



JUVINITY™



Geranylgeranylpropanol (GGP)

Function:

Delays metabolic and nucleus senescence and encourages ageing cells to act as young cells.

Definition:

Geranylgeranylpropanol (GGP) in an oil-soluble excipient.

Properties:

Visibly reduces the signs of ageing on the face and décolleté. Smooths wrinkles, restructures and densifies the dermis.

Characteristics:

Protects the cells from oxidative damage and ensures optimal mitochondrial activity. Reactivates the synthesis of major dermal constituents, preserves the cytoskeleton functionality and prolongs cell lifespan by maintaining telomere length.

Points of interest:

The Nobel prize in Physiology or Medicine 2009 was awarded for discovery of how chromosomes are protected by telomeres.

INCI Name:

Caprylic/Capric Triglyceride – Geranylgeranylisopropanol

Applications:

All anti-ageing products.

Formulation:

Oil-soluble. Add in the oily phase, between room temperature and 80°C.

Recommended use level:

2 %

Patents:

WO 2011/125039 – FR 2 958 541 – EP 2 555 743 – US 9,126,060



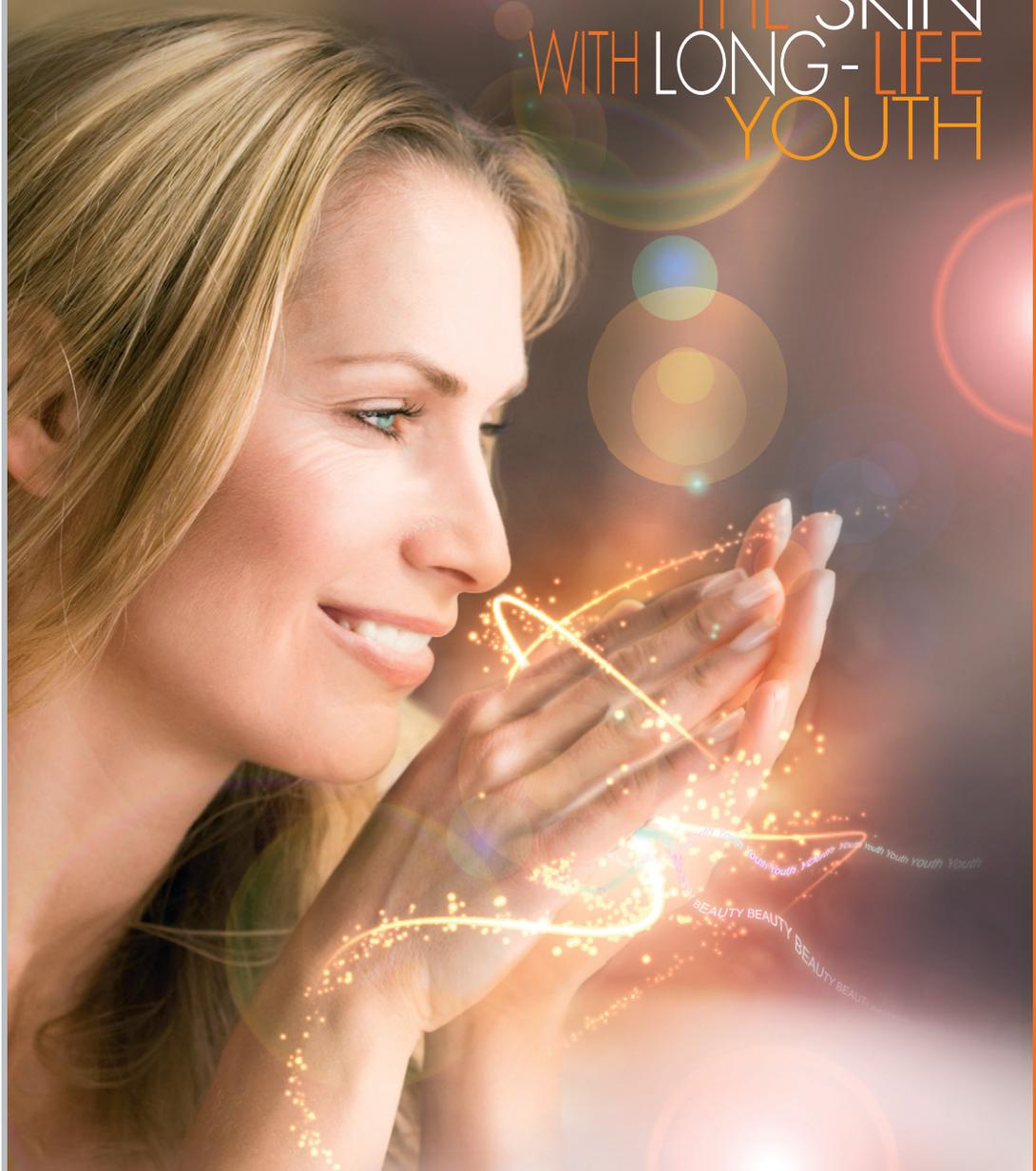
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RECHARGE
THE SKIN
WITH LONG-LIFE
YOUTH



