

# AC MOISTURE-PLEX ADVANCED PF

Hyaluronic Acid Alternative + Potent Moisturizer + Improves Barrier Integrity



# AC MOISTURE-PLEX ADVANCED PF



## Technical Information:

**Product Code:** 16503PF

**INCI Name:** Glycerin & Water & Sodium PCA & Urea & Trehalose & Polyquaternium-51 & Sodium Hyaluronate

**INCI Status:** Conforms

**Suggested Use Levels:** 1.0 – 10.0%

**Suggested Applications:** Moisturizer, Barrier Formation, Hyaluronic Acid Alternative

**Solubility:** Water Soluble

# EPIDERMAL DEFENSE + HYDRATION

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## Optimally Functioning Skin

- The epidermis is part of our innate immune system and serves as the body's primary defence mechanism against the environment
- Skin needs to protect us from UV damage, free radicals and hazardous microorganisms
- Must provide barrier protection from chemicals and liquids
- Skin's ability to function against environmental stress diminishes if it is not properly hydrated

# DRY SKIN + DIMINISHED FUNCTION

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## Ways skin becomes irritated, dry & damaged?

- Cold temperatures, humidity changes, wind in addition to cosmetic and personal care products can dry out the skin
- Soap, facial cleanser and toners are skin dehydrating culprits
- Many moisturizers contain alcohol which ironically dries the skin!

# EPIDERMIS LAYERS + ROLE IN SKIN FUNCTION

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## Epidermis

- Consists of several layers with the outermost layers being keratinized cells help together by epidermal lipids
- Sebum is secreted on the surface layer to provide moisturizing benefits
- Dry skin is caused by the stripping away of the surface sebum layer
  - Integrity of the epidermal lipids becomes less substantive
  - Keratinized cells separate
  - Result is Red + Itchy + Inflamed + Cracked Skin

# AC MOISTURE-PLEX ADVANCED PF

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## Protecting the Skin

- AC Moisture-Plex Advanced PF was formulated to address skin issues by:
  - ✓ Improving the skin's barrier integrity
  - ✓ Reducing surface evaporation
  - ✓ Improving moisture levels on the skin
  - ✓ Regulating moisture and lipid balance
  - ✓ Increasing cellular renewal

# SKIN PROTECTION + INGREDIENTS



## AC Moisture-Plex Advanced PF

- Contains a complex of glycerine, sodium PCA, urea, polyquaternium-51 and sodium hyaluronate
- **Glycerin: Hydroscopic + Humectant**
  - Helps hydrate skin and prevent lipid damage
- **Sodium PCA: Hydroscopic**
  - Helps skin stay moist
  - More hygroscopic than glycerine or sorbitol
- **Urea: Moisturizing (NMF) + Exfoliant**
  - Capable of binding water in the stratum corneum to prevent water loss
  - Component of the body's natural moisturizing factor (NMF)
  - Functions to smooth and soften skin

# SKIN PROTECTION + INGREDIENTS



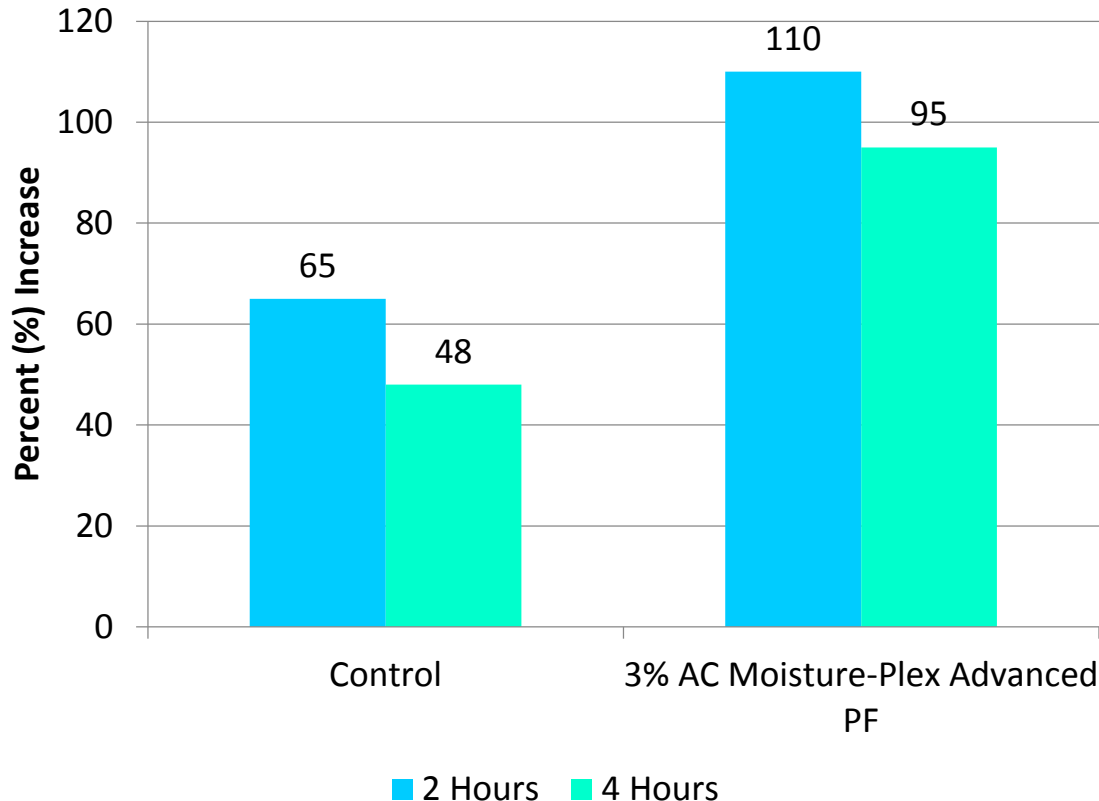
## AC Moisture-Plex Advanced PF

- **Polyquaternium-51: Hydroscopic + Moisture Retainer**
  - Stabilized epidermal phospholipids while significantly improving moisture retention
- **Sodium Hyaluronate: Cellular Repair + Cellular Renewal**
  - Minimizes cracking and damage
  - Hyaluronic acid is known to minimize formation of scar tissue
- **Trehalose: Osmo-Regulation + Protectant**
  - Glucose disaccharide
  - Topical application may improve barrier function
  - Possibly prevent heat shock



# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## *In-vivo* Moisturization Assay



