

60195.

AC ExoRestore

DELIVERY SYSTEM



VEGAN



COSMOS



IN VITRO



IN VIVO



CHINA



ISO 16128



PRODUCT
PASSPORT



THE FEATURES.

Active Concepts aims to evolve the modern incarnations of cosmetic delivery systems through the use of BioAuthentic Exosomes. While exosomes currently available in the market are typically sourced from animal or human stem cells, primarily targeting anti-aging benefits, Active Concepts pioneers a natural approach to delivery systems while broadening the spectrum of benefits. Introducing AC ExoRestore, an exosomal delivery system that capitalizes on bitter melon extract. Bitter melons are known to contain natural prebiotics, in which when applied topically to the skin, provide wound healing and soothing properties. AC ExoRestore intends to make natural prebiotics more bioavailable, and, therefore, provide balance and restoration to the skin.

*Water & Momordica Charantia Fruit Extract
& Phospholipids*

Actions

**BioAuthentic Exosome
Encourages Wound Healing
Skin Homeostasis
Prebiotic Provenance**



TECHNICAL DATA SHEET.

THE REGULATION.

INCI. Water & Momordica Charantia Fruit Extract & Phospholipids
CAS. 7732-18-5 & 93333-80-3 & 123465-35-0 (OR) 8002-43-5
EINECS. 231-791-2 & 297-050-0 & N/A (OR) 232-307-2
EUROPE. Compliant
USA. Compliant
CHINA. Compliant

THE SPECIFICATION.

Origin. Botanical & Bacteria
Natural Antimicrobial. Lactobacillus Ferment
Preservatives. None
Solvents Used. Water
Soluble/Miscible. Water Dispersible
Appearance. Liquid Exosomal Dispersion, Light Beige to Tan
Use Level. 1- 10 %



THE STORY.

Delivery systems act as the trusted couriers of the beauty world. At the intersection of beauty and science, these vesicles ensure the effective delivery of cosmetic actives to consumers in their personal care products. However, to stay competitive in the ever-changing industry, Active Concepts has evolved modern incarnations of well-known delivery systems. While conventional delivery systems rely on synthetic means, our company proudly champions green chemistry and sustainability. As is our signature approach, we turned to nature for the answer to craft a solution that harmonizes with both the skin and the planet.

Adding to our delivery system technology platform, Active Concepts introduces BioAuthentic Exosomes — natural vesicles that are functionally identical to exosomes, extracted from natural sources, and target specific benefits. AC ExoRestore is intended to enhance wound healing and provide soothing properties to the skin by capitalizing on the prebiotic content found in bitter melons. Knowledge of our gut’s microbiome has inspired research into the skin’s microbiome. Immuno-cosmetics is a term that turns heads in the personal care industry as it is a more holistic approach to skin care. Immuno-cosmetics treats the skin as an ecosystem that must work in symbiosis across the main pillars of the skin: the skin barrier, the microbiome, and immunity cells. Research on how to modulate the skin’s microbiome and introducing prebiotics into skin care is a hot topic of research and an innovative approach. Third-party research has demonstrated that topically applying prebiotics allows the skin microbiome to rebalance itself, therefore causing an increase in wound healing and a decrease in skin irritation.

Skin is sensitive and can easily acquire injuries from acne breakouts, microtears, harsh exfoliation, and outside stressors. AC ExoRestore allows a natural source of prebiotics to be more bioavailable, allowing consumers to quickly foster skin recovery to encourage a quicker return to skin balance and homeostasis.

THE SCIENCE.

By definition, exosomes are the smallest forms of extracellular vesicles and are natural, membrane-derived particles¹. They are shed by most cells in response to intracellular and extracellular stimuli. With their ability to increase cell-to-cell contact and intracellular communication, exosomes are efficient at enhancing the delivery and bioavailability of actives to intended cells². As an active area of research, exosomes are mainly used in the pharmaceutical space, harnessing their therapeutic and diagnostic potential. Exosomes are emerging in the personal care industry as well, however, they are only being marketed towards skin rejuvenation, anti-aging, and are derived from human or animal stem cells. As Active Concepts realizes most brands are not a one-stop shop, our exosome line provides significant advances in delivery system brand differentiation with natural origins and a plethora of benefits to choose from.

Bitter melon, or *Momordica charantia*, is cultivated all over the world, traditionally in developing countries such as India, China, Brazil, and more³. Due to bitter melons being a natural source of prebiotics⁴, AC ExoRestore intends to capitalize on balancing skin immunity regulation. The skin consists of millions of viruses, bacteria, and fungi that all work to defend our skin from pathogens not only as a physical barrier, but also as an internal instructor for our immune system. While commensal bacteria does make up most of the skin’s microbiome, there are sometimes alterations in the commensal-pathogenic bacteria ratio that can cause an imbalance of the microbiota barrier, leading to inflammation.

