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AC

ExoEternal

Encapsulated Retinol Alternative

Collagen Boosting Complex

Gentle Exfoliating Care



VEGAN



SEPHORA
CLEAN



CREDO
CLEAN



GLOBALLY
COMPLIANT



ISO 16128



PRODUCT
PASSPORT



THE FEATURES.

Modern life keeps the body in constant overdrive, and as we turn to biohacking and mindfulness to find balance, our skin reflects the strain through visible signs of stress, reduced elasticity, and diminished firmness. In this new era of accelerated change, the skin needs more than renewal — it needs equilibrium. AC ExoEternal delivers that balance as a biotech-powered retinol alternative rooted at the intersection of modern science and Traditional Chinese Medicine, centered on perilla leaf to help restore the flow of Qi. Through targeted fermentation and exosome-inspired delivery, perilla's potent bioactives are awakened and stabilized, working in sync to boost collagen synthesis, calm inflammation, and strengthen the skin's structure, helping to deliver visible renewal without the irritation of retinol.

*INCI: Water & Lactobacillus & Perilla
Frutescens Extract & Phospholipids &
Lactobacillus Ferment*

TECHNICAL DATA SHEET.

THE STORY.

Modern life keeps the body in constant acceleration. Endless screens, disrupted sleep, and shifting metabolic rhythms push our systems toward imbalance. To regain control, we turn to biohacking, metabolic resets, and GLP-1s, yet these internal shifts can leave the skin dull, dry, and less firm, prompting many to reach for retinol as the traditional path to renewal. But despite its reputation, retinol often brings irritation, sensitivity, and pregnancy-related limitations, underscoring the need for a gentler alternative.

From CRISPR to cellular reprogramming, modern medicine redefines balance through science and precision. Long before these frontiers, Traditional Chinese Medicine understood that harmony cannot be engineered but cultivated through the flow of Qi, the living energy that sustains the body in equilibrium.

AC ExoEternal brings these worlds together. It is a biotech-powered, natural retinol alternative that channels both the precision of modern science and the harmony of Traditional Chinese Medicine. At its core is perilla leaf, a botanical revered for its ability to harmonize Qi and protect the skin. Through targeted fermentation and exosome-inspired delivery, perilla's bioactives are awakened and stabilized to boost collagen, calm inflammation, and renew the skin without irritation.

In an age defined by stress, the skin needs more than renewal. It needs balance restored. It needs AC ExoEternal.



THE SCIENCE.

In the skin, retinol (vitamin A) is converted by enzymes into retinoic acid, the active form that binds nuclear receptors (RARs and RXRs) to regulate gene expression.¹ This process promotes keratinocyte differentiation, supports collagen production, and enhances skin renewal, improving texture, resilience, and appearance. While retinol delivers visible renewal, its use is limited by irritation, regulatory restrictions, and safety concerns during pregnancy.

AC ExoEternal rewrites the rules of renewal. Developed through a controlled fermentation of *Perilla frutescens*, it awakens the plant's powerful bioactives, including protocatechuic acid, rosmarinic acid, and lactic acid, supported by the biological networks that drive their protective and restorative functions within perilla. Rather than isolating individual actives, Active Concepts preserves the complete metabolic ecosystem responsible for perilla's natural balance and resilience. Through BioAuthentic Exosomal Technology, AC ExoEternal captures this biochemical network and the interconnected pathways that sustain its adaptive properties. These pathways are encapsulated within protein-stabilized BioAuthentic Exosomes, maintaining the integrity of perilla's living synergy to deliver visible renewal without irritation or imbalance.

Plant-derived actives in perilla, including protocatechuic acid,² have been shown *in vitro* to increase type I collagen levels and inhibit MMP-1 activity, supporting extracellular matrix integrity.³ Perilla also naturally produces rosmarinic acid, a potent antioxidant that scavenges reactive oxygen species and modulates pro-inflammatory mediators, helping protect skin from oxidative and inflammatory stress.^{4,5} *Perilla frutescens* has been found to contain lactic acid, an alpha hydroxy acid known to promote mild exfoliation by disrupting the bonds between corneocytes, encouraging cell turnover and smoother skin texture.⁶ Together, these bioactives form the foundation of AC ExoEternal's skin-renewing benefits, each contributing distinct yet complementary functions within the perilla matrix.

THE TECHNICAL DETAILS.

INCI. Water & Lactobacillus & Perilla Frutescens Extract & Phospholipids & Lactobacillus Ferment

CAS. 7732-18-5 & 68333-16-4 (or) 92128-79-5 & 90082-61-4 (or) 68132-21-8 & 123465-35-0 (or) 8002-43-5 & 68333-16-4 (or) 1686112-36-6 (or) 9015-54-7

EINECS. 231-791-2 & N/A (or) 295-777-8 & 290-151-0 (or) 268-884-2 & N/A (or) 232-307-2 & N/A (or) N/A (or) 295-635-5

EUROPE. Compliant

USA. Compliant

CHINA. Compliant

Origin. Botanical/bacteria

Natural Antimicrobial. Lactobacillus Ferment

Preservatives. None

Solvents Used. Water

Appearance. Liquid Exosomal Dispersion, Tan to Dark Brown

THE FORMULATION TIPS.

pH Stability. 3 - 7

Temperature Stability. Stable up to 50°C

Use Level. 2 - 4%

Ionic State. Nonionic

Alcohol Compatibility. Compatible with up to 10% alcohol at 5%

Solubility. Water Soluble

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

THE BENEFITS OVERVIEW.

AC ExoEternal **delivers the visible results of retinol**: smoother texture, refined tone, renewed collagen support, without the irritation, cytotoxicity, or photosensitivity that can come with it. AC ExoEternal **goes beyond bakuchiol** in targeted efficacy, and paired with 0.1% retinol, **unlocks a synergistic effect** that delivers more with less.

IN VIVO.

Anti-Aging Moisturization (vs. retinol and bakuchiol)
VISIA: Reduction in Wrinkles
High Resolution Ultrasound Skin Imaging Test

Gentle Exfoliating and Evening Cellular Renewal (vs. retinol and bakuchiol)
VISIA: Reduction in Surface Spots
VISIA: Reduction in Texture

Non-Irritating Anti-Erythema (vs. retinol and bakuchiol)
VISIA: Redness Reduction
TEWL (vs. retinol and bakuchiol)

Enhanced Skin Delivery Enhanced Skin Delivery via UV Dye

SYNERGISTIC DATA.

