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UlvaProtect

A global approach to solar preparation and protection

Photo: Getty Images

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Revealing hidden skills, from the visible to the invisible

Solar exposure generates oxidative and thermal stresses. These latter induce direct lesions on the DNA, but also indirectly on the structure of the cells and of the extracellular matrix which constitute the epidermis. UlvaProtect significantly improves the cell's ability to protect itself from the sun.

Visible Skills:

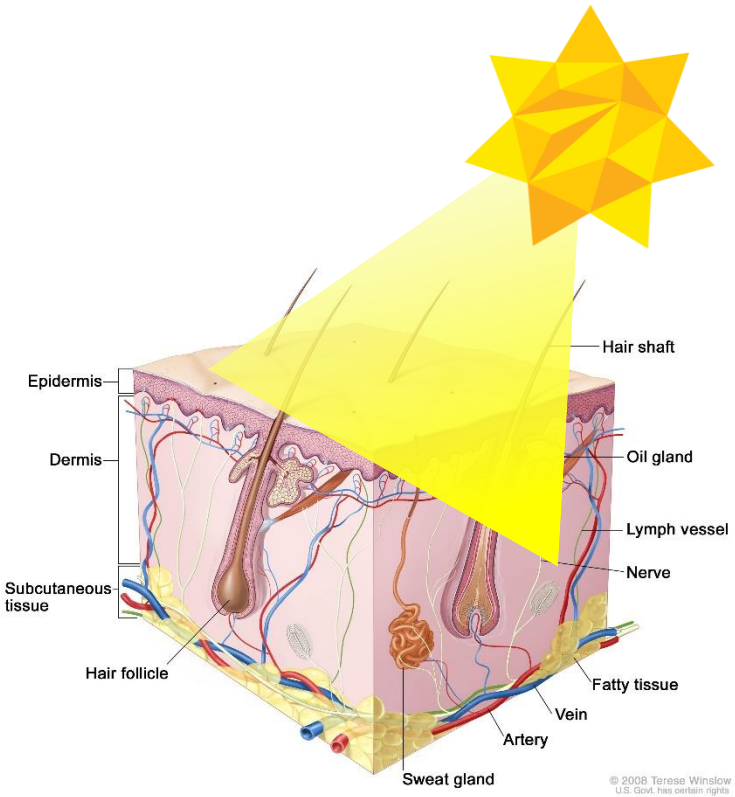
1. The natural protection of the skin is improved through the stimulation of melanogenesis.

2. Physiological oxidative stress is strongly limited at the level of the extracellular matrix by inhibition of the activity of collagenases and elastases.

Invisible skills:

3. Intracellular stress is significantly reduced by decreasing the stress of HSP 70.

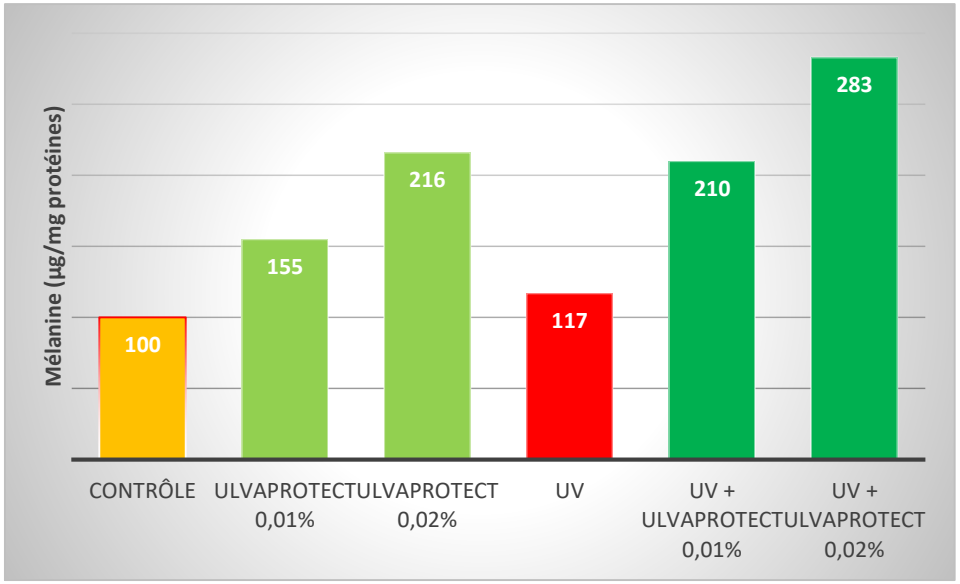
4. Direct lesions on the genome are reduced thanks to a decoy effect due to p53 decreasing.



