SUN'ALG®

Helps shield your skin
from damaging effects of sun exposure

*

Strengthens the skin's defence mechanisms

Offers high protection against both UVA-UVB radiation

Prevents the formation of sun burn cells

Fights against inflammatory skin reactions

Diminishes redness & soothes sunburns (erythema)

Gelyma

UV radiation appears as one of the most harmful environmental factors inducing multiple deleterious cutaneous effects from the painful sunburn to photoaging and at least the dangerous skin cancer.

In order to limit UV-induced damage, GELYMA proposes SUN'ALG® an innovative combination of natural bioactive ingredients:

- *Pongamia glabra* seed oil (Karanga seed oil, deodorised grade) provides a primary shield against UV radiations, acting as a natural sunscreen thanks to its important absorption ability especially for UVB but also for UVA.
- two microalgal extracts bring additional protective capacity against the oxidative stress thanks to their mixed carotenoids composition, these two microalgae having not been chosen by random:
  - *Dunaliella salina* extract is mainly rich in β-carotene
  - *Haematococcus pluvialis* extract is chiefly rich in astaxanthin.

Due to its unique ingredients combination, stable to temperature and UV radiations, SUN'ALG®

- offers free radical scavenger potential (IC 50% inhibition : 1.85% active with DPPH assay)
- helps to prevent signs of premature aging and protect the skin against damaging effects of sun exposure.

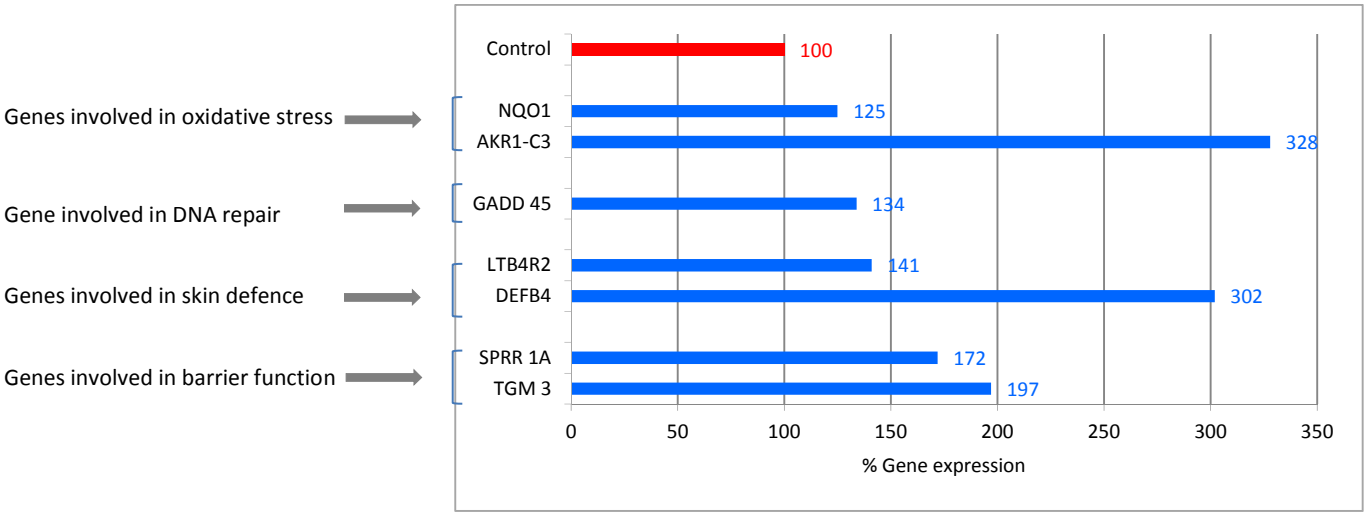
Mechanisms of action

The mechanisms of action of SUN'ALG® have been proven by using different methods *e.g.* cosmetogenomic analysis, *in vitro*, *ex vivo* and *in vivo* testing.

SUN'ALG ® strengthens the skin's defence mechanisms

Genomic analysis on pigmented reconstituted epidermis treated with 5% active in a basic Carbopol gel for 24h. Analysis by qRT-PCR on TaqMan cards Collaboration Strati CELL-Belgium.

