

20440PF.

ACB

# Modified Pomegranate Enzyme PF

ENZYMES



VEGAN



COSMOS



IN VIVO



IN VITRO



CHINA



ISO 16128



## THE FEATURES.

**A**CB Modified Pomegranate Enzyme PF is a water-soluble, viscous liquid developed by Active Concepts to offer an ingredient with multifunctional properties for use in cosmetic and personal care formulations. This product is capable of enhancing skin moisturization, barrier function, and cellular renewal in both leave-on and wash-off applications, showcasing the benefits of skin exfoliation without typical irritation. Harness the power of *Punica granatum* (pomegranate) in your next skin care application to reap these amazing benefits!

*Lactobacillus/Punica Granatum Fruit Ferment Extract & Leuconostoc/Radish Root Ferment Filtrate*

*actions*

Cellular Renewal  
Moisturization  
Skin Barrier Function  
Great for Skin

TECHNICAL DATA SHEET.

## THE REGULATION.

**INCI.** Lactobacillus/Punica Granatum Fruit Ferment Extract & Leuconostoc/Radish Root Ferment Filtrate  
**CAS.** 84961-57-9 & 1686112-10-6 (or) 84775-94-0 (or) 9015-54-7  
**EINECS.** 284-646-0 & N/A (or) 283-918-6 (or) 295-635-5  
**EUROPE.** Compliant  
**USA.** Compliant  
**CHINA.** Compliant

## THE SPECIFICATION.

**Origin.** Botanical/Bacteria  
**Natural Antimicrobial.** Leuconostoc/Radish Root Ferment Filtrate\*  
**Preservatives.** None  
**Solvents Used.** None  
**Soluble/Miscible.** Water Soluble  
**Appearance.** Slightly Hazy to Hazy Viscous Liquid  
**Use Level.** 1 - 10 %

\* Please note this product contains Leuconostoc/Radish Root Ferment Filtrate (Tradename: M15008-Leucidal® Liquid) - produced by Active Micro Technologies, LLC - containing 18.0-22.0% Phenolics (tested as Salicylic Acid). Please refer Leucidal® Liquid product literature for additional information.



## THE STORY.

Pomegranate, or *Punica granatum*, is one of the oldest known edible fruits, having been used since ancient times for therapeutic and medicinal purposes to treat a wide variety of diseases. In ancient times, *Punica granatum* was regarded as a “healing food,” with the Chinese viewing the seeds as symbolizing longevity and immortality. Belonging to the Punicaceae family, *Punica granatum* is mainly found in Iran, the Himalayas in northern India, China, USA, and throughout the Mediterranean region.<sup>1</sup> The utilization of this fruit in the beauty industry has grown exponentially to capitalize on its natural source of beneficial properties.

Known as a superfruit in the food industry, *Punica granatum* offers consumer recognizable materials for cosmetic applications. This nutrient-rich fruit speaks to the consumer’s desire for natural, botanical materials capable of nourishing and rejuvenating the complexion. ACB Modified Pomegranate Enzyme PF offers a functional active capable of increasing skin moisturization, barrier function, and cellular renewal.

Mindfully sourced, we utilize pomegranates that are grown on farms respective to our three global manufacturing sites. For the United States, our pomegranates come from the infamous San Joaquin Valley in California. Our Italian facility receives pomegranates from Spain, and our Taiwan team collects from India. These local partnerships are what make the production of ACB Modified Pomegranate Enzyme PF more sustainable and secure.

## THE SCIENCE.

Traditionally, enzymes are isolated in a purified form in effort to maximize activity. However in reality, these enzymes do not naturally exist in biological systems as isolated, purified enzymes. They exist as complexes, protected and guided by chaperone proteins. These enzymes are very effective for breaking down large proteins that can accumulate on the skin, hair and scalp.

Pomegranates are known to contain proteolytic enzymes. Proteolytic enzymes are also called “proteases”.<sup>2</sup> Proteases digest proteins and are involved in many processes within the cells of the fruit.<sup>3,4</sup> These phytochemicals can serve as a safe means of exfoliation and removing proteinaceous impurities, such as product build-up and from the skin, scalp, and hair strands. Exfoliation helps to remove the dead skin cells on the surface and encourage skin to more rapidly create new cells for a more youthful appearance.<sup>5</sup>

The following efficacy studies highlight the ability of ACB Modified Pomegranate Enzyme PF to enhance skin moisturization, barrier function, and cellular renewal in both leave-on and wash-off applications, showcasing the benefits of skin exfoliation without typical irritation.

