



CENTELLA REVERSA^{PPF}

The EQUATION of YOUTH

REVERSA: a rejuvenating strategy

- Reversion of cell Senescence
- Rebuilding the core skin structure
- Global facial complexion Improvement

First
generation of
**PLANT
PEPTIDES**



A global Re-Youth effect

A GREAT TECHNOLOGY BEHIND

As expert developer of plant totipotent cell cultures, Vytrus Biotech launches a new range of products arising from the proprietary Technology Platform Plant Cell Biofactories introducing: **Phyto-Peptidic Fractions™ (PPF)**.

Phyto-Peptidic Fractions™ represent the first generation of **genuine plant peptides**, a revolutionary discovery that opens the door to a new generation of cosmetics.

Vytrus Biotech, through a driven **Growth Factor Control** development process, has been able to **identify, produce and concentrate** these **Phyto-Peptidic Fractions™** from an optimized culture of totipotent cells.

These PPF are the ultimate responsible of the extremely high regenerative properties of totipotent cells and, for the first time, this astonishing potential can be used in cosmetics.

That makes of **Phyto-Peptidic Fractions™** the first cosmetic active ingredients able to maintain the skin regenerative potential.

DESCRIPTION

Originally from Asia, *Centella asiatica* is a little herb from wet zones characterized by its **excellent regenerative properties** and **longevity**. It presents a growth by stolons that can be maintained indefinitely.

Traditionally used in the Ayurvedic medicine and rich in centellosides (asiaticoside, madecassoside, etc.), it has been used during centuries due to its **wound healing, antioxidant, anti-inflammatory** and **adaptogenic** properties, among others.

CENTELLA REVERSA^{PPF} represents a **new activity profile** for this species claiming the **Phyto-Peptidic Fractions™** as a new range of bioactives from *Centella asiatica* (Centellosides are only a 1-8 % of the total actives present in the plant).

CENTELLA REVERSA^{PPF} is the **concentrated secretome** of totipotent cells from *Centella asiatica* petioles. This secretome is rich in **signaling peptides** specially designed to **reverse the skin aging process**.

APPLICATIONS

Treatment and prevention of skin aging (serums, gel-creams, creams, masks), facial treatments, neck-necklines, hands; treatments for wrinkles, firming and anti-aging treatments, skin blemishes and imperfections.

FORMULATION

Water and ethanol soluble.
Incorporation during the cooling phase (<40°C).

DOSAGE

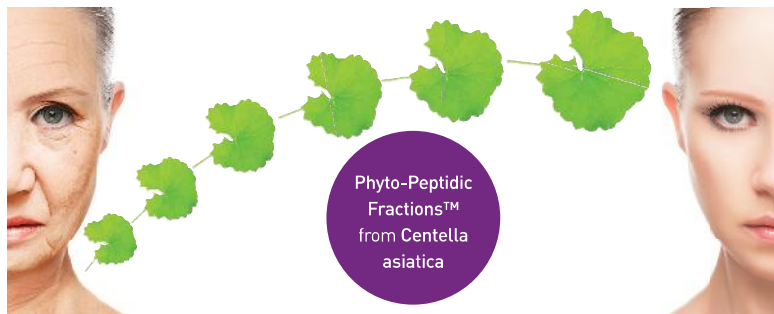
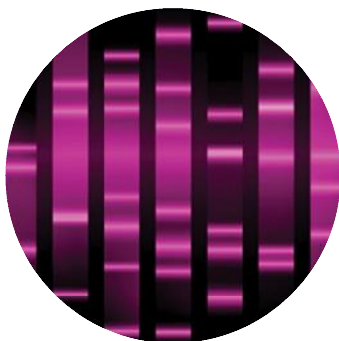
Suggested use level: 1 – 3%.

INCI

Glycerin (and) *Centella Asiatica* Callus Conditioned Media (and) Gluconolactone (and) Sodium Benzoate.
China listed INCI also available.

DECLARATIONS

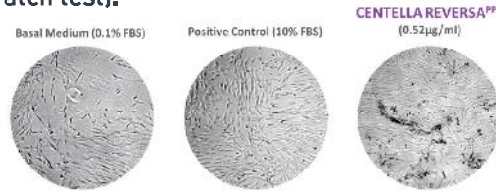
Free of: GM0, BSE, listed CMR, VOC, heavy metals, listed allergens, parabens, phenoxyethanol, aflatoxins, pesticides and contaminants.



IN VITRO EFFICACY

1. Wound healing properties (Scratch test).

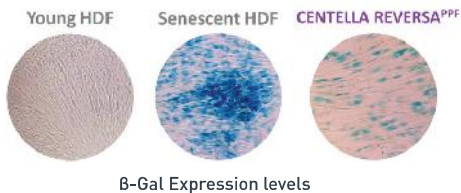
- Human Dermal Fibroblasts (HDF).
- 2mm wound on the monolayer culture.
- FBS: Fetal Bovine Serum.
- Monitoring of the healing process by phase contrast microscopy.