1) Ex-vivo : melanogenesis stimulation under UVB exposure

MATERIAL AND METHOD

In order to demonstrate the stimulation of melanogenesis, human melanocytes were cultured until a monolayer was obtained. Melanocyte are then incubated in the presence or absence of the UlvaProtect active at different concentrations and in the presence or absence of UVB . At the end of the incubation, the melanin contained in the intracellular medium was quantified by a spectrophotometric method.



RESULTS :

The results obtained show that UlvaProtect is able, without UV radiation, of stimulating melanogenesis. Also, the presence of the two effectors, UlvaProtect and UVB rays generate a synergy: the effect obtained is clearly superior to the cumulative effects of UlvaProtect alone and UVB alone. These results indicate that the presence of UVB and UlvaProtect will significantly increase the amount of melanins and will therefore strengthen skin protection and tanning.

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2) In-vitro : Inhibition of elastase activity

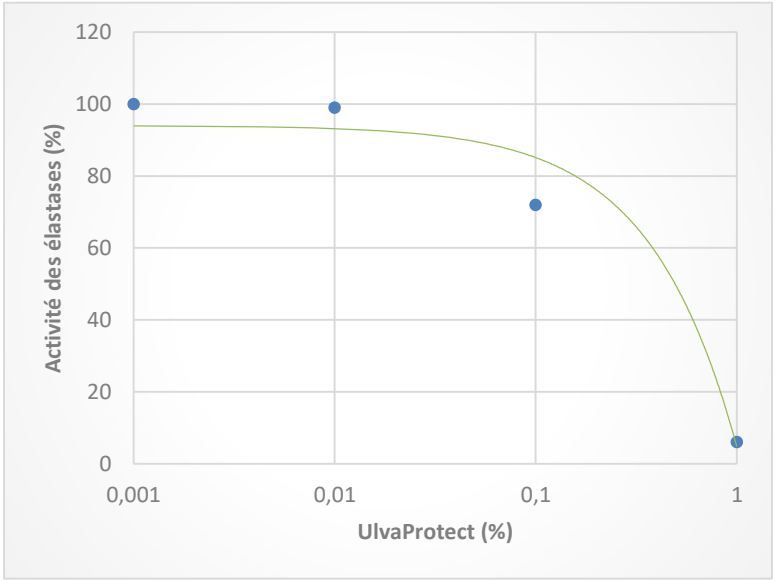
MATERIAL AND METHOD:

The inhibition of the elastic activity is related to the ability to block the activity of elastases, the enzyme responsible for the degradation of elastin.
The results were obtained by using a commercial enzymatic kit (EnzCheck)

RESULTS :

Different concentrations of active ingredients were tested and two of them were found to be significant. With an UlvaProtect concentration of 0.1%, the percentage inhibition is 28%. By increasing the concentration to 1%, the percentage inhibition of elastases reaches 94%.

The results obtained show that the active UlvaProtect is able to inhibit elastase activity. This inhibition will limit the degradation of the elastin maintaining the elastic properties of the skin.



