

20496.

ACB

# Modified Pumpkin Enzyme PF

Gentle Exfoliation  
Collagen Enhancing  
Hair Stylist Approved



VEGAN



SEPHORA  
CLEAN



CREDO  
CLEAN



COSMOS  
COMPLIANT



ISO 16128



## THE FEATURES.

**B**orn from nature's own renewal process, ACB Modified Pumpkin Enzyme PF redefines gentle exfoliation through science-backed innovation. Inspired by the natural proteolytic activity that drives pumpkin decomposition, this active harnesses the fruit's innate enzymatic power, now optimized through a unique fermentation process to enhance bioavailability while eliminating irritation. Sustainably sourced using upcycled pumpkin flesh, a byproduct of seed harvesting, ACB Modified Pumpkin Enzyme PF delivers all the skin-smoothing, rejuvenating benefits of traditional enzymes with none of the harshness.

*INCI: Lactobacillus/Pumpkin Fruit  
Ferment Filtrate*

TECHNICAL DATA SHEET.

# ACB Modified Pumpkin Enzyme PF

## THE STORY.

In today's skincare and haircare market, consumers are increasingly looking for products that merge nature's wisdom with scientific innovation. While exfoliating acids like AHAs and BHAs once defined the category, modern beauty trends are shifting toward gentler, bio-based actives that deliver results without compromising skin comfort. ACB Modified Pumpkin Enzyme PF is a naturally derived exfoliating complex that harnesses the proteolytic power of pumpkin enzymes to refine skin texture, boost radiance, and promote renewal through a more mindful, skin-friendly approach.

The inspiration behind ACB Modified Pumpkin Enzyme PF comes from the pumpkin's own life cycle. As it ripens, softens, and transforms, this fruit relies on powerful proteolytic enzymes to gently break down structural proteins – a natural process we've optimized for skincare. Derived from the nutrient-rich pumpkin flesh, which is often discarded during seed harvesting, this upcycled ingredient transforms waste into worth. By carefully modifying the process through fermentation, Active Concepts has enhanced pumpkin's rich phytochemical bioavailability while reducing irritation potential. Brands are now able to utilize this renewable crop that embodies seasonal abundance and circular beauty.



## THE SCIENCE.

Pumpkin tissues, particularly the pulp and peel, are rich in a diversity of bioactives that are relevant to skin and hair biology: carotenoids, tocopherols, a wide range of phenolic acids and flavonoids, polysaccharides, proteins/peptides, and in the seeds, a lipid fraction dominated by unsaturated fatty acids and phytosterols. These classes supply antioxidant activity, substrates for microbial and enzymatic biotransformation, and lipidic building blocks and signaling precursors for barrier and follicular health. Comprehensive compositional surveys and reviews quantify these constituents across pumpkin parts and support strong antioxidant and polyphenolic signatures that differ by cultivar and tissue.<sup>1,2</sup>

Pumpkins also contain native proteolytic activity, such as proteases expressed during germination and fruit ripening, that, when properly moderated, can deliver controlled proteolysis of extracellular proteinaceous debris and weakly-attached corneodesmosomal proteins at the skin surface. In topical context, low-level proteolysis loosens corneocyte cohesion, enabling desquamation and accelerating surface renewal without the acid-mediated barrier disruption seen with aggressive chemical peels. This enzymatic route thus provides a complementary mechanism to AHAs and BHAs: mechanistic removal of intercellular protein bridges rather than acid hydrolysis of desmogleins or corneodesmosomal lipids.<sup>3</sup>

Beyond surface renewal, pumpkin phytochemicals can indirectly support dermal matrix homeostasis. Carotenoids, phenolic compounds, and tocopherols reduce reactive oxygen species (ROS) and oxidative signaling that otherwise upregulate matrix metalloproteinases (MMPs) and accelerate collagen degradation. Parallel to antioxidant action, peptides and small protein fragments can act as matrikines or signal modulators that increase expression of collagen-related genes and elastin family members in dermal fibroblasts.<sup>4</sup>

Together, these findings highlight how the naturally occurring phytochemicals within pumpkin work to promote balanced exfoliation, stimulate collagen production, and support healthy hair. Through its optimized modification and fermentation process, ACB Modified Pumpkin Enzyme PF delivers these multifaceted benefits in a stable, gentle, bioavailable form.

## THE TECHNICAL DETAILS.

**INCI.** Lactobacillus/Pumpkin Fruit Ferment Filtrate

**CAS.** 89998-03-8

**EINECS.** 289-741-0

**EUROPE.** Compliant

**USA.** Compliant

**CHINA.** Contact Us

**Origin.** Botanical/Bacteria

**Natural Antimicrobial.** Leuconostoc/Radish Root Ferment Filtrate\*

**Preservatives.** None

**Solvents Used.** None

**Appearance.** Clear to Slightly Hazy Viscous Liquid

## THE FORMULATION TIPS.

**pH Stability.** 4 - 7

**Temperature Stability.** Product may change appearance if exposed to cold temperatures. Gently warm to 45-50°C and mix until normal appearance is restored. Avoid prolonged exposure to UV.