## THE BENEFITS.

### Skin

- Moisturization** 24-Hour Moisturization Assay
- Barrier Function** 24-Hour Transepidermal Water Loss (TEWL) Assay



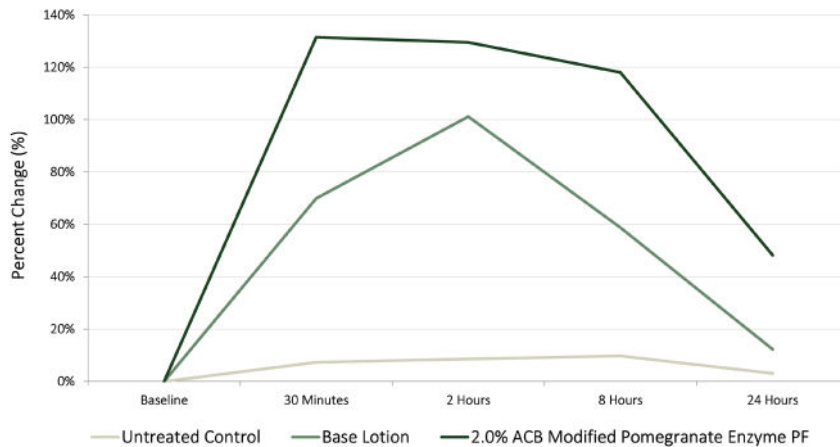
- Exfoliation** Cellular Renewal Study
- Cellular Renewal Study: Wash-Off



## THE EFFICACY.

### 24-Hour Moisturization Assay.

A moisturization study was conducted to evaluate the immediate and short-term skin hydrating properties of ACB Modified Pomegranate Enzyme PF. 20 volunteers between the ages of 23 and 45, and who were known to be free of any skin pathologies with Fitzpatrick skin types I to IV, participated in this study. 3 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. Moisture measurements were recorded at 4 time increments after the application of test materials. Results indicate ACB Modified Pomegranate Enzyme PF increases skin moisturization immediately when added to personal care applications at recommended use levels.



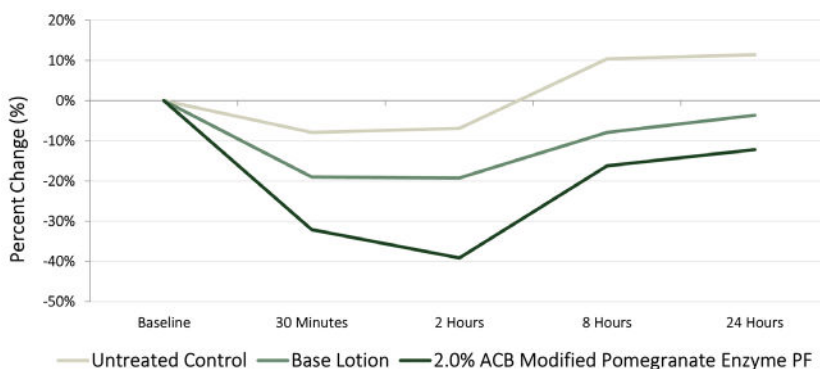
Increased skin moisture levels by 48.25% after 24 hours from baseline readings (at 2%)

### Moisturization.

Increases moisturization & Skin hydration

### 24-Hour TEWL Assay.

A transepidermal water loss (TEWL) study was conducted to evaluate the immediate and short-term moisture retention properties of ACB Modified Pomegranate Enzyme PF. 20 volunteers between the ages of 23 and 45, and who were known to be free of any skin pathologies with Fitzpatrick skin types I to IV, participated in this study. 3 randomly assigned test sites were identified on the volar forearm of participants and baseline TEWL measurements were recorded. Following baseline measurements, participants applied 0.2 g of each test material on their volar forearms once during the 24-hour study. TEWL measurements were recorded at 4 time increments within a 24-hour period. Results indicate ACB Modified Pomegranate Enzyme PF reduces TEWL immediately when added to personal care applications at recommended use levels.



