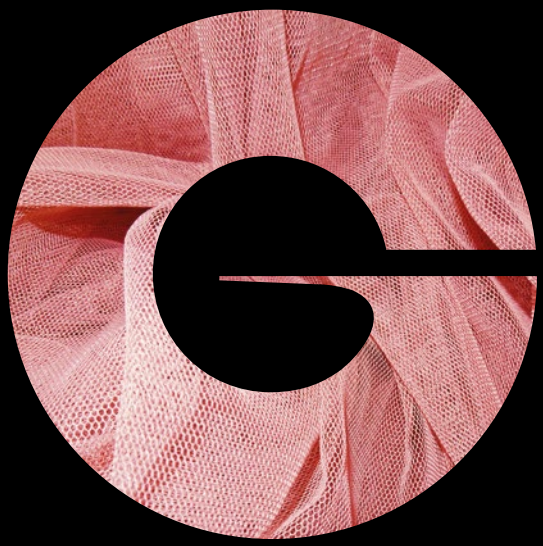
# Active Beauty

## Eliorelys®

## The strength of a delicate flower for anti-(UV+blue) photoageing

Crafted by Green Fractionation



Givaudan

engage your senses

# Focus on the product

Eliorelys® significantly improves the quality of skin showing signs of photoageing. Specific biochemical markers of ageing such as ROS generation, inflammation and extra-cellular matrix damage are reduced under radiation exposure with application of Eliorelys®. Measures of visible aspect and texture of the skin demonstrate the repairing property of Eliorelys® in fighting photo-induced skin damage.

## Eutectys™ technology from the heart of Provence

Eliorelys® is an active obtained through extraction by Eutectigenesis on fresh flowers from the cherry tree. A symbol of delicacy and renewal of Nature, the cherry blossom flower is cultivated and collected in the heart of Provence, France. Through an exclusive patented extraction process using NaDES (Natural Deep Eutectic Solvent) technology, the active compounds of the fresh cherry flowers are revealed, providing a superior phytochemical profile

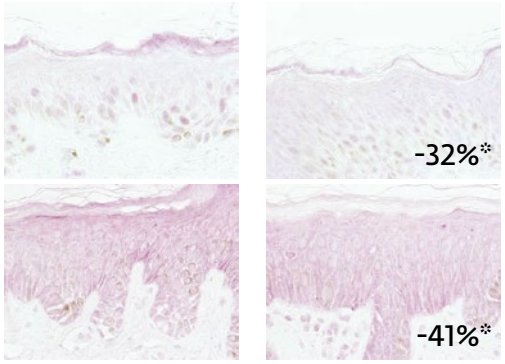
## Antioxidant property (*ex vivo*)

▶ **Test 1/** Eliorelys® was tested at 1% in CMC (carboxymethylcellulose) gel, and applied during 5 days on human skin explants. On day 6, explants incubated 2h with the probe H2DCFDA are irradiated with UVA (equivalent to 4 MED for a phototype II). The formation of ROS has been assessed on frozen sections by fluorescent microscopy.

Results: Eliorelys® tested at 1% on topical application on human explants shows a good protection **against UVA-induced ROS formation + 33%** *(p<0.05). [Results not shown].

▶ **Test 2/** Human skin explants are treated with Eliorelys® at 1% in CMC gel vs. an untreated control. The explants are treated twice daily for 5 days, and then exposed to UV (4 MED UVA + UVB). Expression of DJ-1 and Nrf2 is followed by immunostaining in epidermis.

**Protection of skin from photoageing by strong antioxidant effects (*ex vivo*)**




Results: In the UV exposure condition, Eliorelys® application **triggers DJ-1 expression -32% and Nrf2 expression -41%** compared to control without active. This is a reduction of the necessity of mobilization of an antioxidant defense system.

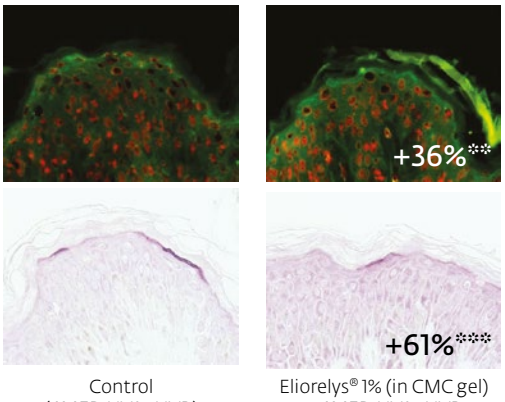
*p<0.01

## Improvement of barrier function (*ex vivo*)

Human skin explants are treated with Eliorelys® @1% in CMC gel *vs* an untreated control. The explants are treated twice daily for 5 days and then exposed to UV (4 MED UVA + UVB). Expression of ZO-1 and loricrin is followed by immunostaining in epidermis.

Results: Eliorelys® **increases expression of ZO-1 + 36% and Loricrin +61% in response to UV radiation**. Adhesion between cells, and cornification are reinforced, leading to an improvement of the barrier function.

**p<0.05, ***p<0.1



# Biological Activity

## Extra Cellular Matrix protection (*in vitro* and *ex vivo*)

▶ **Test 1/** Human fibroblasts are cultured in vitro and treated with Eliorelys®. After 72h incubation without cell growth, soluble collagen in the extracellular matrix is quantified by the Sircol assay.

Results: Eliorelys® **increases x21 the collagen synthesis on fibroblasts**.

