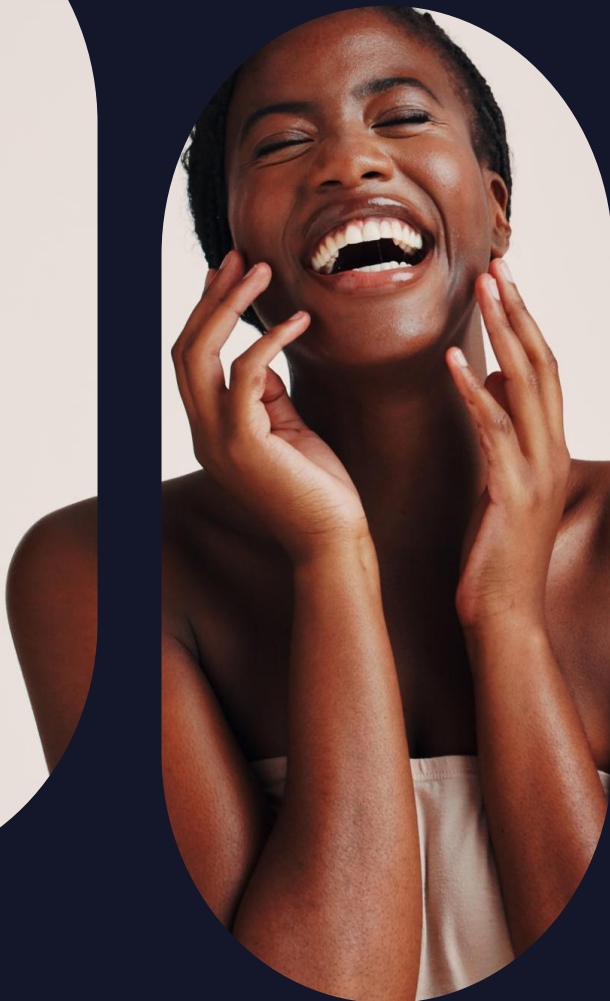




AC

ExoEternal

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





Stress isn't a moment – it's our baseline.

Constant digital input, irregular schedules, and restless nights keep our bodies in a **state of overdrive**. In response, we've turned to new forms of control like biohacking, mindfulness, and even GLP-1s, each designed to rebalance the body from within.

Tools like GLP-1 accelerate changes in energy use and nutrient flow, reshaping the face from within. **As metabolism shifts, volume softens, and elasticity fades before the skin can rebuild.**

These approaches don't bypass the skin; they **imprint on it**. Even when these approaches support overall wellness, the skin is left trying to catch up, revealing dryness, dullness, and a noticeable decline in firmness.

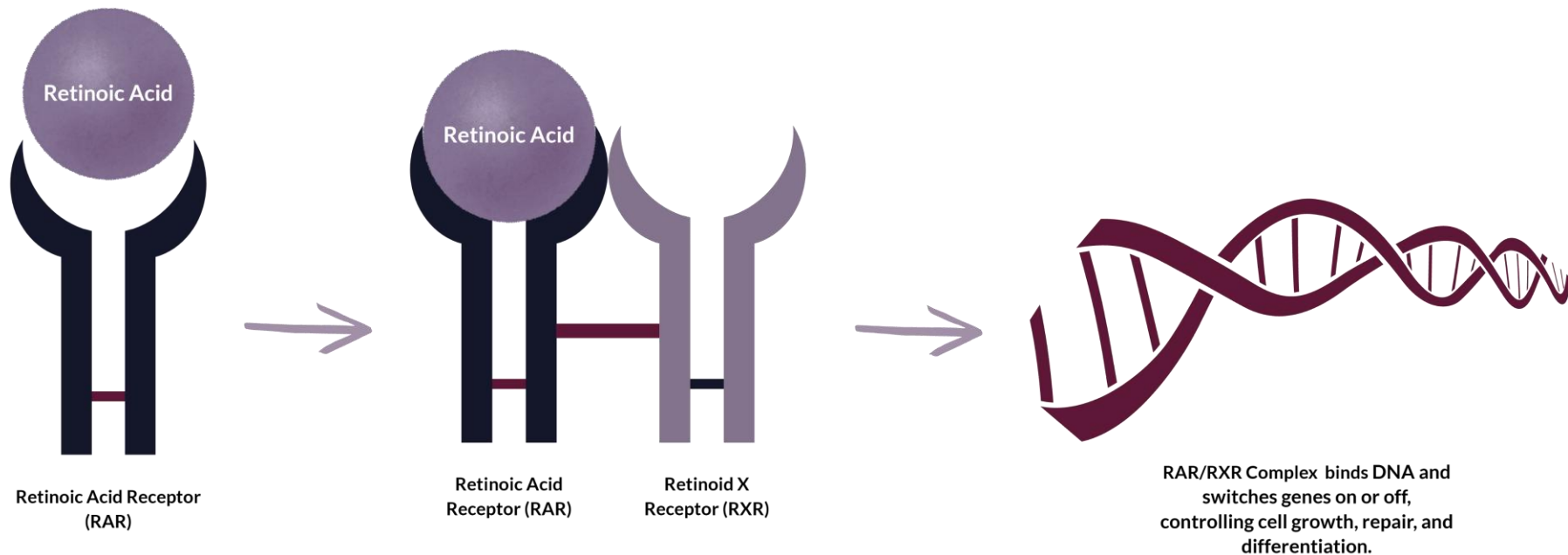
Retinoids, Retinol, and Tretinoin, Oh My!

Retinoids are a class of compounds derived from **vitamin A** that affect skin cell behavior. They regulate **cell turnover**, **collagen production**, and **pigmentation**, making them powerful for anti-aging, acne, and skin texture improvement.

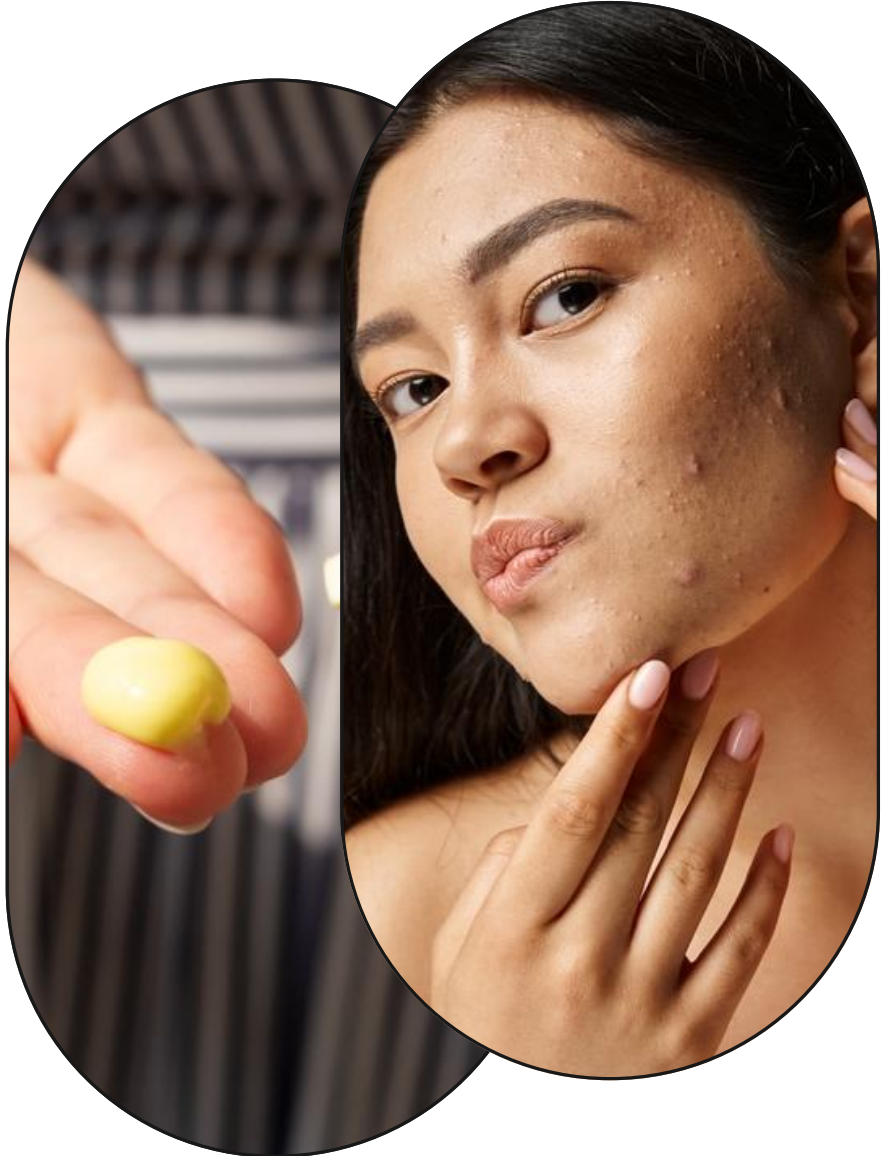
Retinoid	Strength	OTC or Prescription?	Common Uses
Retinyl esters	Weakest	OTC	Mild anti-aging, cosmetic moisturizers
Retinol	Gentle	OTC	Early aging, mild acne, skin texture, mass-market serums
Retinaldehyde/Retinal	Moderate	OTC	Anti-aging, acne, slightly faster acting than retinol
Tretinoin	Strong	Prescription	Acne, photoaging, hyperpigmentation, clinical anti-aging
Adapalene	Moderate-Strong	Prescription	Acne, less irritation than tretinoin

Why is Retinol the Go-To in Cosmetics?

- Sweet spot of efficacy & tolerability: stronger than retinyl esters, gentler than retinaldehyde
- Versatile for daily use: found in serums, creams, and oils
- Delivers visible results gradually: gentle, consistent skin renewal



When Retinol Pushes Too Hard



Although retinol is considered the 'gold standard,' its shine comes with shadows.

- Pregnancy Risk: Retinol is **teratogenic**, meaning it can cause **birth defects** if used during pregnancy (fetal retinoid syndrome)
- Regulatory Limits: Maximum allowable concentrations of retinol in cosmetic products are strictly controlled under EU Cosmetic Regulation (EC 1223/2009).
 - Face and Hand: **0.3% maximum**
 - Body: **0.05% maximum**
- Skin Sensitivity: **Redness, dryness, flaking**; tolerance takes time.
- Requires diligent SPF usage: Increases **UV sensitivity**

The Overdone Alternative

Bakuchiol, derived from the seeds and leaves of *Psoralea corylifolia*, introduced a new pathway for gentler, **plant-derived retinol alternatives**.

But what once ignited the industry has now burned out.

Bakuchiol now saturates the market, offering **little room for innovation** and **even less room for brand differentiation**.

And a harder truth has come forward: **bakuchiol is cytotoxic** and **does not match the performance of retinol**, creating an unavoidable ceiling for brands that rely on it.

While bakuchiol was a breakthrough for its time, **modern skin needs more**: a next-generation retinol alternative built for a world that overwhelms the body and pushes the industry to evolve.

To understand what comes next, we look to where science is heading — **toward balance**.



The Science of Equilibrium

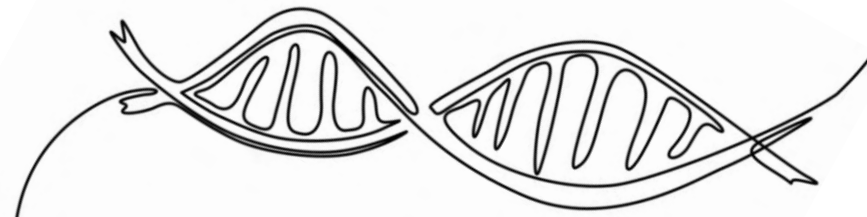
Across every field of research, the body is being reexamined through the **lens of balance**. **Biology is built on equilibrium**, the constant effort to keep internal systems stable in the face of stress.

Modern science no longer focuses solely on fixing isolated symptoms. It seeks to understand how **systems interact, communicate, and self-correct**.

From gene editing with **CRISPR**, which enables scientists to correct errors in DNA, to **metabolic reprogramming**, which fine-tunes how cells convert energy, research is focused on **restoring balance** at the most fundamental levels of life.

These advances aim to reset the body's internal rhythm, repairing communication between cells, reviving natural renewal cycles, and rebuilding stability where stress or aging have caused disruption.

These discoveries reveal what nature has always known: lasting health depends on balance, and every living system relies on equilibrium that allows the body to renew itself.



Flowing Energy, Thriving Skin

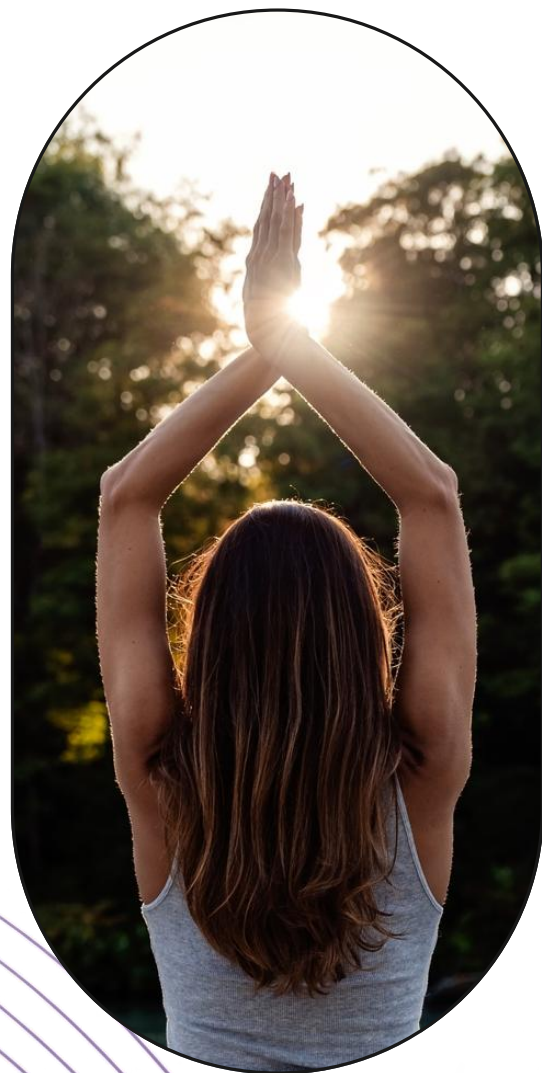
Long before the language of genetics or metabolism, Traditional Chinese Medicine (TCM) viewed the body as a **connected system in harmony with nature**. Health is a dynamic balance between organs, mind, and the external elements: wood, fire, earth, metal, and water.

Imbalance is described as a disruption of **Qi, the vital life force guiding energy, movement, and adaptation**. When Qi flows freely, the body is in harmony and the skin thrives. When Qi stagnates, signs of imbalance appear on the skin, revealing internal shifts.

TCM treats each person as a unique system, emphasizing restoration of equilibrium rather than one-size-fits-all solutions.

Support the flow within and see the balance reflected on the skin.





Where Wisdom Meets Wellness

According to Ben Cao Gang Mu (本草纲目), a foundational Ming dynasty text from the late 1500s, perilla (紫苏/紫蘇) leaf has long been cherished in TCM as a **mover of Qi**, the vital life force that harmonizes body and mind.

Traditionally described as warm and aromatic, perilla supports the natural movement of Qi, easing stagnation, dispersing tension, and strengthening the body's innate resilience.



Inside Perilla

Compounds that Create Balance

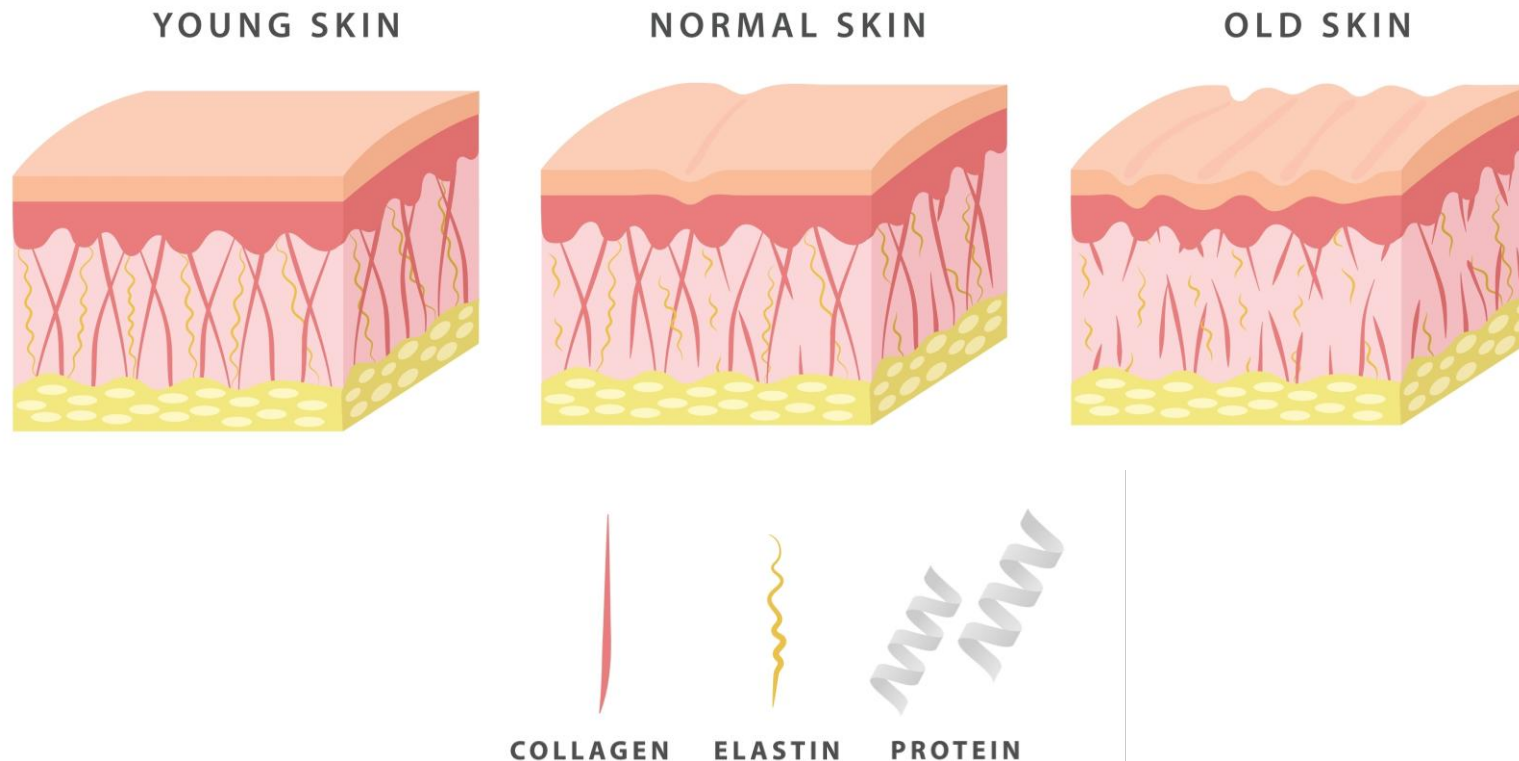
Perilla is naturally rich in bioactive compounds that work together to restore harmony to the skin. Each can play a role in creating balance, resilience, and radiance.