Anti-Aging High Resolution Ultrasound Skin Imaging Test

Gentle Exfoliating and Evening Cellular Renewal

Non-Irritating Anti-Erythema (vs. retinol and bakuchiol)

IN VITRO.

Anti-Aging Collagen Boosting (Sirius Red Fast Green)
Elastin Boosting (Elastin ELISA)

Maintains Cellular Vitality Cellular Viability

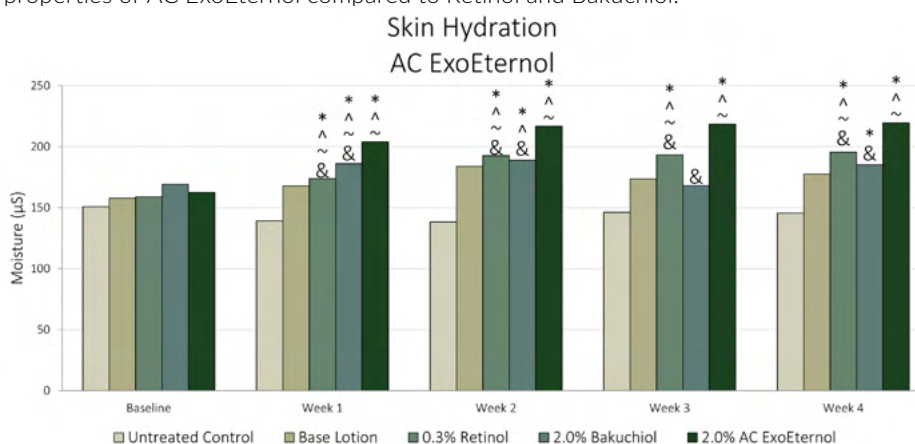
Gentle Exfoliating and Evening Hyperpigmentation (Tyrosinase Inhibition)

Non-Irritating Anti-Inflammatory (IL-6 ELISA)
Cellular Protection (CYP1A1 Assay)
Antioxidant (ORAC Assay)
UV Protection (Total Cellular Protein in Response to UV)



Replenishes Moisture

The skin's structural and functional integrity is predominantly dependent on sufficient hydration levels given several enzymes maintaining homeostasis within the stratum corneum are hydrolytic and do not occur efficiently if water is below an acceptable threshold. Adequately hydrated skin is flexible, resistant to shearing forces, an effective protective barrier, and appears more youthful with a reduction in fine lines and wrinkles. Conversely, insufficiently hydrated skin is present in many skin diseases and exhibits a compromised protective barrier, feels dry, flaky, and rough, and is correlated with skin aging. Consequently, proper hydration maintains the skin's structural and functional integrity and contributes to the appearance of healthier looking skin. Accordingly, a moisturization study was conducted to evaluate the skin hydrating properties of AC ExoEternal compared to Retinol and Bakuchiol.

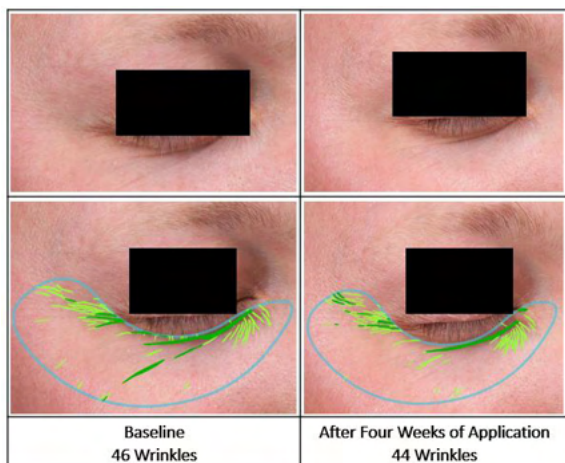


**Increased
moisturization
by +35%**

THE EFFICACY CONTINUED.

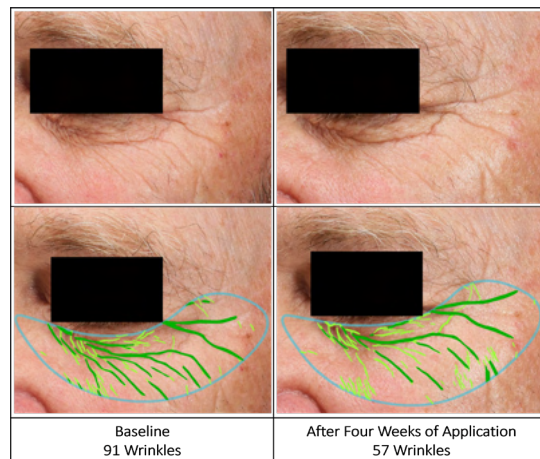
Anti-Aging

Wrinkles are furrows, folds, or creases in the skin that are associated with a decrease in skin elasticity and an increase in development as a result of sun exposure. As skin ages, cell production slows resulting in the dermis becoming thinner and allowing depressions to form on the skin's surface. Aging skin is often slower to retain moisture and heal wounds and with the formation of wrinkles, the appearance of the skin often looks unappealing. It is important to monitor the development of skin damage, such as fine lines and wrinkles, because limiting skin damage provides a healthier and more youthful appearance. Accordingly, an *in vivo* study was conducted over a period of four weeks to evaluate the ability of 2.0% AC ExoEternal to reduce wrinkles on the face.



Reduced wrinkles in younger skin by -2%

Reduced wrinkles in mature skin by -2%



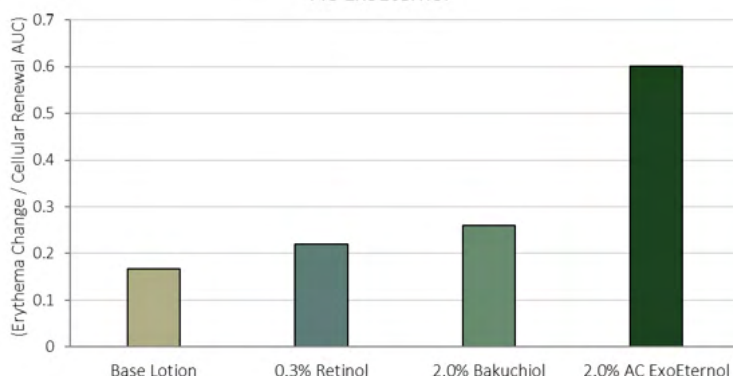
Promotes Skin Renewal

As the largest human organ, the skin's integrity is critical to properly function as a physical barrier and maintenance of a healthy appearance for aesthetics. The epidermis constantly undergoes major self-renewal as the superlayer of cells are lost by desquamation and replaced by cells in the basal layers. The constant replacement of cells mitigates the negative long-term effects of ultraviolet light damage and harmful agents (chemicals, pollutants, etc.) on the skin. Aiding in the processes of cellular renewal can improve the skin's physical appearance as well as function as a protective barrier. Accordingly, a cellular renewal study was conducted to evaluate the ability of AC ExoEternal to accelerate skin cell replacement by assessing changes in pigmentation.