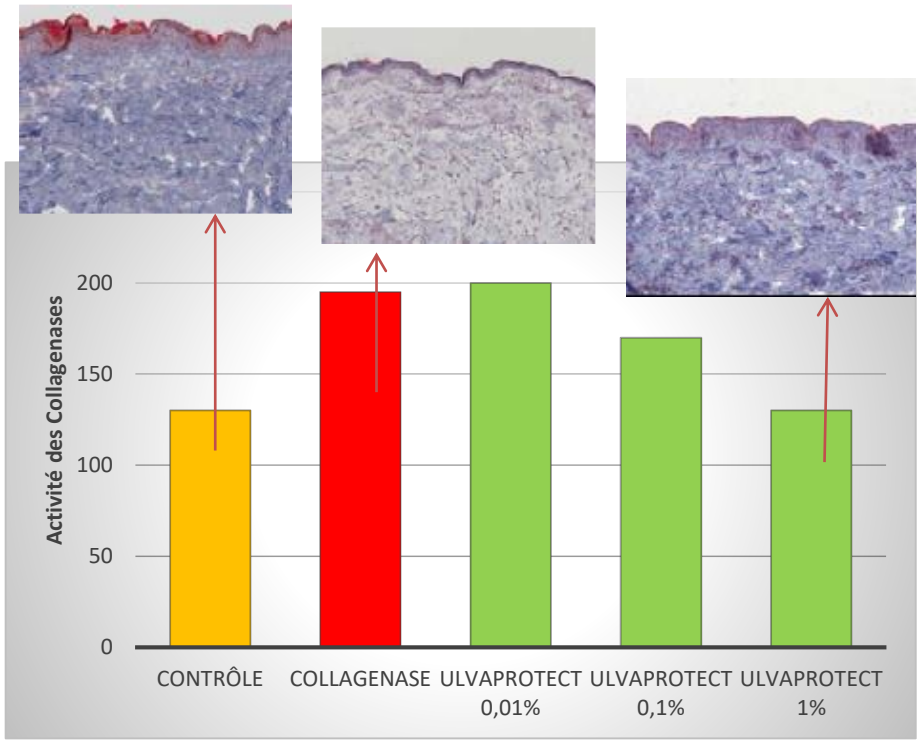
2) Ex-vivo : Inhibition of collagenase activity

MATERIAL AND METHOD :

Inhibition of collagenase activity results in the ability to block collagen degradation. To demonstrate this inhibition, tests were carried out on human skin histological section.
These latter were incubated for 30 minutes at 37 ° C. in the absence or in the presence of UlvaProtect at different concentrations. Thus a collagenase solution has been added to the medium and re-incubated for 3 hours at 37 °C. Thus, the activity of the collagenases was measured by quantification of the fibers by an optical microscopy technique.

RESULTS :

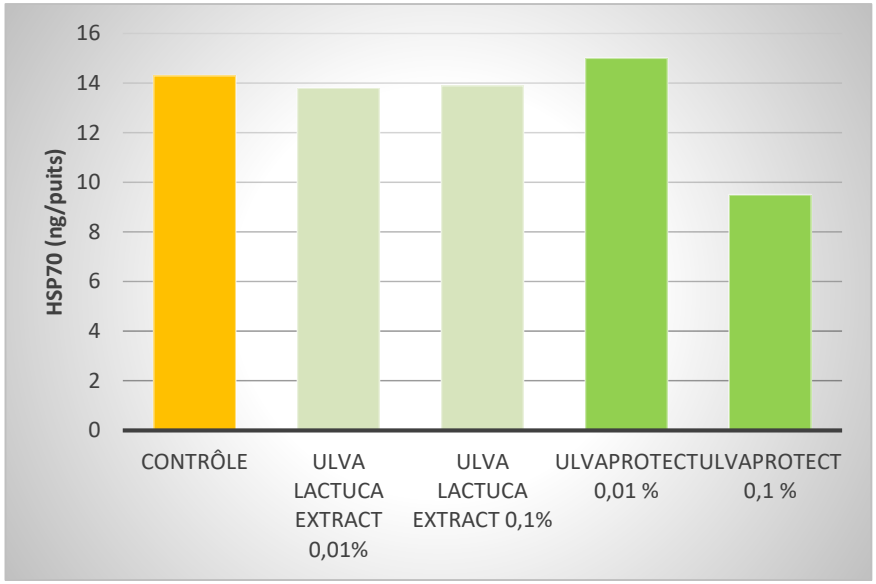
The results obtained show that the presence of UlvaProtect inhibits the activity of the collagenases, at the concentrations of 0.1% and 1%.