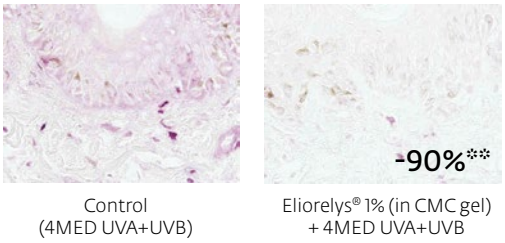
▶ **Test 2/** Keratinocytes are cultured *in vitro* and treated with Eliorelys® 1h before exposition to simulated solar light (UVA/B/visible). MMP-1 release is measured by ELISA kit and a protective gain is expressed compared to the positive control.

Results: Eliorelys® **shows greater inhibition of MMP-1 release than ascorbic acid**, with 70% protective gain.

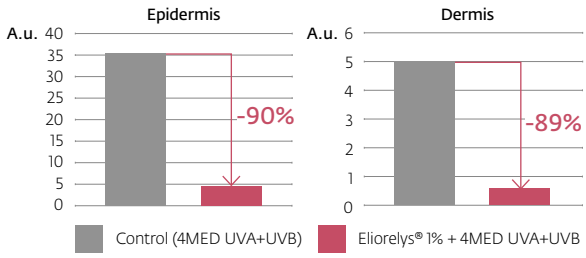
▶ **Test 3/** Human skin explants are treated with Eliorelys® at 1% in CMC gel *vs* control. The explants are treated twice daily for 5 days and then exposed to UV (4 MED UVA + UVB). Expression of MMP-1 is followed by immunostaining in epidermis.

Results: Eliorelys® **reduces the release of photo-induced collagenase MMP-1 in epidermis -90% and dermis -89%**. It prevents premature UV-induced degradation of collagen fibers.

**Inhibition of MMP-1 release (*ex vivo*)**




Control (4MED UVA+UVB) | Eliorelys® 1% (in CMC gel) + 4MED UVA+UVB




## DNA-protective activity (Blue-Light irradiation) (*in vitro*)

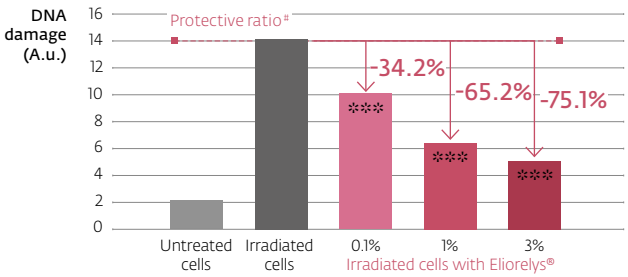
Human Epidermal keratinocytes were incubated with different concentrations of Eliorelys® for 2h at 37°C. Following this contact period, cells were irradiated with blue light (30 minutes, 20 mW/cm², 410-470 nm) to induce DNA-lesions. After irradiation, DNA strand-breaks were revealed by micro-electrophoresis using the comet assay.

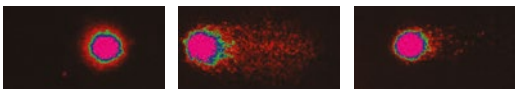
Results: With Eliorelys®, a significant **dose-response decrease of DNA-damage is noticed**, indicating that Eliorelys® exerted a protective effect against photo-inducted DNA-lesions.

#Protective ratio calculated with $\chi^2$ OTM

Student's t-test: *p<0.05, **p<0.01, ***p<0.001

**Protective effect against blue light photo-inducted lesions**



Untreated cells | Irradiated cells | Irradiated cells with Eliorelys®

## Improvement of photo-aged skin appearance (clinical study)

Eliorelys® is applied at 3% in a (O/W) cream in a half-face double-blind *vs* placebo (active is replaced by water) clinical study on Caucasian female human volunteers, showing visible signs of photo-ageing. A group of 17 persons aged 51-60 years old applied twice daily the cream, during 56 days.

Biochemical markers (Carbonylated proteins - Lipids oxidation marker) and several parameters of skin appearance (UV spots, Brown spots, Skin texture/smoothing parameter) associated to photo-damaged skin are selected and followed during the study.

| | *Vs* T0 (p<0.0001) | *Vs* Placebo (p<0.05) |
|---|---|---|
| Reduction of Carbonylated Proteins | -54% | +15% |
| Reduction of Lipids Oxidation | -10% | ×2.5 |
| Decrease of UV Spots Count | -8% | ×4 |
| Decrease of UV Brown Spots Count | -7% | ×7 |
| Improvement of Skin Texture | -20% | +12% |

Results: Eliorelys® applied at 3% in O/W cream significantly **improves the quality of skin showing signs of photo-ageing**. Specific biochemical markers of ageing are reduced, and visible aspect and texture of the skin demonstrate the repairing property of Eliorelys® fighting photo-induced skin damage.

# Summary

## Technical information

| | |
|---|---|
| INCI: | Glycerin (and) Betaine (and) *Aqua* (and) *Prunus Cerasus* Flower Extract |
| Origin: | Eutectys™ green technology |
| Preservation: | Preservative free |
| Labels: | Cosmos approved, easily biodegradable (OECD301b) |
| Appearance: | Light amber to amber liquid |
| Solubility: | water |
| Dosage: | 3% |
| Processing: | Preferable to add the extract under gentle agitation at the end of the formulation (under 40°C if hot process). Avoid heating too long. |

## Claims

| | |
|---|---|
| Claims: | Protects the skin against photo-induced damages, prevents from premature photoageing |
| Applications: | Anti-ageing (anti-wrinkles) creams and gels, anti-photoageing lotion and serum, face and décolleté masks, eye contour products, makeup products |

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