- ✦ Protocatechuic Acid: stimulates collagen synthesis
- ✦ Rosmarinic Acid: anti-inflammatory and antioxidant
- ✦ Lactic Acid: gently exfoliating to even skin tone

PCA: Powering Collagen from Within

Protocatechuic acid (PCA) can help to protect and restore dermal collagen through a twofold mechanism:

1. **Antioxidant Defense:** Neutralizes UV-induced ROS to prevent activation of MMP-1, the enzyme that begins breaking down type I and III collagen and reduces skin firmness.
2. **Collagen Renewal:** Stimulates fibroblasts to increase Type I procollagen synthesis, supporting extracellular matrix regeneration and wrinkle reduction.

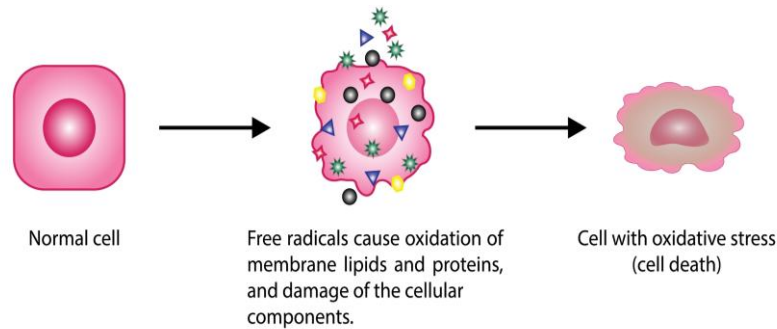


The Antioxidant Blueprint: Rosmarinic Acid

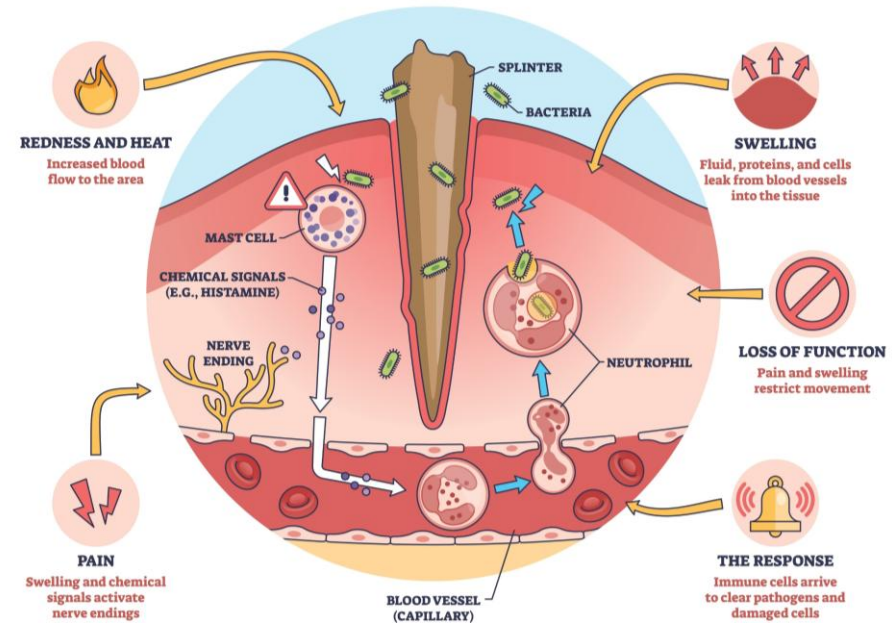
Rosmarinic acid (RA) provides comprehensive protection against oxidative and inflammatory stress in skin.

- Antioxidant Pathway: Scavenges reactive oxygen species (ROS) to prevent oxidative chain reactions.
- Anti-Inflammatory Pathway: Suppresses ROS-triggered activation of NF- κ B and JNK, two inflammatory signaling pathways that increase IL-6, TNF- α , and MMP-1 expression in fibroblasts and keratinocytes.

Oxidative Stress



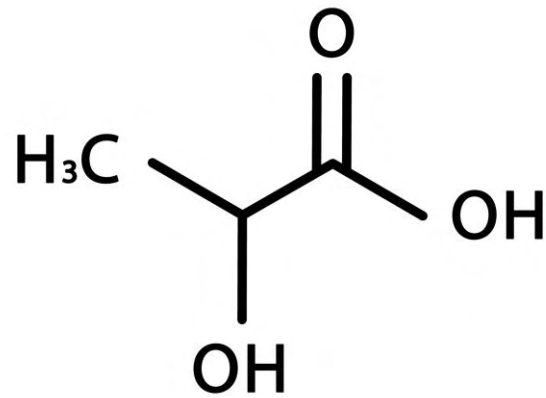
Inflammation



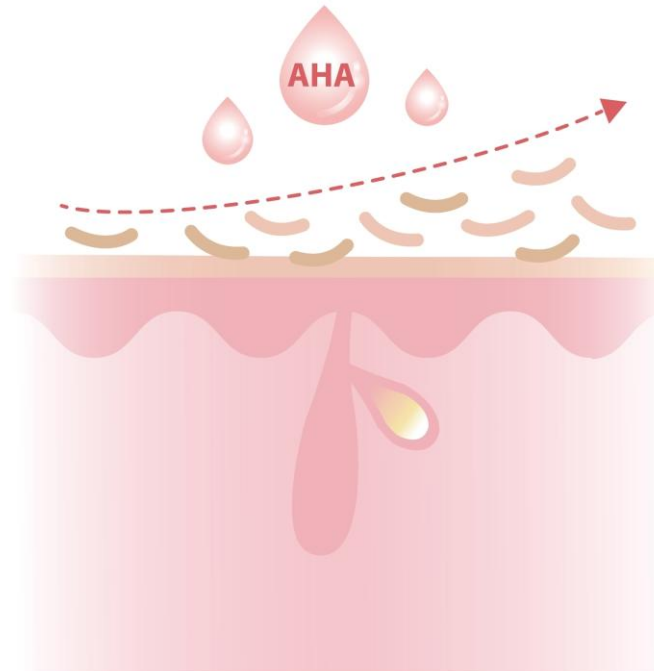
AHA Exfoliation

Lactic acid, a naturally occurring alpha hydroxy acid (AHA), **penetrates the stratum corneum** and interacts with desmosomes, promoting **gentle exfoliation** and removal of dead skin cells. This renewal process reveals smoother skin while enhancing radiance.

It also helps reduce hyperpigmentation by **modulating tyrosinase activity**, supporting a more even and luminous complexion.



Lactic acid
 $\text{C}_3\text{H}_6\text{O}_3$



AC ExoEternal

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



AC ExoEternal is a **biotech-powered retinol alternative** that embodies the **meeting point** of modern science and Traditional Chinese medicine, where precision technology and ancient wisdom converge in the **pursuit of balance**.

At its core is **perilla**, a TCM botanical long valued for regulating Qi and restoring internal harmony. Rich in polyphenols, perilla can support the skin's **natural renewal processes** and strengthen its ability to **adapt to stress**.

Through **targeted fermentation**, perilla's most potent bioactives are awakened and encapsulated within a plant-derived, protein-stabilized vesicle inspired by **exosomal delivery systems**. The result is visible rejuvenation that mirrors retinol's benefits, such as promoting renewal, resilience, and equilibrium, but without irritation or sensitivity.

This is not retinol. This is what comes next.

#RewritingRenewal



Benefits

- + AC ExoEternal rewrites the rules of retinol as an encapsulated retinol alternative that supports healthy cells, and helps defend the skin after UV exposure.
- + AC ExoEternal supports collagen synthesis, reduces oxidative stress, and suppresses inflammatory signals to help strengthen the skin's structure while calming irritation.
- + AC ExoEternal helps to regulate melanin production, promoting a more even, luminous complexion over time.



Standardization: Therapeutic Index

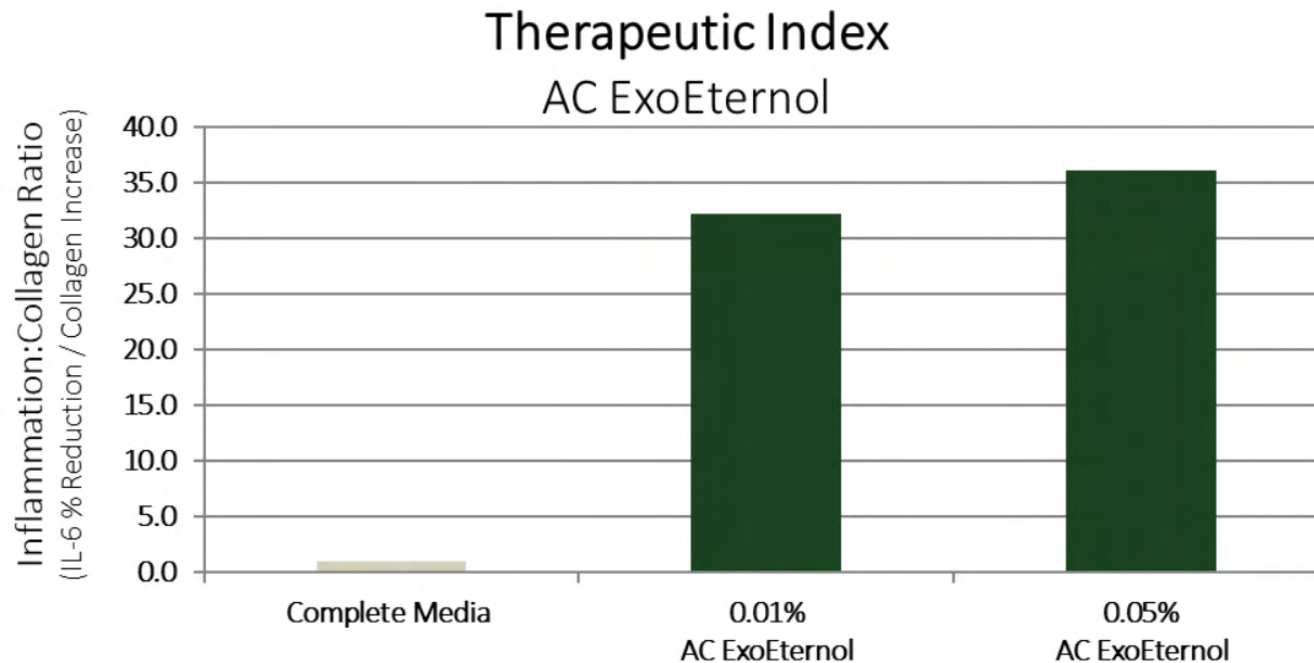


Figure 1. Therapeutic Index of AC ExoEternal

AC ExoEternal is standardized for a Therapeutic Index above 20, the threshold where IL-6 suppression and collagen stimulation remain synergistic rather than counteractive.

By considering the Therapeutic Index, the ratio of collagen production to IL-6 reduction, we gain a quantitative measure of how effectively an ingredient balances renewal with tolerability. This positions AC ExoEternal as a retinol alternative that delivers visible anti-aging benefits while minimizing irritation.

Sourcing



Our South Carolina supplier supports sustainability by cultivating native plants suited to local soils and climate, minimizing water and chemical use while restoring biodiversity and providing habitat for wildlife.

USA



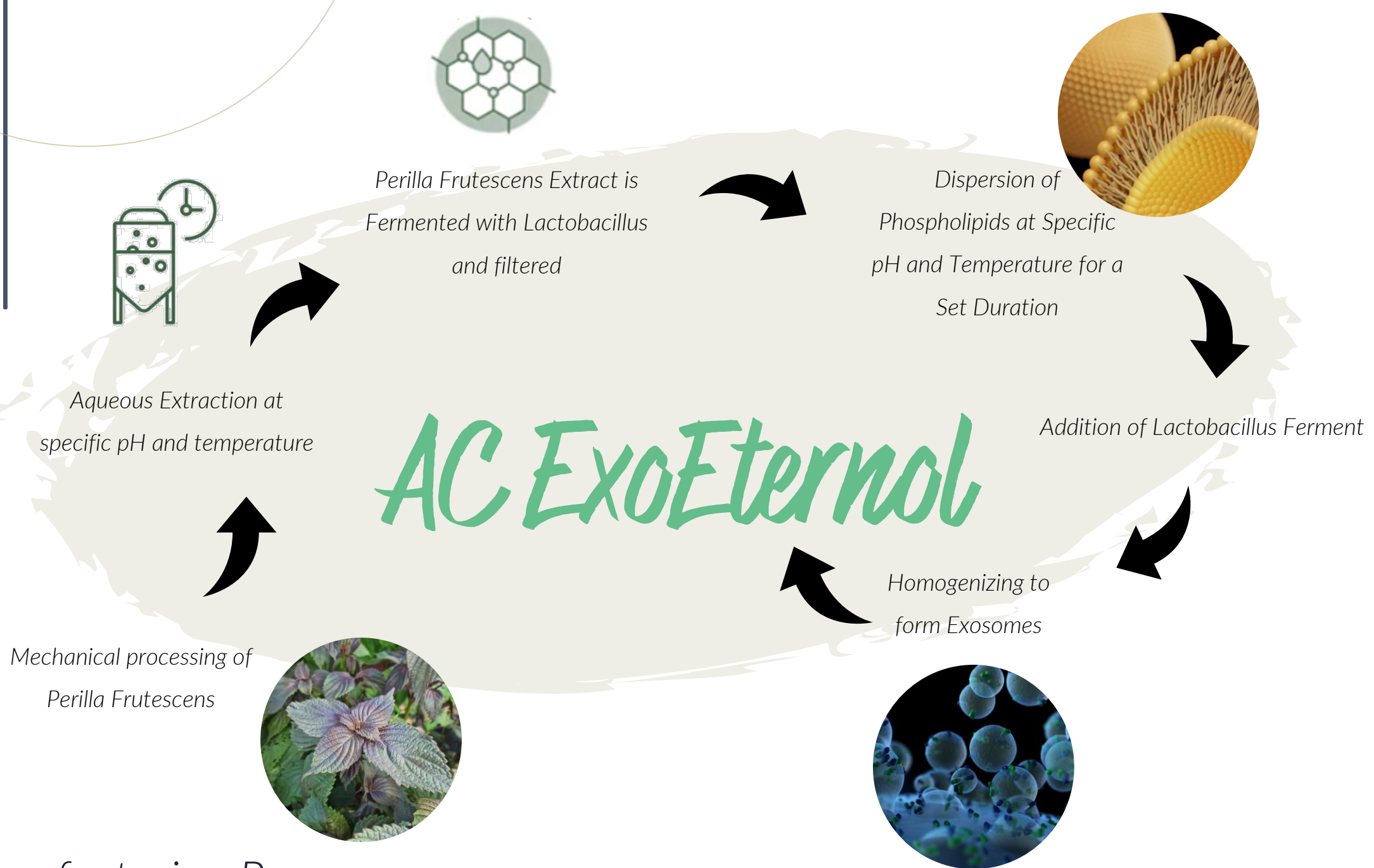
In Italy, our perilla supplier cultivates premium seeds that strengthen responsible agriculture. Their approach respects the environment, protects biodiversity, and supports a conscientious, long-term supply chain.

Italy



Our Japanese supplier cultivates with intention, enriching fields with a proprietary fermented organic fertilizer for nutrient-dense soil. Smart sensors and cameras track growth in real time to maintain an ideal environment for healthy, high-quality cultivation.

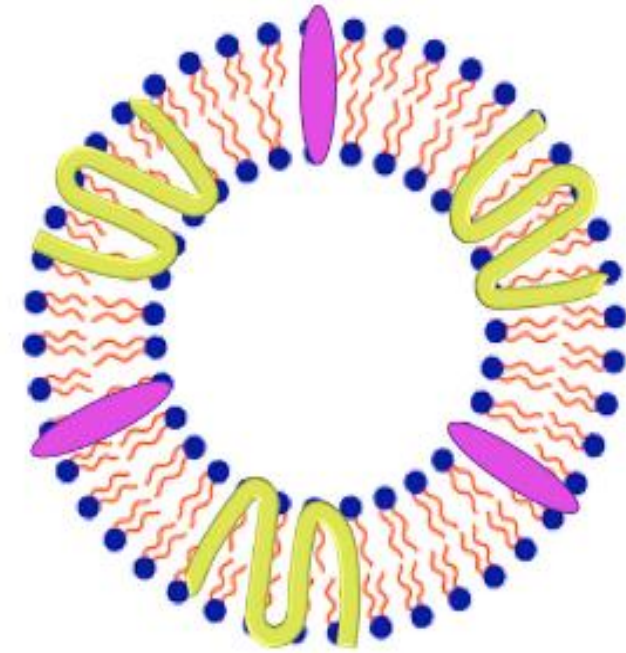
Japan



The Science of BioAuthentic Balance

Since their debut in 2023, our BioAuthentic Exosomes have led the evolution of exosome-based delivery systems. Unlike conventional botanical extracts encapsulated in lipids, these vesicles represent a complete biological system, capturing the full biochemical network of the botanical source rather than just isolated actives. This approach blends the holistic principles of Traditional Chinese Medicine with the precision of modern biotechnology, creating a biologically aligned platform for advanced cosmetic innovation.

AC ExoEternal contains 3.13×10^{12} exosomes/mL. While this reflects the system's robustness, the real value lies in the bioactivity of the encapsulated compounds and their proven potential to support regenerative intercellular signaling.



Efficacy Studies

In Vivo.