3) Ex-vivo : Reduction of cellular stress

MATERIAL AND METHOD :

In the intracellular medium, cellular stress caused by heating, thermal shock or exposure to the sun is at the origin of the production of "Heat Shot Protein" (HSP-70).
In order to demonstrate this natural biological process, normal human keratocytes were incubated for 24 hours at 37 °C in the absence or presence of UlvaProtect at different concentrations.
At the end of the incubation period, the HSP-70 proteins present in the keratinocytes were quantified by an ELISA assay.



RESULTS :

The results obtained show that the presence of UlvaProtect limits the production of HSP-70 proteins at the concentration of 0.1%

This phenomenon shows that the UlvaProtect significantly reduces the cellular stress observed in case of sun exposure and thermal shock.

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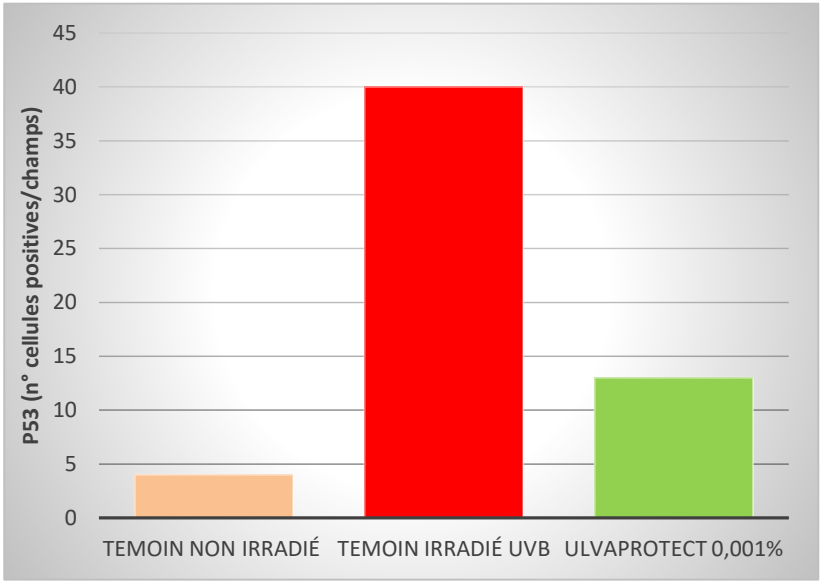
4) Ex-Vivo: better tolerance to UVBs of the cells

MATERIAL AND METHOD :

When the skin is exposed to sunlight, UVB radiation can damage the DNA of epidermal cells, especially keratinocytes. The p53 protein is a protein essential to the maintenance of the integrity of the cell and its genome. P53 protein is used to repair the damage of the DNA. As direct consequence, the amount of P53 protein found in a cell will reflect the degradation of the repaired DNA.

Thus, in order to evaluate the degradation of DNA, we will focus on the amount of p53 protein. In order to ensure this, p53 proteins have been deposited on a skin human explants in the absence or in the presence of UlvaProtect.
The explants were then exposed to UVB radiation. The amount of p53 proteins was measured after irradiation of the explants by immunohistochemical labeling.



RESULTS :

The presence of UlvaProtect at a concentration of 0.001% considerably limits the p53 protein solicitation, which shows that the cell nucleus is very poor damaged by UVB radiation. UlvaProtect induces then higher UVBs tolerance of the cells and limits the alteration of the genome.