Reduced pigmentation by -1.7%

Efficacy-Tolerance Ratio
AC ExoEternal



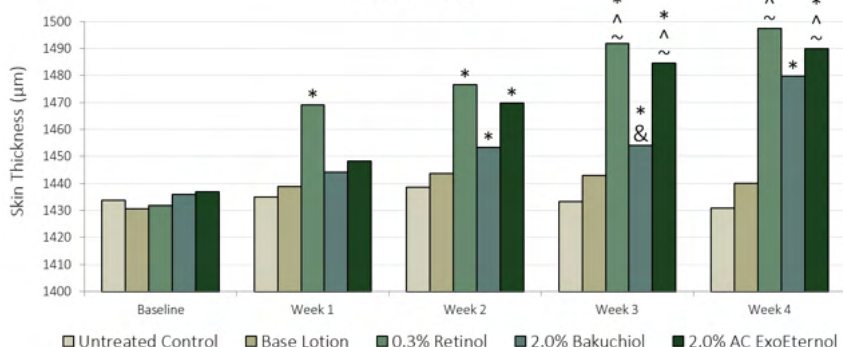
Promotes cellular renewal while minimizing irritation

THE EFFICACY CONTINUED.

Collagen Boosting

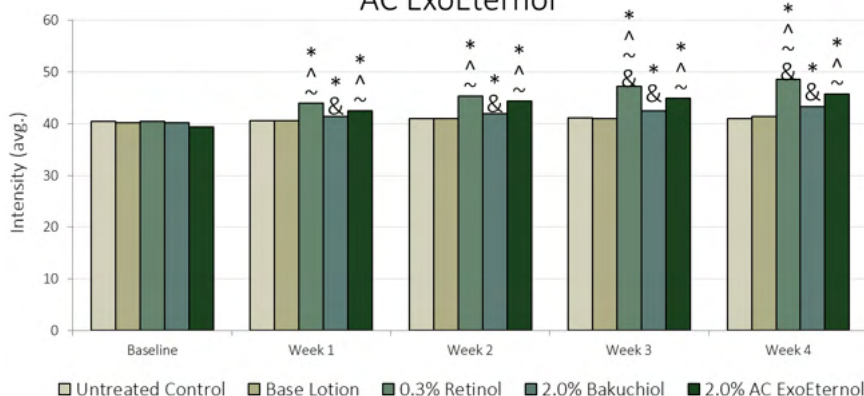
The visible signs of aging often begin deep within the dermis, where collagen architecture gradually weakens long before changes appear on the surface. High resolution ultrasound imaging allows us to look beneath the epidermis to evaluate these structural shifts directly, providing an objective view of collagen organization, dermal density, and overall skin integrity. Because this technology offers a noninvasive way to visualize true structural renewal, a High Resolution Ultrasound Skin Imaging Study was conducted to assess how AC ExoEternal influences the Dermal Age-Band, Dermal Collagen Thickness, and Collagen Fiber Density compared to retinol and bakuchiol.

Dermal Collagen Thickness
AC ExoEternal



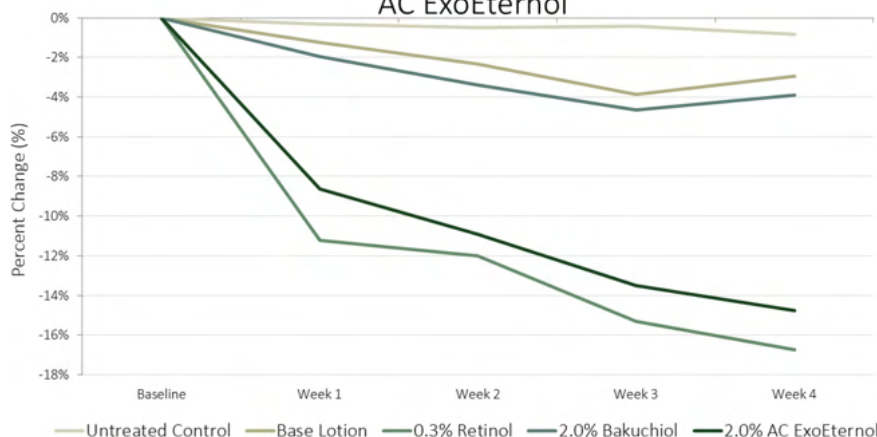
Increased collagen thickness by +4%

Collagen Fiber Density
AC ExoEternal



Increased collagen fiber density by +16%

Change in Dermal Age-Band
AC ExoEternal



Reduced Dermal Age-Band by -15%

THE EFFICACY CONTINUED.

Evens Skin Tone

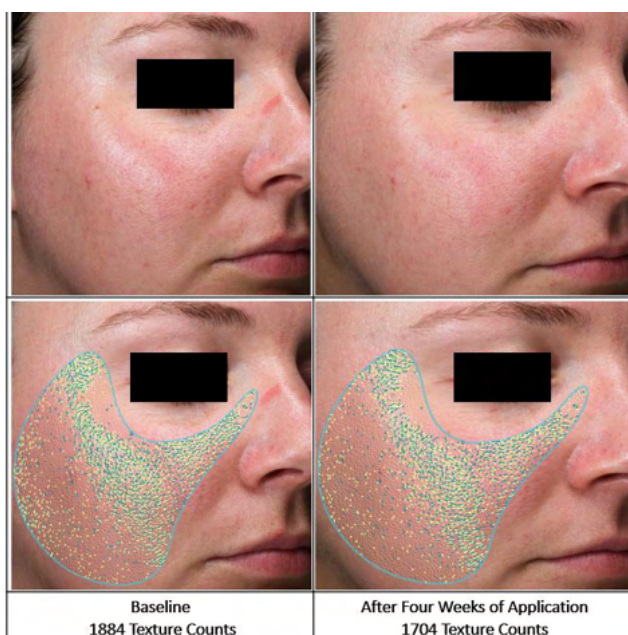
Spots are typically brown or red skin lesions, including hyperpigmentation, freckles, and acne scars. Spots are distinguishable by their color as they vary in shape and size. Reducing spots allows the skin to look more youthful in appearance which is an increasing desire in the cosmetic world. Accordingly, an *in vivo* study was conducted over a period of four weeks to evaluate the ability of 2.0% AC ExoEternal to reduce Surface Spots on the face.