Anti-Aging

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

Gentle Exfoliation and Evening

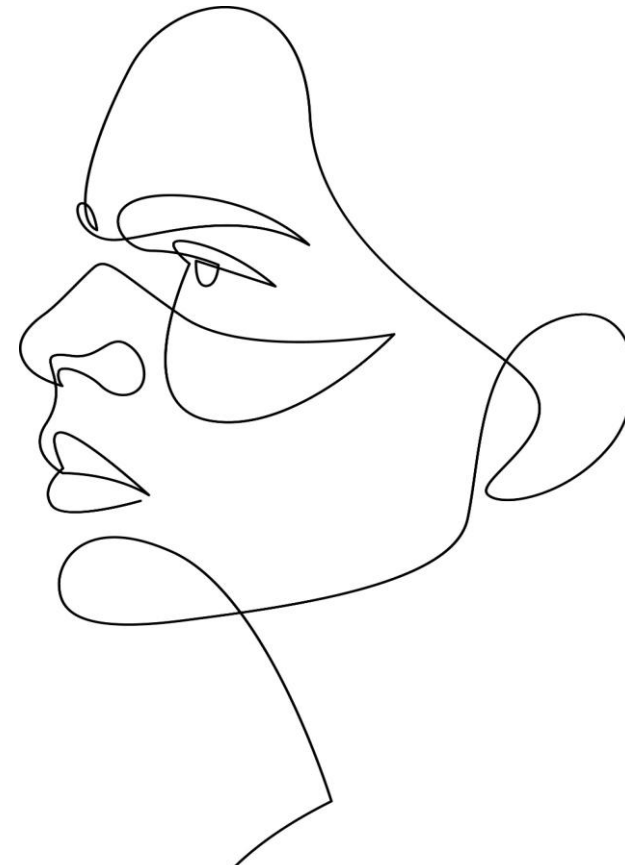
- Cellular Renewal (vs. retinol and bakuchiol)
- VISIA: Reduction in Surface Spots
- VISIA: Reduction in Texture
- VISIA: Reduction in UV Spots (Mature Skin)
- VISIA: Reduction in Brown Spots (Mature Skin)

Non-Irritating

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

Enhanced Delivery

- Enhanced Skin Delivery via UV Dye



Efficacy Studies

Synergistic Performance: Unlock More from Less Retinol

In Vivo.

Anti-Aging

- High Resolution Ultrasound Skin Imaging Test (tested with 0.1% retinol versus 0.3% retinol)

Gentle Exfoliation and Evening

- Cellular Renewal (tested with 0.1% retinol versus 0.3% retinol)

Non-Irritating

- Anti-Erythema (tested with 0.1% retinol versus 0.3% retinol)



Efficacy Studies

In Vitro.

Cytotoxicity Assessment

- Cellular Viability (vs. retinol and bakuchiol)

Anti-Aging

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

Gentle Exfoliation 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)



In Vivo.

———— Anti-Aging

High Resolution Ultrasound Skin Imaging Test

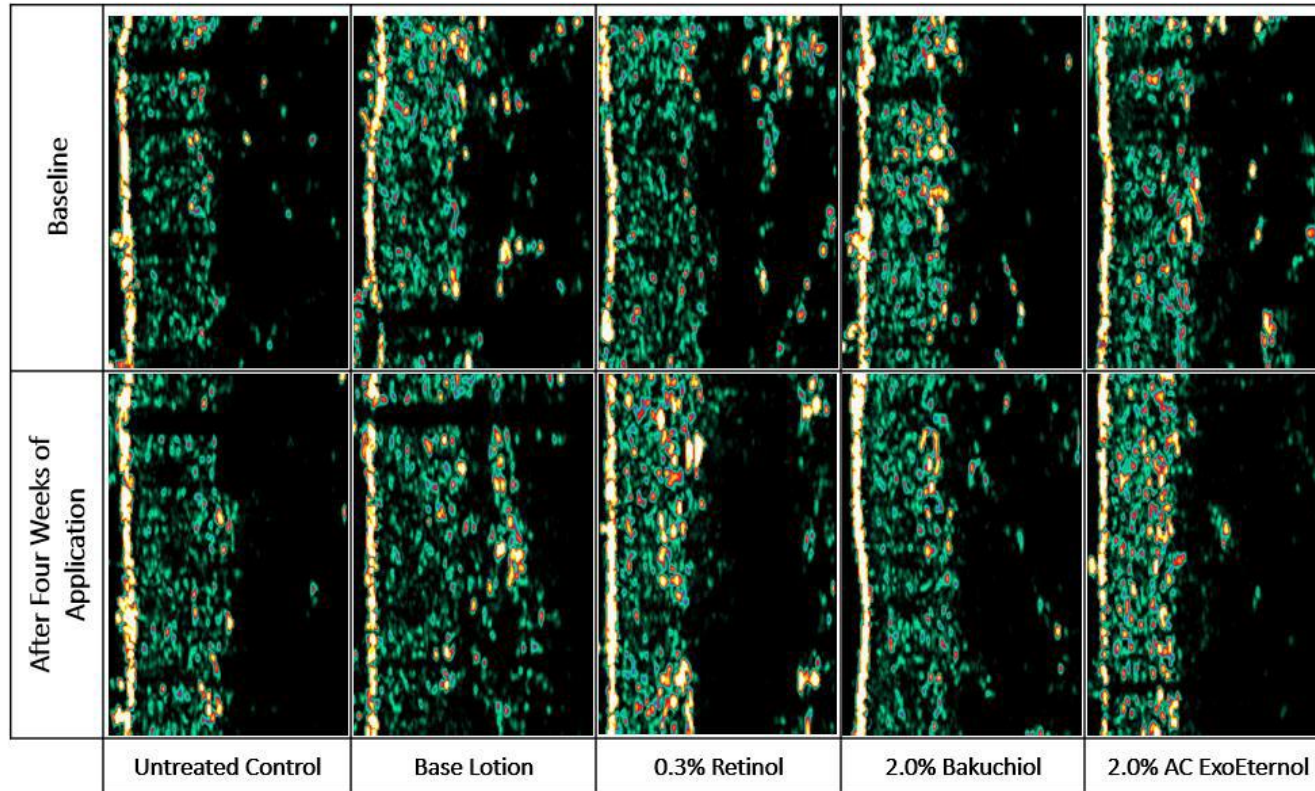


Figure 1. Participant Ultrasound Images of Each Test Site at Baseline (Top) and After Four Weeks (Bottom) of 2.0% AC ExoEternal.

Ultrasound skin imaging sends acoustic pulses into the skin and measures their reflections to create a cross-sectional image. Dark colors indicate low reflection and minimal density changes, while bright colors show strong reflections and greater structural contrast. The epidermis appears white or yellow, and the dermis displays mixed colors of varying intensity.

AC ExoEternal shows a more uniform and brighter epidermal band, suggesting improved surface integrity and enhanced dermal reflection, both markers of increased collagen density and healthier tissue organization.

High Resolution Ultrasound Skin Imaging Test

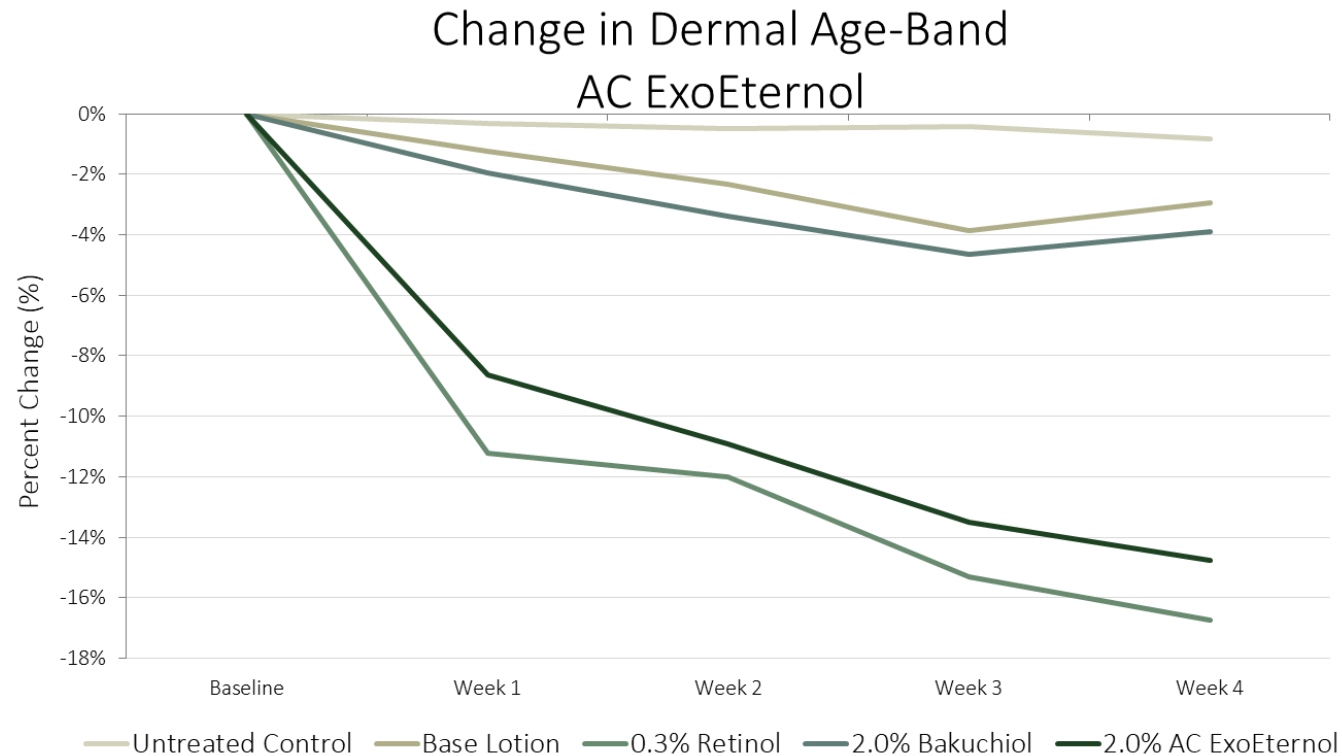


Figure 2. Percent Change in Dermal Age-band Relative to Baseline Values

The LEB (Low Echogenic Band), or Dermal Age-band, refers to the layer of skin just beneath the epidermis that appears darker on ultrasound images due to lower reflection. A thicker or more pronounced LEB indicates reduced collagen density and structural degradation, which are common signs of skin aging and photodamage.

2.0% AC ExoEternal reduced the Dermal Age-band by **-15%**, comparable to retinol (-17%) and outperforming bakuchiol (-4%).

High Resolution Ultrasound Skin Imaging Test

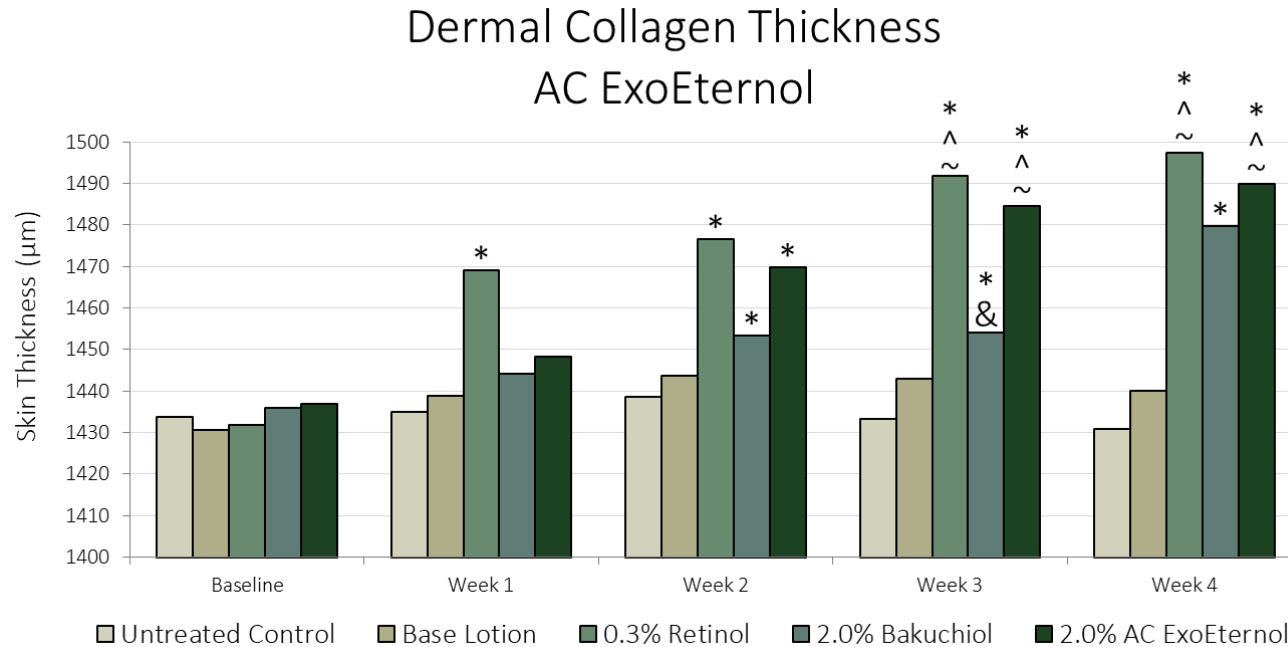


Figure 3. Dermal Collagen Thickness Overtime. * indicates significance ($p \leq 0.05$) compared to Baseline values within the same condition. ^ indicates significance ($p \leq 0.05$) compared to Untreated Control within the same timepoint. ~ indicates significance ($p \leq 0.05$) compared to Base Lotion within the same timepoint. & indicate significance ($p \leq 0.05$) compared to 2.0% AC ExoEternal.

Skin Thickness (Dermal Collagen Thickness) measures the area behind the epidermis to the back of the dermis, with lower values correlating with age and less collagen.

2.0% AC ExoEternal increased dermal collagen thickness by **+4%**, comparable to retinol (+5%) and outperforming bakuchiol (+3%).

High Resolution Ultrasound Skin Imaging Test

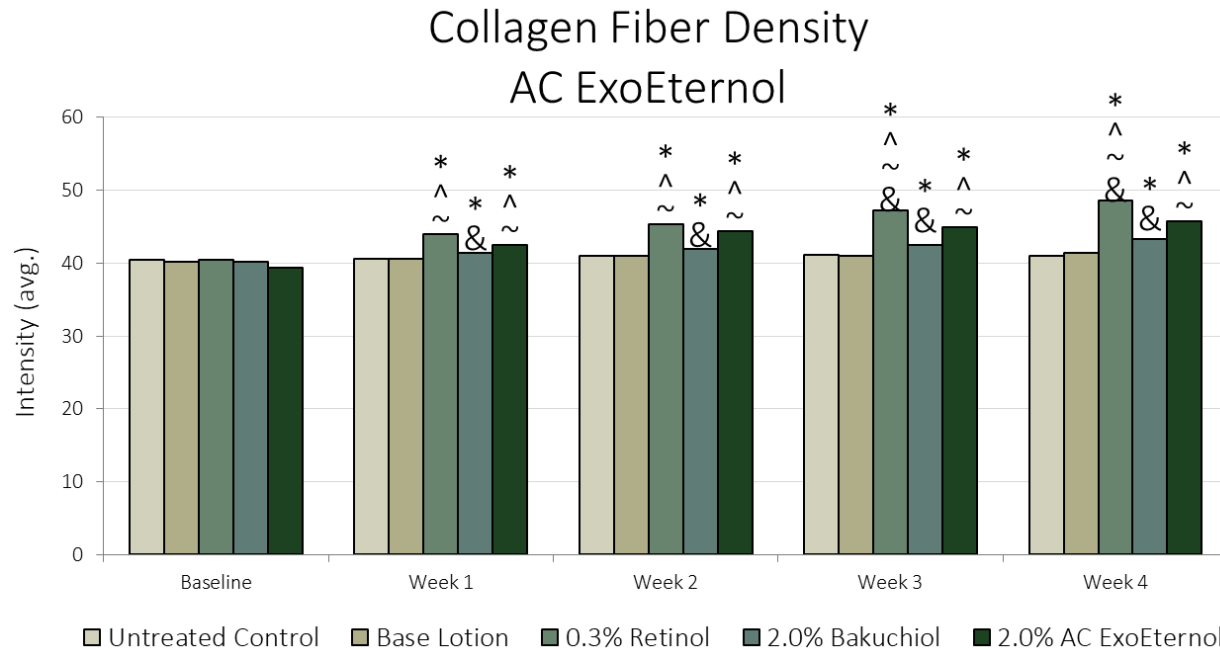


Figure 4. Collagen Fiber Density Overtime. * indicates significance ($p \leq 0.05$) compared to Baseline values within the same condition. ^ indicates significance ($p \leq 0.05$) compared to Untreated Control within the same timepoint. ~ indicates significance ($p \leq 0.05$) compared to Base Lotion within the same timepoint. & indicates significance ($p \leq 0.05$) compared to 2.0% AC ExoEternal within the same timepoint.

Intensity (Collagen Fiber Density) is an indicator of the amount of collagen within the dermis, with greater intensities correlating with higher levels of collagen.

2.0% AC ExoEternal increased collagen fiber density by **+16%**, comparable to retinol (+20%) and outperforming bakuchiol (+8%).

Moisturization Study

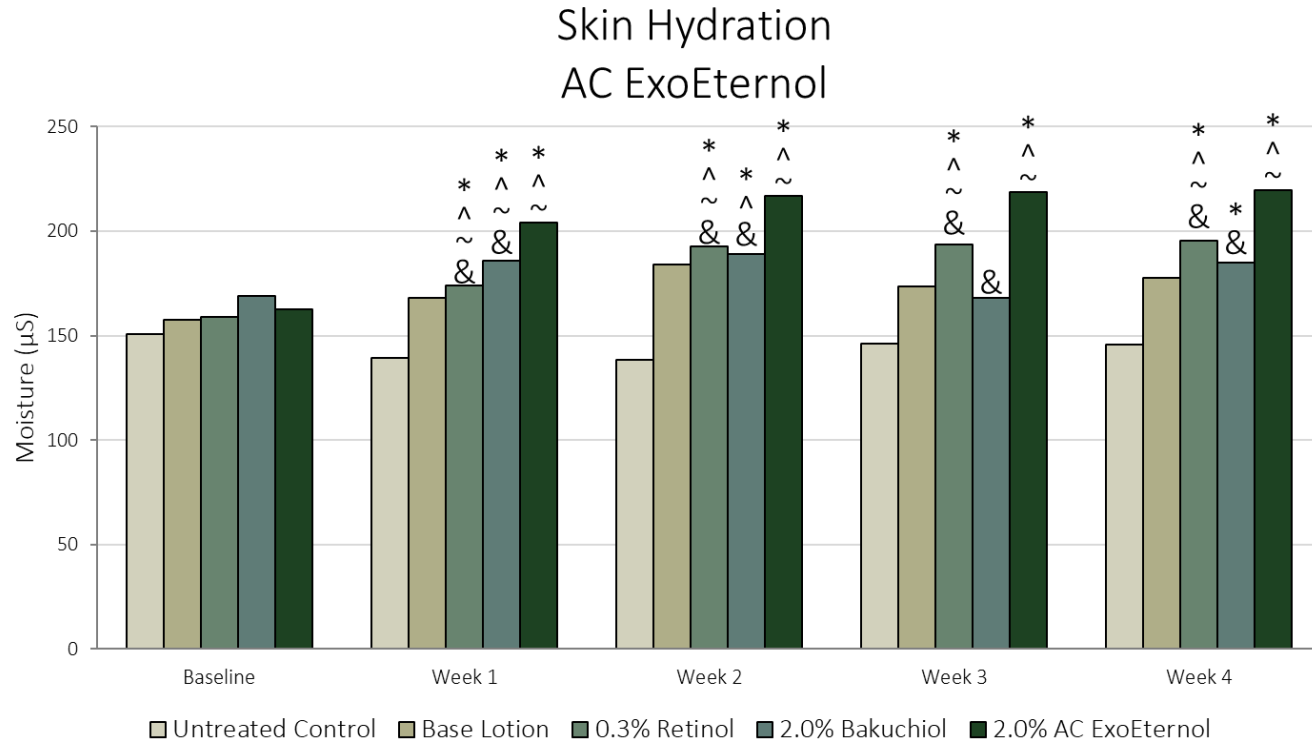


Figure 5. Skin Hydration Overtime. * indicates significance ($p \leq 0.05$) compared to Baseline values. ^ indicates significance ($p \leq 0.05$) compared to Untreated Control within the same timepoint. ~ indicates significance ($p \leq 0.05$) compared to Base Lotion within the same timepoint. & indicates significance ($p \leq 0.05$) compared to 2.0% AC ExoEternal within the same timepoint.

