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AC

ExoTone

BioAuthentic Exosome
Harmonize Skin Tone
Cellular Renewal



VEGAN



SEPHORA
CLEAN



CREDO
CLEAN



GLOBALLY
COMPLIANT



COSMOS
COMPLIANT



ISO 16128



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 ExoTone, a natural exosomal delivery system that encapsulates upcycled apple extract, utilizing apple's alpha hydroxy acid content to exfoliate the skin and even skin tone. In many cultures, an even skin tone is considered a standard of beauty and is a significant motivator for consumers. AC ExoTone provides a natural delivery system to increase the bioavailability of skin-harmonizing properties.

INCI: Water & Pyrus Malus (Apple) Fruit Extract & Phospholipids

TECHNICAL DATA SHEET.

THE STORY.

At the intersection of beauty and science, delivery 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 ExoTone is intended to harmonize skin tone by reducing hyperpigmentation and increasing cellular renewal. Apples are known to contain alpha hydroxy acids which chemically exfoliate the skin, leaving behind a brighter and more even appearance. While we have sourcing in Italy and Taiwan, Active Concepts' headquarters is located in Lincolnton, North Carolina, where once a year the Lincoln County Apple Festival occurs, attracting more than 80,000 visitors.



THE SCIENCE.

By definition, exosomes are the smallest forms of extracellular vesicles and are natural, membrane-derived particles.¹ 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 cells.² As an active area of research, exosomes are mainly used in the pharmaceutical space. 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 BioAuthentic Exosome line offers a significant advance in delivery system innovation by providing naturally derived vesicles with a broad range of targeted benefits, setting brands apart through differentiation as well as sustainability. Exosome concentration was determined using a Horiba LA-300 by generating a volume-based particle size distribution. Light scattering measurements were converted from particle volume to estimated particle number by applying spherical geometry and density corrections appropriate for lipid-based vesicles, enabling calculation of exosome concentration 2.54×10^{12} exosomes per milliliter.

The growing popularity of apples has led to their usage outside the food industry. The significance of apples in the personal care industry is due to their content of alpha hydroxy acids³, or AHAs, which promote the appearance of healthier and smoother skin. The idea of using AHA technology was inspired by chemical peel treatments used by dermatologists to treat various skin conditions. AHAs are able to bind to cell adhesion molecules and reduce the calcium ion concentration, therefore disrupting cellular adhesion.⁴ This results in the desquamation, or shedding, of the outermost layer of the skin. This reduction of calcium ion levels promotes cell growth and cellular differentiation, leaving behind a more refreshed and youthful appearance. Physical exfoliation methods can cause microtears in the skin, causing a disrupted skin barrier. The use of alpha hydroxy acids from upcycled apples in an exosomal delivery system will safely enhance the benefits of cellular renewal, reduce hyperpigmentation, and even skin tone.

THE TECHNICAL DETAILS.

INCI. Water & Pyrus Malus (Apple) Fruit Extract & Phospholipids

CAS. 7732-18-5 & 85251-63-4 & 123465-35-0 (OR) 8002-43-5

EINECS. 231-791-2 & 286-475-7 & N/A (OR) 232-307-2

Origin. Botanical/Bacteria

Natural Antimicrobial. Lactobacillus Ferment

Preservatives. None

Solvents Used. Water

Appearance. Liquid Exosomal Dispersion, Light Beige to Tan

EUROPE. Compliant

USA. Compliant

CHINA. Compliant

THE FORMULATION TIPS.

pH Stability. 4 - 7

Temperature Stability. Do not freeze. Product may change appearance if exposed to cold temperatures.

If this happens, gently warm to 45-50 °C and mix.

Use Level. 1 - 10%

Ionic State. Cationic

Alcohol Compatibility. 10% of active is compatible with up to 10% alcohol.

Solubility. Water Dispersible

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

THE BENEFITS OVERVIEW.