**Use Level.** 1 - 10%

**Ionic State.** Nonionic

**Alcohol Compatibility.** Compatible with up to 50% alcohol

**Solubility.** Water Soluble

**Pro Tips.** It is recommended that this product is added to the batch in cooldown to maintain appearance

\* 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.

# ACB Modified Pumpkin Enzyme PF

## THE BENEFITS OVERVIEW.

**Gentle Exfoliation** Cellular Renewal Study



**Stylist Approved** Salon Half-Head Study



**Collagen Enhancing** Sirius Red Fast Green Analysis

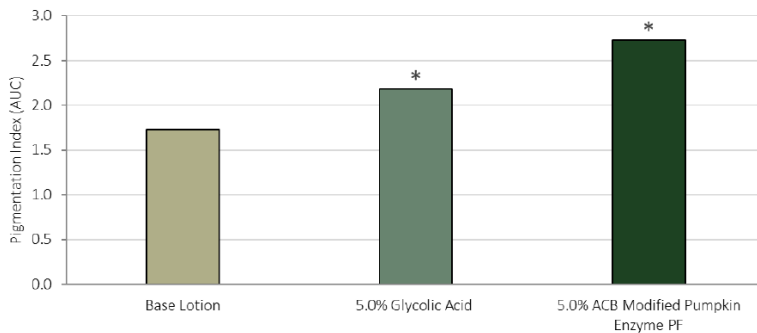


## THE EFFICACY.

### Gentle Exfoliation

A Cellular Renewal Study was performed to evaluate the ability of ACB Modified Pumpkin Enzyme PF to accelerate skin cell turnover using a Dermal Dye Max™ model. Artificially pigmented skin was created with dihydroxyacetone and the rate of pigment loss was used as an indicator of cellular renewal. Ten healthy volunteers (ages 20-45, Fitzpatrick skin types I-III) participated, with five test sites established on the forearm. The dyed areas were treated daily with lotion formulations containing ACB Modified Pumpkin Enzyme PF or controls, while pigmentation levels were measured every 24 hours using a DermaLab instrument until baseline was restored.

Cumulative Cellular Renewal

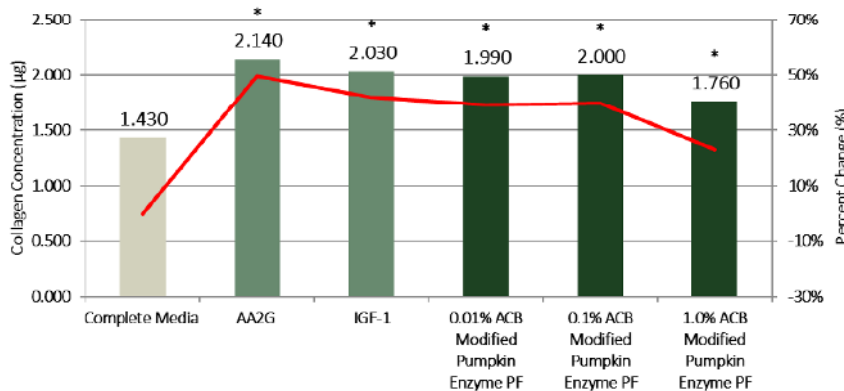


Accelerated cellular turnover by +15%

### Collagen Enhancing

An in vitro study was conducted to evaluate the effect of ACB Modified Pumpkin Enzyme PF on collagen synthesis in human dermal fibroblasts using the Sirius Red Fast Green Analysis. This method differentiates collagen from non-collagen proteins through selective staining, with optical density measurements providing semi-quantitative collagen levels. Fibroblasts were treated with varying concentrations of the enzyme (0.01%, 0.1%, and 1.0%) for 24 hours, alongside positive controls (AA2G and IGF-1). Following fixation and staining, collagen content was extracted and quantified.

Collagen Synthesis



Increased collagen synthesis by +40%

# ACB Modified Pumpkin Enzyme PF

THE EFFICACY CONTINUED.

## Stylist Approved

A Salon Half-Head Study was conducted to evaluate the perceived hair benefits of ACB Modified Pumpkin Enzyme PF in a shampoo and conditioner on wet and dry hair. These results indicate ACB Modified Pumpkin Enzyme PF improves the perceived benefits with wet and dry hair when added to shampoo and conditioner at recommended use levels. Collectively, ACB Modified Pumpkin Enzyme PF demonstrates visual and perceived hair characteristics which contribute to a healthier looking hair appearance.



Improved hydration by +80%



Enhanced overall feel by +125%

References:

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4. Aziz A, Noreen S, Khalid W, Ejaz A, Faiz Ul Rasool I, Maham, Munir A, Farwa, Javed M, Ercisli S, Okcu Z, Marc RA, Nayik GA, Ramniwas S, Uddin J. Pumpkin and Pumpkin Byproducts: Phytochemical Constituents, Food Application and Health Benefits. *ACS Omega*. 2023 Jun 23;8(26):23346-23357. doi: 10.1021/acsomega.3c02176. Erratum in: *ACS Omega*. 2025 Sep 01;10(36):42109. doi: 10.1021/acsomega.5c00201. PMID: 38170139; PMCID: PMC10761000.

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