



HELIONORI®

*

Natural sun protection

thanks to

Marine UVA filters

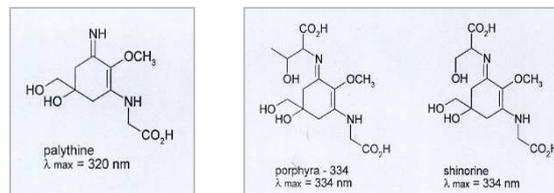


UVA rays are the main producers of free radicals which damage tissues as well as their components such as cellular membranes and DNA.

To prevent deteriorating, the answer has been found in the ocean, especially in some macroalgae which contains powerful UVA-absorbing compounds, acting as natural sunscreens and known as “mycosporine-like amino acids” (MAAs).

HELIONORI® is a patented water and concentrated active ingredient prepared from the red seaweed *Porphyra umbilicalis* (L.) Kützinger known as “nori” in Japan.

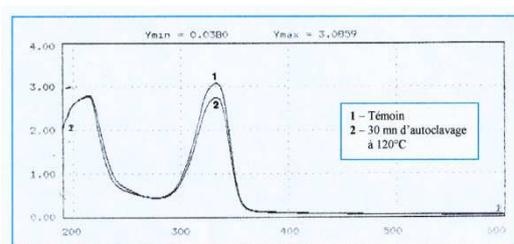
Three different MAAs are extracted selectively from *Porphyra umbilicalis*: palythine, porphyra 334 and shinorine.



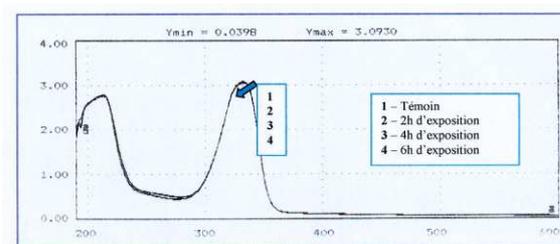
Mechanisms of action

The UV spectrum of HELIONORI® is stable to intense solar light and heat exposure

The maximum UV-absorption peak at 330 nm reveals the presence of mycosporine-like amino-acids.



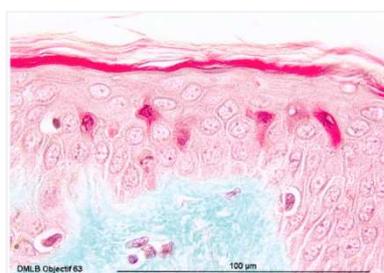
HELIONORI® is stable to solar light
(6 h exposure)



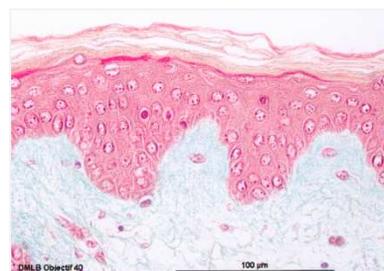
HELIONORI® is stable to heat exposure
(30 min to 120°C)

HELIONORI® prevents the formation of sun burn cells

Skin biopsies submitted to UV (dose: 4 DEM) in presence of a cream with 5% HELIONORI® applied each day during 3 days. Controls without cream. Histological study at day 4 (Laboratoire BIO-EC-FRANCE).



Untreated control



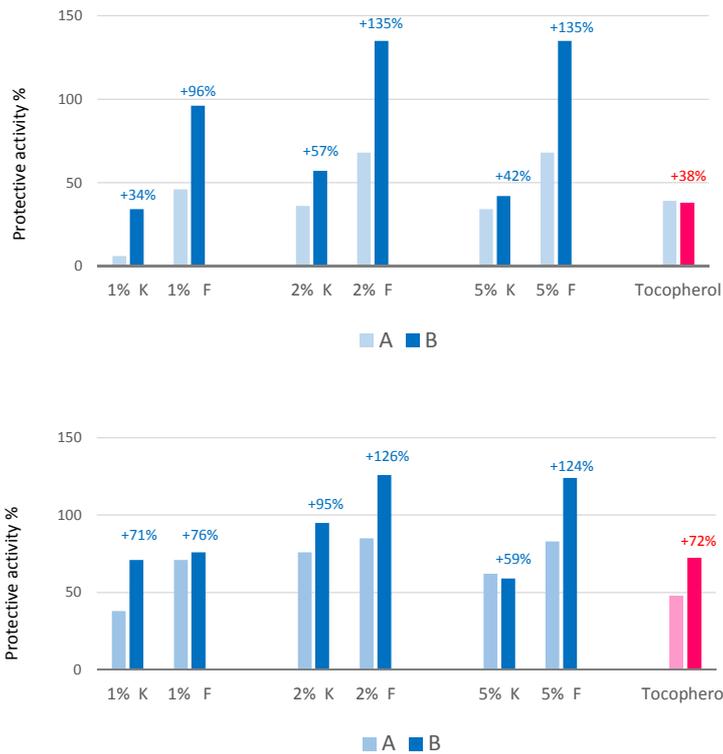
Cream with 5% active °

On the untreated control, sun burn cells are clearly apparent due to their eosinophilic cytoplasm after UV irradiation.