Decrease Melanin Production

Tyrosinase Inhibition



Harmonize Skin Complexion

VISA: Reduction in Cumulative Spots



Leave Behind Brighter Skin

Cellular Renewal Assay



Rid Skin of UV Damage

VISA: Reduction in UV Spots



Minimize Pore Visibility

VISA: Reduction in Pores

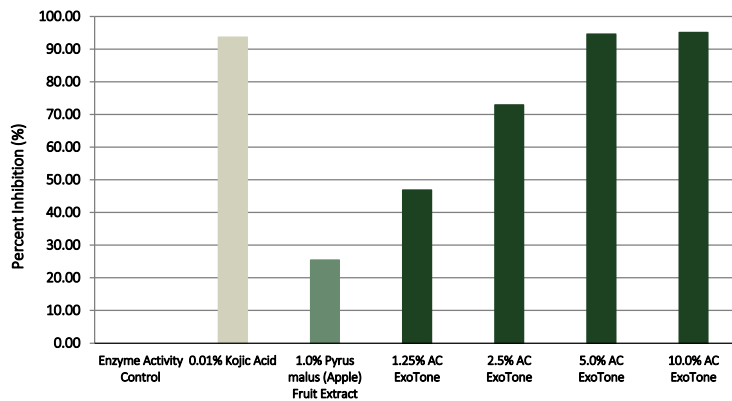


THE EFFICACY.

Decrease Melanin Production

A tyrosinase inhibition assay was conducted to determine the ability of AC ExoTone to inhibit tyrosinase, a key enzyme in melanin synthesis, indicating a potential component to reduce hyperpigmentation. The key active ingredient in AC ExoTone, *Pyrus malus* (Apple) Fruit Extract, was tested to demonstrate the superior nature of BioAuthentic Exosomes as a delivery system.

Tyrosinase Inhibition

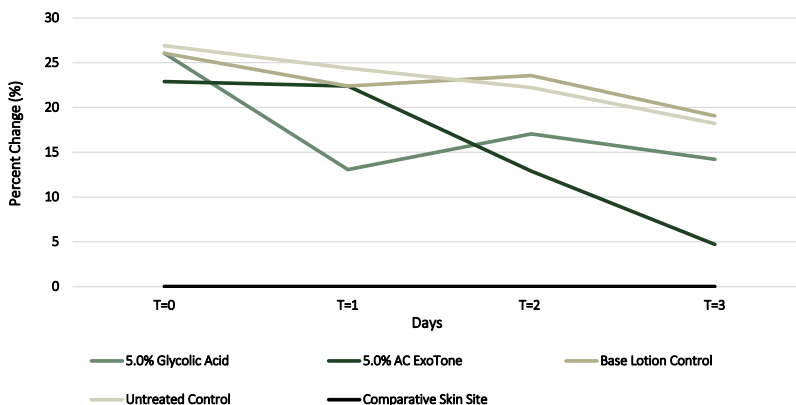


Inhibited tyrosinase production by -47%

Leave Behind Brighter Skin

AC ExoTone was evaluated for its ability to accelerate cell renewal by means of a traditional skin pigmentation assay protocol. M/F volunteers, free of any skin pathologies, applied Derma Dye Max™ to four identified test patches on the volar forearm and let it develop for 24 hours. The fifth site was a control with no applications. Once baseline readings were taken, 0.2g of each lotion treatment, 5% glycolic acid positive control, 5% AC ExoTone, and the base formula were applied. Readings were taken every 24 hours for 3 days.

Pigmentation Percent Change



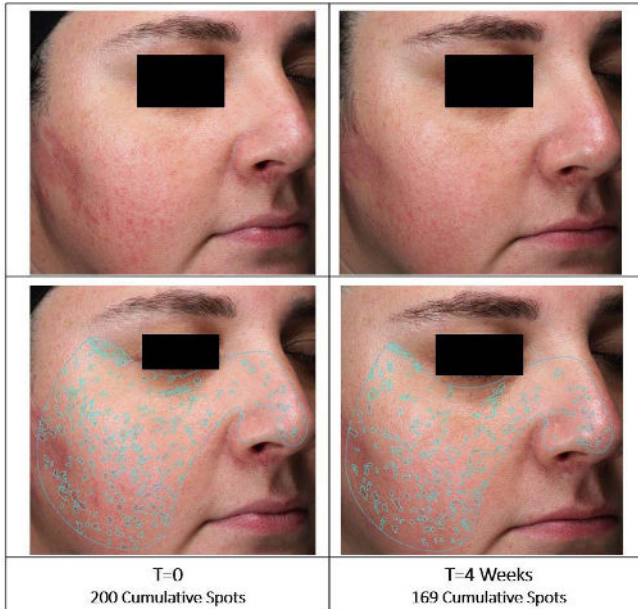
Induced a -15% change in pigmentation

THE EFFICACY CONTINUED.