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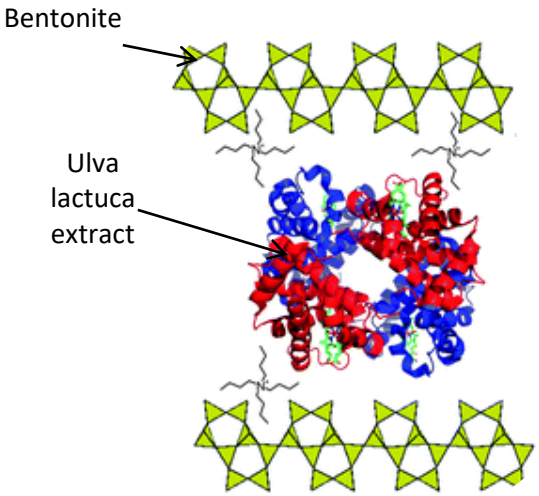
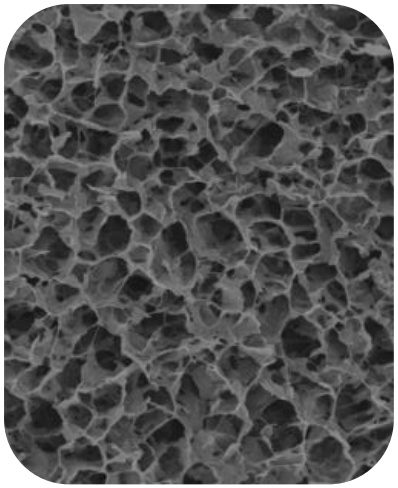
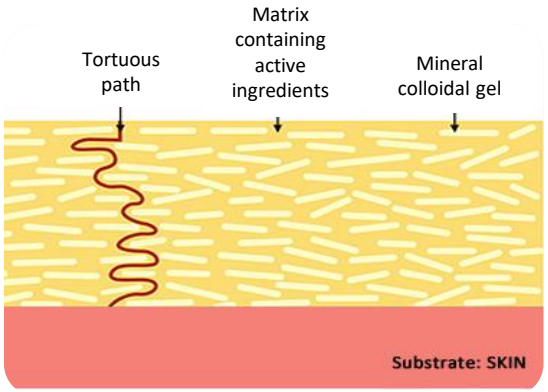
PROTECTION and DRUG RELEASE mechanism

Protection and stability of active ingredients





Drug release mechanism



Active ingredients as raw material in powder from:

Biological active ingredients are integrated in bentonite sheets as a dehydrated form without preservatives.

Active ingredient as finished products:

In aqueous environment, betonite creates a 3D structure as « honeycomb » able to protect biological active ingredients.

Once on the skin:

Creation of a scaffolding structure type « second skin » able to release biological active ingredients in a controled way.

UlvaProtect, technical specifications

- INCI: Bentonite & Ulva lactuca extract
- CAS: 1302-78-9 & 97281-59-9
- EINECS: 215-108-5 & 306-651-0
- COSMOS Ready; China Compliant
- APPARENCE : beige powder, preservative free
- FORMULATION: dispersible in water
- STORE CONDITIONS: 18 months in a ventilated area
- DOSAGE : 1%
- TOLERANCE:
  - Cutaneous: non-irritant
  - Ocular: moderately irritant
  - Genotoxicity: non-mutagenic
- **Certified estrogen-like endocrine disruptors free**

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UlvaProtect, conclusion

1. UlvaProtect stimulates the production of melanin promoting skin protection and tanning

   + 116 % of melanin production in the absence of UVB

   + 183 % of melanin production in the presence of UVB

2. UlvaProtect allows the skin to maintain its elastic properties thanks to an inhibition of the activity of the elastases

   + 94 % elastase inhibition

2. UlvaProtect allows the skin to maintain its firmness thanks to the action of inhibition of the extracellular matrix collagenases.

   +100 % collagenase inhibition

3. UlvaProtect, reduces cellular stress caused by overheating due to sun exposure:

   - 33 % HSP-70 proteins reduction

4. UlvaProtect helps to protect cellular DNA from sun exposure:

   - 75 % p53 proteins reduction

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