HELIONORI® (5% in a cream) provides efficient protection against sun burn cells.

HELIONORI® reduces by 94% the sun burn cells formation compared to untreated control.

HELIONORI® protects cell metabolism against UVA irradiation



UVA penetrates deeper into the epidermis and dermis of the skin. It induces oxidative stress.

In vitro assays performed on keratinocytes (K) and fibroblasts (F) submitted to UVA irradiation:
 Keratinocytes dose 34 J/cm²
 Fibroblasts dose 24 J/cm²
 in the presence of HELIONORI® (1% - 2% or 5%).
 Standard: tocopherol - dose 5.10⁻⁴M.

Evaluation of protection carried out:

- A: either immediately after UV stress
- B: 24h after UV stress.

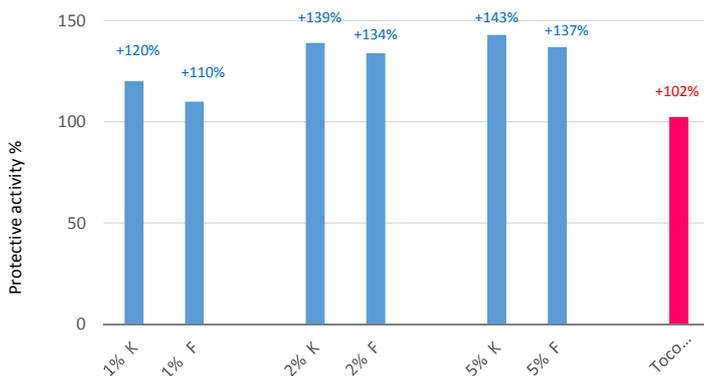
Two different tests: MTT test (evaluation of mitochondrial activity) and Total protein content evaluation.

HELIONORI® exhibits efficient protective effects of metabolism for both cell types: keratinocytes and fibroblasts submitted to two different testing.

Note the superior efficient protection against UVA 24h after stress (B) for both cell types.

HELIONORI® protects cellular components against UVA irradiation

► Protection of cell membranes

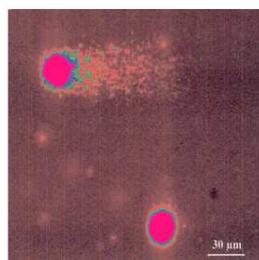
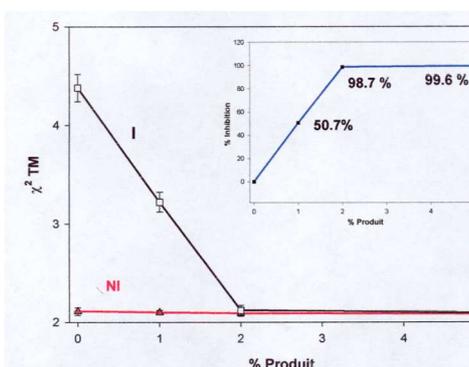


LDH assay performed on human keratinocytes (K) and fibroblasts (F) irradiated with UVA dose: 34 J/cm².
 Standard: tocopherol dose: 5.10⁻⁴M.

HELIONORI® strongly preserves membrane lipids.

With 2% HELIONORI®, the protection reaches
 + 139% for keratinocytes
 + 134% for fibroblasts

► Protection of DNA



Comet assay performed on human melanocytes irradiated with UVA (dose: 0.8 J/cm²) to quantify DNA damage.

HELIONORI® offers an excellent photoprotection for DNA.

The maximal protection is reached with 2% HELIONORI®.

The mycosporine-like amino-acids (MAAs) are a group of water-soluble nitrogenous compounds typically absorbing between 310 nm and 360 nm. They are never present in terrestrial environments, except in fungi spores. They are always reported in marine organisms (animals or algae) exposed to intense UV stress. Their concentration is correlated to the both depth and quantity of UV.

The mycosporine-like amino acids act as natural sunscreens in some marine organisms (but not in all of them).

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Natural UVA protection
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Patent FR 2 803 201

Cosmetic benefits

Thanks to its unique resource in mycosporine-like amino acids, HELIONORI® offers a new natural marine protection for sun protective cares against UVA irradiation.

HELIONORI® - acts as a genuine protector against UVA induced skin alterations
- prevents premature photo-aging
- repairs DNA.

HELIONORI® supplies natural skin protection against the sun burn cells formation as well as the protection of cells and their components such as membrane lipids and DNA.

HELIONORI® provides a safe marine alternative to synthetic UVA filters.

Cosmetic applications

Daily UV protective care - Sun care - Anti-photo-aging care.

Recommended use levels: 1% - 4%.

Characteristics

INCI names water CAS n° 7732-18-5 EINECS n° 231-791-2
 Porphyra umbilicalis extract CAS n° 223751-76-6

Limpid liquid amber colored.

Additives by selection: microcare SB or phenoxyethanol
emollient CLG (caprylyl glycol) or emollient PTG (pentylene glycol).

Packing size: 1 kg - 5 kg – 10 kg.



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