Reduced
surface spots
by -4%

Skin Smoothing

Skin may feel uneven, dry, or coarse as we age. As skin ages, the process of shedding dead skin cells rapidly declines, resulting in skin cell buildup that appears dry and clumpy. Additionally, collagen and elastin are responsible for providing smoothness and resiliency on the skin. With increased sun exposure, collagen and elastin begin to breakdown thus resulting in more visible and tangible skin texture. To prevent uneven skin texture, it is important to include exfoliation in a skincare regimen. Accordingly, an *in vivo* study was conducted over a period of four weeks to evaluate the ability of 2.0% AC ExoEternal to improve Texture on the face.



Reduced
texture by
-2%

THE EFFICACY CONTINUED.

Short-Term Redness Reduction

In this study, surgical tape was applied to test sites for two minutes to intentionally induce redness, after which erythema measurements were recorded and test materials were applied. Fifteen minutes after application, redness levels were measured again, and participants rated visible improvement on a scale from 1 (no change) to 10 (no redness). Reducing redness and irritation helps restore a calm, balanced complexion for skin that appears healthier and more even-toned.

Before Application				
After Application				
	Base Lotion	0.3% Retinol	2.0% Bakuchiol	2.0% AC ExoEternal

Reduced
redness by
-5% after 15
minutes

Long-Term Redness Reduction

Red areas in the skin often indicate increased blood flow and inflammatory activity, signaling irritation or stress within the tissue. This response can reflect sensitivity, barrier disruption, or an overactive immune reaction triggered by external or environmental factors. Accordingly, an *in vivo* study was conducted over a period of four weeks to evaluate the ability of 2.0% AC ExoEternal to reduce Red Areas on the face. Each participant received two treatments applied to opposite sides of the face to allow direct comparison under controlled conditions. The study used Simple® Hydrating Light Moisturizer as the base lotion for consistent hydration and formulation stability.

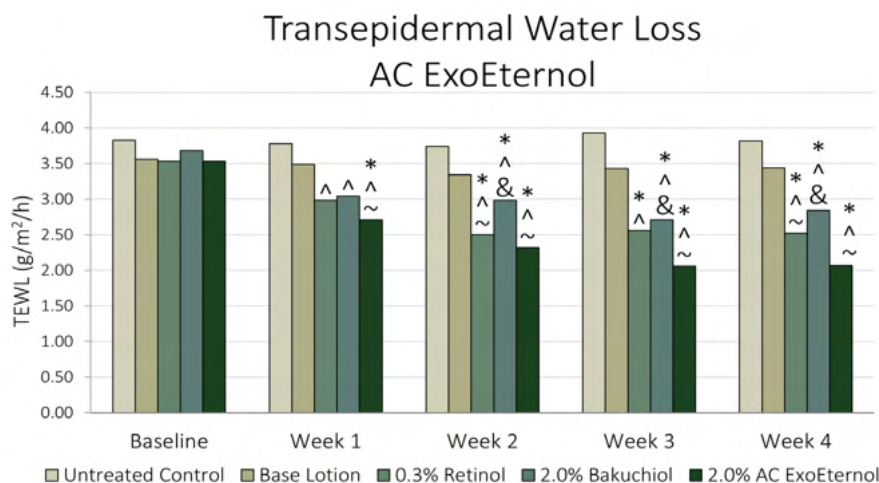


Decreased
red areas
by -3%

THE EFFICACY CONTINUED.

Barrier Protection

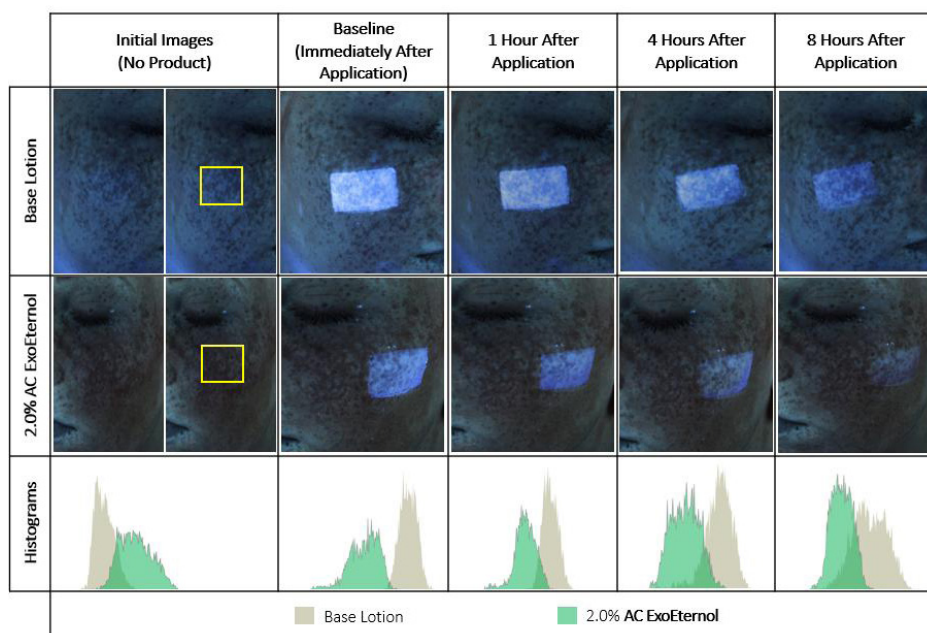
As the largest human organ, the skin's integrity is critical to properly function as a physical barrier and maintenance of a healthy appearance for aesthetics. Moisture retention is a fundamental component to the preservation of the skin's protective barrier function. Transepidermal water loss (TEWL) is the passive evaporation of water across the stratum corneum to the external environment because of the water vapor pressure gradient on both sides of the skin barrier. In healthy skin, TEWL is inversely proportional to skin hydration (i.e., decreased TEWL indicates properly hydrated skin). However, when the skin's protective barrier is compromised, TEWL levels are high and the skin feels dry, flaky, and rough. High TEWL levels, and reduced skin hydration, are correlated with skin aging and seen in many skin diseases. Consequently, moderating excessive TEWL improves the skin's protective barrier function and contributes to the appearance of healthier looking skin. Accordingly, a transepidermal water loss study was conducted to evaluate the moisture retention properties of AC ExoEternal compared to Retinol and Bakuchiol.