Topically applying prebiotics helps produce certain antimicrobial amino peptides that benefit the immune responses in the skin, helping to eliminate pathogens and encourage wound healing⁵. Common skin conditions arise from an imbalance in the skin’s microbiome. AC ExoRestore intends to enhance the delivery of bitter melon extract, capitalizing on the natural content of prebiotics in an exosomal delivery system to provide benefits of restoring our skin’s balance and encouraging the process of wound healing.

THE BENEFITS.

Skin

Collagen Production *Sirius Red Fast Green Assay*

Wound Healing *Scratch Assay*



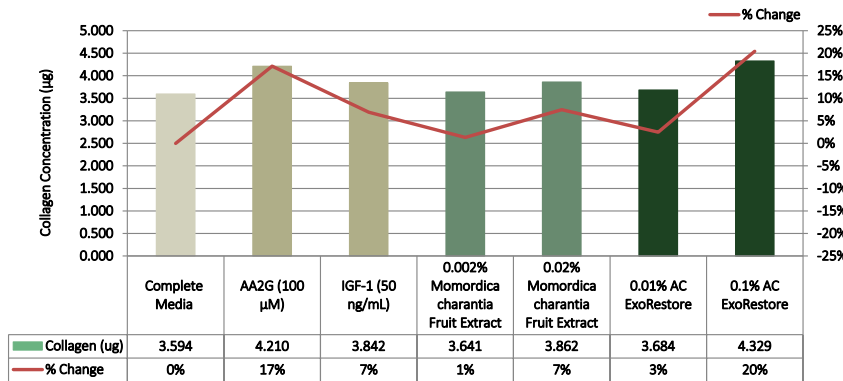
Youthful Skin *High Resolution Ultrasound Skin Imaging*



THE EFFICACY.

Sirius Red Fast Green Assay.

Collagen is the main protein of connective tissues and is responsible for skin's elasticity. Therefore, degradation leads to wrinkles that accompany aging. A Sirius Red/Fast Green Collagen Assay was conducted to assess the *in vitro* effect of AC ExoRestore to trigger collagen synthesis in dermal fibroblasts. The key active ingredient in AC ExoRestore, *Momordica charantia* (Bitter Melon) Fruit Extract, was tested to demonstrate the superior nature of BioAuthentic Exosomes as a delivery system.



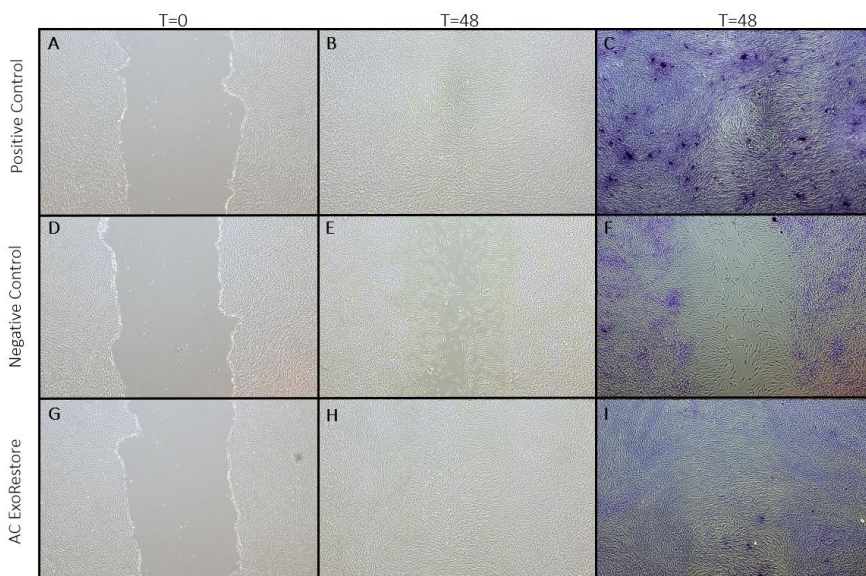
AC ExoRestore increased collagen synthesis by 3% and 20%, while the bitter melon extract alone increased collagen synthesis by 1% and 7% (tested at 0.01% and 0.1%)

Collagen Synthesis.

Healthier Dermal Complexion & Enhanced Collagen Deposition

Scratch Assay.

Wounded tissue begins a complex and structured series of events in order to repair the damaged region. These processes reflect the behavior of individual cells as well as the entire tissue complex. A Scratch Assay was conducted to assess the *in vitro* wound healing properties of AC ExoRestore in dermal fibroblasts. This assay is based on the observation that when an artificial scratch is made on a confluent cell monolayer, the cells will migrate towards the opening and close the scratch. Through the images below, we can quantify the rate of cell migration.