Many of the enzymes responsible for maintaining balance within the stratum corneum rely on water to function properly. When hydration levels are optimal, the skin remains flexible, resilient, and protected—appearing smoother, softer, and more youthful. When hydration is lacking, the barrier becomes compromised, leading to dryness, flakiness, and visible signs of aging. Maintaining proper moisture is therefore essential for preserving the skin's structure, function, and overall healthy appearance.

At 2.0%, AC ExoEternal
increased moisturization by

+35%

Benefits

AC ExoEternal deeply hydrates the skin and outperforms retinol (+23) and bakuchiol (+9%), delivering superior results without compromising tolerance or skin barrier health.

VISIA: Reduction in Wrinkles

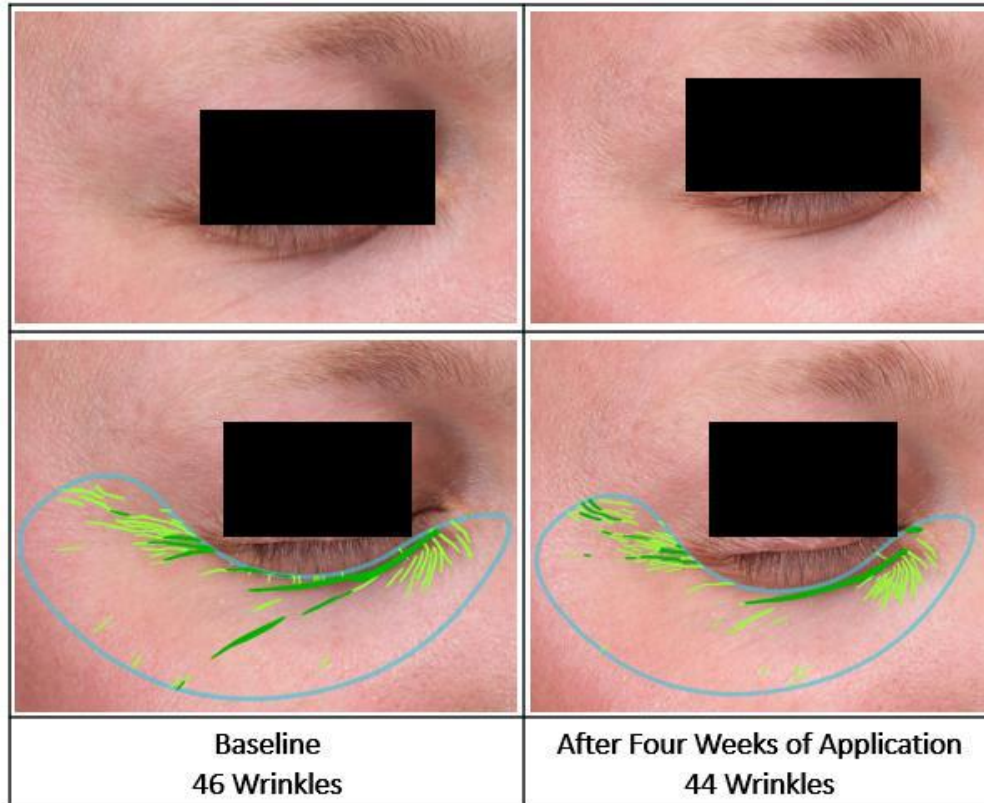


Figure 6. Images of Participant Treated with 2.0% AC ExoEternal. Natural Photos (top) and VISIA Image Enhancement (bottom) Before and After Four weeks.

Participants applied 2.0% AC ExoEternal to designated halves of their face twice a day for four weeks. Measurements were collected once a week during the four-week study period. Photographs of participant faces were obtained using the VISIA Complexion Analysis System and analyzed for Wrinkles. The most pronounced wrinkles are represented by dark green lines whereas light green lines represent finer wrinkles in the analyzed region.

2.0% AC ExoEternal
reduced wrinkles by

-2%

Benefits

By supporting collagen renewal, AC ExoEternal delivers measurable improvements in skin wrinkle depth, reducing visible skin age by up to 7 months.

VISIA: Reduction in Wrinkles – Mature Skin

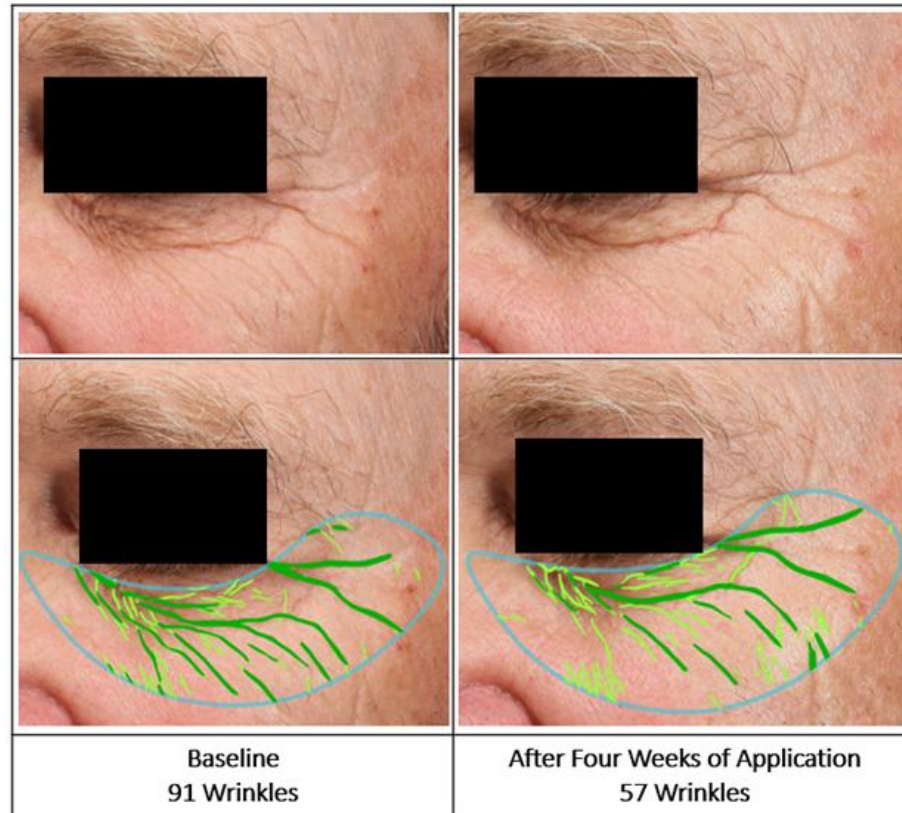


Figure 7. Image 1. Images of Participant Treated with 2.0% AC ExoEternal. Natural Photos (top) and VISIA Image Enhancement (bottom) Before and After Four weeks.

Participants applied 2.0% AC ExoEternal to designated halves of their face twice a day for four weeks. Measurements were collected once a week during the four-week study period. Photographs of participant faces were obtained using the VISIA Complexion Analysis System and analyzed for Wrinkles. The most pronounced wrinkles are represented by dark green lines whereas light green lines represent finer wrinkles in the analyzed region.

2.0% AC ExoEternal
reduced wrinkles in mature
skin by

-6%

Benefits

In mature skin, AC ExoEternal delivers measurable improvements in wrinkle depth by addressing age-related structural changes.

In Vivo.

Gentle Exfoliation and Evening

Cellular Renewal Study



Figure 8. Participant Images of Each Test Patch at Baseline (Top) and After Three Days (Bottom)

Five test sites were designated on the volar forearm of each participant, with one left untreated to represent normal pigmentation. Dermal Dye Max™ was applied to the remaining sites to simulate pigmentation, followed by baseline readings using the DermaLab system. Each treated area received 0.2 g of test formulation, and pigmentation was measured every 24 hours until color returned to baseline, with treatments reapplied after each reading.

At 2.0%, AC ExoEternal
reduced pigmentation by

-1.7%

Benefits

AC ExoEternal delivers visible renewal
results comparable to retinol but
without the irritation.

VISIA: Reduction in Surface Spots



Figure 9. Images of Participant Treated with 2.0% AC ExoEternal. Natural Photos (top) and VISIA Image Enhancement (bottom) Before and After Four weeks. Surface Spots are denoted by light blue shapes.

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.

At 2.0%, AC ExoEternal led
to a decrease in surface
spots by

-4%

Benefits

AC ExoEternal visibly fades the look of
dark spots and helps the skin appear
more youthful and radiant.

VISIA: Reduction in Surface Spots – Mature Skin



Figure 10. Images of Participant Treated with 2.0% AC ExoEternal. Natural Photos (top) and VISIA Image Enhancement (bottom) Before and After Four weeks. Surface Spots are denoted by light blue shapes.

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.

At 2.0%, AC ExoEternal
decreased surface spots in
mature skin by

-4%

Benefits

AC ExoEternal helps visibly fade age-related dark spots while restoring skin's natural radiance, supporting more even, and youthful-looking complexion.

VISIA: Reduction in Texture

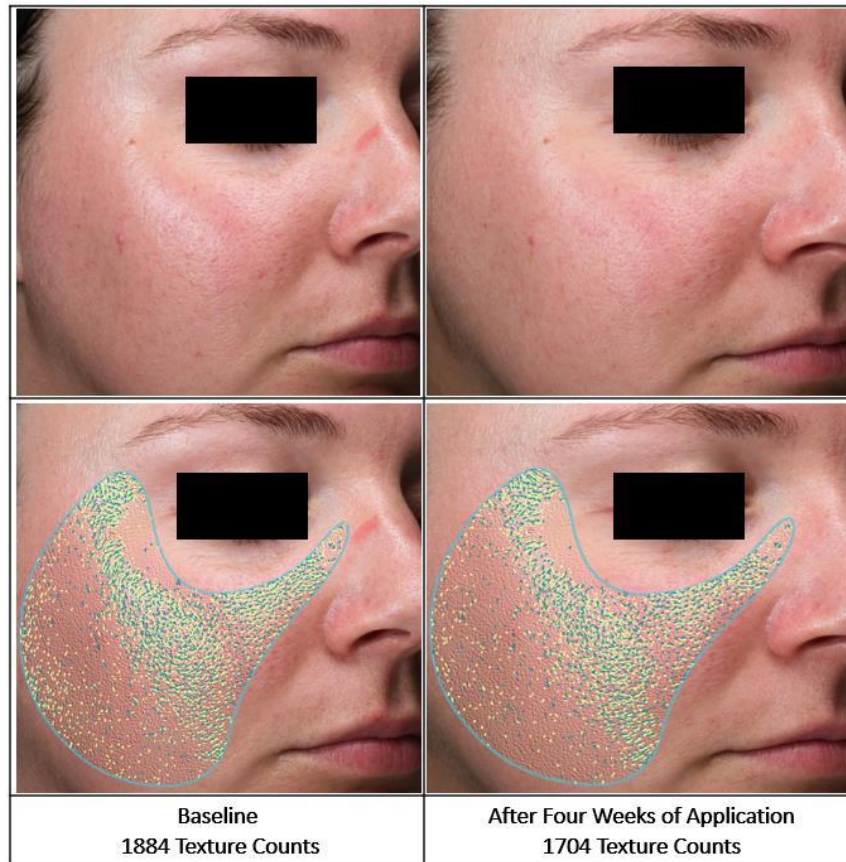


Figure 11. Images of Participant Treated with 2.0% AC ExoEternal. Natural Photos (top) and VISIA Image Enhancement (bottom) Before and After Four Weeks. Yellow indicates raised areas and blue denotes depressions in the skin. Reducing Skin Texture is indicative of smoother skin.

Skin texture reflects how smooth and even the skin appears, influenced by subtle shifts in tone and surface contours. As we age, slower cell turnover and declining collagen and elastin create dryness, roughness, and visible unevenness. Sun exposure accelerates this breakdown, making texture more noticeable. Supporting exfoliation and collagen renewal helps maintain a smoother, more refined complexion.

2.0% AC ExoEternal
reduced texture by

-2%

Benefits

By supporting collagen renewal, AC ExoEternal delivers measurable improvements in skin texture and wrinkle depth, reducing visible skin age by up to 7 months.

VISIA: Reduction in Texture – Mature Skin

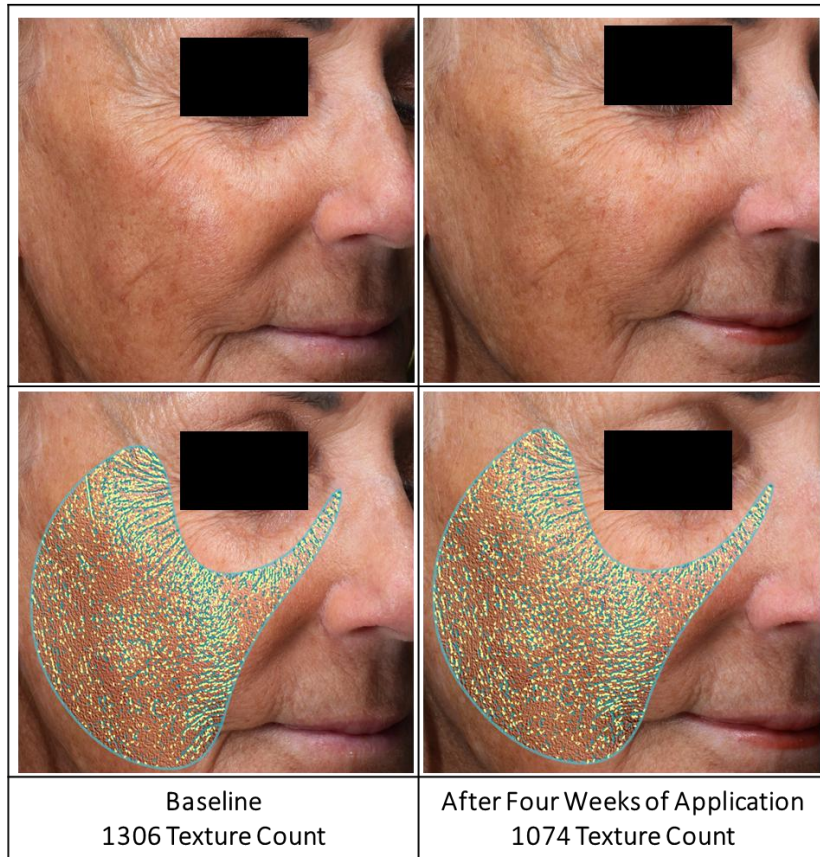


Figure 12. Images of Participant Treated with 2.0% AC ExoEternal. Natural Photos (top) and VISIA Image Enhancement (bottom) Before and After Four Weeks. Yellow indicates raised areas and blue denotes depressions in the skin. Reducing Skin Texture is indicative of smoother skin.

Skin texture reflects how smooth and even the skin appears, influenced by subtle shifts in tone and surface contours. As we age, slower cell turnover and declining collagen and elastin create dryness, roughness, and visible unevenness. Sun exposure accelerates this breakdown, making texture more noticeable. Supporting exfoliation and collagen renewal helps maintain a smoother, more refined complexion.

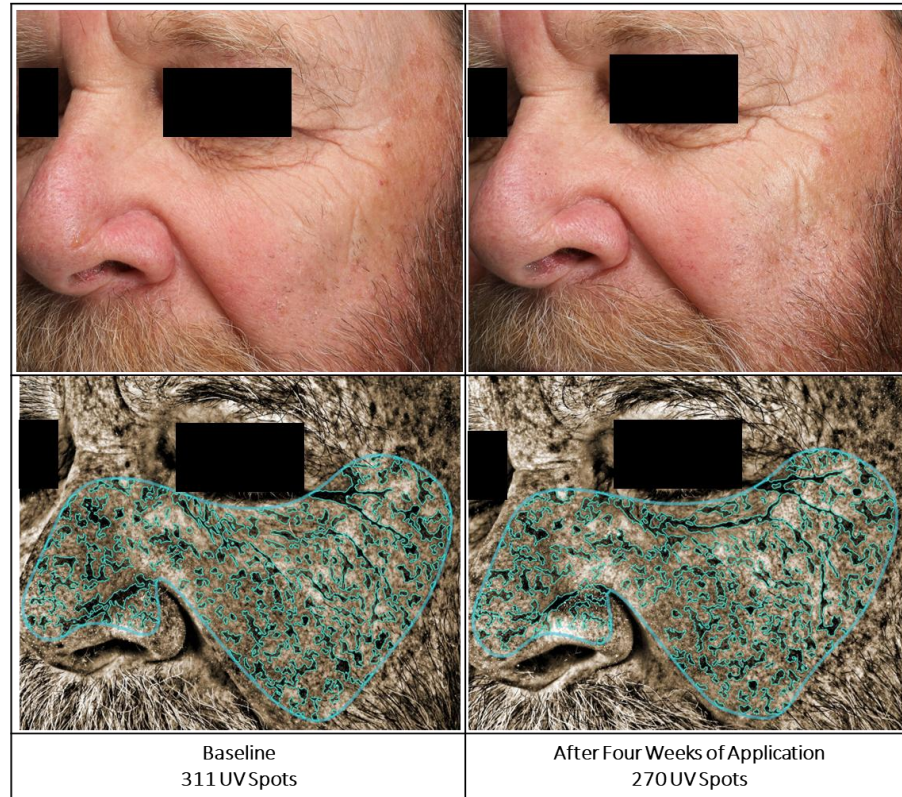
2.0% AC ExoEternal
reduced texture in mature
skin by

-5%

Benefits

AC ExoEternal improves skin health and provides a more youthful appearance by reducing the visual consequences of normal aging.

VISIA: Reduction in UV Spots – Mature Skin



UV spots develop when melanin accumulates beneath the skin as a result of long-term sun exposure. Although they may not be visible at first, these spots indicate underlying photodamage that can contribute to uneven tone, texture changes, and reduced radiance over time.

Figure 13. Images of Participant Treated with 2.0% AC ExoEternal. Natural Photos (top) and VISIA Image Enhancement (bottom) Before and After Four weeks. UV Spots are the absorption of UV light by epidermal melanin just below the skin surface and denoted by the yellow-outlined shapes.