**Reduced
water loss by
-41%**

Enhanced Skin Delivery

The skin's ability to regenerate, repair, and maintain homeostasis is influenced by intercellular communication and the delivery of bioactive molecules to deeper layers. Exosomes—nanosized extracellular vesicles secreted by cells—play a critical role in mediating this communication by transporting proteins, lipids, and nucleic acids that regulate cellular activity. When effectively delivered into the skin, exosomes can contribute to improved elasticity, barrier function, and overall skin vitality. In contrast, limited penetration reduces their biological efficacy, diminishing potential benefits for skin rejuvenation and repair. Accordingly, a UV Dye Penetration Study was conducted to evaluate exosome penetration of AC ExoCalm over time. A fluorescent dye was attached to the lipid bilayer in AC ExoEternal, allowing us to visually track exosome-associated fluorescence. 2.0% AC ExoEternal



**Enhances
skin delivery
by +52%**

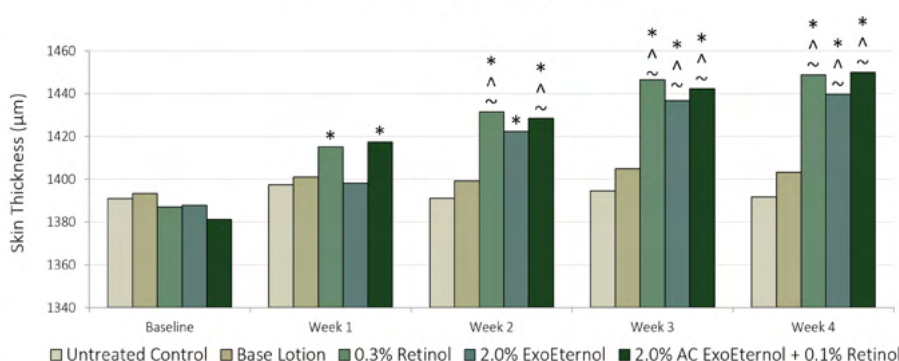
THE EFFICACY CONTINUED.

Synergistic Performance: Unlock More from Less Retinol

Collagen Boosting

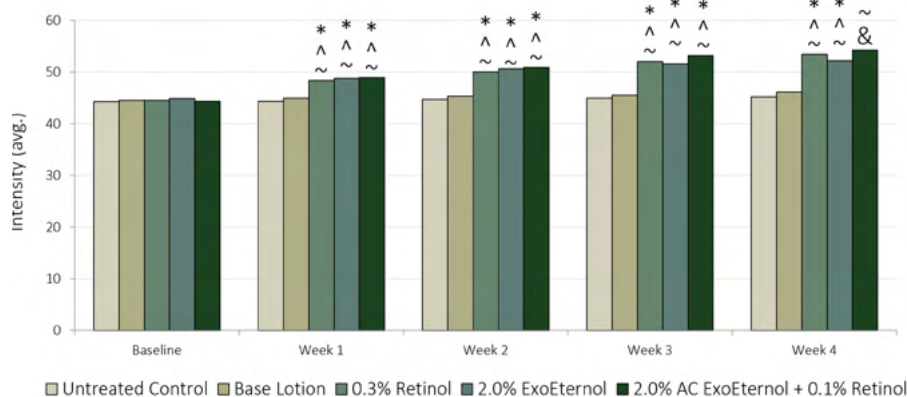
The visible signs of aging often begin deep within the dermis, where collagen architecture gradually weakens long before changes appear on the surface. High resolution ultrasound imaging allows us to look beneath the epidermis to evaluate these structural shifts directly, providing an objective view of collagen organization, dermal density, and overall skin integrity. Because this technology offers a noninvasive way to visualize true structural renewal, a High Resolution Ultrasound Skin Imaging Study was conducted to assess how a blend of 2.0% AC ExoEternal and 0.1% Retinol influences the Dermal Age-Band, Dermal Collagen Thickness, and Collagen Fiber Density compared to 0.3% retinol.

Dermal Collagen Thickness



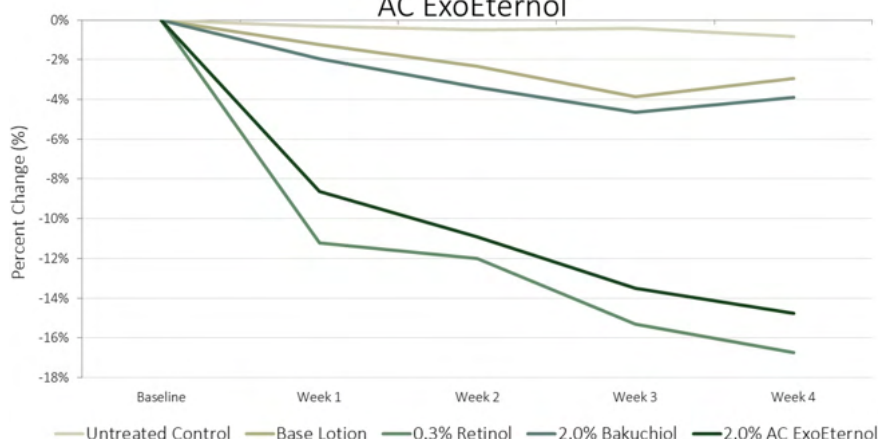
Increased collagen thickness by +5%

Collagen Fiber Density



Increased collagen density by +22%

Change in Dermal Age-Band
AC ExoEternal



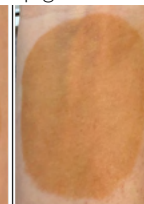
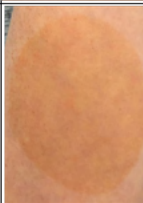
Reduced Dermal Age-Band by -21%

THE EFFICACY CONTINUED.

Synergistic Performance: Unlock More from Less Retinol

Promotes Skin Renewal

As the largest human organ, the skin's integrity is critical to properly function as a physical barrier and maintenance of a healthy appearance for aesthetics. The epidermis constantly undergoes major self-renewal as the superlayer of cells are lost by desquamation and replaced by cells in the basal layers. The constant replacement of cells mitigates the negative long-term effects of ultraviolet light damage and harmful agents (chemicals, pollutants, etc.) on the skin. Aiding in the processes of cellular renewal can improve the skin's physical appearance as well as function as a protective barrier. Accordingly, a cellular renewal study was conducted to evaluate the ability of 2.0% AC ExoEternal + 0.1% retinol to accelerate skin cell replacement by assessing changes in pigmentation compared to 0.3% retinol.