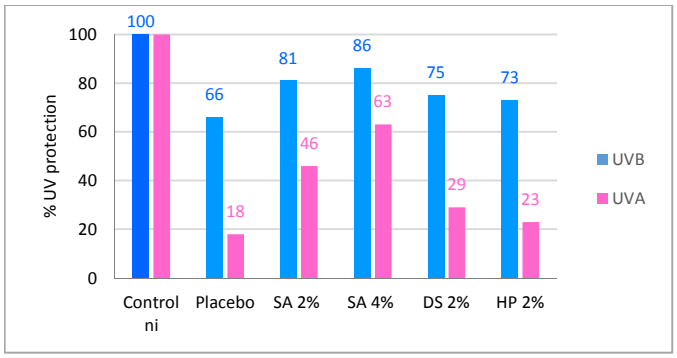
According to this cosmetogenomic analysis, SUN'ALG® is able to influence the major genes involved in several protective mechanisms.



By over expressing genes linked to		
the oxidative response	→	SUN'ALG® detoxifies skin cells & protects towards oxidative and cellular stress
DNA repair	→	SUN'ALG® helps maintaining genomic integrity in UV-exposed skin
the anti-microbial defence	→	SUN'ALG® is able to contribute to the innate skin defence by improving ➤ the epidermal capacity against microbial attacks (action on DEFB4) ➤ the ability of cell responses to activate host defences (action on LTBAR2)
the reinforcement of the barrier function	→	SUN'ALG® reinforces the epidermal barrier function by ➤ helping catalyse cross-linking reactions between proteins during the skin cornification (action on TGM3) ➤ providing the outer layer with a highly protective antioxidant shield (action on SPPR1A-cornifin).

SUN'ALG® offers high protection against both UVA and UVB radiation

In vitro studies on reconstituted human epidermis submitted to UVA (20 J/cm²) or UVB (200 mJ/cm²) in the absence or the presence of basic Carbopol gels including (or not = Placebo) SUN'ALG® (2% or 4%) or algal extracts (same concentration than in SUN'ALG®) Dunaliella salina extract (SA 2%) or Haematococcus pluvialis extract (HP 2%).



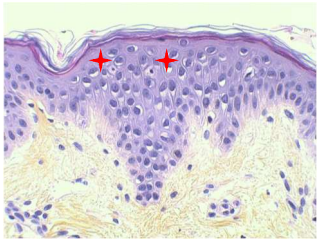
SUN'ALG® and the two algal extracts show superior protection than placebo against both UVA and UVB.

With 2% SUN'ALG®, the protection reaches
+ 46 % against UVA
+ 81% against UVB.

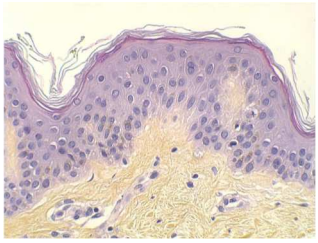
SUN'ALG® prevents the epidermal cells apoptosis associated to DNA damage (formation of sun burn cells)

Ex vivo studies on skin human explants submitted to basic Carbopol gels with 2.5% or 5% SUN'ALG® for 24h. Irradiation UVA 8 J/cm² + UVB 200 mJ/cm². Observation of the eventual presence of sun burn cells 24h after irradiation. Positive control: Trade Cream SPF 50. Collaboration SEPhRA-France.

Control
no irradiation-no treatment

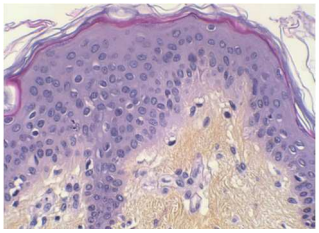


Control
UV irradiation-no treatment

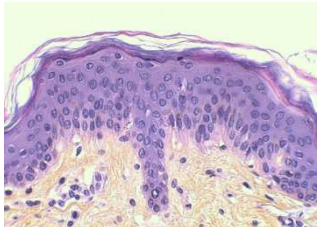


Positive control
UV irradiation Cream SPF 50

Placebo
UV irradiation



SUN'ALG® 2.5%
UV irradiation



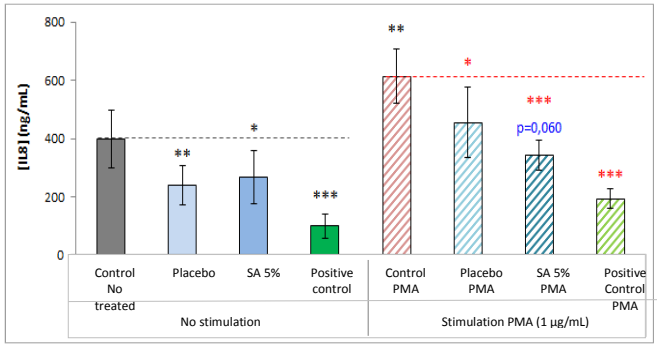
SUN'ALG® 5%
UV irradiation

SUN'ALG® is able to reduce the formation of sun burn cells highly significantly ✦.