2.0% AC ExoEternal
reduced UV Spots in
mature skin by

-6%

Benefits

In just four weeks, AC ExoEternal supports a visible reduction in UV spot appearance for a more even-looking complexion.

VISIA: Reduction in Brown Spots – Mature Skin

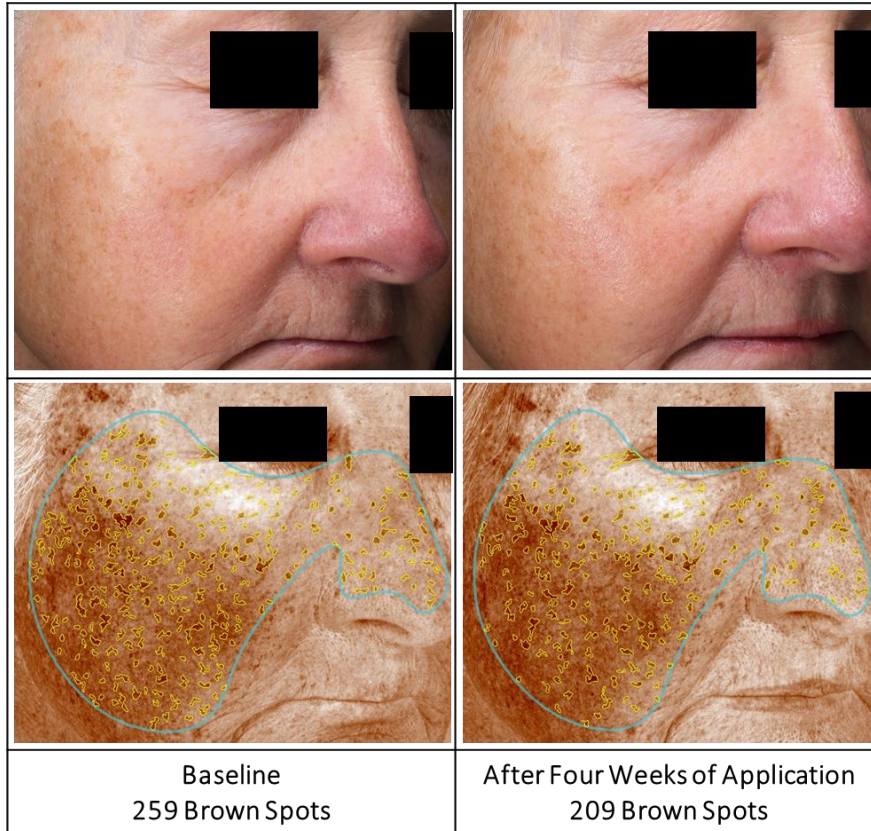


Figure 14. Images of Participant Treated with 2.0% AC ExoEternal. Natural Photos (top) and VISIA Image Enhancement (bottom) Before and After Four Weeks. Brown Spots are denoted by yellow-outlined shapes.

Brown spots are areas of excess pigment that can make skin look uneven, including freckles, dark spots, and melasma. They form when pigment-producing cells create too much melanin, often as a result of long-term sun exposure and slower skin renewal over time. In mature skin, these factors can cause brown spots to appear more easily and last longer, making tone-correcting care especially important for maintaining a brighter, more youthful-looking complexion.

2.0% AC ExoEternal
reduced Brown Spots in
mature skin by

-6%

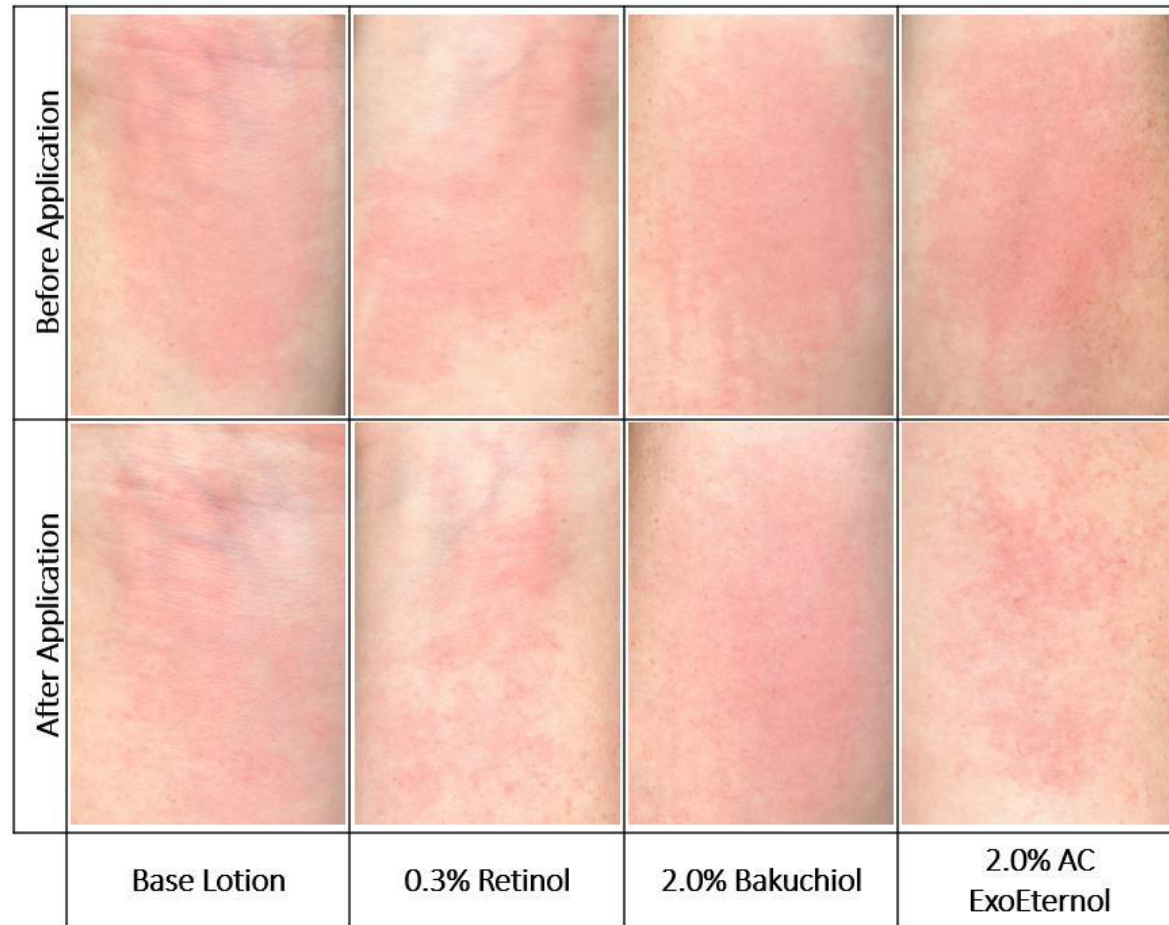
Benefits

After four weeks, AC ExoEternal helps promote a more even-looking skin tone by improving the appearance of brown spots.

In Vivo.

———— Non-Irritating

Anti-Erythema Study



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.

Figure 15. Participant Image Before and After Application of Base Lotion (Left) and AC ExoEternal (Right)

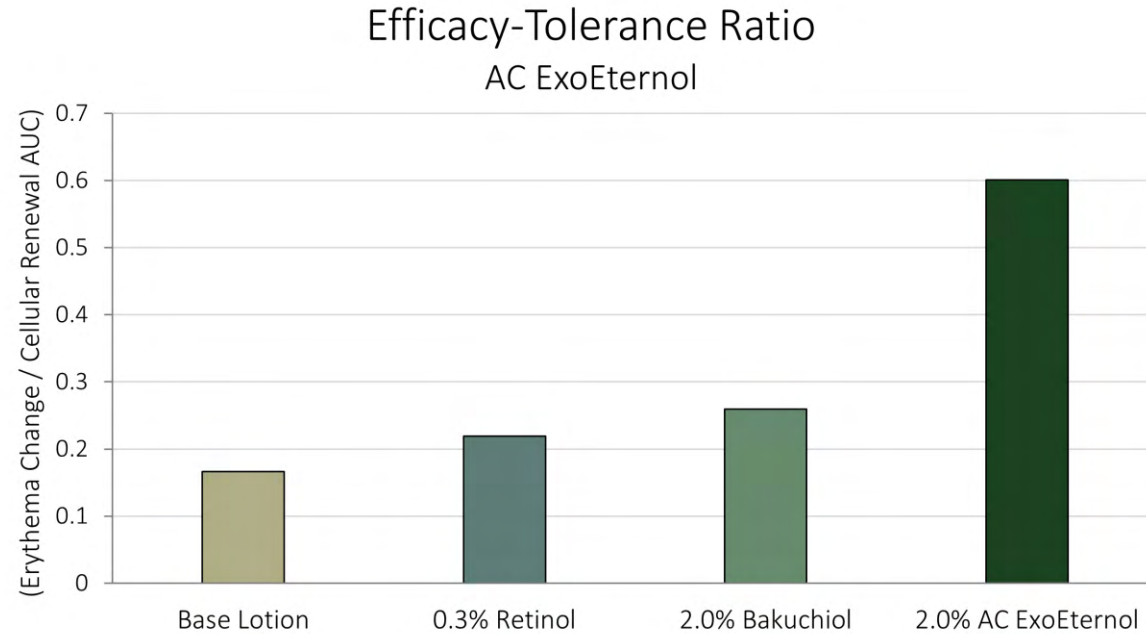
At 2.0%, AC ExoEternal
significantly reduced skin
redness 15 minutes after
application by

-5%

Benefits

AC ExoEternal demonstrates rapid
soothing benefits, reducing visible
redness more effectively than retinol
and bakuchiol.

Cellular Renewal Study

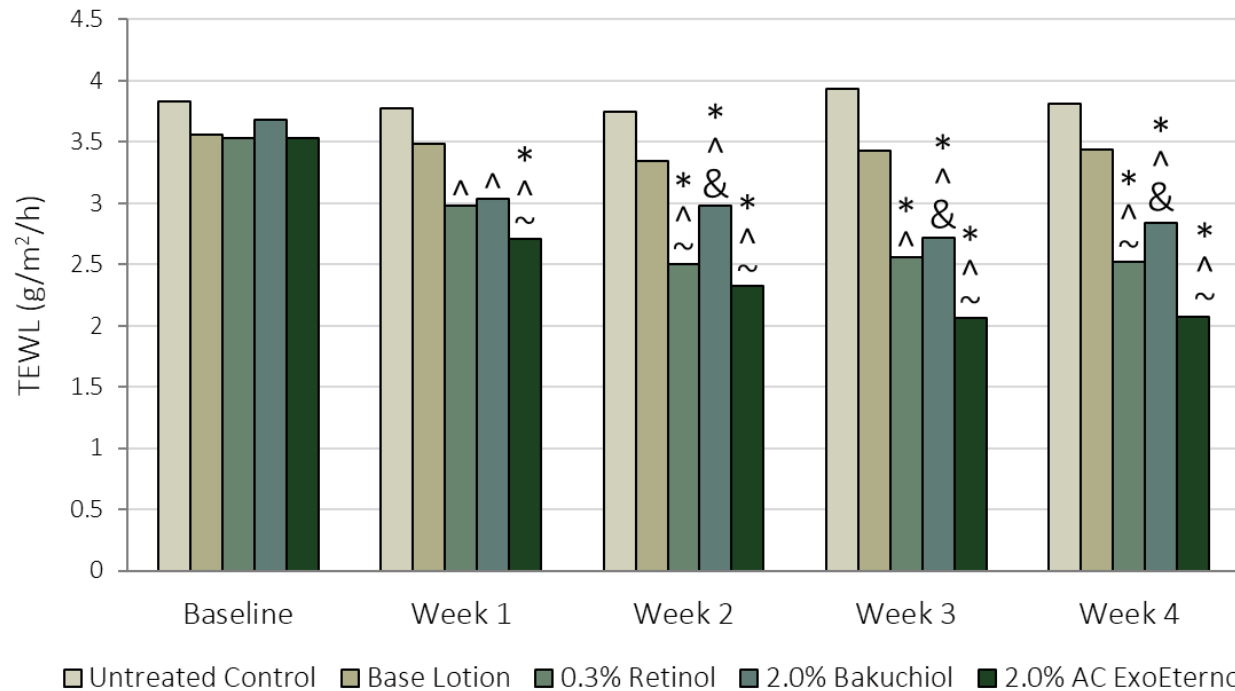


The efficacy-tolerance ratio measures how effectively an ingredient promotes cellular renewal while minimizing irritation. AC ExoEternal achieved a similar renewal rate to retinol while significantly reducing redness, resulting in a higher efficacy-tolerance ratio, demonstrating superior performance with enhanced skin comfort.

Figure 16. Efficacy-Tolerance Ratio Displaying Redness Reduction Capacity to Cellular Renewal Ability

Transepidermal Water Loss

Transepidermal Water Loss AC ExoEternal



The skin's ability to retain moisture is essential for maintaining its barrier function and healthy appearance. When this barrier is compromised, transepidermal water loss (TEWL) increases, leading to dryness, roughness, and visible signs of aging. Reducing excessive TEWL helps restore hydration, strengthen the barrier, and promote smoother, healthier-looking skin.

Figure 17. TEWL Measurements Overtime. * indicates significance (p ≤ 0.05) compared to Baseline values. ^ indicates significance (p ≤ 0.05) compared to Untreated Control within the same timepoint. ~ indicates significance (p ≤ 0.05) compared to Base Lotion within the same timepoint. & indicates significance (p ≤ 0.05) compared to 2.0% AC ExoEternal within the same timepoint.

At 2.0%, AC ExoEternal
significantly reduced TEWL by

-41%

Benefits

AC ExoEternal demonstrates superior moisture retention properties, outperforming retinol (-29%) and bakuchiol (-23%).

VISIA: Reduction in Red Areas



Figure 18. Images of Participant Treated with 2.0% AC ExoEternal. Natural Photos (top) and VISIA Image Enhancement (bottom) Before and After Four weeks. Red Areas are concentrated darker red areas and denoted by light blue areas.

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. 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.

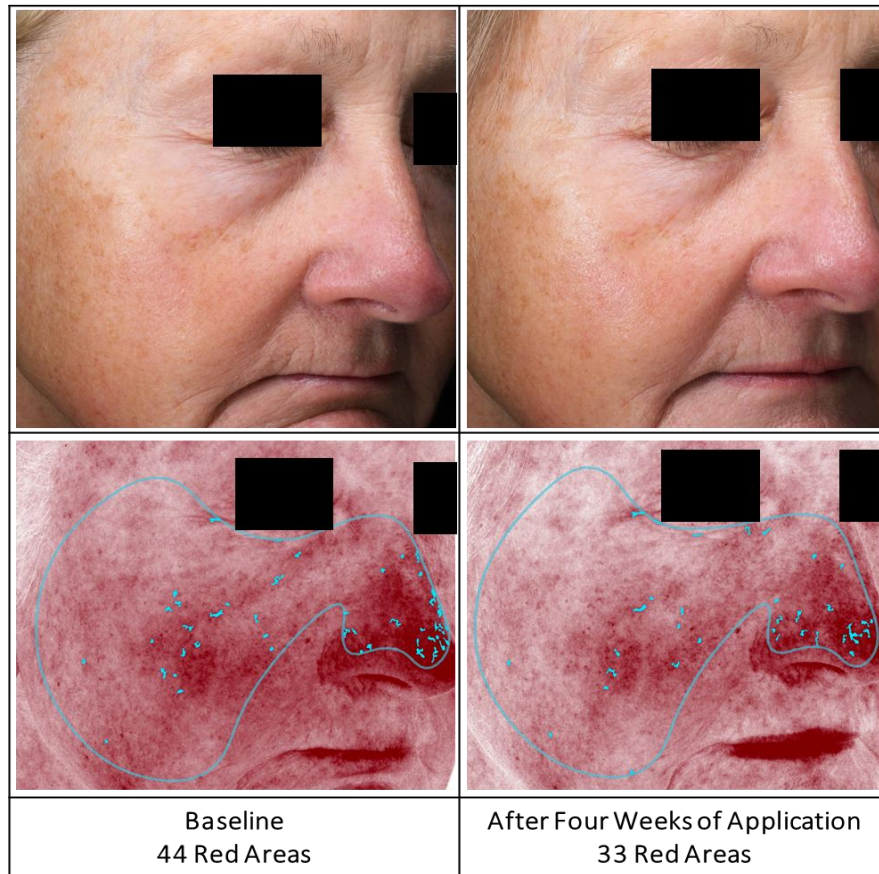
At 2.0%, AC ExoEternal
decreased red areas on the
skin over a 4-week period by

-3%

Benefits

AC ExoEternal helps calm visible
redness and restores balance to the
skin, promoting a healthier, more even-
toned complexion.

VISIA: Reduction in Red Areas - Mature Skin



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. 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.

Figure 19. Images of Participant Treated with 2.0% AC ExoEternal. Natural Photos (top) and VISIA Image Enhancement (bottom) Before and After Four weeks. Red Areas are concentrated darker red areas and denoted by light blue areas.

At 2.0%, AC ExoEternal
decreased red areas on the
skin over a 4-week period by

-4%

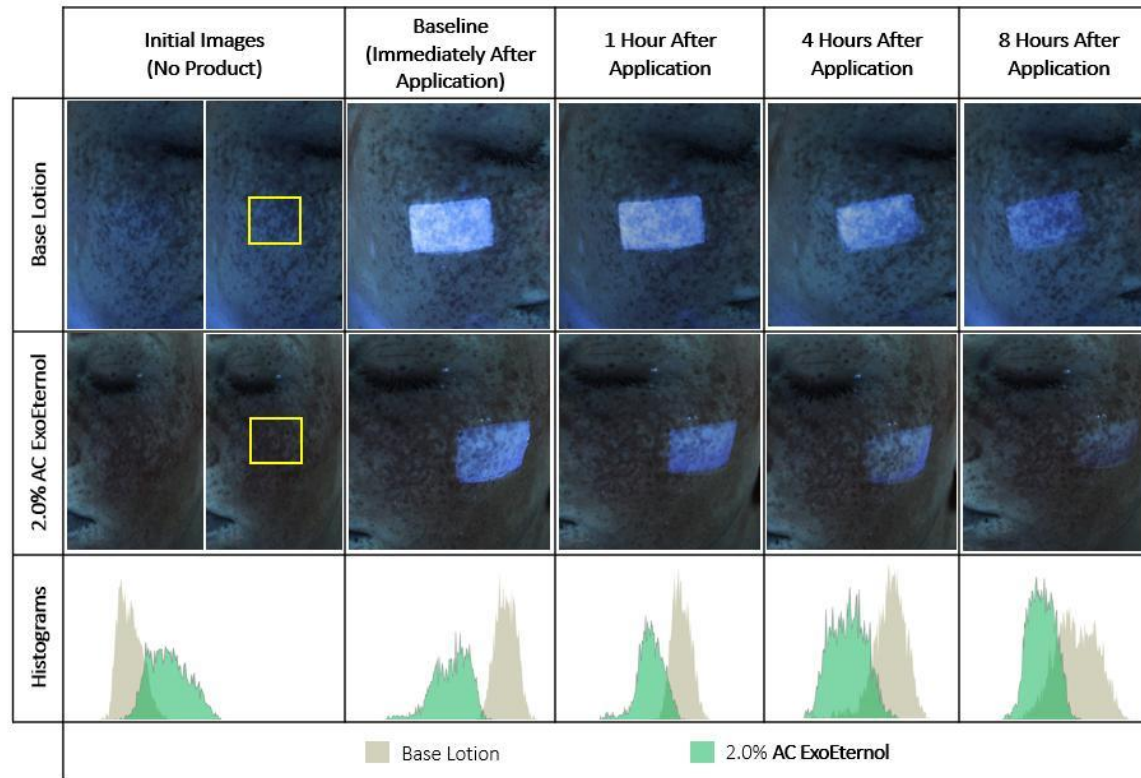
Benefits

AC ExoEternal visibly reduces the look
of red areas for a smoother, more
youthful appearance.