Baseline					
After Three Days of Application					
	Untreated Control	Base Lotion	0.3% Retinol	2.0% AC ExoEternal	2.0% AC ExoEternal + 0.1% Retinol

Reduced
pigmentation
by -2.4%

Short-Term Redness Reduction (Synergistic with Retinol)

In this study, surgical tape was applied to test sites for two minutes to intentionally induce redness, after which erythema measurements were recorded and test materials were applied. Fifteen minutes after application, redness levels were measured again, and participants rated visible improvement on a scale from 1 (no change) to 10 (no redness). Reducing redness and irritation helps restore a calm, balanced complexion for skin that appears healthier and more even-toned. A blend of 2.0% AC ExoEternal and 0.1% Retinol were tested against 0.3% retinol.

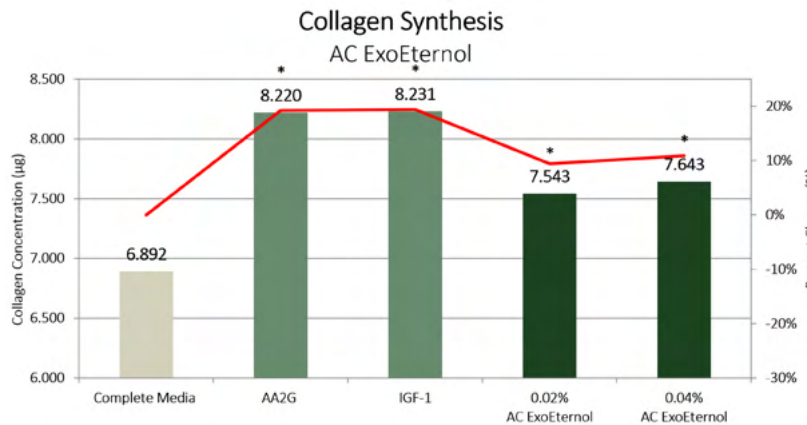
Before Application				
After Application				
	Base Lotion	0.3% Retinol	2.0% AC ExoEternal	2.0% AC ExoEternal + 0.1% Retinol

Reduced
redness by
-7% after 15
minutes

THE EFFICACY CONTINUED.

Collagen Boosting

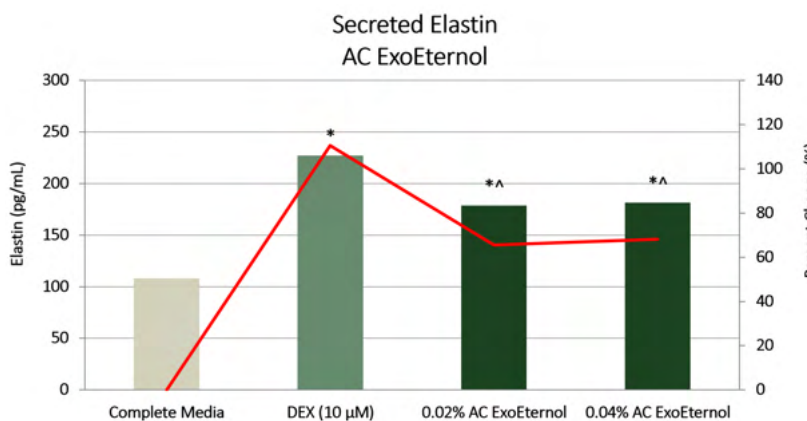
Collagen is the main protein of connective tissues, such as skin, bone, tendon and ligament, and the most abundant protein in mammals. Specifically, it accounts for nearly 25% to 35% of the total human protein content. Collagen is a long, fibrous protein that forms bundles called fibers giving structure and support to cells and tissues. Collagen has great tensile strength and is responsible for skin's elasticity, therefore its degradation leads to wrinkles that accompany aging. Accordingly, a Sirius Red/Fast Green Collagen Assay was conducted to assess the in vitro effect of AC ExoEternal to trigger collagen synthesis in dermal fibroblasts.



Increased collagen synthesis by +11%

Elastin Boosting

Elastin is essential for maintaining skin's firmness, flexibility, and youthful resilience. By supporting elastin production, the skin retains its ability to stretch, smooth, and bounce back, helping reveal a firmer, more lifted appearance over time. Accordingly, an Elastin ELISA was conducted to assess the in vitro effect of AC ExoEternal on the extracellular release and intracellular synthesis of elastin from human dermal fibroblasts.

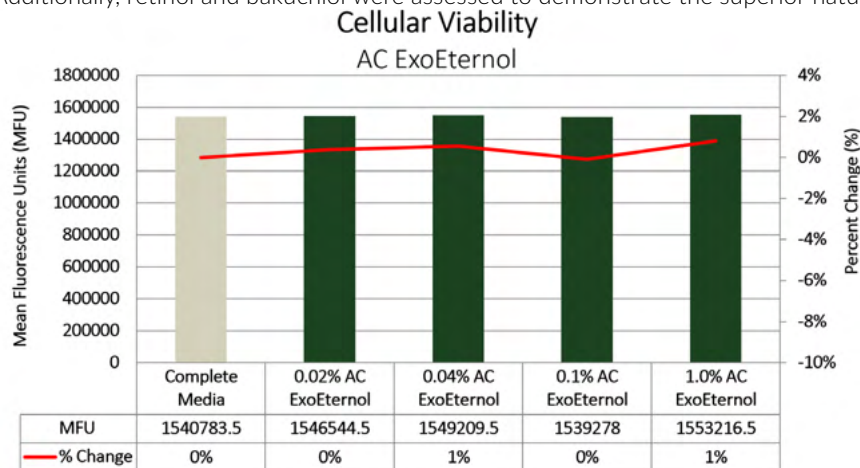


Increased elastin levels by +68%

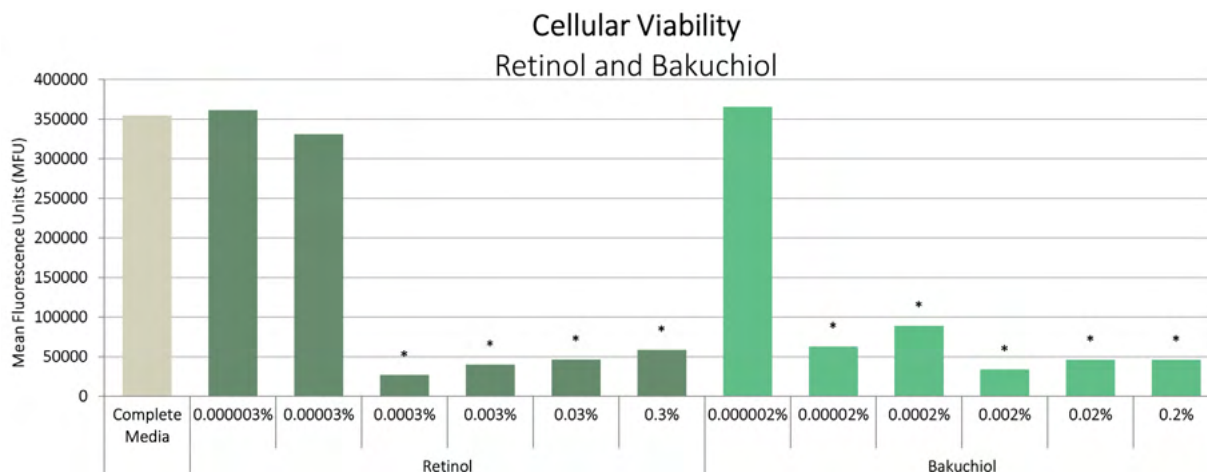
THE EFFICACY CONTINUED.