With 5% in a basic Carbopol gel, the efficacy is comparable with those of the positive control (cream SPF 50).

SUN'ALG® fights against inflammatory skin reactions

Ex vivo studies on skin human explants submitted to a basic Carbopol gel with 5% SUN'ALG® for 24h. Evaluation of the release of Il-8 by ELISA testing- Stimulation PMA (1 µg/mL). Positive control: Trade Cream SPF 50. Collaboration SEPhRA-France.



The basic Carbopol gel with 5% SUN'ALG® inhibits the release of interleukin IL-8 highly significantly by

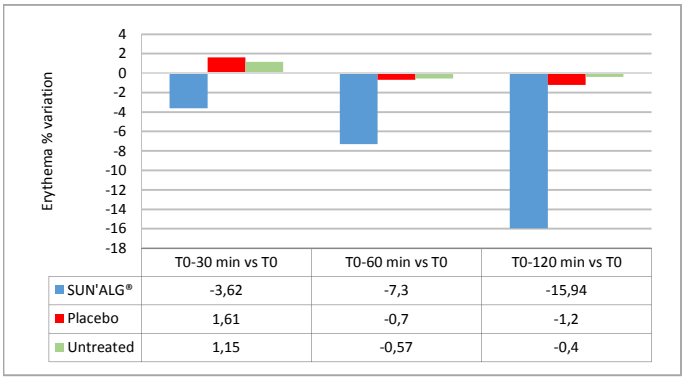
- 33% without PMA stimulation
- 44% with PMA stimulation.

SUN'ALG® is able to protect the skin against inflammatory stress, indirect consequence of UV radiation and cause of premature skin aging.

SUN'ALG® diminishes redness and soothes sunburns

In vivo studies on 10 volunteers, male and female, 18-65 years old. Evaluation of the soothing effect of a basic Carbopol gel with 5% SUN'ALG® after UVA+UVB (DEM x 1.5) irradiation. Observation at 30 min, 60 min and 120 min from application. Collaboration ABICH-Italy.

T0 | T0 + 30 min | T0 + 120 min



	T0-30 min vs T0	T0-60 min vs T0	T0-120 min vs T0
SUN'ALG®	-3,62	-7,3	-15,94
Placebo	1,61	-0,7	-1,2
Untreated	1,15	-0,57	-0,4

SUN'ALG® offers a soothing effect which calms local irritations due to UV radiation.

By diminishing redness and soothing erythema with a short-term efficacy, SUN'ALG® helps to prevent premature aging of the skin due to sun exposure.

Cosmetic benefits

This cooperative combination of *Pongamia glabra* seed oil and microalgae extract brings a superior and efficient protection against damaging effects of sun exposure. It is stable to temperature and UVA-UVB radiation. It offers free scavenger potential.

SUN'ALG® is able to

- strengthen the skin' defence mechanisms by up regulating various genes involved in the oxidative stress, DNA repair, the antimicrobial defence and the reinforcement of the barrier function,
- reduce inflammatory skin responses which take place in UV-exposed skin, causing premature skin aging by inhibiting the release of IL-8,
- provide reinforced protection against both UVA and UVB radiation,
- prevent the formation of sun burn cells with a high efficacy,
- minimize redness and soothes sunburns (erythema) with a short term efficacy (after 30 - 60 - 120 min) from application.

This finally leads to

- protect against the daily attacks by harmful UV rays and
- maintain skin health and good look by helping to prevent the appearance of lines and wrinkles.

Cosmetic applications

Skin care for daily protection - Suncare - Anti-aging products.

INCI names: *Pongamia glabra* seed oil (and)
Dunaliella salina extract (and) *Haematococcus pluvialis* extract.

Recommended use level: 2% - 5%.

Vérifié par ECOCERT MATIÈRE PREMIÈRE COSMÉTIQUES

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GELYMA Parc d'Affaires Marseille Sud (C4) - 1 Boulevard de l'Océan - 13009 Marseille - France
Phone: +33 4 96 14 09 82 - Fax: +33 4 96 14 09 83 - E-mail: gelyma@wanadoo.fr