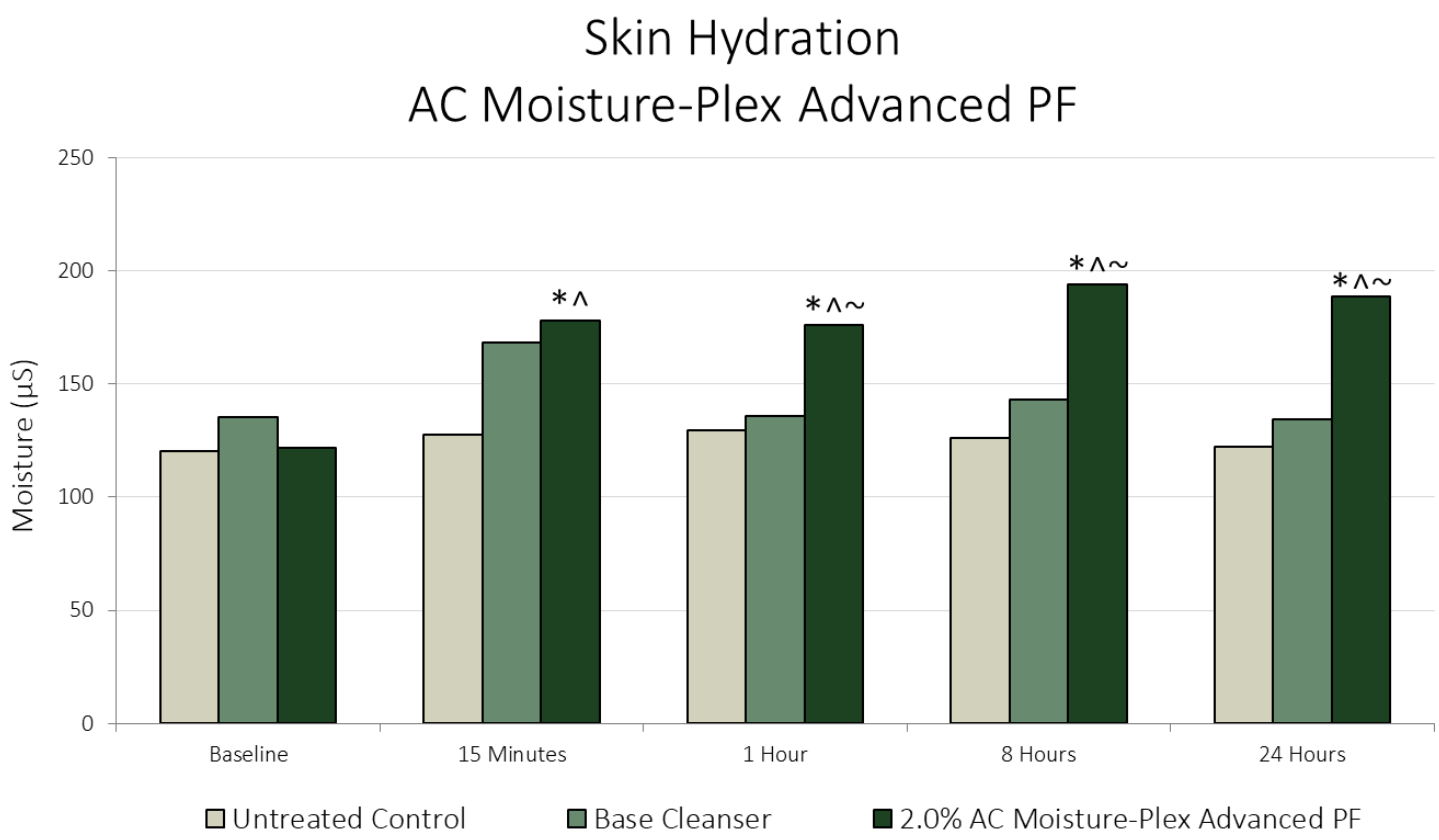


**Figure 1**. Skin Hydration Overtime. * indicates significance ($p \leq 0.05$) compared to Baseline values. ^ indicates significance ($p \leq 0.05$) compared to Untreated Control within the same timepoint. ~ indicates significance ($p \leq 0.05$) compared to Base Cleanser within the same timepoint.

**Table 3.** P-values from t-test Analyses of Moisture Levels from Baseline to 8 Hours and 24 Hours After Application. * indicates significance ($p \leq 0.05$) compared to Baseline values.

| | Untreated Control | Base Cleanser | 2.0% AC Moisture-Plex Advanced PF |
|---|---|---|---|
| 8 Hours After Application | 0.197 | 0.537 | < 0.001* |
| 24 Hours After Application | 0.755 | 0.942 | < 0.001* |

**Table 4.** T-test Analysis of Moisture Levels 8 Hours After Application. ^ indicates significance ($p \leq 0.05$) compared to Untreated Control within the same timepoint. ~ indicates significance ($p \leq 0.05$) compared to Base Cleanser within the same timepoint.

| | Untreated Control vs Base Cleanser | Untreated Control vs 2.0% AC Moisture-Plex Advanced PF | Base Cleanser vs 2.0% AC Moisture-Plex Advanced PF |
|---|---|---|---|
| P-value | 0.091 | < 0.001^ | 0.001~ |