In Vitro.

Enhanced Delivery

Enhanced Skin Delivery via UV Dye



A specially prepared version of AC ExoEternal was labeled with a fluorescent probe, allowing its skin delivery to be visually tracked over time. Under UV imaging, the fluorescence highlights where the active remains on the skin surface, with a gradual decrease indicating movement beyond the outer layer and into the skin. Performance was directly compared against a base lotion to understand how effectively the ingredient enhances delivery within a finished formula.

Figure 20. VISIA UV Dye Participant Images and Intensity Histograms at All Timepoints.

At 2.0%, AC ExoEternalol
enhanced skin absorbance
after 8 hours by

+52%

Benefits

AC ExoEternalol demonstrates enhanced
exosome delivery properties on the skin.

In Vivo.

Synergistic Data with Retinol

High Resolution Ultrasound Skin Imaging Test

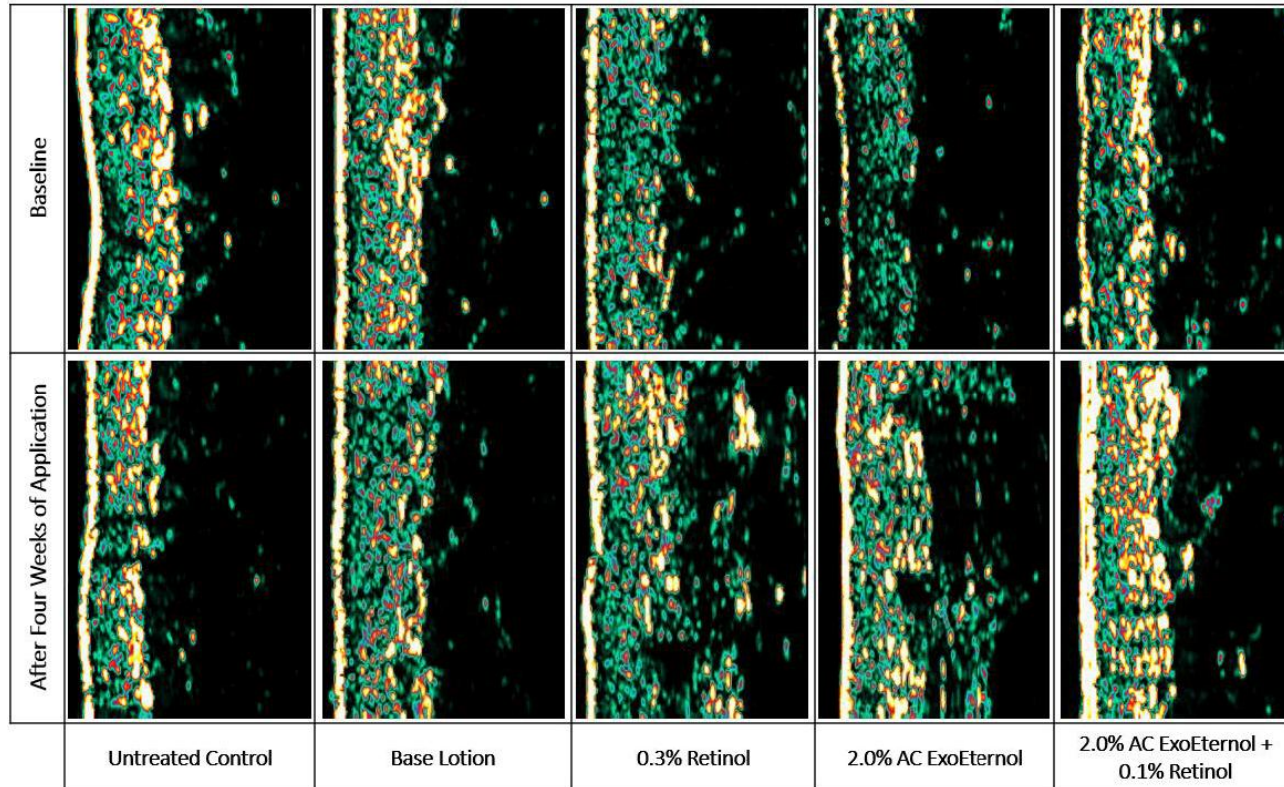


Figure 21. Participant Ultrasound Images of Each Test Site at Baseline (Top) and After Four Weeks (Bottom).

Ultrasound skin imaging sends acoustic pulses into the skin and measures their reflections to create a cross-sectional image. Dark colors indicate low reflection and minimal density changes, while bright colors show strong reflections and greater structural contrast. The epidermis appears white or yellow, and the dermis displays mixed colors of varying intensity.

2.0% AC ExoEternal + 0.1% Retinol shows the brightest and most uniform epidermal band of all conditions tested, suggesting the combination enhances surface integrity and dermal reflection, consistent with its synergistic improvements in collagen density and structural organization.

High Resolution Ultrasound Skin Imaging Test

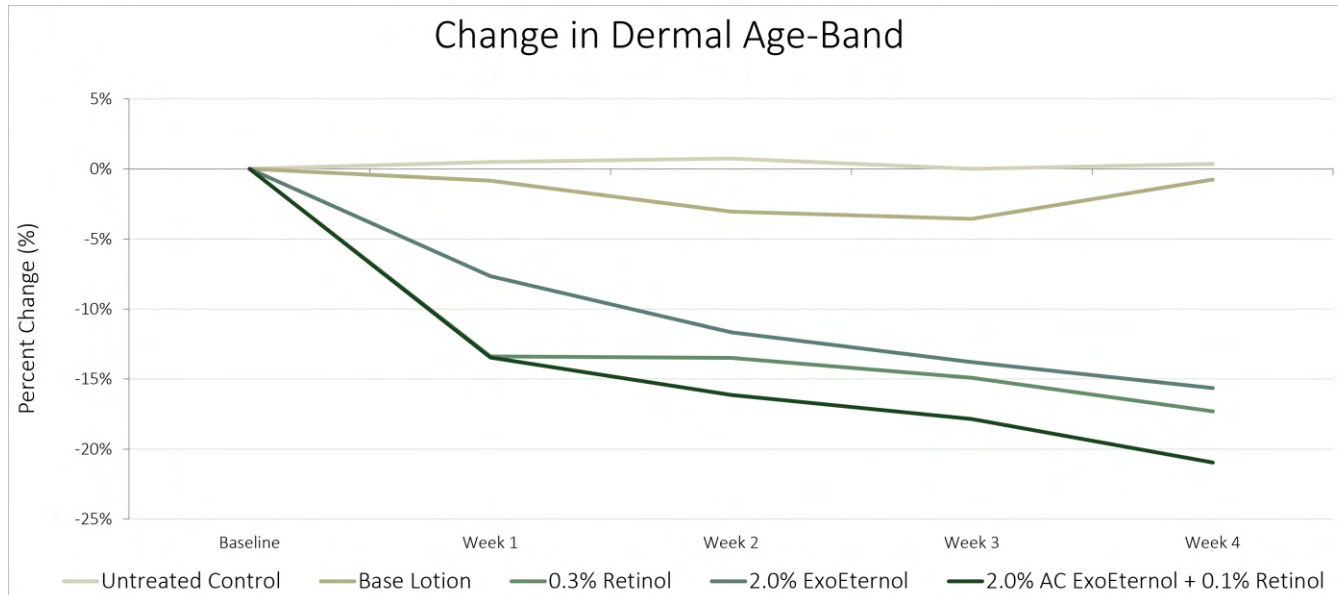


Figure 22. Percent Change in Dermal Age-band Relative to Baseline Values

The LEB (Low Echogenic Band), or Dermal Age-band, refers to the layer of skin just beneath the epidermis that appears darker on ultrasound images due to lower reflection. A thicker or more pronounced LEB indicates reduced collagen density and structural degradation, which are common signs of skin aging and photodamage.

2.0% AC ExoEternal + 0.1% Retinol reduced the Dermal Age-band by **-21%**, significantly outperforming 0.3% retinol (-17%).

High Resolution Ultrasound Skin Imaging Test

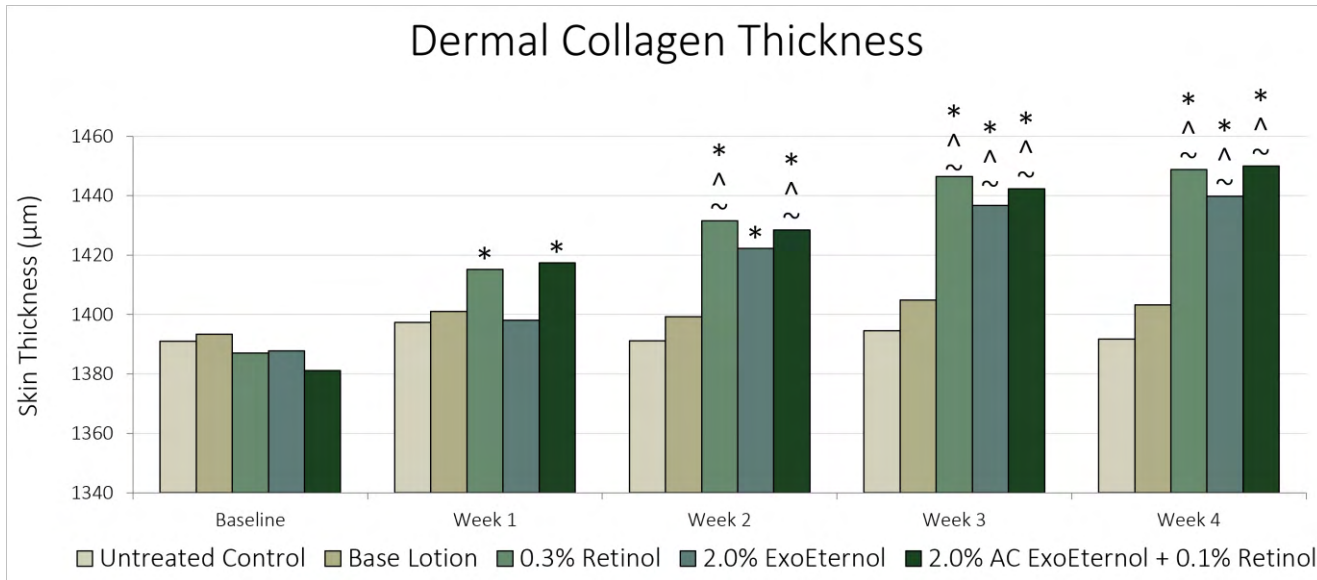


Figure 23. Dermal Collagen Thickness Overtime. * indicates significance ($p \leq 0.05$) compared to Baseline values within the same condition. ^ indicates significance ($p \leq 0.05$) compared to Untreated Control within the same timepoint. ~ indicates significance ($p \leq 0.05$) compared to Base Lotion within the same timepoint.

Skin Thickness (Dermal Collagen Thickness) measures the area behind the epidermis to the back of the dermis, with lower values correlating with age and less collagen.

2.0% AC ExoEternal + 0.1% Retinol improved collagen thickness by **+5%**, comparable to 0.3% retinol (+4.5%).

High Resolution Ultrasound Skin Imaging Test

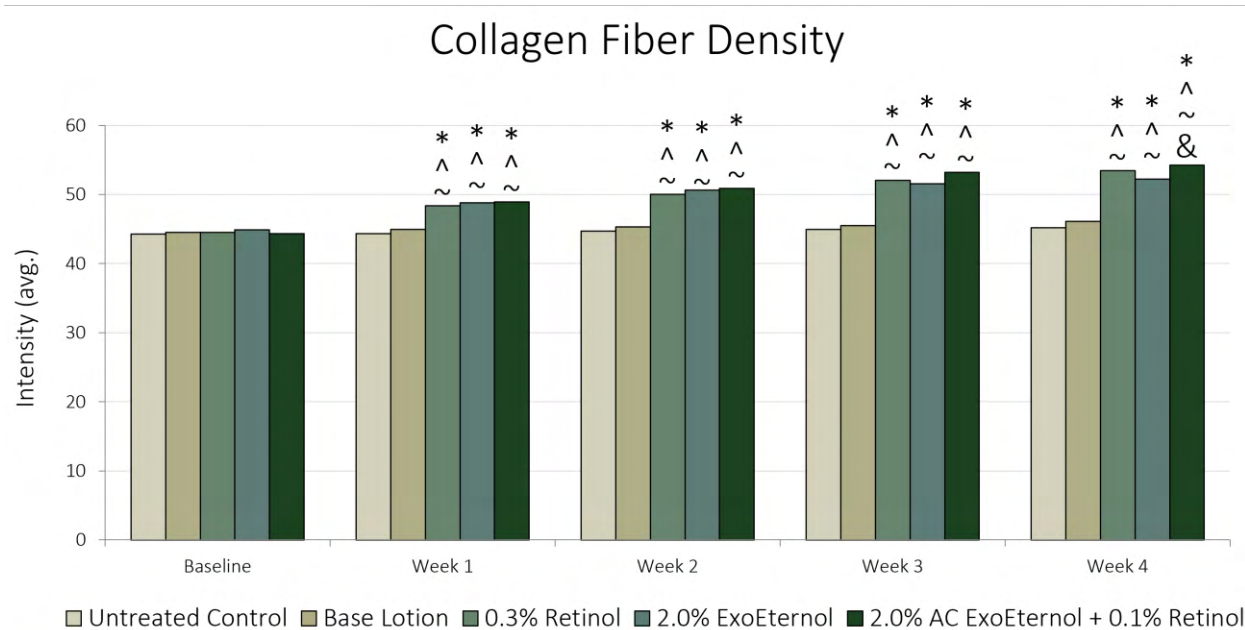


Figure 24. Collagen Fiber Density Overtime. * indicates significance ($p \leq 0.05$) compared to Baseline values within the same condition. ^ indicates significance ($p \leq 0.05$) compared to Untreated Control within the same timepoint. ~ indicates significance ($p \leq 0.05$) compared to Base Lotion within the same timepoint. & indicates significance ($p \leq 0.05$) compared to 0.3% Retinol within the same timepoint.

Intensity (Collagen Fiber Density) is an indicator of the amount of collagen within the dermis, with greater intensities correlating with higher levels of collagen.

2.0% AC ExoEternal + 0.1% Retinol increased collagen fiber density by **+22%**, outperforming 0.3% retinol (+20%).

Cellular Renewal Study



Figure 25. Participant Images of Each Test Patch at Baseline (Top) and After Three Days (Bottom)

Five test sites were designated on the volar forearm of each participant, with one left untreated to represent normal pigmentation. Dermal Dye Max™ was applied to the remaining sites to simulate pigmentation, followed by baseline readings using the DermaLab system.

Each treated area received 0.2 g of test formulation, and pigmentation was measured every 24 hours until color returned to baseline, with treatments reapplied after each reading.

2.0% AC ExoEternal and
0.1% retinol reduced
pigmentation by

-2.4%

Benefits

2.0% AC ExoEternal + 0.1% Retinol
unlocks a new standard in cellular
renewal, significantly outperforming
retinol alone.

Anti-Erythema Study



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.

Figure 26. Participant Image Before and After Application of Test Materials.

2.0% AC ExoEternal + 0.1%
Retinol significantly reduced
redness by

-7%

Benefits

AC ExoEternal calms redness where
retinol falls short, with AC ExoEternal +
Retinol delivering the strongest
reduction of all conditions tested.

In Vitro.

Cellular Viability

Cellular Viability

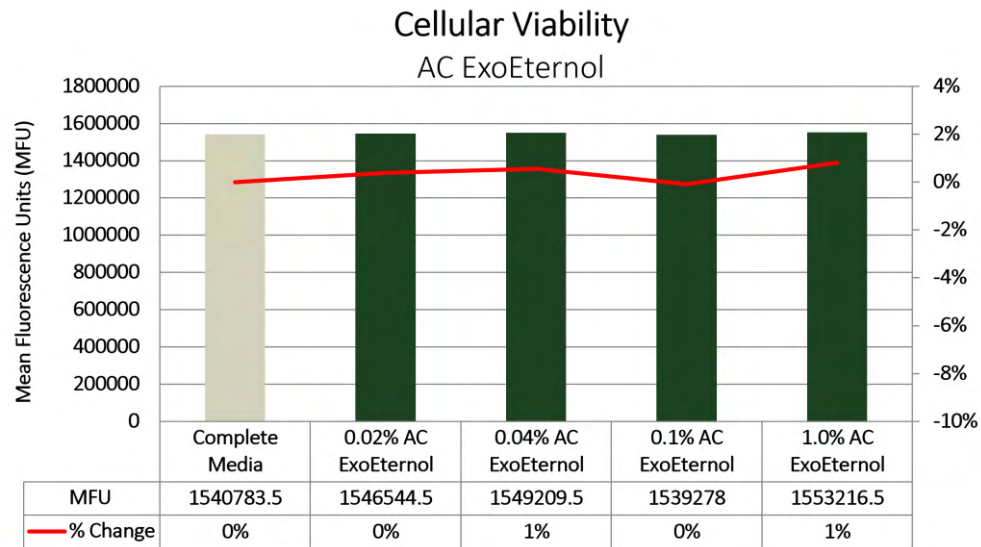


Figure 27. Cellular Viability of Fibroblasts Treated with AC ExoEternal. * indicates significance ($p < 0.05$) compared to Complete Media.

