



Provital
Do Care

Altheostem™

Dermohacking senescence through
the eternal power of plant stem cells

- Next-level efficacy and sustainability for the cosmetics of the future
- Leverages technology for a tailored biological action on senescent skin cells
- AI-proved well-aging power of over 3 years less on apparent age
- Biotechnological active sustainably obtained from lab-grown flower stem cells of *Althaea rosea*

CareActives

Well-aging



Modern science has opened an assortment of new ways to improve survival and quality of life. Meanwhile, the worldwide population aging phenomenon intensifies.

As new unprecedented advances on cellular senescence take ground in the scientific community, the beauty industry can better tap into the opportunities that this longevity era offers.

Provital combined nature and science to capture the essence of immortality on a new approach to well-aging that will push its boundaries on efficacy, technology & sustainability: DERMOHACKING COSMETICS.

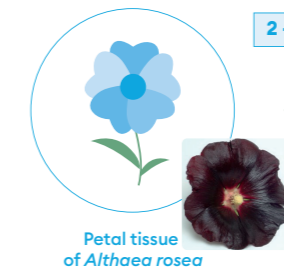
Hacking the future of the skin by seizing the self-renewal power of stem cells

Altheostem™ is sustainably obtained from lab-grown flower stem cells of *Althaea rosea*. Apart from being a beautiful flower species with known medicinal properties, Althaea is a Greek mythological female figure whose healing eternal power is the spirit that fuels Altheostem™

The accumulation of senescent cells over time has deleterious consequences. In fact, it is now considered one of the most important hallmarks of ageing.

Altheostem™ appears as a new biotechnological plant ingredient with senolytic activity in dermal fibroblasts to ultimately provide a cosmetic formula with a very effective & accurate way to prolong the skin's youthful and healthy state.

1 - In vitro micropropagation
The best explant is selected and obtained from the plant in sterile conditions



2 - Cell dedifferentiation



3 - Growth medium optimization
The healthiest incipient callus masses are selected and submitted to various types of culture media

4 - Biomass production

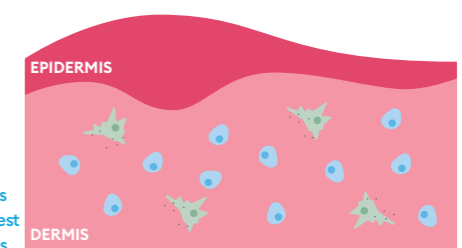


Genotoxic or oxidative stress;
Telomere shortening;
DNA injury;
Mitochondrial dysfunction;
Replication capacity

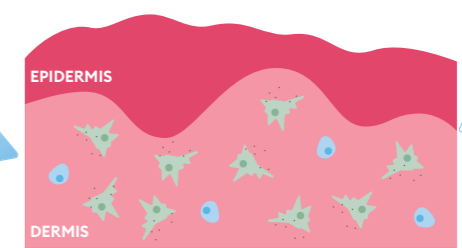
CELL SENESCENCE

- Morphological changes
- Irreversible growth arrest
- Resistance to apoptosis
- Release of senescence-associated secretory phenotype (SASP)

Young & healthy skin



Aged & dull skin



ALTHEOSTEM™

[senolytic effect]

- Rebalances the senescent cell population to an earlier age
- Selectively promotes apoptosis of senescent fibroblasts
- Restores the Extracellular Matrix (ECM)



The poster "Senolysis, a cutting-edge strategy for healthy skin ageing, is activated by *Althaea rosea* stem cells" based on Altheostem™ mechanism and in vitro study was Awarded as TOP 10 Poster (from 367 posters) on IFSCC 2020.

In vitro efficacy

In vitro analysis on Human Dermal Fibroblasts (HDF) prove how Altheostem™ selectively reduces the viability and the number of senescent HDF by inducing its apoptosis, and how such activity is transferred into the anti-aging biological pathways of aging skin cells.

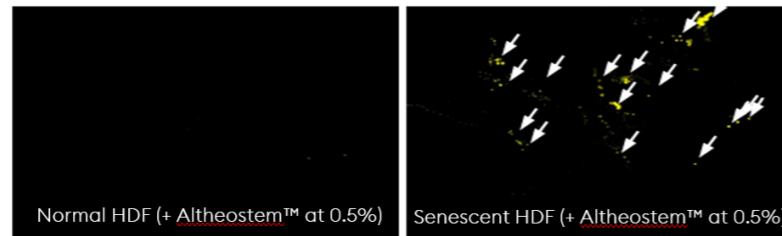
Quantification of the Senolytic activity of Altheostem™ on Human Dermal Fibroblasts (HDF).