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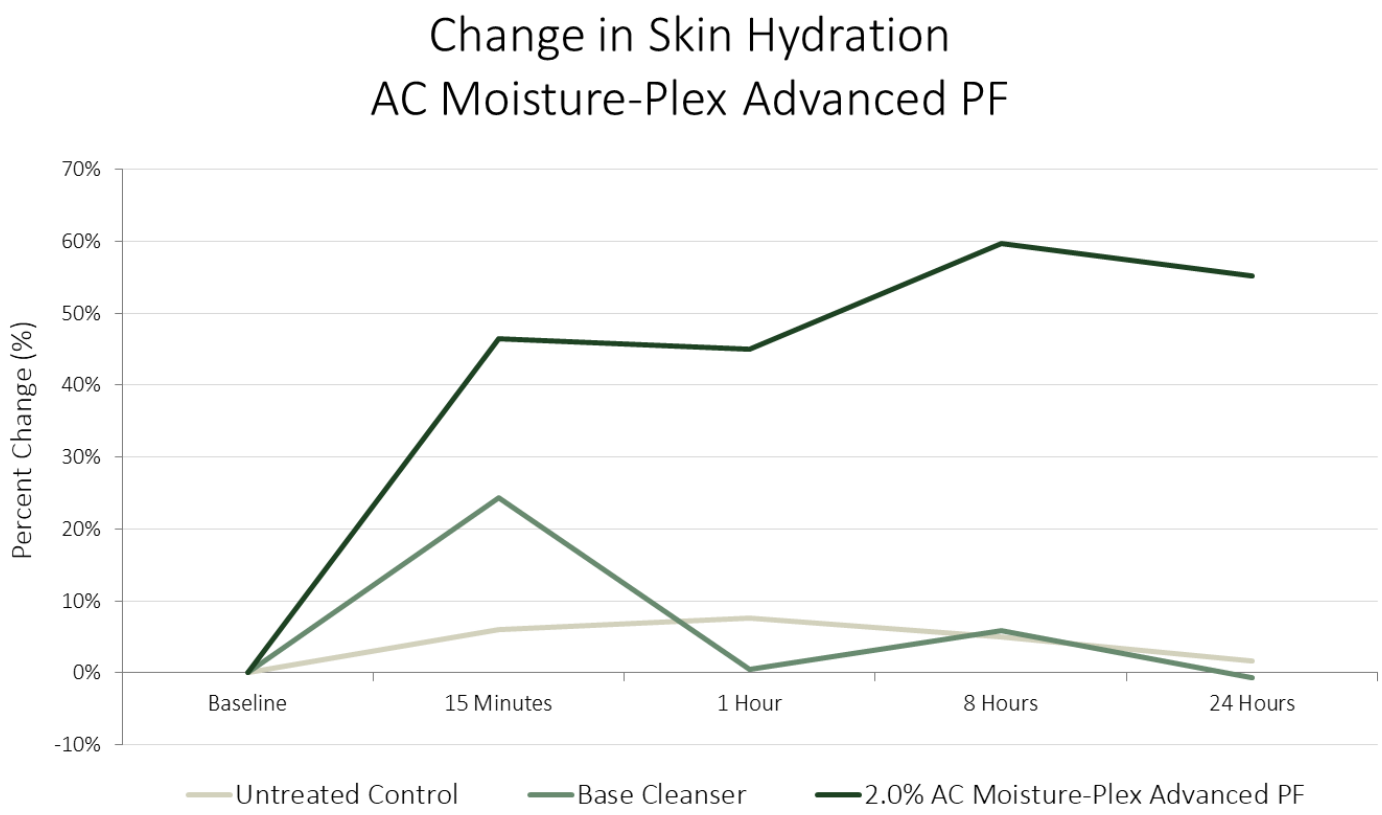


**Figure 2.** Percent Change in Skin Hydration Relative to Baseline Values

## Discussion

The ability of **AC Moisture-Plex Advanced PF** to enhance skin moisturization was assessed via hydration throughout 24 hours with one initial application followed by a rinse-off with warm water. As shown in Figure 1 and 2, skin moisture did not significantly change throughout the study with the Untreated Control test site, indicating consistent skin hydration over 24 hours (Table 3). Similarly, hydration was not significantly altered throughout the study with Base Cleanser application, indicating the Base Cleanser does not exert significant moisturization properties on the skin (Figures 1, 2; Table 3). Conversely, applying 2.0% **AC Moisture-Plex Advanced PF** once in a 24-hour period significantly augmented skin moisturization by 60% eight hours after application, and remained elevated 24 hours after application (Figures 1, 2; Table 3). These results demonstrate **AC Moisture-Plex Advanced PF** has effective immediate and short-term skin hydration properties.

Similar results are shown when examining the collective effect between each condition. There is no difference in skin hydration between the Untreated Control and Base Cleanser eight hours after application (Figure 1; Table 4). However, applying 2.0% **AC Moisture-Plex Advanced PF** significantly increased hydration compared to the Untreated Control and Base Cleanser (Figure 1; Table 5). These results demonstrate **AC Moisture-Plex Advanced PF** elicits acute skin moisturization with just one application.

Taken together, these results indicate **AC Moisture-Plex Advanced PF** increases skin moisturization immediately when added to personal care applications at recommended use levels. Collectively, **AC Moisture-Plex Advanced PF** demonstrates immediate and short-term skin hydration properties which improves the skin's protective barrier function and contributes to the appearance of healthier looking skin.

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## References

1. Sharma AN, Patel BC. Laser Fitzpatrick Skin Type Recommendations. [Updated 2022 Mar 9]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK557626/