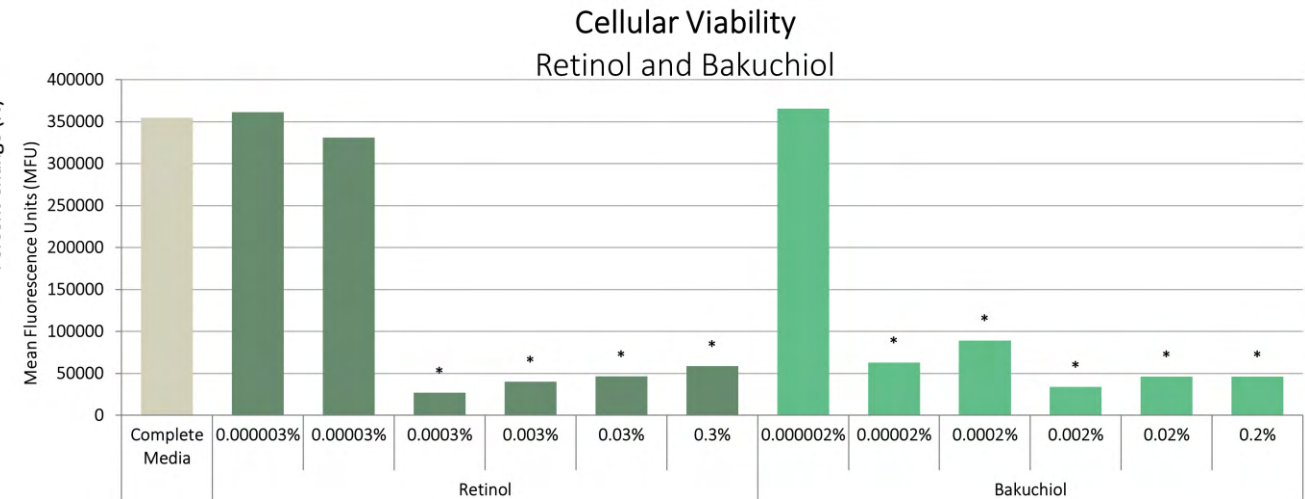


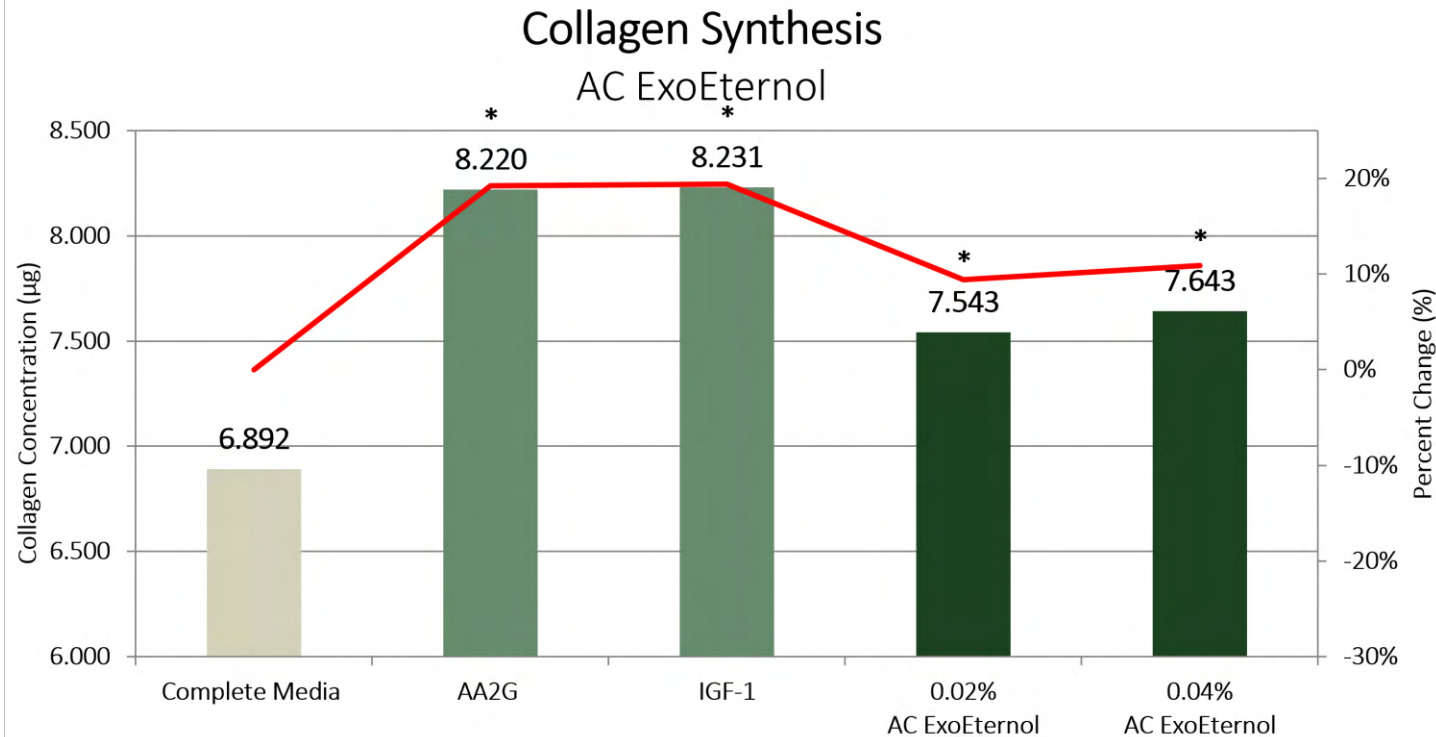
Figure 28. Cellular Viability of Fibroblasts Treated with retinol and bakuchiol. * indicates significance ($p < 0.05$) compared to Complete Media.

In this study, retinol, bakuchiol, and AC ExoEternal were evaluated for their effects on cell viability. While retinol and bakuchiol showed significant reductions in fibroblast viability even at very low concentrations, AC ExoEternal maintained healthy cell activity across all tested levels. These findings highlight AC ExoEternal's exceptional skin compatibility and confirm that it delivers performance without compromising cellular health.

In Vitro.

———— Anti-Aging

Sirius Red Fast Green



Collagen is the skin's structural foundation, providing strength, firmness, and elasticity, and maintaining its levels is essential to preserve a smooth, resilient, and youthful appearance. Human dermal fibroblasts, the skin's collagen-producing cells, were treated with AC ExoEternal to assess its ability to boost collagen synthesis.

Figure 29. The effect of AA2G (100 µM or 34 µg/mL), IGF-1 (6.5 nM or 50 ng/mL), and AC ExoEternal on collagen concentrations in dermal fibroblasts. * indicates significance ($p \leq 0.05$) compared to untreated fibroblasts.

AC ExoEternal* increased
collagen synthesis by

+11%

Benefits

AC ExoEternal supports the skin's structural foundation by boosting collagen synthesis for smoother, firmer, and more youthful-looking skin.

*Evaluated in vitro at 0.05%, equivalent to a 5% application level.



Elastin ELISA

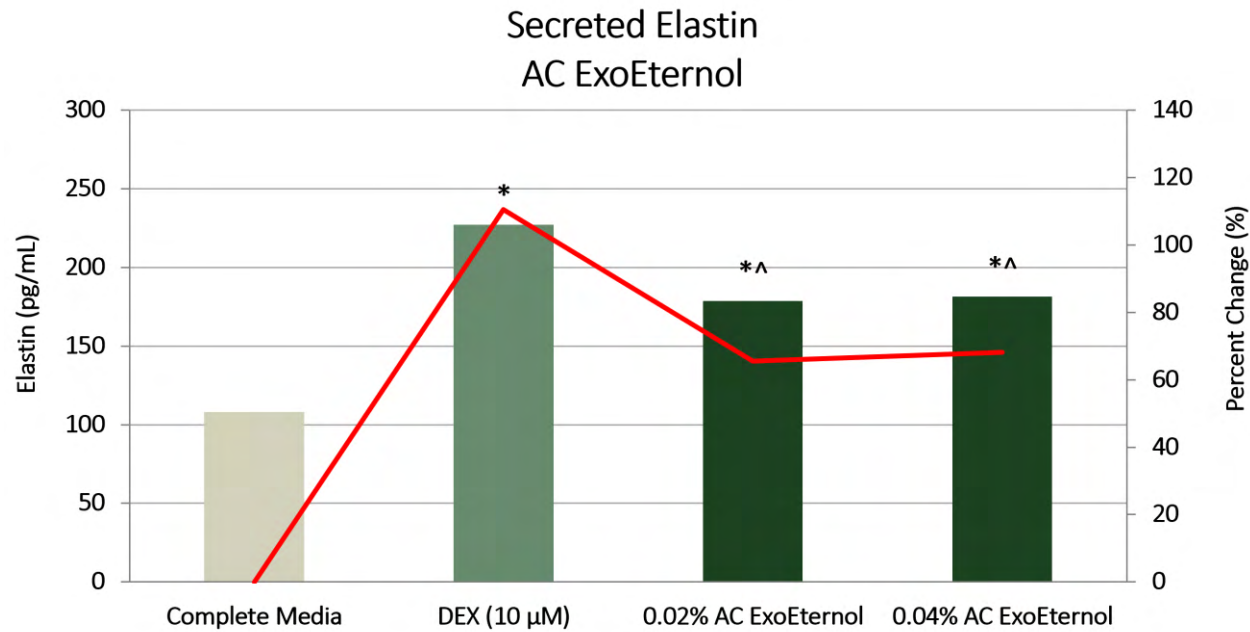
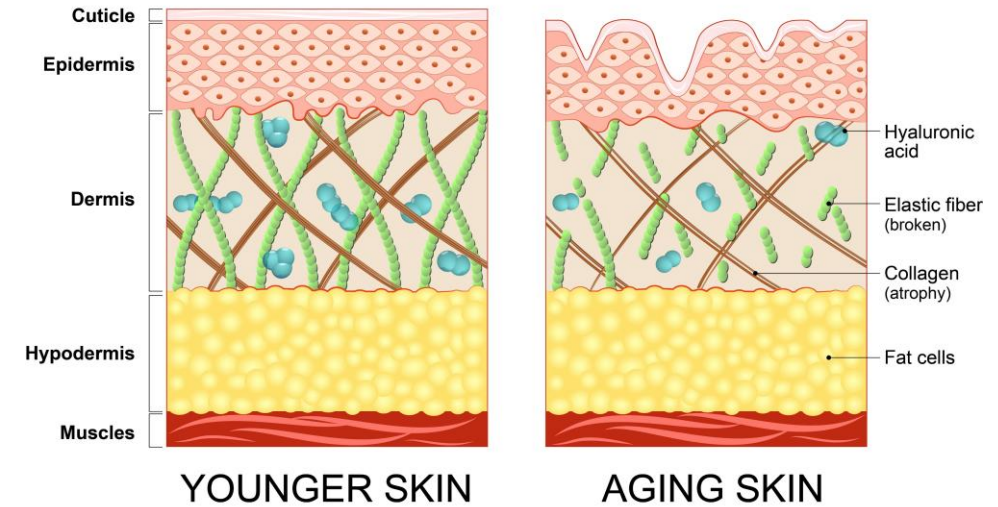


Figure 30. Concentrations of Elastin Secreted from AC ExoEternal-treated fibroblasts. * indicates significance ($p \leq 0.05$) compared to untreated fibroblasts. ^ indicates significance ($p \leq 0.05$) compared to DEX.



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.

AC ExoEternal* increased
elastin levels by

+68%

Benefits

AC ExoEternal boosts fibroblast activity to enhance elastin production, helping replenish the skin matrix, slow degradation, and visibly reduce fine lines and wrinkles.



*Evaluated in vitro at 0.05%, equivalent to a 5% application level.

In Vitro.

Gentle Exfoliation and Evening

Tyrosinase Inhibition

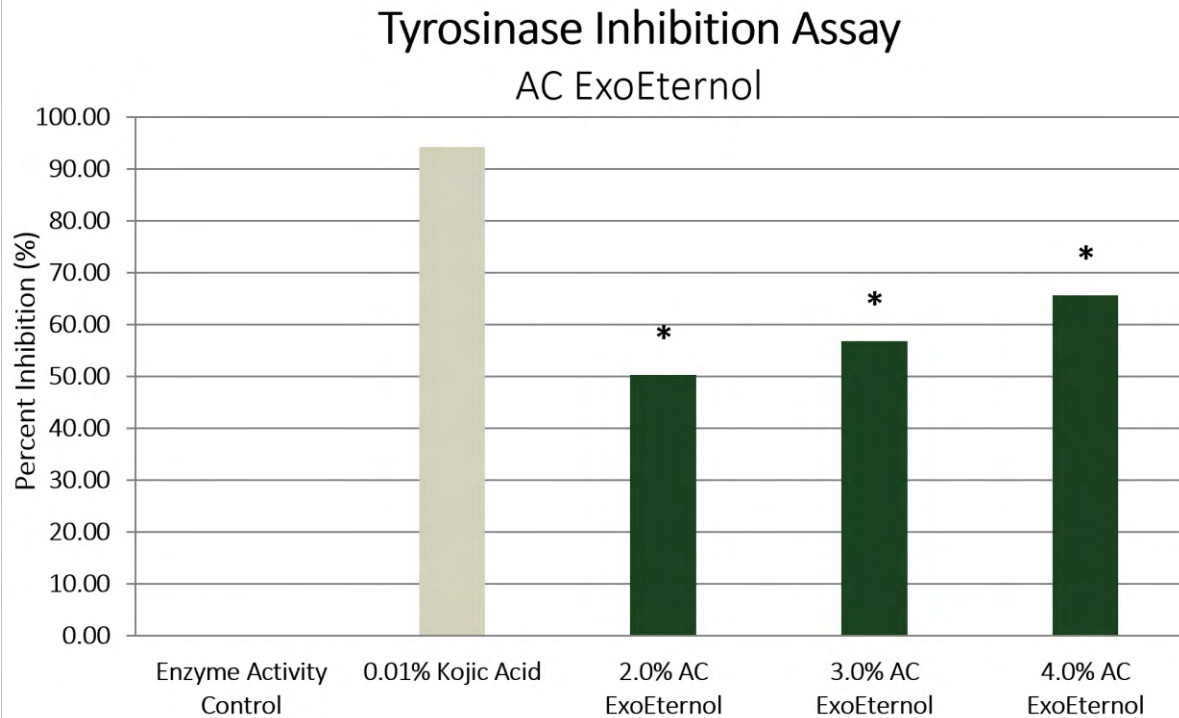


Figure 31. Tyrosinase Inhibition. * indicates significance ($p \leq 0.05$) compared to Kojic Acid.

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.

At 5.0%, AC ExoEternalol
inhibited tyrosinase by

-66%

Benefits

AC ExoEternalol can help regulate
tyrosinase activity to support a brighter,
more even complexion.

In Vivo.

———— Non-Irritating

IL-6 ELISA

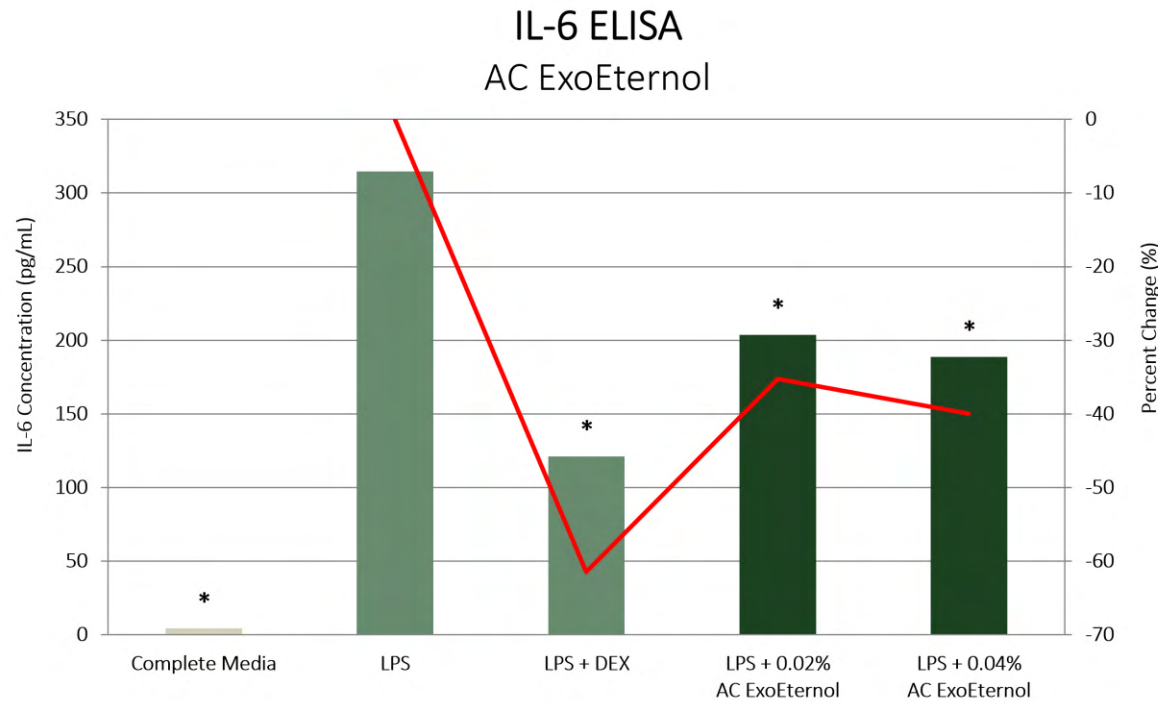


Figure 32. The effect of AC ExoEternal on IL-6 concentrations in fibroblasts. * indicates significance ($p \leq 0.05$) compared to fibroblasts incubated with LPS.

Interleukin-6 (IL-6) is a key signaling molecule that drives inflammation in the skin. Elevated IL-6 levels 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.

AC ExoEternal*
reduced IL-6 levels by

-40%

Benefits

Through its anti-inflammatory action, AC ExoEternal can help counteract the visible effects of cellular aging and supports long-term skin resilience.



*Evaluated in vitro at 0.05%, equivalent to a 5% application level.

