

12011.

# AC AmaraSense

COMPLEX ACTIVES



VEGAN



COSMOS



IN VITRO



IN VIVO



CHINA



ISO 16128



## THE FEATURES.

Similar to our tongue and nose, skin has taste and olfactory receptors that allow it to smell and taste. AC AmaraSense combines bitter substances including licorice root, white willow bark, and artichoke extracts into a blend that can stimulate cutaneous bitter taste receptors. Topical application of AC AmaraSense helps restore balance in your skin by boosting intracellular calcium levels, providing deep hydration, and nourishing your complexion for a youthful radiance. Step into the sensory world of AC AmaraSense and experience the power of unlocking your skin's natural sense receptors!

*Water & Glycyrrhiza Glabra (Licorice) Root Extract & Salix Alba (Willow) Bark Extract & Cynara Scolymus (Artichoke) Leaf Extract & Lactobacillus Ferment*

## Actions

**Intracellular Calcium**  
**Pro-Aging**  
**Reparation**  
**Moisturization**  
**Anti-Dryness**

# TECHNICAL DATA SHEET.



## THE REGULATION.

**INCI.** Water & Glycyrrhiza Glabra (Licorice) Root Extract & Salix Alba (Willow) Bark Extract & Cynara Scolymus (Artichoke) Leaf Extract & Lactobacillus Ferment  
**CAS.** 7732-18-5 & 84775-66-6 & 84082-82-6 & 84012-14-6 & 1686112-36-6 (or) 68333-16-4 (or) 9015-54-7  
**EINECS.** 231-791-2 & 283-895-2 & 282-029-0 & 281-659-3 & N/A (or) N/A (or) 295-635-5  
**EUROPE.** Approved  
**USA.** Approved  
**CHINA.** Approved

## THE SPECIFICATION.

**Origin.** Botanical  
**Natural Antimicrobial.** Lactobacillus Ferment  
**Preservatives.** None  
**Solvents Used.** Water  
**Soluble/Miscible.** Water Soluble  
**Appearance.** Clear to Hazy Liquid, Medium Amber to Brown\*\*  
**Use pH.** 5.0 - 7.0  
**Use Level.** 2 - 5%



*When handling this product, please prevent prolonged exposure to temperatures above 25°C. Prolonged exposure to temperatures above 25°C may cause darkening.\*\**

## THE STORY.

Today, the demand for multisensory experiences that elicit pleasant feelings and have positive effects on our minds extends to the skin, our body's greatest sensitive organ as well as the most sophisticated sensory system. The desire of a total sensory experience is the reason behind the creation of cosmetics in conjunction with neuroscience that can satisfy the growing demands of the modern consumer: a scientifically supported, efficient, and innovative beauty regimen.

Surprisingly, according to recent studies based on scientific investigations, skin cells like keratinocytes have olfactory and taste receptors that are activated by molecules that have a scent or taste. These receptors are involved in or regulate key biological processes, such as the modulation of cutaneous homeostasis.

Humans have five different taste receptor types: umami, bitter, sweet, sour, and salty. Probably the most disliked flavor is the bitter one. However, bitter substances provide a variety of advantages for human health. For instance, they enhance digestion, aid in appetite management, and are connected to the liver's detoxification process. In addition to their impacts on body health, bitter substances have been shown to have a stimulating effect on the skin due to their ability to trigger a positive calcium influx<sup>1</sup>.

## THE SCIENCE.

Studies show that skin cells express mRNA for bitter 'taste' receptors (TAS2Rs)<sup>1</sup>. By activating these receptors, we may cause a calcium influx, which is the main factor in skin vitality since it affects epidermal renewal. The proliferation, migration, and differentiation of cells are influenced by these sensory information relays, which encourage epidermal regeneration and result in a flawless and radiant skin surface.

Calcium concentration in the epidermis is essential in order to manage the growth of keratinocytes, the development of an antimicrobial barrier, and skin homeostasis<sup>2</sup>. When the calcium gradient is functioning properly, the skin does not dry up and lose moisture. Additionally, the critical calcium gradient of the skin alters with age or stress, giving the appearance of unhealthy, tired, and dehydrated skin.

As people age, an irreversible cell cycle stoppage known as cellular senescence alters the structure and functions of the skin by increasing inflammation, oxidative stress, and collagen homeostasis. Higher intracellular calcium levels result in improved skin hydration and moisture retention, increased protection against cellular damage, and a decrease in cellular senescence.

The sensorial cosmetic active ingredient, AC AmaraSense, creates a special and closer link between the world of senses and the world of skincare. AC AmaraSense is a bitter blend comprised of artichoke extract, a substance known for its bitter taste and purifying effects, as well as licorice root extract and willow bark extract, which are sources of glycyrrhetic acid and tannic acid, respectively. Through the stimulation of the bitter taste receptor, AC AmaraSense releases intracellular calcium, improving skin homeostasis and promoting a youthful, healthy complexion. In addition to having a bitter taste, glycyrrhetic acid has lenitive and anti-redness effects<sup>3</sup>, tannic acid has antimicrobial and wound-healing capabilities<sup>4</sup>, and artichoke is known for its antioxidant properties. When combined, these bitter ingredients encourage healthy, youthful skin.