Maintains Cellular Vitality

Cosmetic ingredients interact directly with dermal cells to provide a multitude of skin benefits. Assessing the impact of topical cosmetics on cellular homeostasis is an important screening step to avoid disrupting natural skin balance and normal skin barrier function. The cellular viability assay is useful for quantitatively measuring test article-induced cytotoxicity. Accordingly, a cellular viability assay was conducted to assess the impact of AC ExoEternal on cellular homeostasis in cultured dermal fibroblasts. Additionally, retinol and bakuchiol were assessed to demonstrate the superior nature of AC ExoEternal.

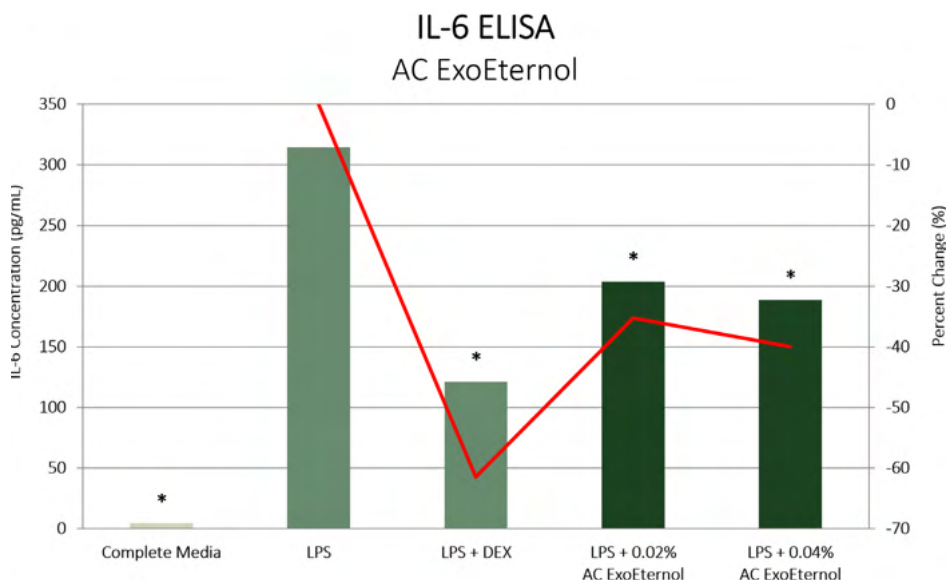


AC ExoEternal is not cytotoxic, while retinol and bakuchiol compromise viability



Anti-Inflammatory

Interleukin-6 (IL-6) is a key signaling molecule that drives inflammation in the skin. Elevated IL-6 levels can activate enzymes such as matrix metalloproteinase-1 (MMP-1), which break down collagen and other components of the extracellular matrix. This process contributes to wrinkles, fine lines, and loss of firmness over time. By helping to reduce IL-6 activity, skin can maintain a calmer, more balanced environment that supports collagen integrity and promotes a smoother, more youthful appearance. Accordingly, an interleukin-6 ELISA was conducted to assess the in vitro effect of AC ExoEternal to elicit changes in IL-6 levels in dermal fibroblasts.

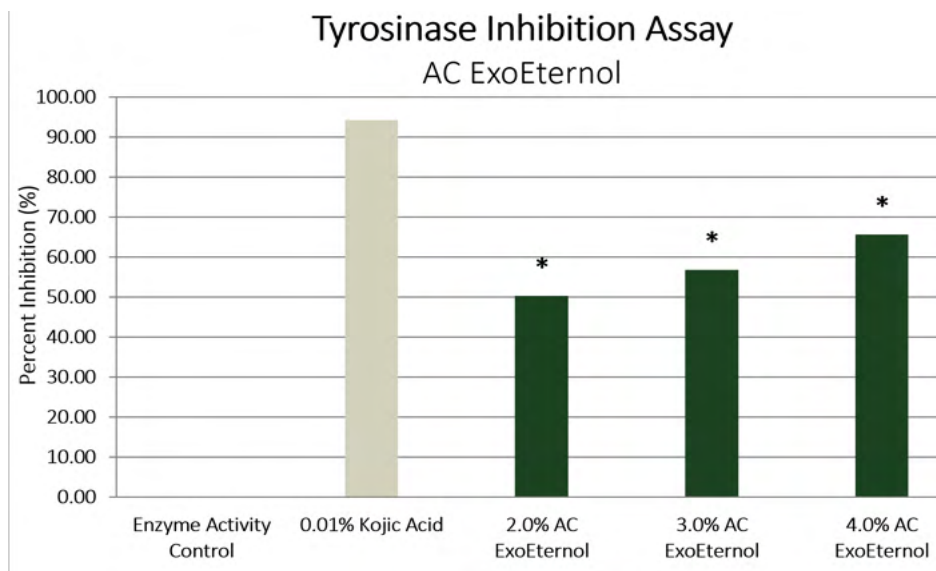


Reduced inflammation by 40%

THE EFFICACY CONTINUED.