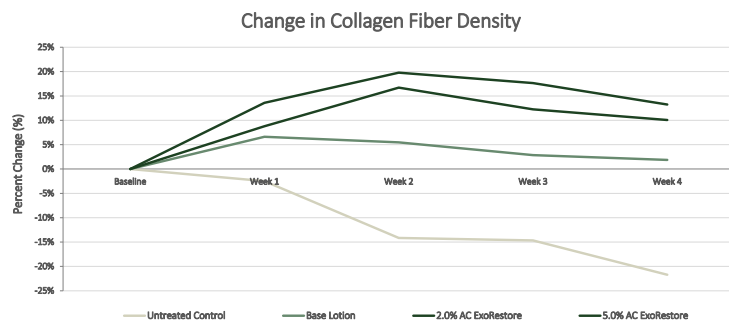
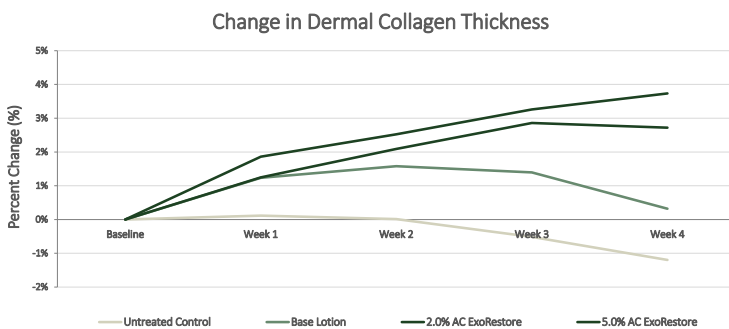
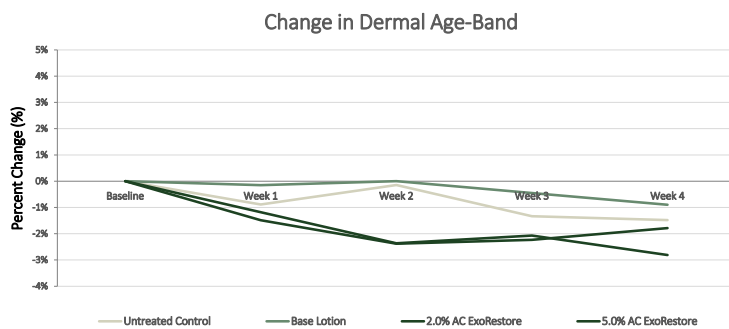
AC ExoRestore increased cell migration and closed the scratch 100% after 48 hours, similar to the positive control (tested at 0.01%)

Wound Healing.

Triggers Cellular Migration & Closes Skin Wounds

High Resolution Ultrasound Skin Imaging.

Collagen is the most abundant protein found in the skin and other areas of the body. Within the skin, collagen aids in the youthful appearance by providing an anchor point. With age, collagen naturally decreases and results in sagging, wrinkles, and fine lines. Accordingly, a High Resolution Ultrasound Skin Imaging Study was conducted to assess the ability of AC ExoRestore to improve the Dermal Age-Band (represents the area just behind the epidermis, with higher values indicative of aging and photo damage), Dermal Collagen Thickness (measures the area behind the epidermis to the back of the dermis, with lower values correlating with age and less collagen), and Collagen Fiber Density (indicator of the amount of collagen within the dermis, with greater intensities correlating with higher levels of collagen). Participants applied products to designated areas on their forearms twice a day for four weeks, with measurements collected once a week during the four-week study.



AC ExoRestore reduced Dermal Age-Band values, significantly augmented Dermal Collagen Thickness, and increased Collagen Fiber Density by 3%, 4%, and 13%, respectively.
(tested at 5.0%)

Youthful Skin.

Increases Collagen & Barrier Integrity

References:

1. Kalluri R, LeBleu VS. The biology, function, and biomedical applications of exosomes. *Science*. 2020 Feb 7;367(6478):eaaug977. doi: 10.1126/science.aau9777. PMID: 32029601; PMCID: PMC7717626.
2. Hannafon BN, Ding WQ. Intercellular communication by exosome-derived microRNAs in cancer. *Int J Mol Sci*. 2013 Jul 9;14(7):14240-69. doi: 10.3390/ijms140714240. PMID: 23839094; PMCID: PMC3742242.
3. Dandawate, Prasad R., et al. "Bitter melon: a panacea for inflammation and cancer." *Chinese journal of natural medicines* 14.2 (2016): 81-100.
4. Hartajanie, Laksmi, et al. "Probiotics fermented bitter melon juice as promising complementary agent for diabetes type 2: study on animal model." *Journal of nutrition and metabolism* 2020 (2020).
5. Habeebuddin, M.; Karnati, R.K.; Shiroorkar, P.N.; Nagaraja, S.; Asdaq, S.M.B.; Khalid Anwer, M.; Fattepur, S. Topical Probiotics: More Than a Skin Deep. *Pharmaceutics* 2022, 14, 557. <https://doi.org/10.3390/pharmaceutics14030557>

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