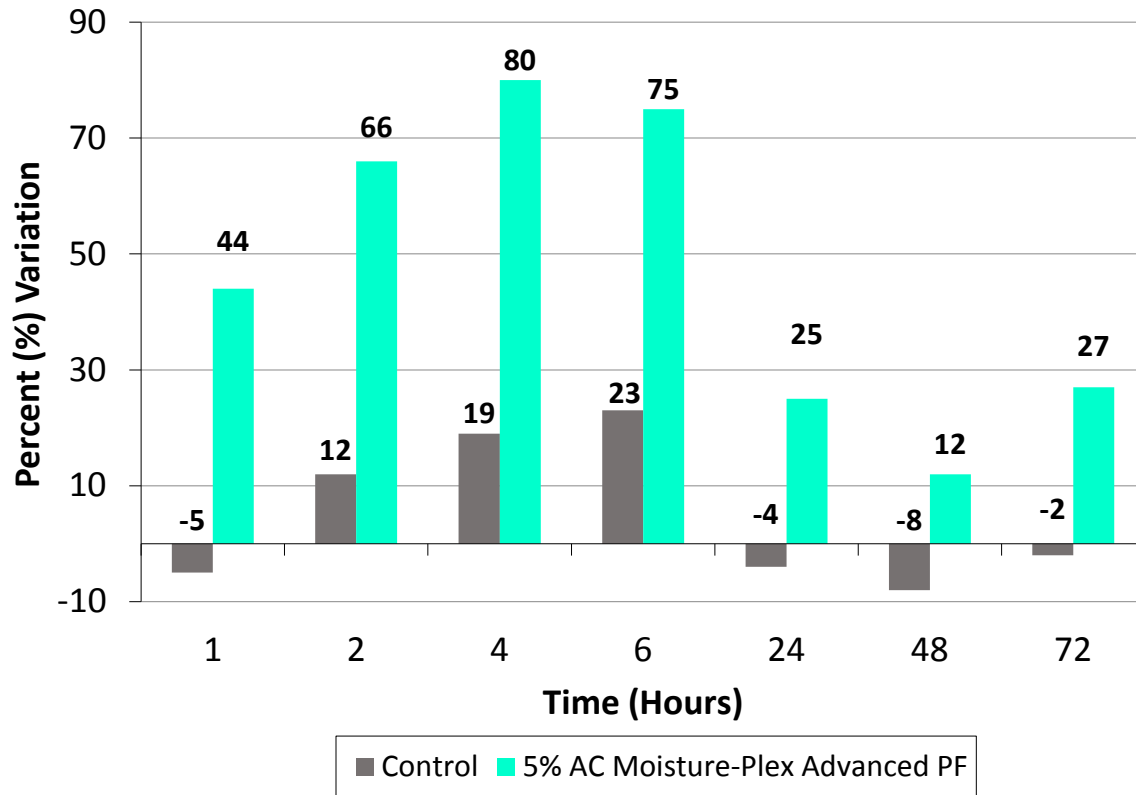
### Protocol

- Assay was conducted to determine the effectiveness of **AC Moisture-Plex Advanced PF** at increasing barrier function and improving moisture levels on the skin
- 7 panelists applied the control lotion (Cetaphil Moisturizing Lotion) and 3.0% **AC Moisture-Plex Advanced PF** in the base lotion to the respective skin patches on their volar forearms
- Measurements were taken after 2 and 4 hours

**Figure 1.** Improvements in moisturization following application of 3% **AC Moisture-Plex Advanced PF** after a 4 hour period.

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## *In-vivo* 72 Hour Moisture Variation Assay



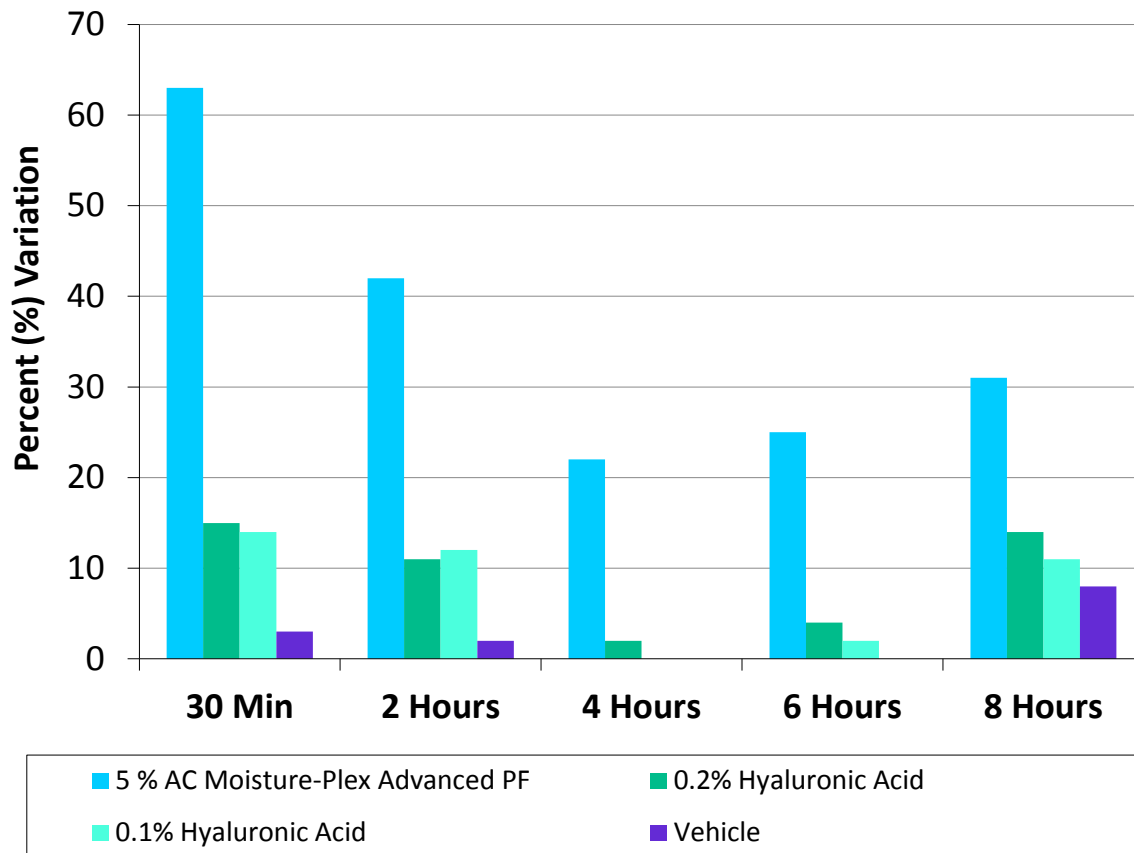
### Protocol

- Assay was conducted to determine the effectiveness of **AC Moisture-Plex Advanced PF** at increasing barrier function and improving moisture levels on the skin over time
- 11 panelists applied the control lotion (Cetaphil Moisturizing Lotion) and 5.0% **AC Moisture-Plex Advanced PF** in the base lotion to the respective skin patches on their volar forearms
- Measurements were taken after 1, 2, 4, 6, 24, 48, and 72 hours

**Figure 2.** Improvements in moisturization following application of 3% **AC Moisture-Plex Advanced PF** during a 72 hour period.

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## In-vivo Moisturization Comparison



**Figure 3.** Variation in moisturization using **AC Moisture-Plex Advanced PF** against Hyaluronic Acid.



### Protocol

- Assay was conducted to determine the effectiveness of **AC Moisture-Plex Advanced PF** at increasing barrier function and improving moisture levels on the skin in comparison to Hyaluronic Acid
- 9 panelists applied the control lotion (Cetaphil Moisturizing Lotion), 5.0% **AC Moisture-Plex Advanced PF** in the base lotion, 0.2% Hyaluronic Acid and 0.1% Hyaluronic Acid to the respective skin patches on their volar forearms
- Measurements were taken at 30 minutes and again at 2, 4, 6, and 8 hours respectively

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## TEWL Assay

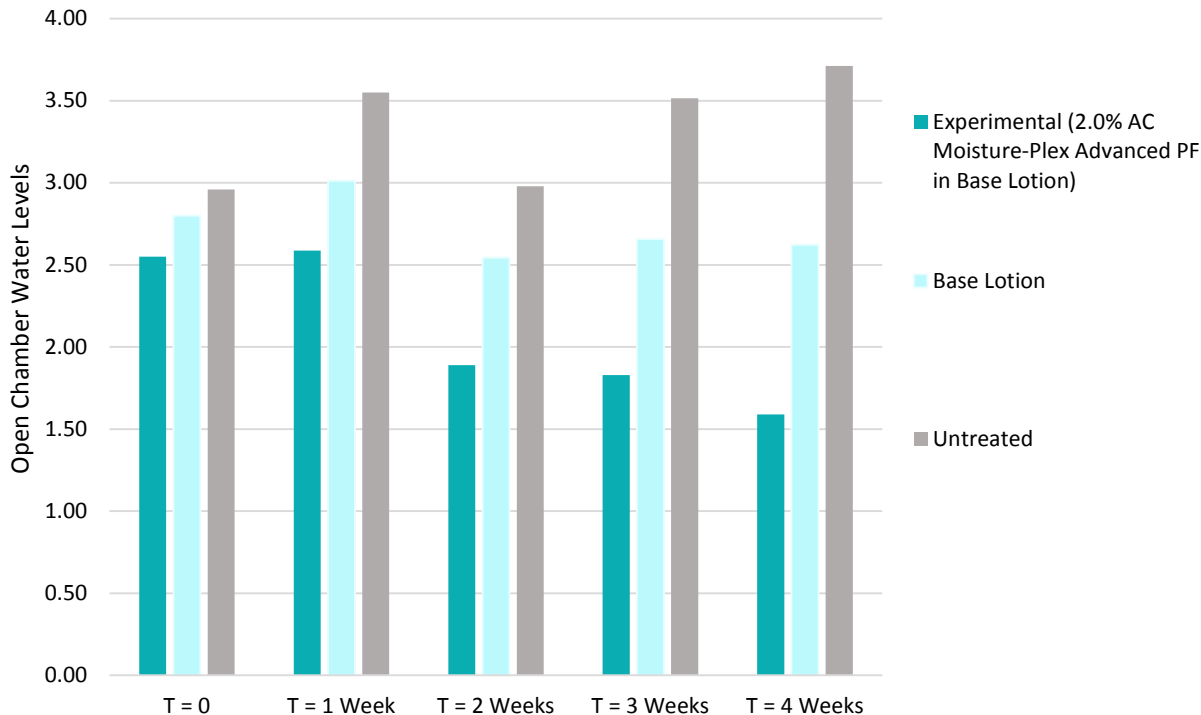


Figure 4. TEWL measurements taken at individual test sites.