Senescence-induced HDF are compared to Normal HDF (Control) for all the results expressed.



- 1. Dose-dependent senolytic activity**
The % of β -galactosidase-positive cells diminishes proportionally until a 42.5% less at 1% Altheostem™.
- 2. Selective elimination of senescent cells**
The viability of senescent cells is selectively reduced, reaching a 44.5% less with 1% of Altheostem™.
- 3. Selective apoptotic effect on senescent cells**
The induction of apoptosis is only observable and quantifiable on formerly resistant senescent HDF, reaching a 36% more when treating with 0.75% Altheostem (vs control).

Quantification images showing Caspase-3/7 activation (Apoptosis biomarker)

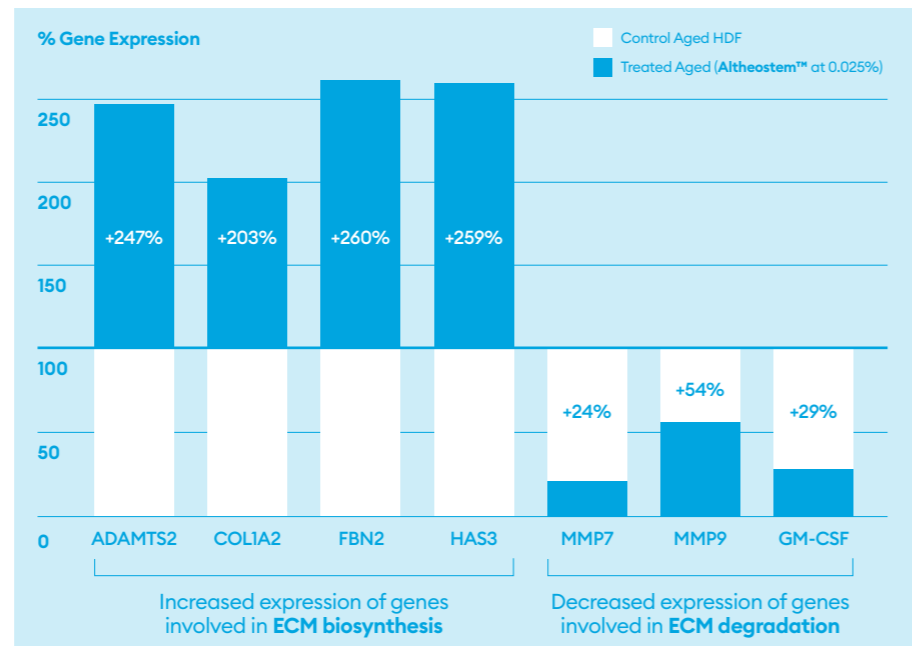


**p<0.01

Gene expression analysis of genes involved in ECM remodelling.

The expression levels of certain genes on natural aged HDF (from an old donor) treated or not with Altheostem™ are compared to Normal HDF (Control).