## THE BENEFITS.

### Skin

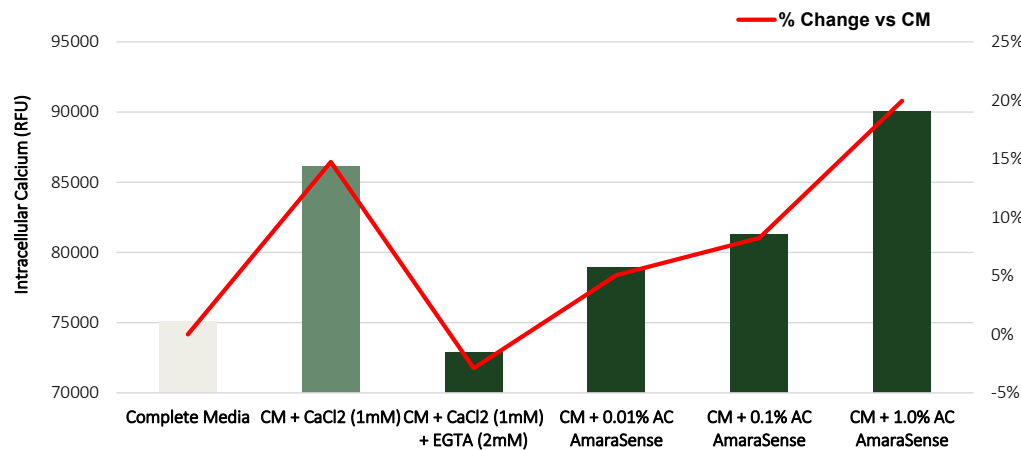
- Skin barrier integrity** Intracellular Calcium Assay
- Moisturizing & hydrating benefits** Moisturization Assay
- Cellular senescence reduction** SA-β-gal Activity Cellular Aging Model

- Cellular damage protection** MDA Lipid Peroxidation Assay
- Healing benefits & cell proliferation** Scratch Assay
- Moisture retention** Transepidermal Water Loss (TEWL) Assay

## THE EFFICACY.

### Intracellular Calcium Assay.

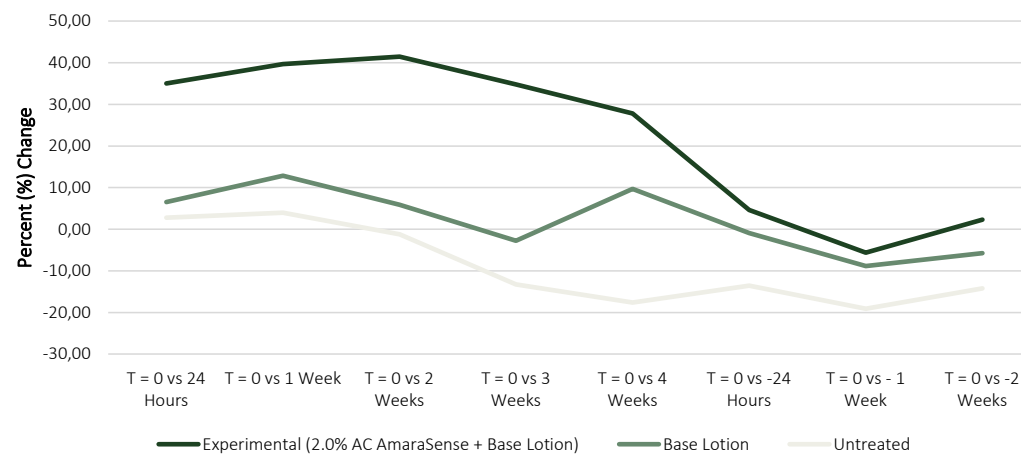
Keratinocyte proliferation is calcium-dependent, thus calcium levels can serve as a surrogate for skin health. A Fluo-4 Direct™ Calcium assay was performed to assess changes in intracellular calcium levels in AC AmaraSense treated human epidermal keratinocytes *in vitro*.