CENTELLA REVERSA^{PPF} accelerated the healing process up to +72% higher compared to baseline conditions.

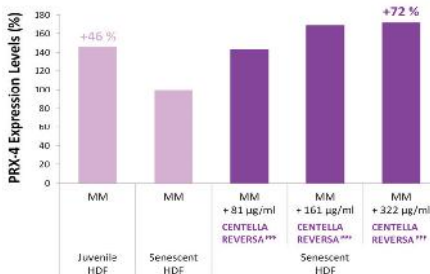
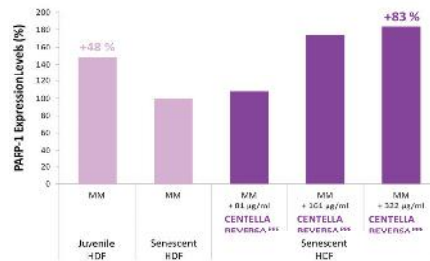
Growth Factor-like Effect

2. Senescence Reversion in Human Dermal Fibroblasts.



B-Gal Expression levels

- Young Human Dermal Fibroblasts (HDF) subcultured >20 times: **Replicative Senescence Induction**.
- Quantification of protein levels by ELISA.
- Negative Control: Not Treated Senescent HDF in MM (Maintenance Medium).
- Positive Control: Not Treated Juvenile HDF in MM.
- PRX-4: Peroxiredoxin 4; Cell Detoxification enzyme.
- β-Gal : β-Galactosidase; Senescence related enzyme.
- PARP-1: Poli (ADP-ribose) polymerase-1; DNA protection enzyme.
- *RI= Re-Youth Index: Capacity to revert the cell senescence and to recover the juvenile phenotype; percentage of closeness levels in aged cells to those measured in young cells.



CENTELLA REVERSA^{PPF} reduced levels of β-Galactosidase up to 38% at the studied doses [RI*=51%].

CENTELLA REVERSA^{PPF} increased the PARP-1 levels up to 83% at the studied doses, reaching higher levels than juvenile cells [RI*=172%].

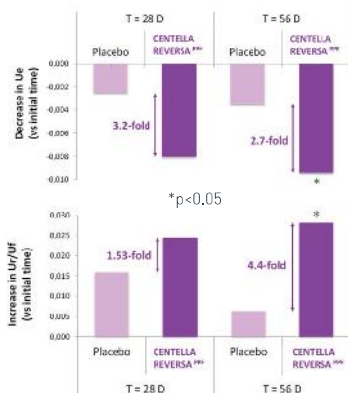
CENTELLA REVERSA^{PPF} increased the PRX-4 levels up to 72% at the studied doses reaching higher levels than juvenile cells [RI* = 156%].

Reversion of cell Senescence

IN VIVO EFFICACY

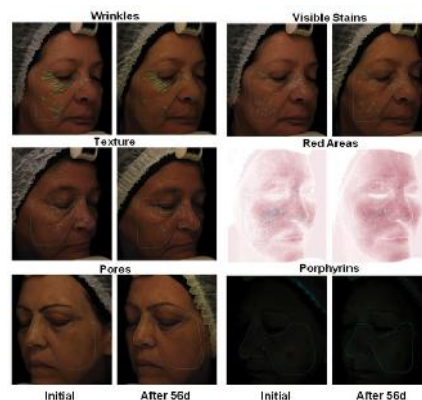
Double blind assay vs Placebo.

- 22 vol. 2% CENTELLA REVERSA^{PPF} vs Placebo [50-63, av. 55 years old].
- 20 vol. Reference Group [20 - 25, av. 23 years old].
- Application zone: face (Crow's feet).
- Measurements in the face (not in forearm).
- 2 application/day during 28 - 56 days.
- Measurement of skin Firmness (Ue) and Elasticity (Ur/Uf).
- Clinical evaluation of wrinkle intensity.



INITIAL

AFTER 56 DAYS



*Analysis of facial complexion by VISIA® in 5 volunteers (6 different parameters)

CENTELLA REVERSA^{PPF} decreased progressively and significantly the wrinkle intensity up to 9.3% at 56d.

4 YEARS younger

A Global RE-YOUTH Effect

CENTELLA REVERSA^{PPF} increased the Ur/Uf parameter up to 6.8% and 7.8%, increasing the crow's feet elasticity at 28d and 56d, respectively.

CENTELLA REVERSA^{PPF} reduced Ue parameter up to 15.9% and 18.8%, increasing the crow's feet firmness at 28d and 56d, respectively.