## Protocol

- **Equipment:** DermaLab Combo
- **Principle of measurement:** Open Chamber, vapor diffusion gradient
- **Subjects:** 10 (m/f)
- **Test area:** Volar forearms
- **Concentration of active used:** 2.0%
- **Frequency of application:** Twice Daily

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## TEWL Assay

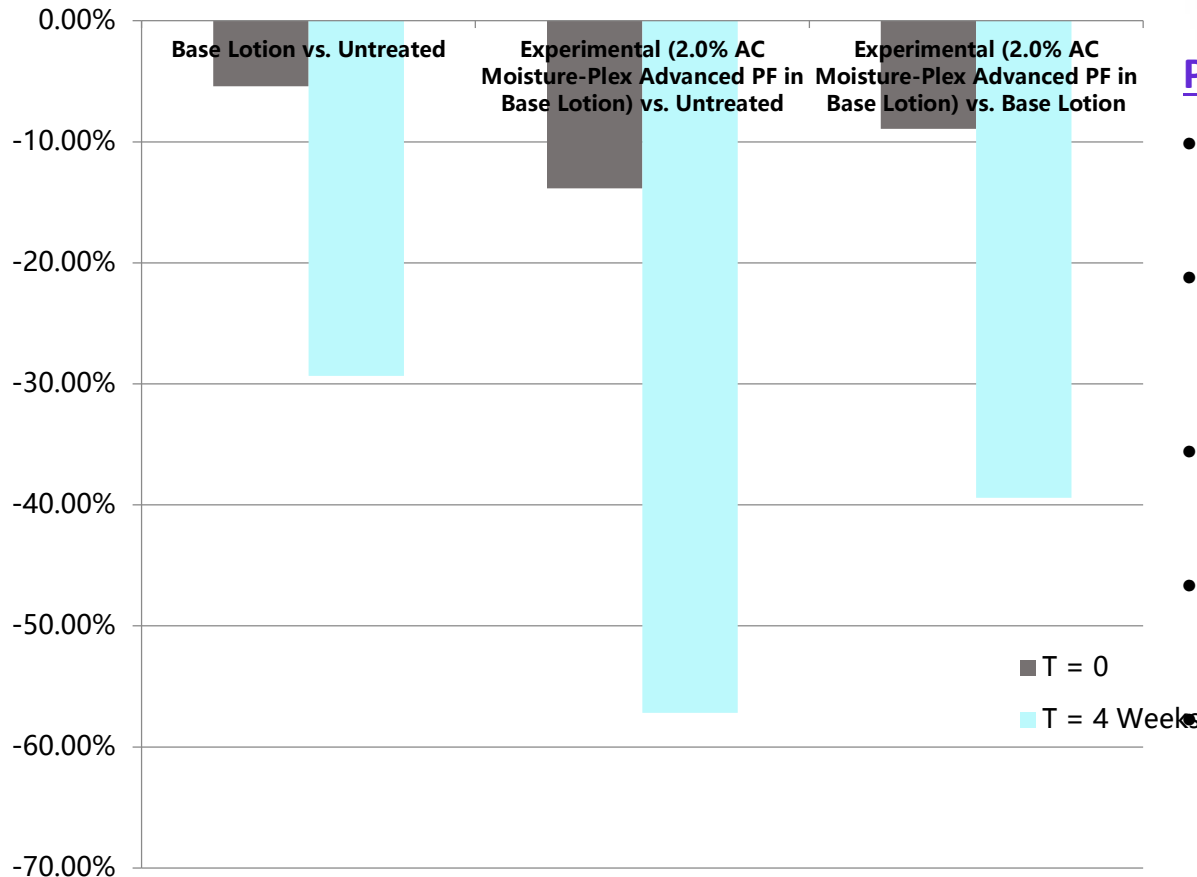


Figure 5. Comparison of percent reduction in water loss over time between two test sites.

## Protocol

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- **Principle of measurement:** Open Chamber, vapor diffusion gradient
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# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## High Resolution Ultrasound Skin Imaging