4. Skin remodeling outcomes resulting from Senolytic activity

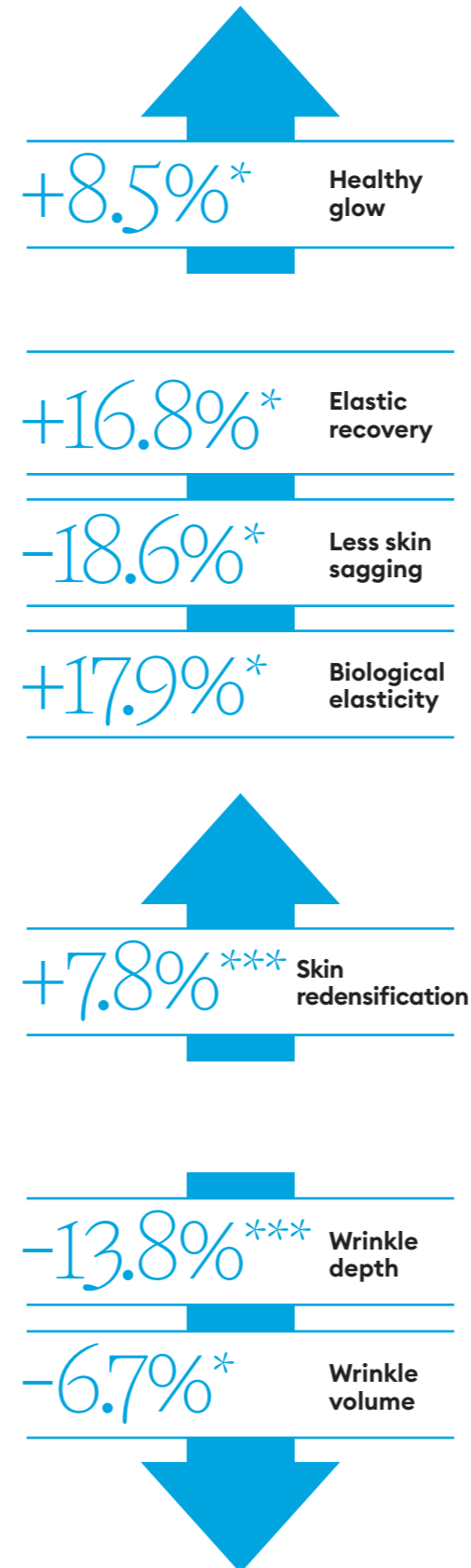


In vivo efficacy

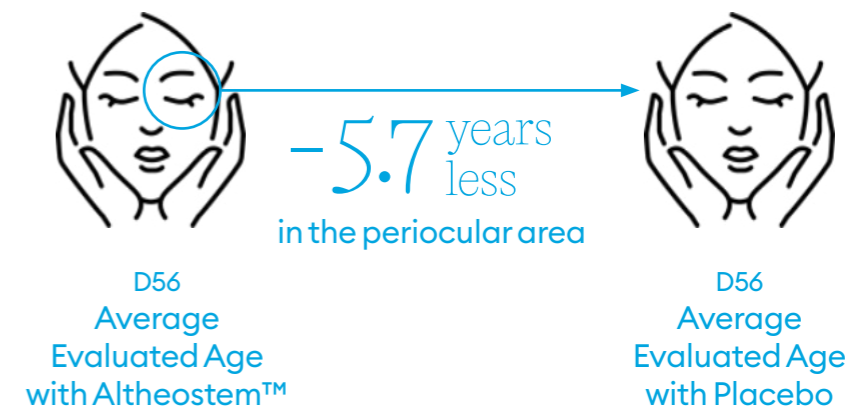
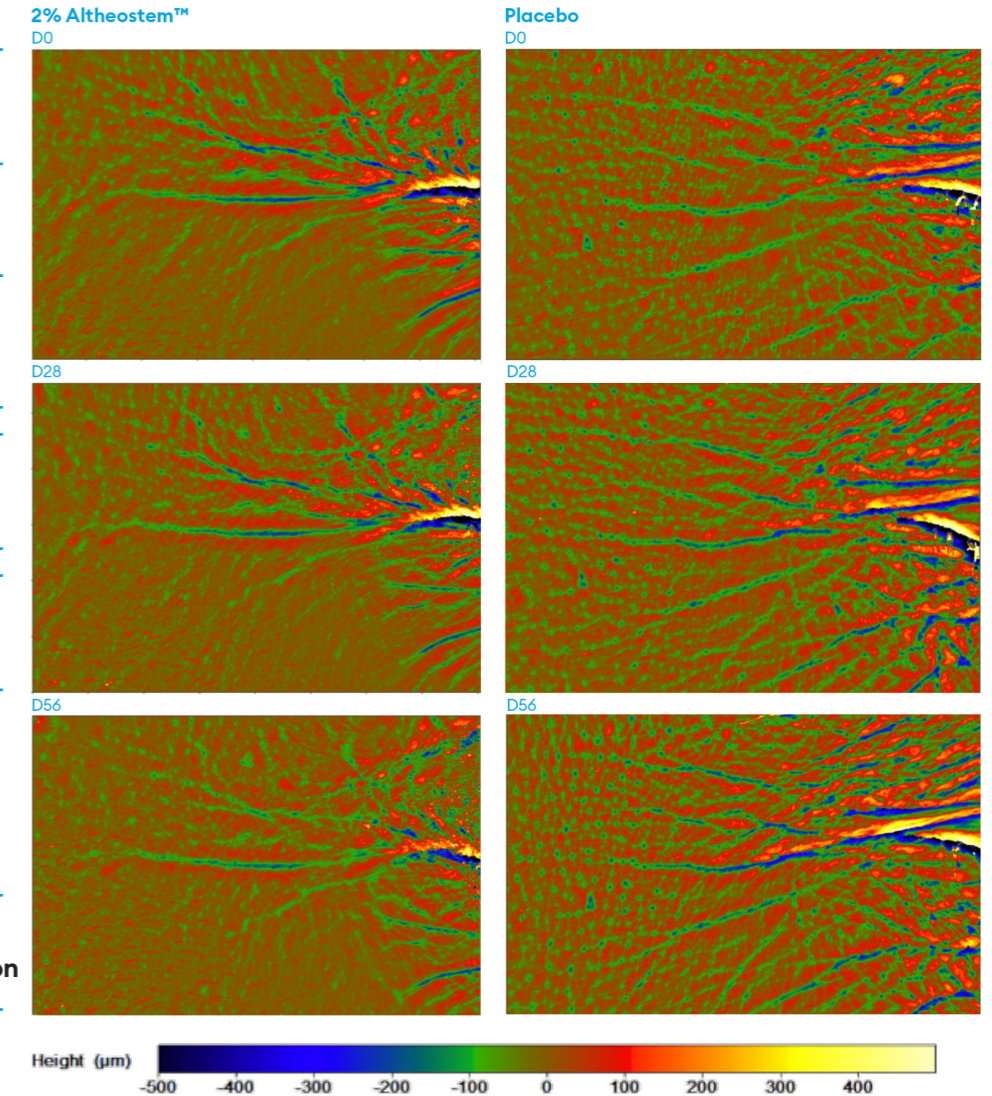
A panel of 70 healthy Caucasian female subjects, aged between 45 and 65 years were studied on a double-blind in vivo study. 35 volunteers applied a formulation with 2% Altheostem™ and 35 the placebo, and different efficacy tests were performed after 28 and 56 days of treatment.