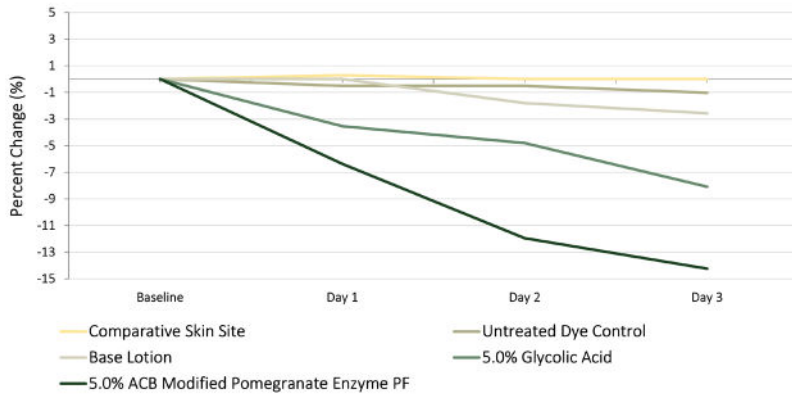
Reduced TEWL by 12.13% after 24 hours from baseline readings (at 2%)

### Barrier Function.

Enhances moisture retention

## Cellular Renewal Study.

A cellular renewal study was conducted to evaluate the ability of ACB Modified Pomegranate Enzyme PF to accelerate skin cell replacement by assessing changes in pigmentation. 10 volunteers between the ages of 20 and 45, and who were known to be free of any skin pathologies with Fitzpatrick skin types I to III, participated in this study. 5 test sites were identified on the volar forearm of participants. The first test site was identified as the Comparative Skin Site, and no dye or treatment was applied to this site to demonstrate normal pigmentation readings. Dermal Dye Max™ was applied to the remaining 4 test sites and allowed to develop for 24 hours prior to baseline readings. After dye development, and prior to initial treatment application, baseline DermaLab pigmentation index readings were taken for all 5 identified sites. Results indicate ACB Modified Pomegranate Enzyme PF enhances cellular renewal when added to personal care applications at recommended use levels.



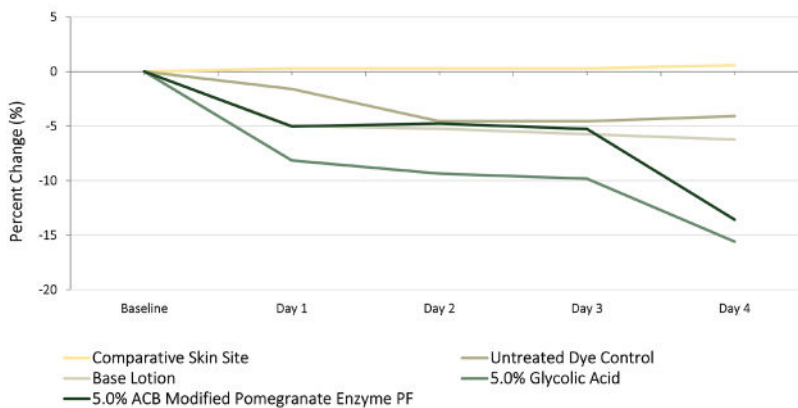
Outperformed glycolic acid by 6% and reduced skin pigmentation by 14% compared to baseline readings (tested at 5%)

## Exfoliation.

Cellular regeneration & barrier protection

## Cellular Renewal Study: Wash-Off.

A wash-off cellular renewal study was conducted to evaluate the ability of ACB Modified Pomegranate Enzyme PF to accelerate skin cell replacement by assessing changes in pigmentation. 10 volunteers between the ages of 20 and 45, and who were known to be free of any skin pathologies with Fitzpatrick skin types I to III, participated in this study. 5 test sites were identified on the volar forearm of participants. The first test site was identified as the Comparative Skin Site, and no dye or treatment was applied to this site to demonstrate normal pigmentation readings. Dermal Dye Max™ was applied to the remaining four test sites and allowed to develop for 24 hours prior to baseline readings. After dye development, and prior to initial treatment application, baseline DermaLab pigmentation index readings were taken for all 5 identified sites. Results indicate ACB Modified Pomegranate Enzyme PF enhances cellular renewal when added to personal care applications at recommended use levels.



Reduced skin pigmentation by 14% compared to baseline readings (tested at 5%)

## Renewal.

Cellular regeneration & barrier protection

### References:

1. Mazzocchi A, Leone L, Agostoni C, Pali-Schöll I. The Secrets of the Mediterranean Diet. Does [Only] Olive Oil Matter? *Nutrients*. 2019 Dec 3;11(12):2941. doi: 10.3390/nu11122941. PMID: 31817038; PMCID: PMC6949890.

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