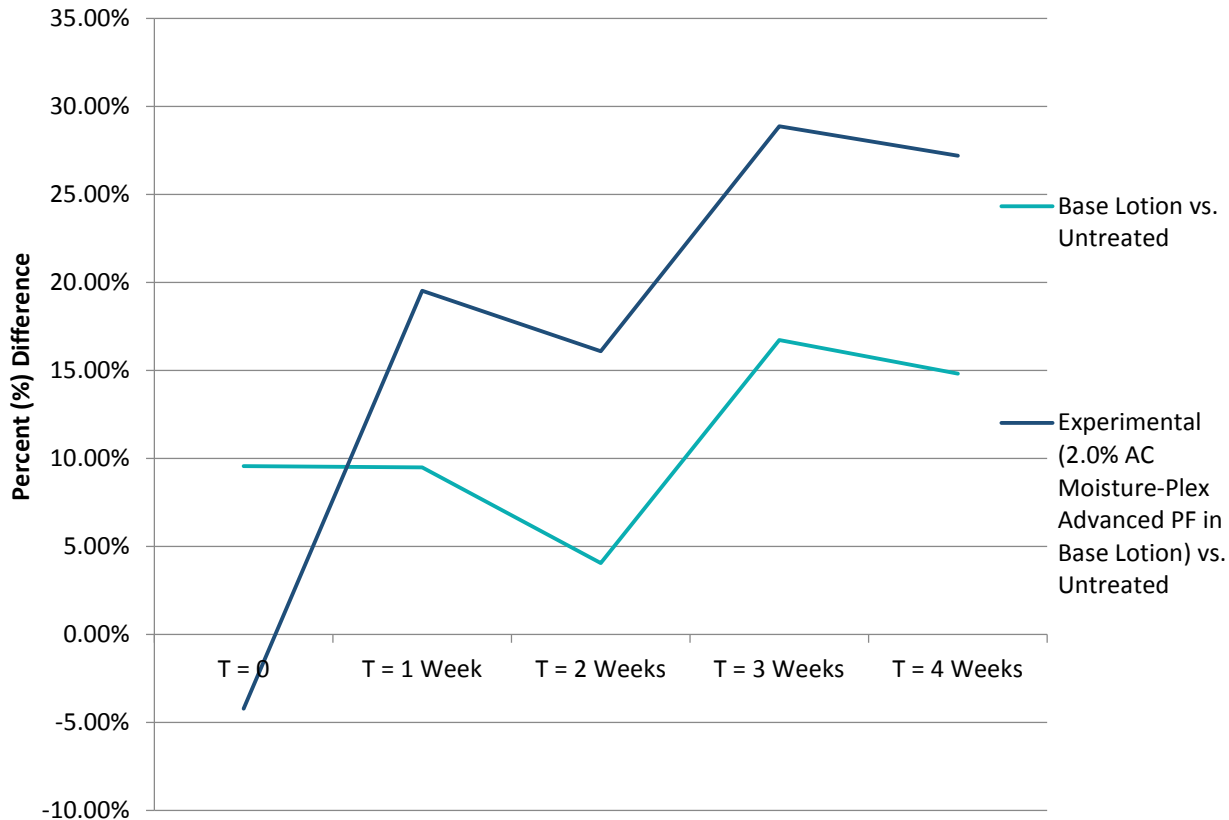


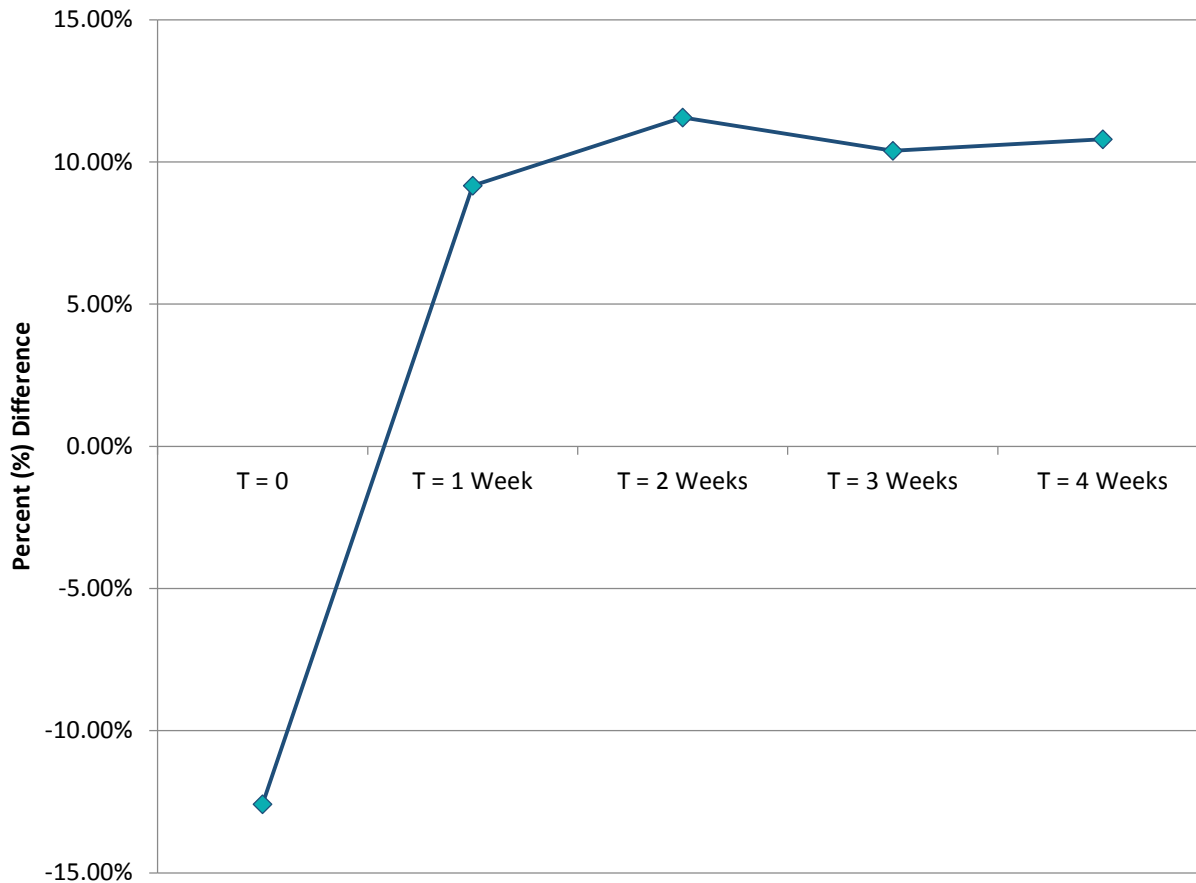
Figure 9. Ultrasound Results Comparing Test Sites to Untreated Site.

### Protocol

- Equipment: DermaLab Skin Combo
- 10 volunteers M/F between the ages of 23 and 45
- Determine the skin density of the subject's volar forearms
- Apply 2 mg of each test material on their volar forearms
- Concentration: 2%
- Skin density was improved by 19.53% after one week and by 27.21% after 4 weeks when compared to the untreated control

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## High Resolution Ultrasound Skin Imaging



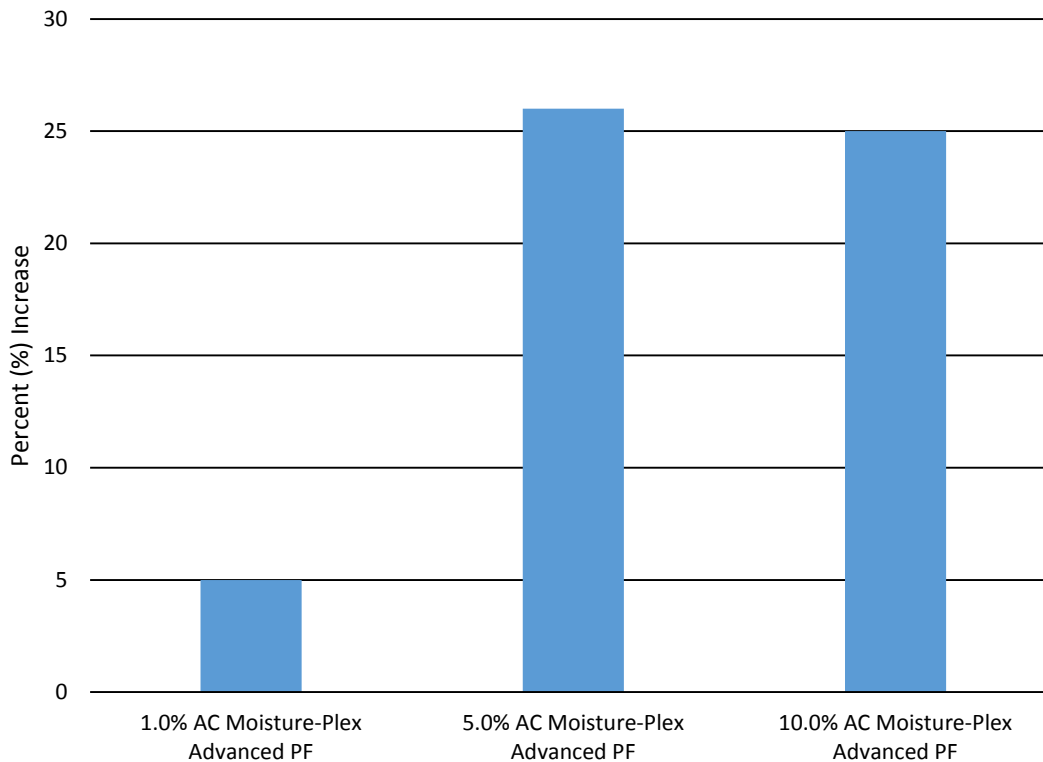
**Figure 10.** Ultrasound Results Comparing the Difference between the Test Site and the Control Site.

### Protocol

- Equipment: DermaLab Skin Combo
- 10 volunteers M/F between the ages of 23 and 45
- Determine the skin density of the subject's volar forearms
- Apply 2 mg of each test material on their volar forearms
- Concentration: 2%
- **AC Moisture-Plex Advanced PF** improved skin density during each week of the trial, working 11.56% better than the base lotion after two weeks and 10.80% better than the base lotion after four weeks

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## Change in Conductance After 24 Hours



### Protocol

- Environment was kept at a constant temperature of 21°C and 19% Relative Humidity (RH)
- Measured on the skin of 6 volunteers before and after 24 hours
- The most effective level of **AC Moisture-Plex Advanced PF** after 24 hours is the 5.0% use level

**Figure 11.** Change in conductance due to increase in moisture from **AC Moisture-Plex Advanced PF** and the effects after 24 hours.



# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## Scratch Assay Analysis

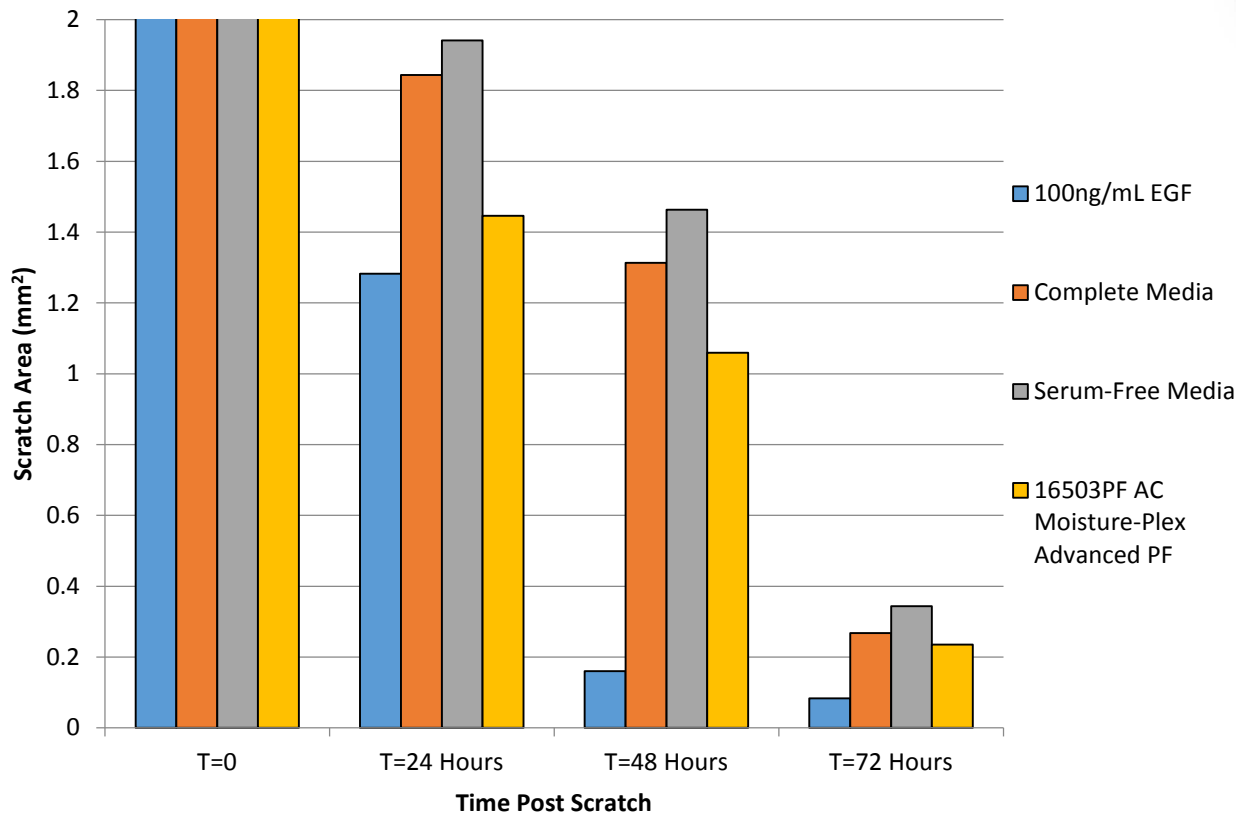


Figure 12. Area of scratch.



### Protocol

- Human dermal fibroblasts were allowed to grow to confluency in complete DMEM
- 1.0% **AC Moisture-Plex Advanced PF** was added to the serum free DMEM & incubated with fibroblasts
- The confluent cells were scratched
- Cells were stained for enhanced microscopy

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## Scratch Assay Analysis

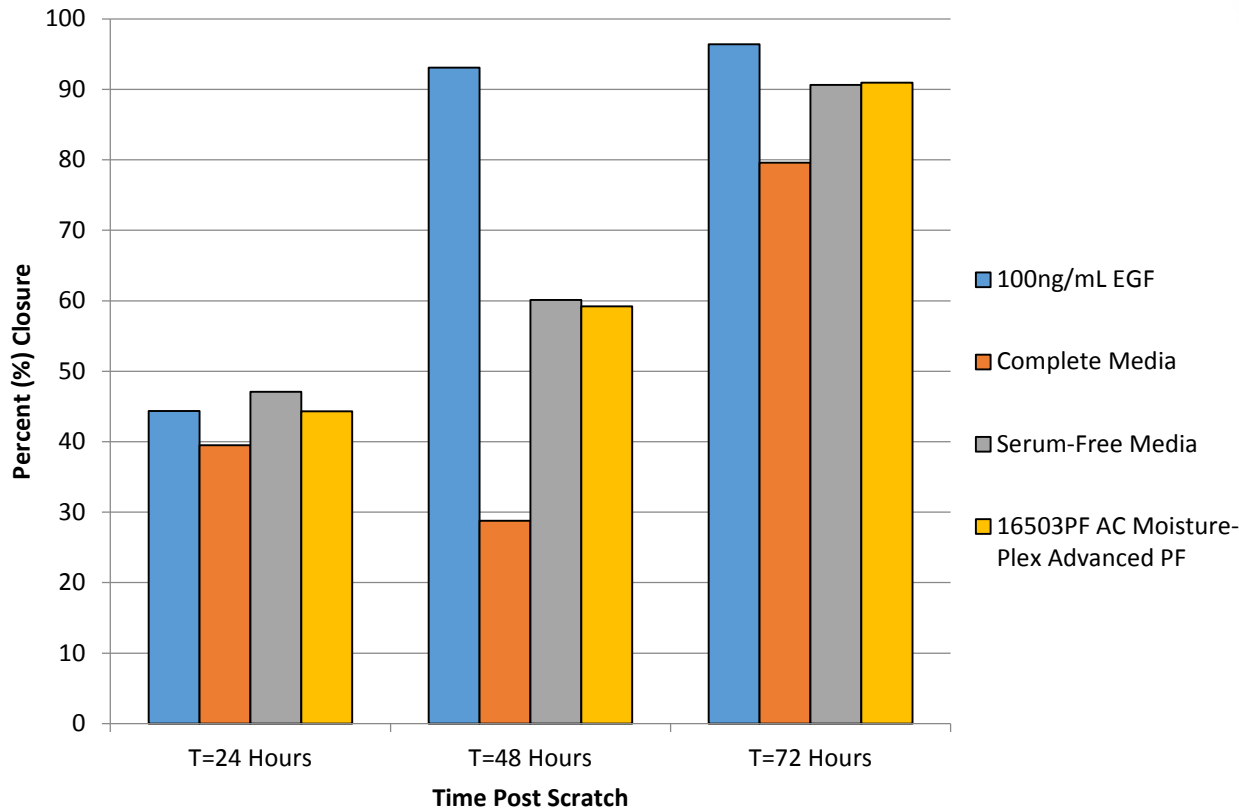


Figure 13. Percent scratch closure.



### Protocol

- Human dermal fibroblasts were allowed to grow to confluency in complete DMEM
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# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## Scratch Assay Analysis