Healthy and youthful skin

The results of the various instrumental tests performed prove that Altheostem™ significantly promotes the improvement of many mechanical and visible well-aging parameters.



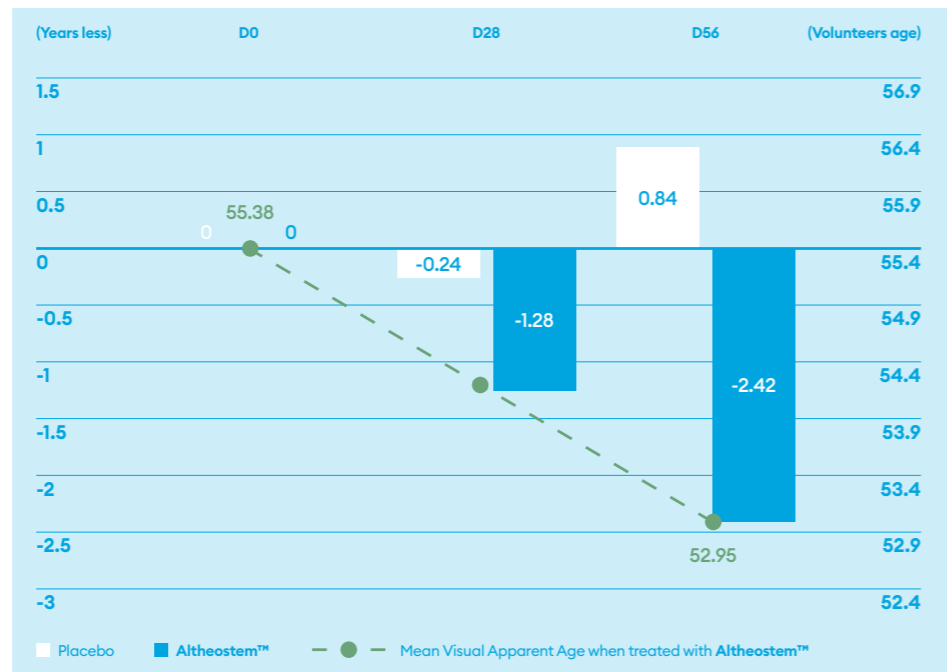
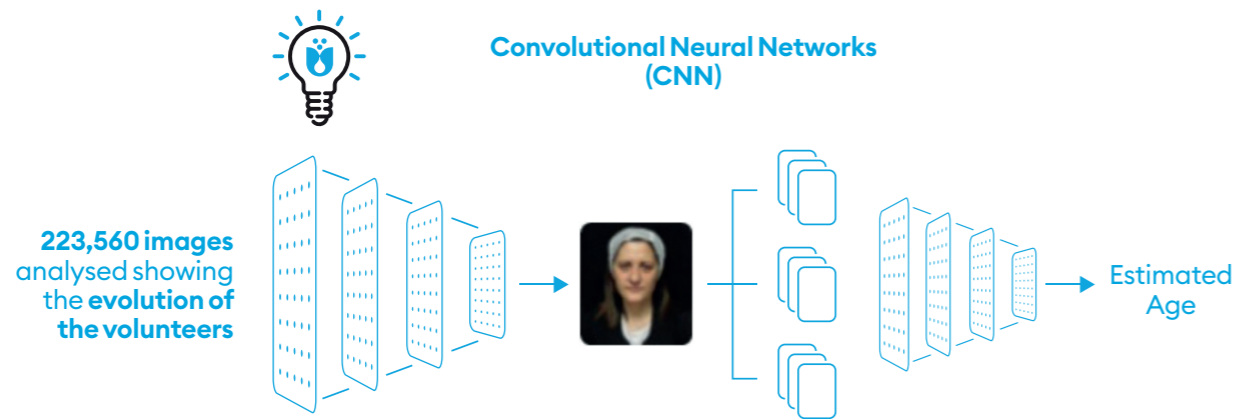
*p<0.05
***p<0.001