CYP1A1 Assay

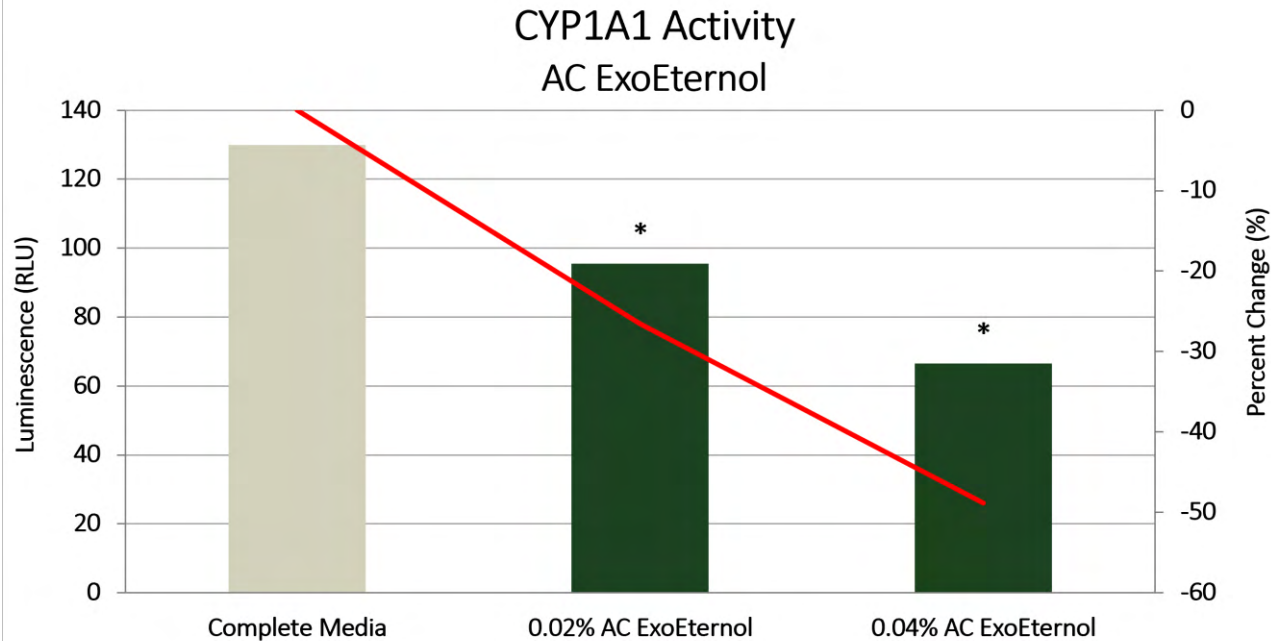


Figure 33. CYP1A1 Activity in Epidermal Keratinocytes. * indicates significance ($p \leq 0.05$) compared to untreated keratinocytes.

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 ExoEternol can calm CYP1A1 activity to support a healthier, more resilient skin environment.

AC ExoEternal* reduced
CYP1A1 activity by

-49%

Benefits

AC ExoEternal supports skin homeostasis and delivers visible anti-aging benefits through balanced CYP1A1 regulation.



*Evaluated in vitro at 0.05%, equivalent to a 5% application level.

Oxygen Radical Absorbance Capacity (ORAC) Assay

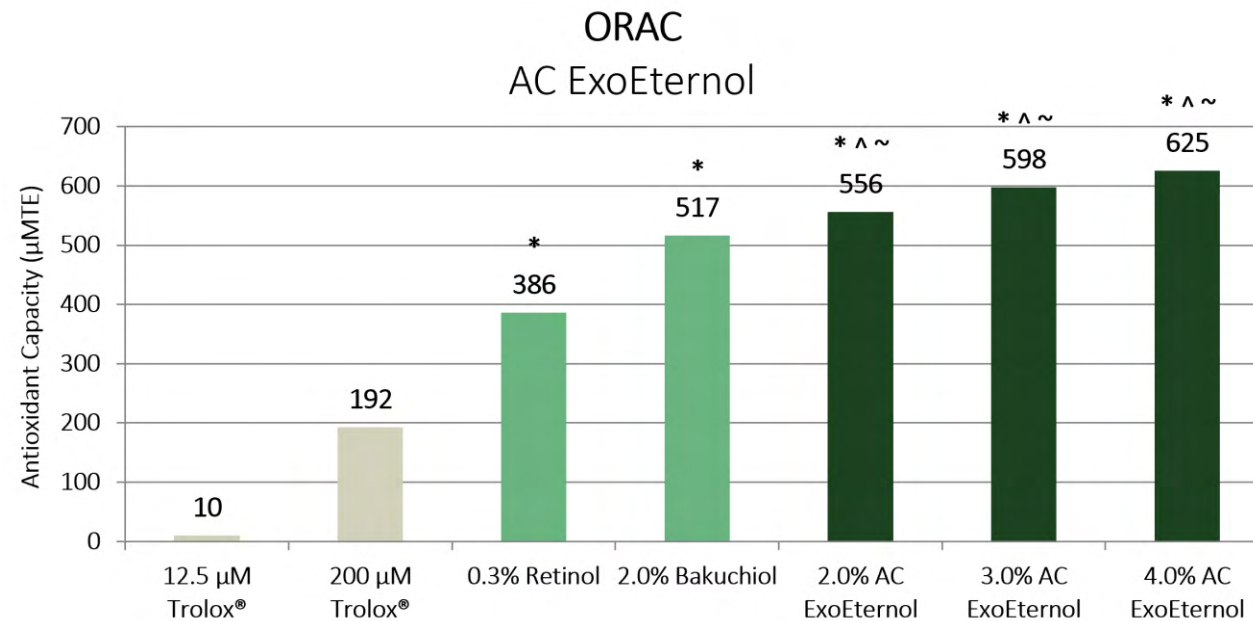


Figure 34. Antioxidant capacity of AC ExoEternol. * indicates significance ($p \leq 0.05$) compared to 200 μM Trolox®. ^ indicates significance ($p \leq 0.05$) compared to Retinol. ~ indicates significance ($p \leq 0.05$) compared to Bakuchiol.

Every day, the skin is exposed to environmental stress and UV light that generate reactive oxygen species (ROS), unstable molecules that can damage vital structures like DNA, proteins, and lipids. Over time, this oxidative stress contributes to visible aging and loss of skin vitality. The Oxygen Radical Absorbance Capacity (ORAC) assay measures an ingredient's ability to neutralize these harmful free radicals, providing a clear indication of its antioxidant strength and its potential to protect and preserve healthy, youthful-looking skin.

The antioxidant capacity of
AC ExoEternal
outperformed both retinol
and bakuchiol.

Benefits

AC ExoEternal is capable of providing antioxidant properties and aids in the anti-aging process through protection at the cellular level.

Total Cellular Protein in Response to UV

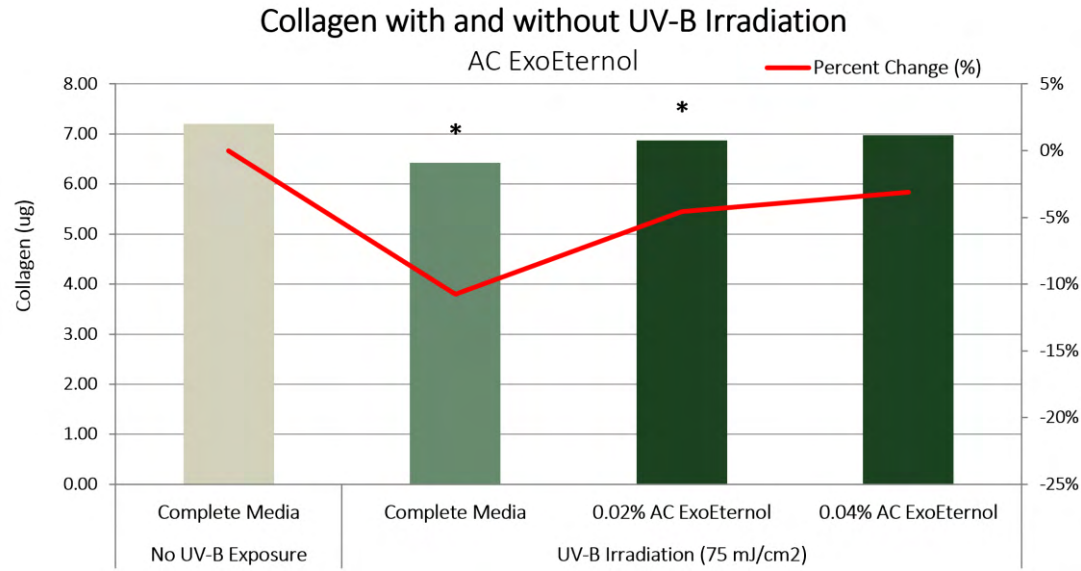


Figure 35. The effect of UV-B irradiation on collagen.

* indicates significance ($p \leq 0.05$) compared to untreated fibroblasts.

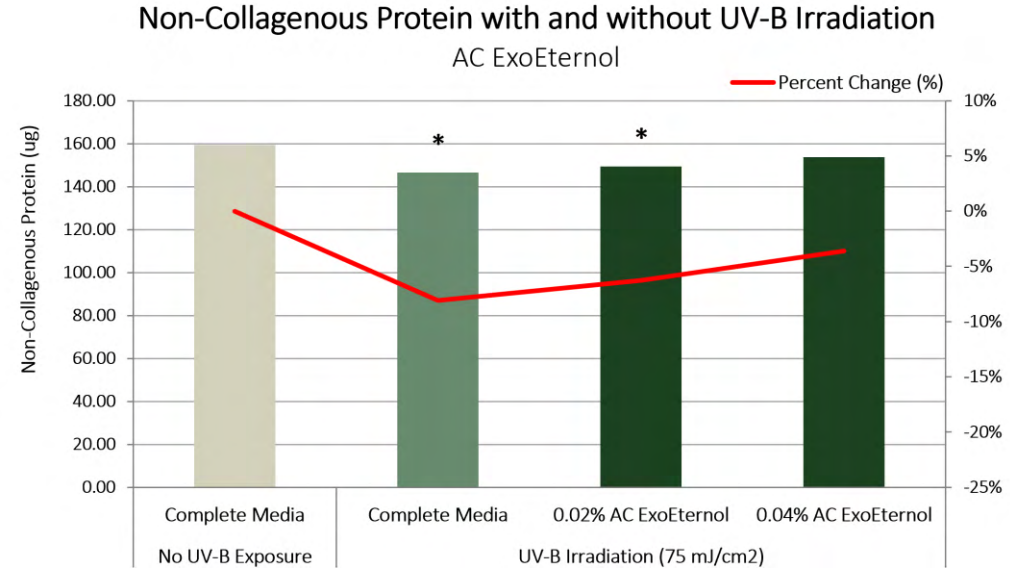


Figure 36. The effect of UV-B irradiation on non-collagenous protein. * indicates significance ($p \leq 0.05$) compared to untreated fibroblasts.

UVB exposure disrupts collagen and other vital proteins, accelerating visible aging and weakening the skin barrier. Unlike retinol, which increases UV sensitivity, AC ExoEternol helps preserve protein synthesis under UV stress, supporting repair and resilience while reducing the risk of irritation.

AC ExoEternal*
maintained collagen levels in
fibroblasts following UV-B
exposure by

Benefits

+95%

AC ExoEternal helps protect against UV-B-induced damage by preserving collagen and essential skin proteins, supporting dermal-epidermal junction integrity and a stronger, more youthful skin matrix.



*Evaluated in vitro at 0.01%, equivalent to a 1% application level.

Market Inspiration: The AC ExoEternal Edit

"Eternal Sunshine" Daily Renewal Serum

A glow-boosting serum that brightens and smooths by supporting collagen, gentle exfoliation, and soothes inflammation.

Target Audience: Perfect for sensitive skin types, sun active lifestyles, and anyone craving skin that reflects a more balanced inner state.

Trend Tie-In: Barrier-Forward Skincare

"Smooth All Over" Body Lotion

A silky body lotion that softens rough texture, calms visible redness, and smooths uneven areas from head to toe.

Target Audience: Uneven texture on arms, legs, and shoulders; redness prone areas; and dull, uneven looking tone.

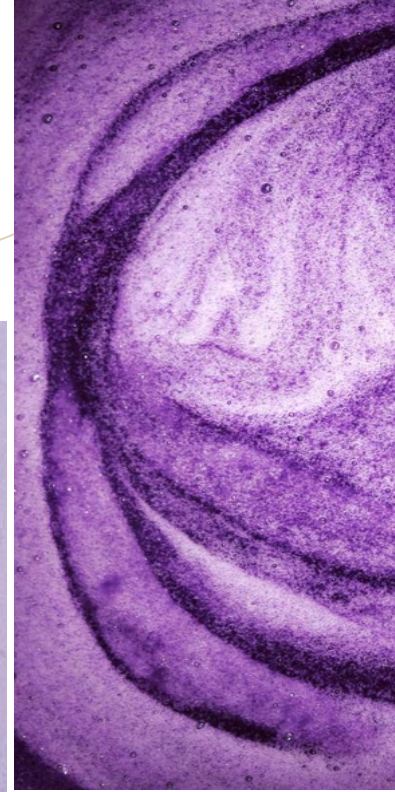
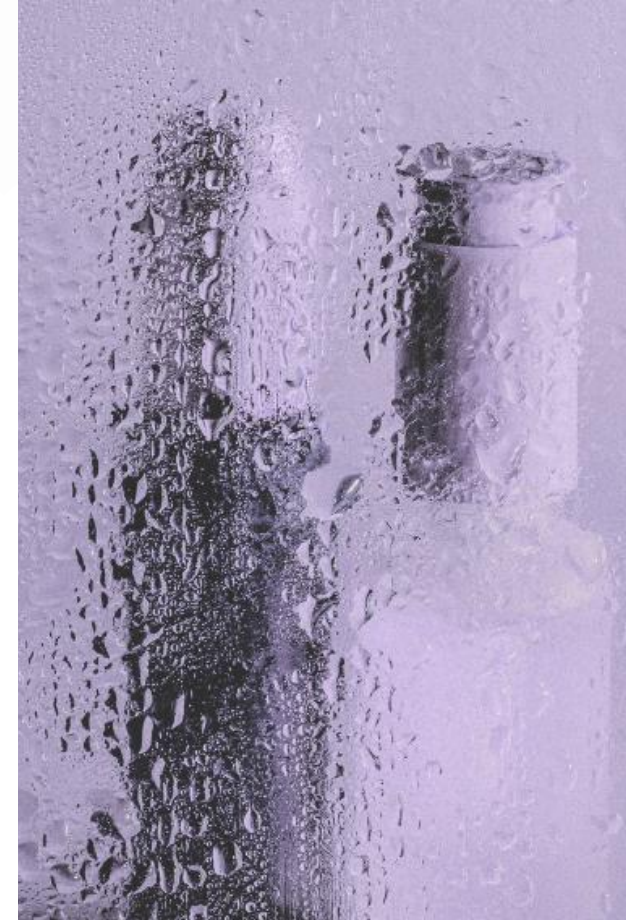
Trend Tie-In: Spa Grade Body Care

"Root Balancing" Scalp Treatment

A lightweight scalp serum that helps nourish, moisturize, and bring a sense of balance to the scalp through soothing, antioxidant rich renewal and collagen supporting care.

Target Audience: People with dry, tight, or easily irritated scalps who want a more soothed, nourished, and balanced scalp.

Trend Tie-In: Hair Longevity



Eternal Sunshine

Daily Renewal Serum

%	TRADE NAME	INCI	SUPPLIER
PHASE A			
68.95	Water	Water	Local
0.10	Sodium Phytate	Sodium Phytate	Tonxiang Xinrui Biotechnology Co, LTD
10.00	Butylene Glycol	Butylene Glycol	Brenntag
PHASE B			
5.00	Pelemol® CCC	Coco Caprylate/Caprates	Phoenix Chemicals
4.00	AC Olive Squalane	Squalane	Active Concepts
0.50	Protachem GMS 450	Glyceryl Stearate	Protameen
3.00	dermofeel® NC MB	Polyglyceryl-3 Distearate (and) Glyceryl Stearate Citrate	Glenn Corp/Evanik
PHASE C			
0.25	Sepimax Zen™	Polyacrylate Crosspolymer-6	Seppic
PHASE D			
5.00	USP-NF Glycerin	Glycerin	Evolution Chemicals/Archer Daniels Midland
0.20	Keltrol® CG-SFT	Xanthan Gum	CP Kelco
PHASE E			
1.00	euxyl® PE 9010	Phenoxyethanol (and) Ethylhexylglycerin	Ashland
2.00	AC ExoEternal	Water & Lactobacillus & Perilla Frutescens Extract & Phospholipids & Lactobacillus Ferment	Active Concepts
PHASE F			
Q.S.	Citric Acid 50%	Citric Acid	Cargill
Q.S.	Sodium Hydroxide 25%	Sodium Hydroxide	Chemtrade

Procedure

1. In a clean and sanitizer beaker, charge Phase A water. Begin stirring and heating to 75 - 80°C. Add remaining Phase A ingredients under stirring. Cover and continue heating.
2. Add Phase B ingredients into a separate clean and sanitized beaker and begin heating to 75 - 80°C with stirring.
3. Phase C: Once ingredients of Phase B are melted and homogeneous, disperse Phase C in Phase B with high speed mixing.
4. Once both main beakers have come up to temperature, add Phase BC into Phase A under homogenization. Homogenize at around 2000 rpm until uniform.
5. Create a pre-mix of glycerin and xanthan gum in a separate container. Once main batch has cooled to 40 - 45°C, add pre-mix slurry to main batch under homogenization and mix until uniform.
6. Move to overhead paddle stirrer to begin cooling with continuous mixing (300 - 400 rpm). Add Phase E ingredients separately to batch under stirring.
7. Check specifications

AC ExoEternal

Designed for Seamless Formulation



Eternal Sunshine Daily
Renewal Serum
(Contains 2.0% AC ExoEternal)



Market-standard Retinol Serum
(Contains 0.3% Retinol and 2%
Bakuchiol)



Temperature
Stability

Stable up to 50°C



pH
Stability

3 - 7



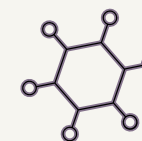
Suggested
Use Level

2.00 - 4.00%



Solubility

Water Dispersible



Ionic and Alcohol
Compatibility

Nonionic
Compatible with up to
10% alcohol



Formulation
Guidelines

Can be incorporated
during cooling phase



Visually **aligned** with market retinol
benchmarks at recommended use levels.

Summary

WHAT.

AC ExoEternal is an **encapsulated retinol alternative** that signals the next chapter of personal care, where innovation rises to meet tightening regulations and consumers search for restored balance across the skin and self.

WHY.

AC ExoEternal matches the performance of retinol while remaining **non-cytotoxic**, **non-photosensitizing**, and **forward-thinking** through its fusion of Traditional Chinese medicine and modern biotechnology.

MADE OF.

Inspired by perilla's role as the guardian of Qi in Traditional Chinese Medicine and the precision of modern science, AC ExoEternal uses **targeted fermentation** and **exosomal encapsulation technology** to unlock perilla's most potent bioactives.

ACTION.

A triple-action renewal complex that helps to **boost collagen**, **smooths with gentle exfoliation**, and **visibly reduces inflammation**.



AC ExoEternal

Code: 60200

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

Appearance: Liquid Exosomal Dispersion, Tan to Dark Brown

Suggested Use Level: 2 - 4%

Suggested Applications: Retinol Alternative, Collagen Boosting, Exfoliating, Anti-Inflammatory, Hyperpigmentation

Standardized for: Therapeutic Index (IL-6:Collagen), PDI, Protein Content, Particle Size

Click for more info!



In Vitro



In Vivo



ISO 16128
NI & NOI



Vegan
Compliant



COSMOS
Compliant



China
Compliant



Product
Passport



Sephora
Clean



Credo
Clean

Active Concepts



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