### Protocol

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- The confluent cells were scratched
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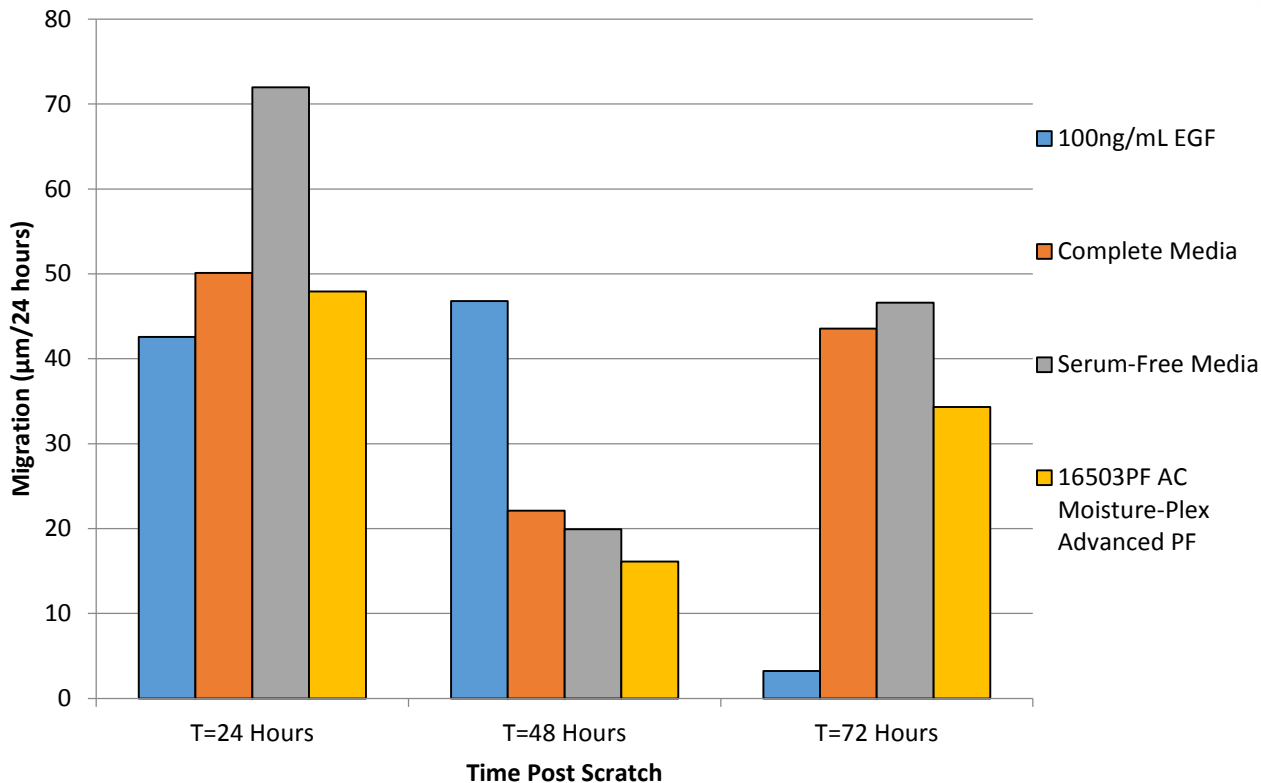
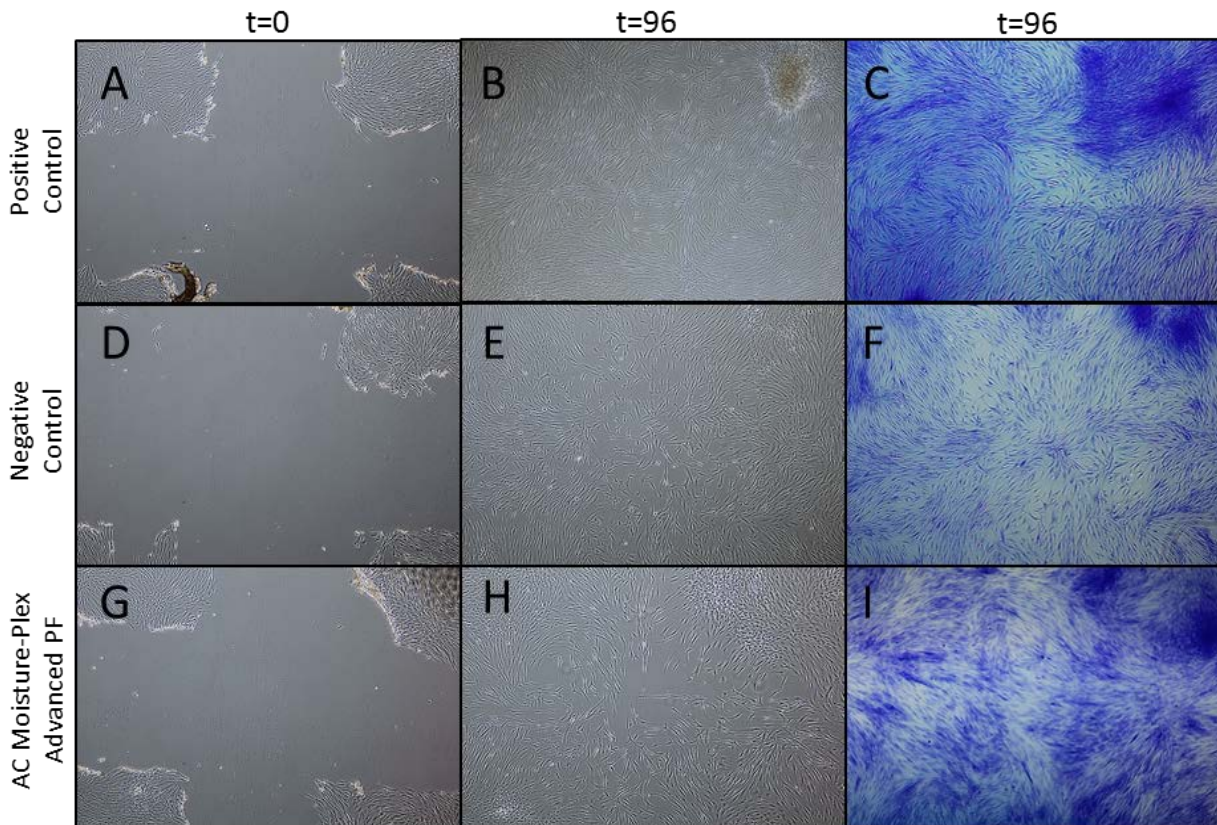


Figure 14. Cell migration rate.

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## Scratch Assay Analysis



### Protocol

- Human dermal fibroblasts were allowed to grow to confluency in complete DMEM
- 1.0% **AC Moisture-Plex Advanced PF** was added to the serum free DMEM & incubated with fibroblasts
- The confluent cells were scratched
- Cells were stained for enhanced microscopy

**Figure 15.** Images at t=0 hours (A, D, G) and t=72 hours (B, E, H) for **AC Moisture-Plex Advanced PF**, positive control (EGF-1), and negative control (SFM). At experiment completion (t=72 hours), cells were fixed in paraformaldehyde and stained with crystal violet (C, F, I).

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## ORAC Assay

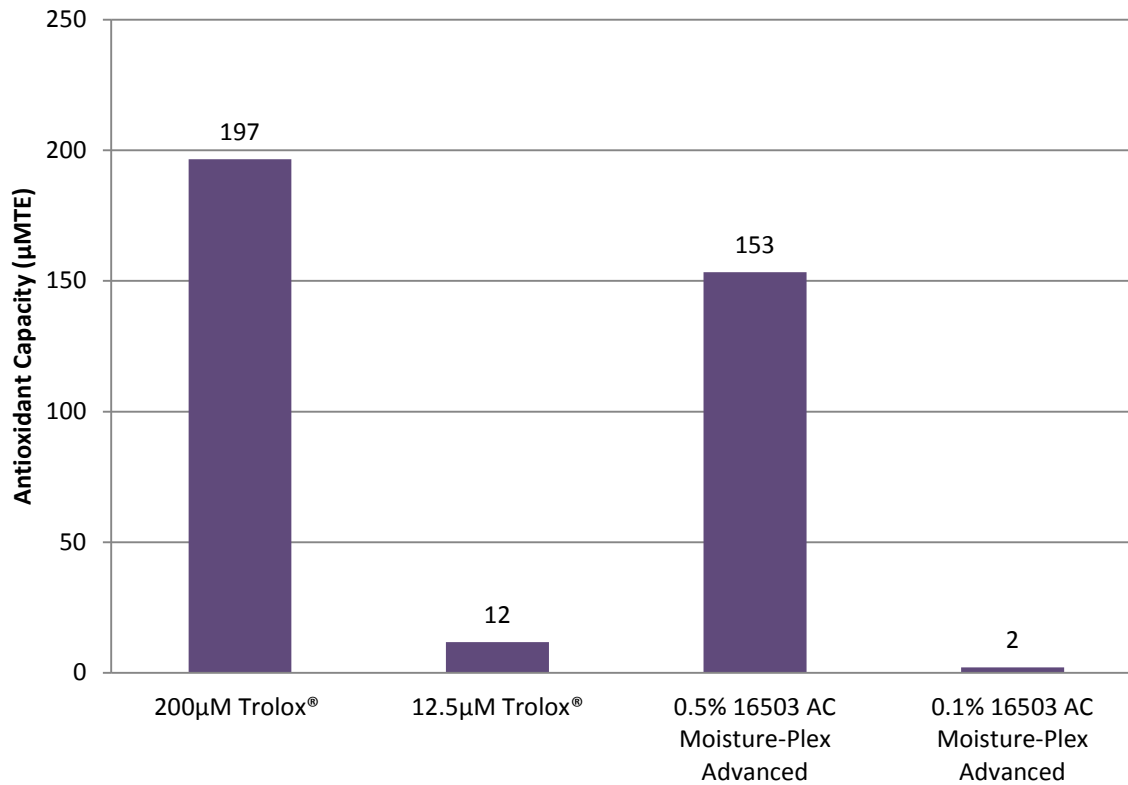


Figure 6. Antioxidant capacities.