Visible wrinkle smoothing
Improvement of the skin quality



before



after 2 months

CLAIM SUBSTANTIATION

In vitro tests

Tests performed with 0.025 % Juvinity™

● NUCLEUS ANTI-SENESCENCE

Protection against peroxidation

- Lipid peroxidation markers **-34 %**, $p < 0.01$
(TBARS* method on human fibroblasts after UVA irradiation)
- Production of intracellular peroxides **-40 %/control**, $p < 0.01$
(On human senescent fibroblasts, 0.015 % Juvinity™)
- Production of intracellular peroxides **-85 %/control**, $p < 0.01$
(On H₂O₂ stressed senescent fibroblasts, 0.015 % Juvinity™)

Replicative senescence markers

- SA-β-galactosidase activity **-51 %**, $p < 0.02$
(Immunolabelling on H₂O₂ stressed fibroblasts)
- Telomere length maintenance **1.45 kb**, $p < 0.05$
(q-PCR method on pre-senescent fibroblasts)

*TBARS: Thiobarbituric Acid Reactive Substances

Juvinity™ delays cell senescence. It limits oxidative stress and telomere shortening to ensure optimal metabolism and replication rate as a young cell.

● METABOLISM ANTI-SENESCENCE

Respiratory chain maintenance

- Evaluation of the mitochondrial potential **+63 %**, $p < 0.01$
(On H₂O₂ stressed senescent fibroblasts)
- ATP synthesis **+76 %/control**, $p < 0.01$
(On H₂O₂ stressed senescent fibroblasts)

Protection of the cytoskeleton

- Cell contraction. Image analysis on pre-senescent fibroblasts.
Surface **-21.5 %**, $p < 0.02$ Density **+20 %**, $p < 0.02$

ECM molecule synthesis

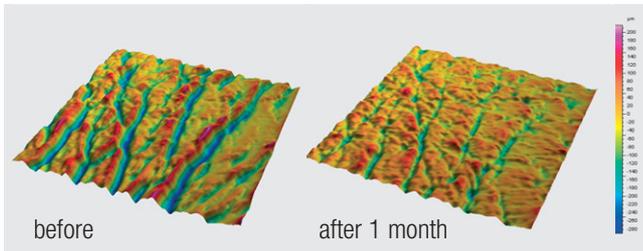
- Collagen-I synthesis **+483 %**, $p < 0.01$
(Immunolabelling on pre-senescent fibroblasts)
- Decorin synthesis **+32 %**, $p < 0.01$
- Hyaluronic acid synthesis **+33 %**, $p < 0.01$
(ELISA method on human fibroblasts)
- Collagen-I synthesis **+14 %**, $p < 0.05$
- Lysyl hydroxylase synthesis **+13 %**, $p < 0.05$
(Immunolabelling on skin biopsies after twice daily application of a cream with 2 % Juvinity™ for 5 days)

In vivo tests

Twice daily application of a cream containing 2 % Juvinity™ for 2 months on the face, arms and décolleté against placebo.
28 female volunteers, mean age 58.4 years old.

● SKIN RELIEF (face) - SILFLO® after 1 month

- Volume of the main wrinkle **-26.5 %/placebo**, $p < 0.02$ up to **-63 %**
- Depth of the main wrinkle **-21 %/placebo**, $p < 0.01$ up to **-57 %**

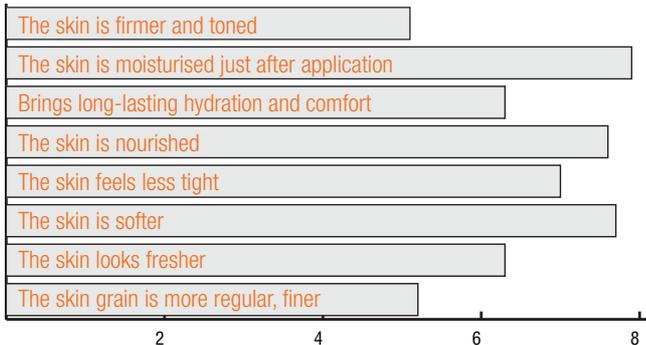


● CUTANEOUS VISCO-ELASTICITY (arms) - Aeroflexmeter™, after 2 months

- Density **+15.8 %/placebo**, $p < 0.01$ up to **+37 %**

● SENSORY EVALUATION

106 female volunteers, mean age 52 years old, 4 weeks.



Juvinity™ visibly reduces the signs of cutaneous ageing. It smoothes the wrinkles, restructures and redensifies the dermis.

15 female volunteers, mean age 57.8 years old.

● RESTRUCTURING EFFECT (décolleté) - FOITS

Hollow and curve of the décolleté after 2 months

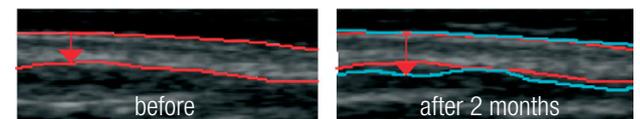
- Volume **-6 %/T0**, $p < 0.04$ up to **-20 %**
- Maximum depth **-9 %/T0**, $p < 0.04$ up to **-100 %**
- Radius of the curvature **+27 %/T0**, $p < 0.05$ up to **+94 %**



● DERMAL DENSIFICATION (décolleté) - Ultrasound

Dermis-epidermis thickness after 2 months

- Thickness **+7.5 %/T0**, $p < 0.01$ up to **+22.5 %**



● SELF-EVALUATION - Volunteer satisfaction

- My skin is less creased **80 %**
- My skin is firmer **80 %**
- My skin is redensified **93.3 %**
- My skin is hydrated **93.3 %**

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