In vivo efficacy

AI-proven well-aging power

Provital calculated the Visual Apparent Age with a new and highly reliable Machine Learning system based on Artificial Intelligence.



By selectively triggering senolysis on aging skin, Altheostem™ appears as an undeniable ‘dermohacker’ whose tailored biological action will induce such a significant improvement on aging skin that the apparent age of volunteers will decrease over 3 years.

Marketing tools

Add value to your projects with Altheostem™



1. Capitalise on Artificial Intelligence by aligning tailored solutions with our ingredient's efficacy through simple algorithms that predict age improvement with your product



2. Emphasize the ecological benefits of lab-grown materials with education on stem cell-based ingredients



3. Bring a new face to dermocosmetics-like with a highly effective & natural ingredient that will appeal to the most savvy consumers



4. Create an elevated but fun formulation topic around immortality and ‘zombie’ cells.

Listen to it  at Provitalks!



Dermohacking cosmetics: leveraging technology, science and natural consumer preferences to push the boundaries on efficacy, technology & sustainability for the beauty world of the future.

Specifications

ALTHEOSTEM™ 73540 Properties Biotechnological active ingredient obtained from lab-grown flower stem cells. AI-proved well-aging power resulting from its selective senolytic activity on HDF.

Active molecules Standardised in total polyphenols.

Appearance Transparent.

Solubility Soluble in aqueous solutions.

Recommended dose 2%

INCI Propanediol, Water, Glycerin, Althaea Rosea Flower Extract, Xanthan Gum, Pentylene Glycol, Levulinic acid, Glyceryl caprylate

Certification



COSMOS APPROVED

Compliance



CHINA

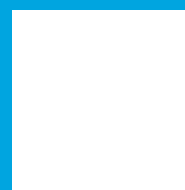
100% Natural Origin
(ISO16128)

Formulation

SKIN REVIVING ANTIDOTE

| INCI/ PCPC | %(W/W) |
|---|-------------|
| A Aqua (Water) | 76.14 |
| Pentylene Glycol | 2.00 |
| Phenylpropanol (and) Propanediol (and) Caprylyl Glycol (and) Tocopherol | 0.80 |
| Magnolia Bark Extract | 0.20 |
| ALTHEOSTEM™ | 2.00 |
| BLACK BACCARA ROSE EXTRACT | 1.00 |
| B Glycerin | 3.00 |
| Shingomonas Ferment Extract | 0.20 |
| C Corylus Avellana Seed Oil | 3.00 |
| Vitis Vinifera Seed Oil | 5.00 |
| C13-15 Alkane, Polyglyceryl-6 Oleate | 2.00 |
| Beta-Glucan (and) Pectin | 1.50 |
| Tocopherol | 0.50 |
| Fragrance (parfum) | 0.15 |
| D Cellulose | 1.00 |
| Mica (and) Titanium Dioxide (C77891) | 1.50 |
| Water, Sodium Hydroxide | 0.05 |

Watch the formulation process here!



One last tip!

Use our Skin Reviving Antidote to tap into the immortal cosmetics trend in an elevated but playful way around the concept of 'zombie' cells.

By only using a 2% of **Altheostem™**, this formula hacks the power of biotechnological plant stem cells to sustainably and selectively eliminate zombie cells, bringing a new kind of rejuvenating hyper-efficacy to the table.

Moreover, this emulsifier-free emulsion was designed to target the premium and sustainable-seeker well-aging consumer, with the delicate silky skin feel and many other activities that our selected range of **CareMotives™** add to the formula:

- Hazelnut oil helps to repair the skin barrier thanks to its remarkably high oleic oil proportion (up to 90%).
- Grape seed oil is rich in polyphenols which are free radical scavengers.
- Black Baccara rose is a symbol of elegance and brings a pleasant velvet feel and instant skin glow due to its content on anthocyanosides whose main power is to improve blood circulation.