Brightens Skin

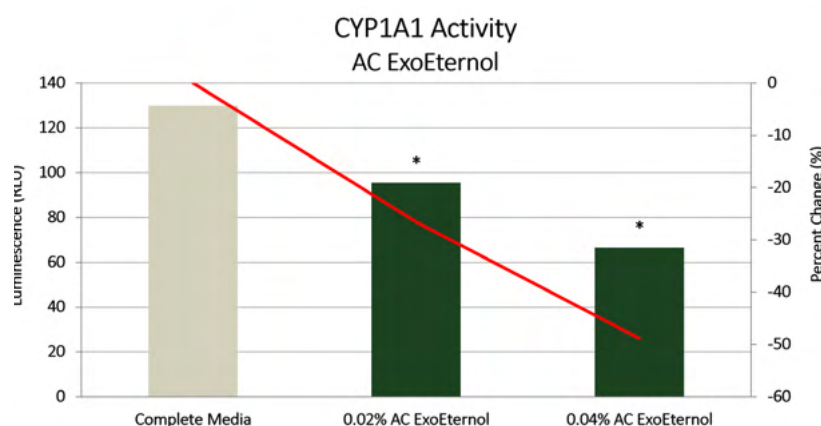
Tyrosinase plays a central role in melanin production, the natural process responsible for skin and hair pigmentation. Overactive tyrosinase can trigger excess melanin formation, leading to visible concerns such as dark spots, freckles, and uneven tone. For this reason, identifying effective tyrosinase inhibitors has become a major focus in cosmetic science aimed at brightening and balancing the complexion. A tyrosinase inhibition assay was conducted to determine the ability of AC ExoEternal to inhibit tyrosinase, indicating its potential in cosmetic applications to reduce hyperpigmentation.



Inhibited
tyrosinase
by -66%

Cellular Protection

CYP1A1 is a detoxification enzyme that becomes highly active in response to pollution, UV exposure, and other environmental stressors. Although its role is protective, excessive CYP1A1 activity can generate reactive metabolites that heighten oxidative stress, trigger inflammation, and contribute to premature skin aging. Inhibiting overactive CYP1A1 helps restore cellular balance by reducing stress signals that interfere with renewal and repair. This assay evaluates whether AC ExoEternal can calm CYP1A1 activity to support a healthier, more resilient skin environment.

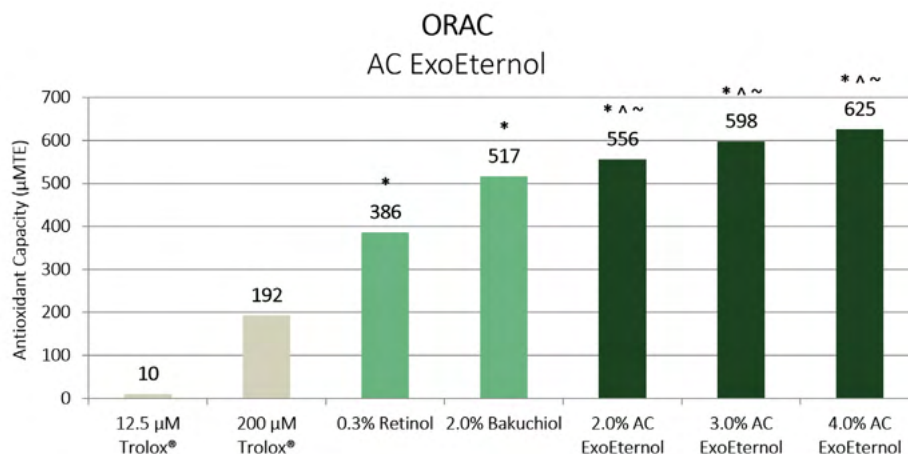


Reduced
CYP1A1
activity by
-49%

THE EFFICACY CONTINUED.

Antioxidant Protection

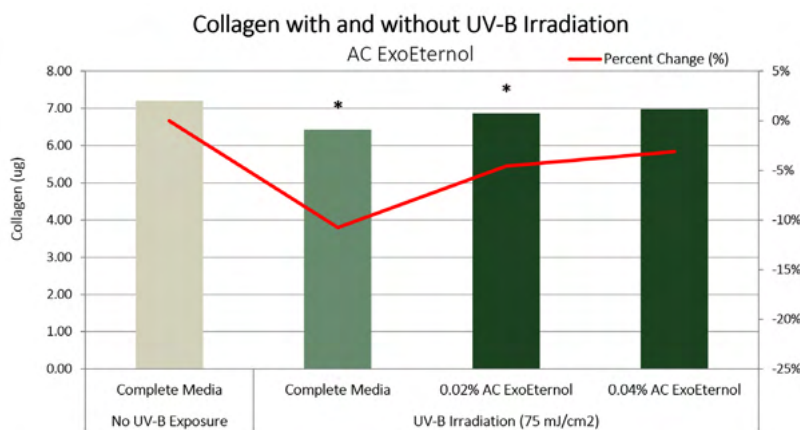
Reactive oxygen species (ROS) are generated by normal cellular processes, environmental stresses, and UV irradiation. ROS are dangerous to cellular structures and functional molecules (i.e. DNA, proteins, lipids) as they act as strong oxidizing agents of free radicals. The oxygen radical absorbance capacity (ORAC) assay is a standard method used to assess antioxidant capacity of physiological fluids, foods, beverages, and natural products. The assay quantitatively measures a sample's ability to quench free radicals that have the potential to react with and damage cellular components. Accordingly, the ORAC assay was conducted to assess the antioxidant capacity of AC ExoEternal.



Exhibited
greater antioxidant
activity than
Trolox, retinol,
and bakuchiol

Sun Safe

UVB exposure breaks down collagen and other essential extracellular matrix proteins, accelerating visible aging and weakening the skin barrier. Unlike retinol, which heightens UV sensitivity, AC ExoEternal helps preserve collagen and non-collagenous protein synthesis under UV stress, supporting repair with less irritation. Because these structural proteins maintain elasticity, firmness, and overall skin integrity, their protection is critical for aging prevention. A Sirius Red/Fast Green assay confirmed AC ExoEternal's *in vitro* ability to counter UVB-induced reductions in these proteins.



Maintained
collagen
levels by
+95%

References:

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2. Hou, T., et al. "Perilla frutescens: A Rich Source of Pharmacological Active Compounds." *Molecules*. 27.11 (2022): 3578.
3. Shin Ph.D, S., et al. "Anti-skin aging properties of protocatechuic acid in vitro and in vivo." *Journal of Cosmetic Dermatology*. 4 (2020): 977-984.
4. Deguchi, Y., et al. "Rosmarinic acid in Perilla frutescens and perilla herb analyzed by HPLC." *Journal of Natural Medicines*.
5. Phromnoi, K., et al. "Polyphenols and Rosmarinic acid Contents, Antioxidant and Anti-Inflammatory Activities of Different Solvent Fractions from Nga-Mon (Perilla frutescens) Leaf." *Journal of Pharmacy and Nutrition Sciences*. 9 (2019): 239-246.
6. Lee, J., Shin, Y. "Antioxidant compounds and activities of Perilla frutescens var. crispa and its processed products." *Food Sci Biotechnol*. 33.5 (2023): 1123-1133.

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