Harmonize Skin Complexion

An *in vivo* study was conducted over a period of six weeks to evaluate the effects of 3.0% AC ExoTone in a base lotion on cumulative spots compared to the base lotion alone. Photographic assessments were performed using the VISIA Complexion Analysis System, taking pictures with standard, cross-polarized, parallel-polarized, and ultraviolet light. Photos were taken of the 10 M/F participants once a week for the four-week use period and for two weeks after application.

VISIA: Reduction in Cumulative Spots

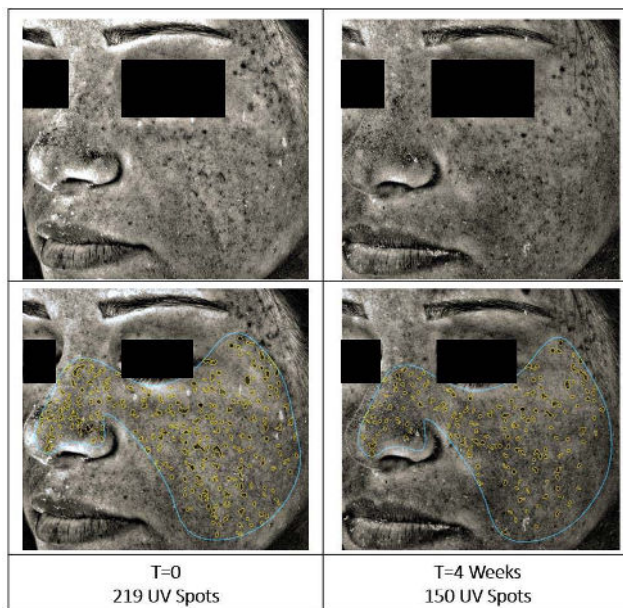


Decreased spot count by -4%

Rid Skin of UV Damage

An *in vivo* study was conducted over a period of six weeks to evaluate the effects of 3.0% AC ExoTone in a base lotion on UV Spots compared to the base lotion alone. Photographic assessments were performed using the VISIA Complexion Analysis System, taking pictures with standard, cross-polarized, parallel-polarized, and ultraviolet light. Photos were taken of the 10 M/F participants once a week for the fourweek use period and for two weeks after application.

VISIA: Reduction in UV Spots



Decreased UV spots by -7%

THE EFFICACY CONTINUED.

Minimize Pore Visibility

An *in vivo* study was conducted over a period of six weeks to evaluate the effects of 3.0% AC ExoTone in a base lotion on the appearance of pores compared to the base lotion alone. Photographic assessments were performed using the VISIA Complexion Analysis System, taking pictures with standard, cross-polarized, parallel-polarized, and ultraviolet light. Photos were taken of the 10 M/F participants once a week for the fourweek use period and for two weeks after application.

VISIA: Reduction in Pores



Decreased amount of pores by -14%

References:

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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. Wanninger, Andrea, et al. "Upcycling of plant residuals to cosmetic ingredients." *Int. J. Agric. Eng. Technol. Soc. Sci* 1 (2020).
4. Kornhauser, Andrija, Sergio G. Coelho, and Vincent J. Hearing. "Applications of hydroxy acids: classification, mechanisms, and photoactivity." *Clinical, cosmetic and investigational dermatology* (2010):

Active Concepts LLC
Lincolnton, NC - USA
Tel +1 704-276-7100
info@activeconceptsllc.com

Active Concepts SRL
Bareggio, (Milano) ITALY
Tel +39 02 90360719
info@activeconcepts.it

Active Concepts LLC, Asia
Kaohsiung, Taiwan
Tel + 886 73599900
info-asia@activeconceptsllc.com.tw

Website
www.activeconceptsllc.com

Social Media
@activeconceptsglobal

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