Increases intracellular calcium  
(at 1.0% enhances keratinocyte intracellular calcium levels by 20%)  
**Skin health.**  
Skin barrier integrity & Homeostasis

### Moisturization Assay.

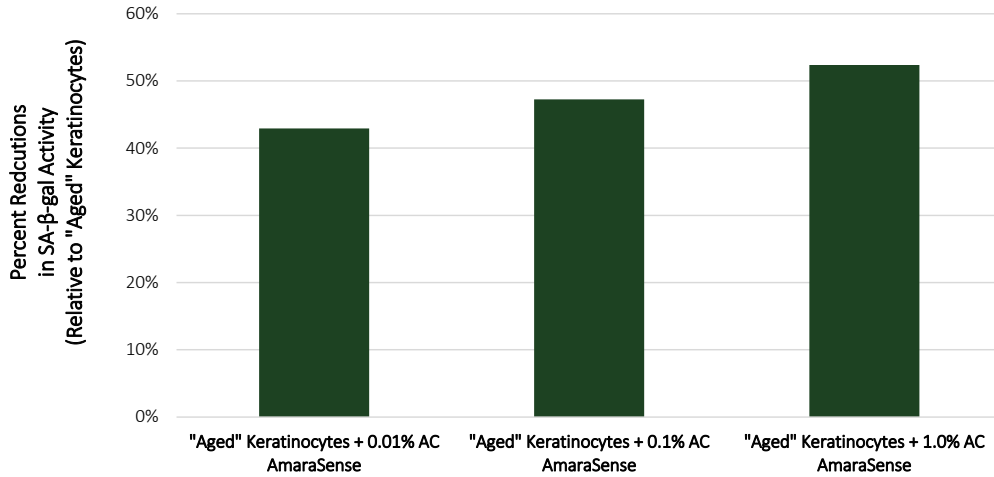
An *in vivo* study was conducted over a period of four weeks to evaluate the moisturization benefits of AC AmaraSense. 20 M/F subjects between the ages of 23-45 participated in the study.



Increases skin moisturization  
(at 2% improves moisture levels by 35.01% after 24 hours)  
**Moisturization.**  
Moisturizing & Hydrating benefits

## SA-β-gal Activity Cellular Aging Model.

Cellular senescence is a state of permanent cell cycle arrest that accompanies aging. A cellular aging model was developed to assess the *in vitro* effect of AC AmaraSense to reduce SA-β-gal activity in "aged" keratinocytes.



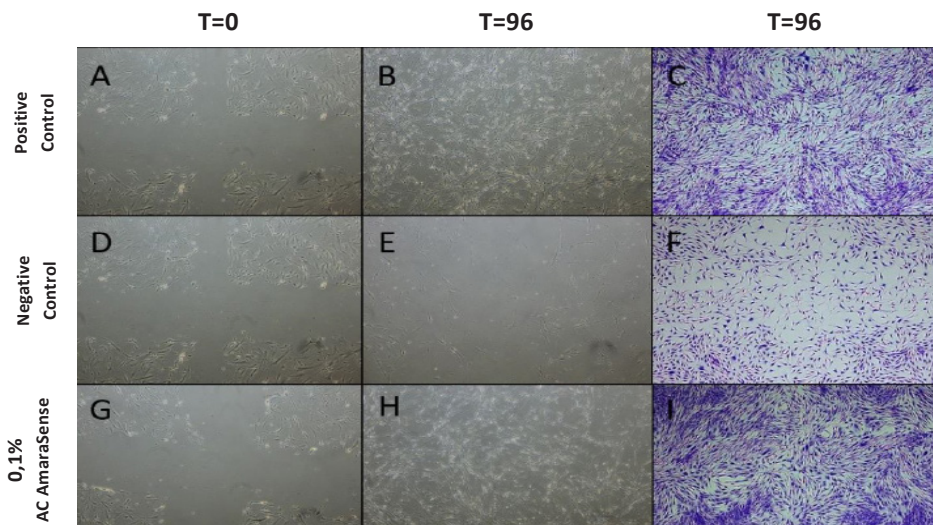
Attenuates cellular senescence in "aged" keratinocytes (at 1% elicits 53% reduction in SA-β-gal activity)

### Pro-Aging.

Reduction of cellular senescence

## Scratch Assay.

Scratch assay is a well-known and widely used method to study cell migration and proliferation. This test was conducted to assess the wound healing properties of AC AmaraSense-treated *in vitro* cultured human dermal fibroblasts.



Increases wound healing (at 0,1% is able to increase cell migration)

### Repairing.

Healing abilities & Cell proliferation

1. Shaw L, Mansfield C, Colquitt L, Lin C, Ferreira J, Emmetsberger J, et al. Personalized expression of bitter "taste" receptors in human skin. Behrens M, editor. PLoS One. 2018 Oct 17; 13(10):e0205322  
 2. Sang Eun Lee and Seung Hun Lee "Skin Barrier and Calcium" doi: 10.5021/ad.2018.30.3.265  
 3. A. Kowalska, U. Kalinowska-Lis "18β-Glycyrrhetic acid: its core biological properties and dermatological applications" https://doi.org/10.1111/ics.12548  
 4. Regina G Daré 1, Celso V Nakamura 2, Valdecir F Ximenes 3, Suelli O S Lautenschlager "Tannic acid, a promising anti-photoaging agent: Evidences of its antioxidant and anti-wrinkle potentials, and its ability to prevent photodamage and MMP-1 expression in L929 fibroblasts exposed to UVB" PMID: 32858160 DOI: 10.1016/j.freeradbiomed.2020.08.019.

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