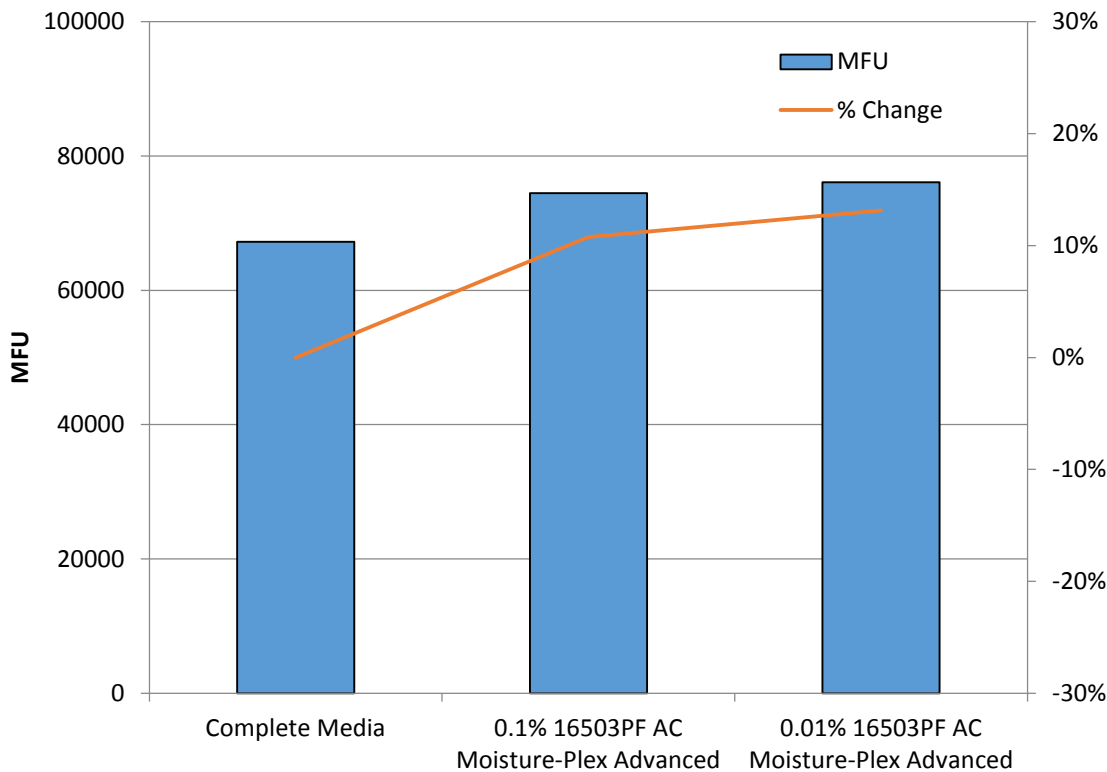


## Protocol

- Trolox® is used as the positive control
- Solutions were prepared at two concentrations for a reference
- Fluorescent measurements were taken every 2 minutes for 2 hours
- **AC Moisture-Plex Advanced PF** exhibited antioxidant activity comparable to 200µM Trolox®

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## Cellular Viability



**Figure 16.** Cellular Metabolism of AC Moisture-Plex Advanced PF-treated fibroblasts expressed in terms of percent of control.

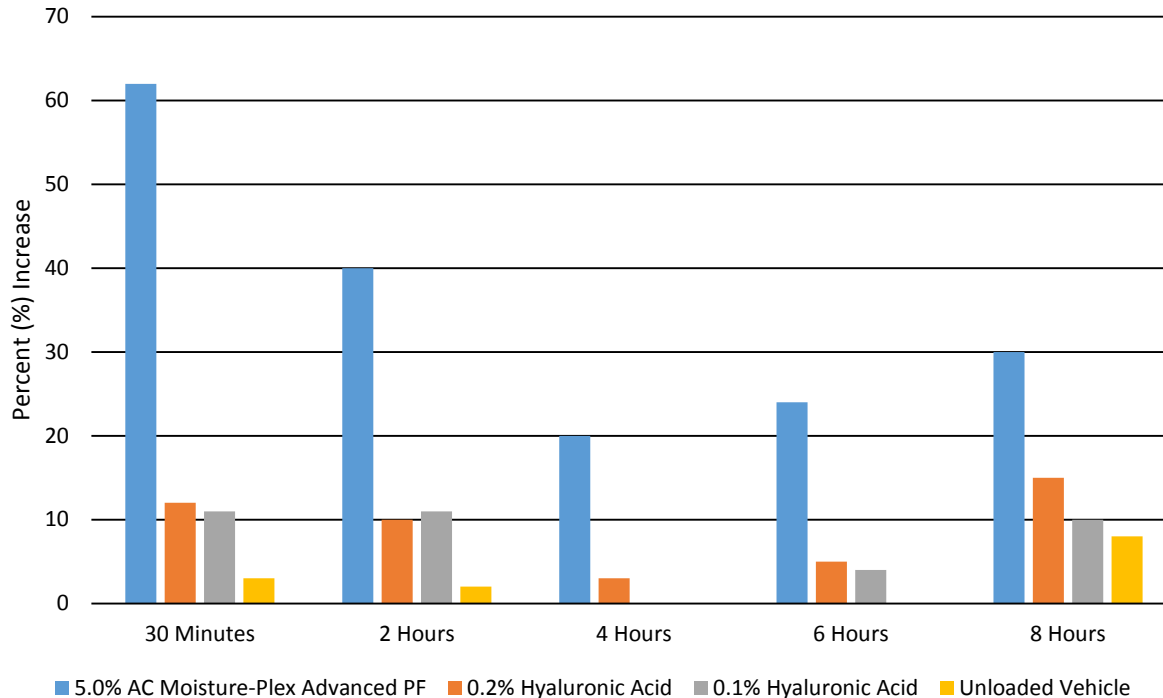


### Protocol

- Human dermal fibroblasts were seeded into 96-well tissue culture plates
- Concentrations: 0.1%, 0.01%
- Ten microliters of viability reagent was added to 90 $\mu$ L of cell culture media in culture wells and a fluorometric measurement was taken at 560nm for excitation and 590nm for emission
- **AC Moisture-Plex Advanced PF** had positive effects on cell metabolism at lower concentrations and slightly negative effects on metabolism at higher concentrations

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## Comparison to Hyaluronic Acid



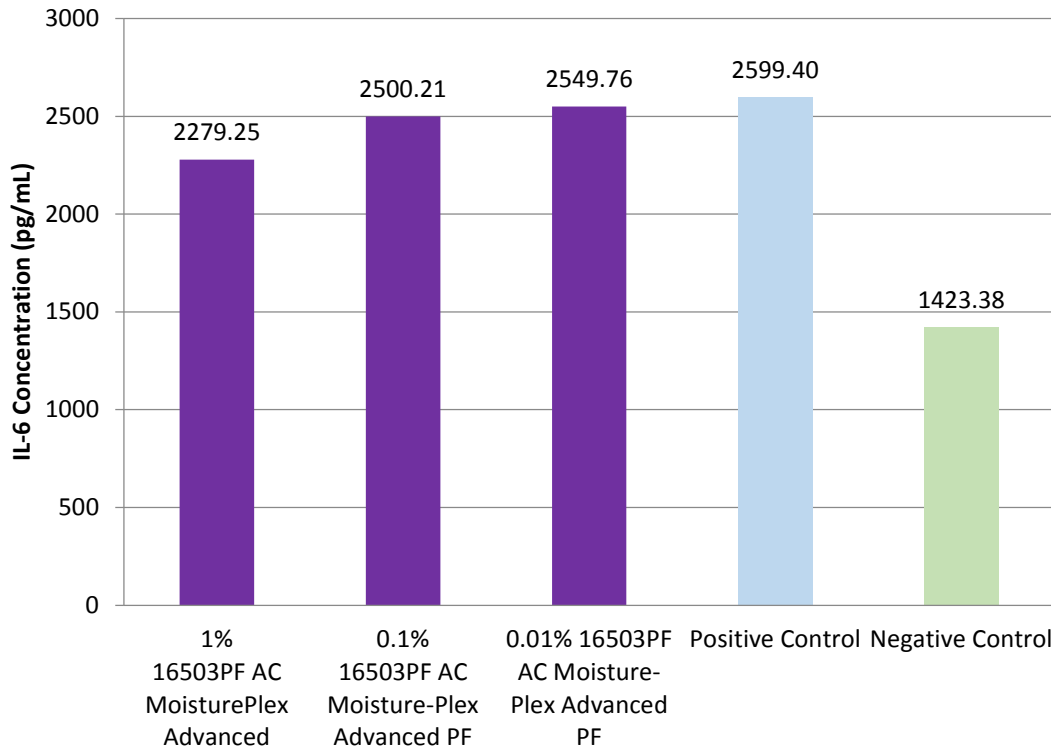
### Protocol

- Measured the moisture levels of 9 volunteers before and after
- A solution of 5.0% **AC Moisture-Plex Advanced PF**, 0.2% Hyaluronic Acid, 0.1% Hyaluronic Acid, and a control vehicle on the forearm
- Measurements were taken at 30 minutes, 2 hours, 4 hours, 6 hours, and 8 hours

**Figure 17.** Comparative increase in skin moisturization over time when using **AC Moisture-Plex Advanced PF** vs. Hyaluronic Acid.

# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## IL-6 ELISA Analysis



### Protocol

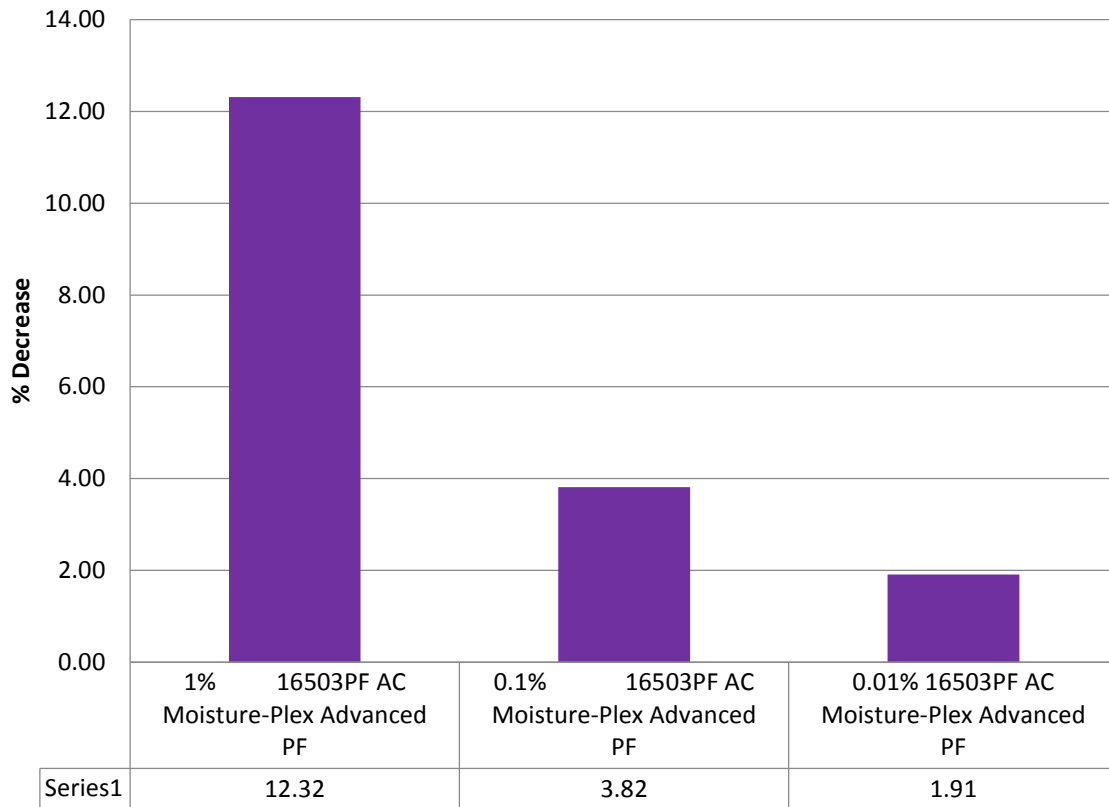
- Human dermal fibroblasts were seeded into 12-well tissue culture plates
- Concentrations: 1%, 0.2%, 0.01%
- **AC Moisture-Plex Advanced PF** were added to complete DMEM containing 1 $\mu$ g/mL LPS and incubated with fibroblasts for 24 hours
- **AC Moisture-Plex Advanced PF**, at all concentrations was able to decrease IL-6 production compared to our positive control

Figure 18. AC Moisture-Plex Advanced PF-treated fibroblasts IL-6 concentrations.



# AC MOISTURE-PLEX ADVANCED PF EFFICACY DATA

## IL-6 ELISA Analysis



### Protocol

- Human dermal fibroblasts were seeded into 12-well tissue culture plates
- Concentrations: 1%, 0.2%, 0.01%
- **AC Moisture-Plex Advanced PF** were added to complete DMEM containing 1 $\mu$ g/mL LPS and incubated with fibroblasts for 24 hours
- This decrease in IL-6 production indicates a reduced inflammatory environment which could decrease the signs of aging and reduce the formation of fine lines and wrinkles

**Figure 19.** Percent decrease in IL-6 production compared to positive control.

# AC MOISTURE-PLEX

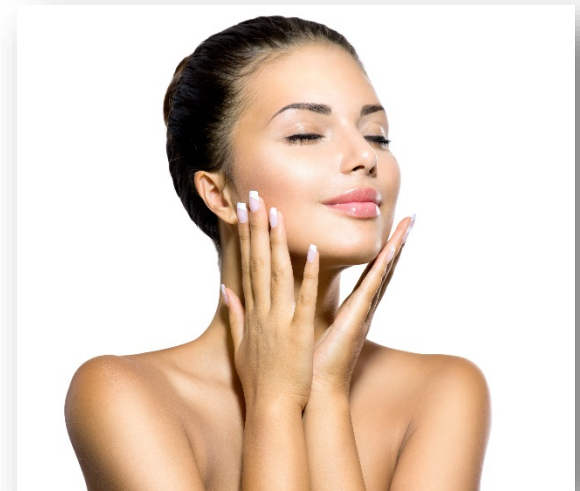
## ADVANCED PF SAFETY DATA

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### Additional Data:



- **Dermal and Ocular Irritation Test: Non-Irritating**



# AC MOISTURE-PLEX ADVANCED PF



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**Product Code:** 16503PF

**INCI Name:** Glycerin & Water & Sodium PCA & Urea & Trehalose & Polyquaternium-51 & Sodium Hyaluronate

**INCI Status:** Conforms

**Suggested Use Levels:** 1.0 – 10.0%

**Suggested Applications:** Moisturizer, Barrier Formation, Hyaluronic Acid Alternative

**Solubility:** Water Soluble

# ACTIVE CONCEPTS LLC

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## THANK YOU

For more information –Visit our website!

[www.activeconceptsllc.com](http://www.activeconceptsllc.com)