

LycoMega®

A new anti-photoaging ingredient
by **Lessonia / Safic-Alcan Italy**

Constant exposure of the skin to various types of mechanical and environmental stresses such as reactive oxidative species, air pollutants and ultraviolet radiations (UVA, UVB and UVC), can cause damage by activating a complex cascade of biochemical mechanisms, especially via the generation of free radicals. Indeed, once endogenous antioxidative defences have been exhausted, these free radicals are free to damage the molecular structures of the cells (proteins, lipids and DNA). Moreover, as a consequence of UV radiation, inflammatory phenomena not only lead to the generation of further free radicals, but also trigger the release of chemical mediators. In fact following UV radiation, keratinocytes produce the pro-inflammatory cytokine interleukine-1 (IL1) that diffuses from the epidermis into the dermis to stimulate the expression of elastase by fibroblasts. These in turn,

provoke degradation of the extracellular matrix, thereby inducing a loss of cutaneous elasticity and other signs of photoaging. Thus it appears that external stresses, oxidation, inflammation and ageing are untimely linked in the skin.

LycoMega® is a synergic association of lycopene and omega 3 and 6, developed to fight oxidation and inflammation occurring in photoaging process.

Mechanism of action

The lycopene contained in LycoMega® is a lipid antioxidant that can place itself at the interface of cells membrane thanks to its liposoluble activity. For this reason it plays an important role in preventing damage to the membrane lipids. It can neutralize free radical, reinforce cell-to-cell junctions, stimulate the metabolism of other carotenoids, inhibited lipid peroxidation and present anti-inflammatory properties. Numerous clinical studies on human show that lycopene supplementation or topical treatment protect the human skin cells against UV radiations. The antioxidant capacity of lycopene has been shown to be significantly higher than many other antioxidants like vitamin E.

Table 1. Technical features of LycoMega®

Organoleptic characteristics	
Aspect	oil
Colour	orange
Odour	characteristic
Chemical composition	
Lycopene (ppm)	80
Tocopherols (ppm)	2500
Omega 3 (%)	7
Omega 6 (%)	38
Physical and chemical properties	
Density (g/L)	950
Solubility	Insoluble in water
Microbiological properties	
Total bacterial count (cfu/g)	< 100
Mould/yeast (cfu/g)	< 10
Stability	
12 months from manufacturing date (at least).	
Storage	
in tightly closed container, in a cool, dark and dry area	

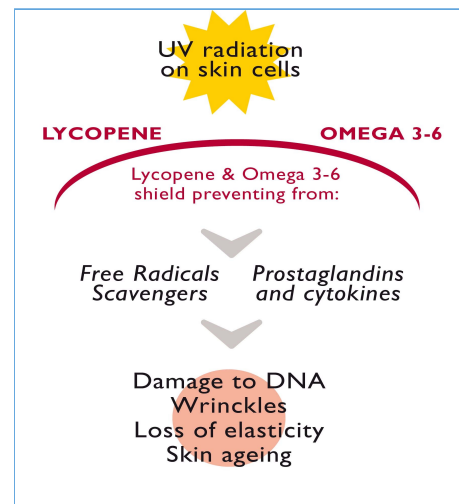
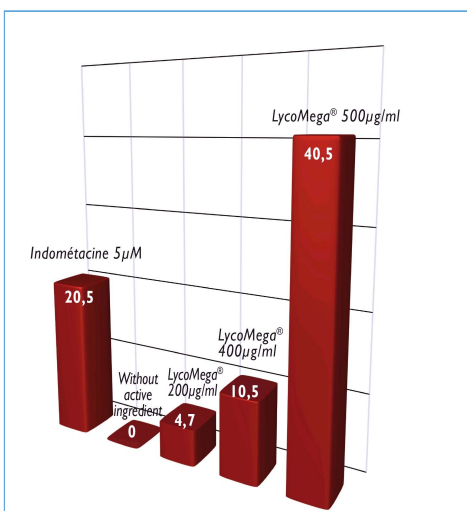


Figure 1 : Synergy between lycopene and omega 3 to reduce radiation inducing skin damage

An anti-inflammatory effect can be explained thanks to the omega 3 and 6 contained. Omega 3 is the precursor in the synthesis of anti-inflammatory mediators that control the inflammatory response of human tissues. It has been found that the cells convert omega-3 into anti-inflammatory mediator called resolvin D2 (RvD2). This mediator powerfully relieves inflammation. Furthermore, LycoMega® has the right balance omega 6 to omega 3 needed by human cell membranes to regulate anti-inflammatory mediators and other metabolic functions. These unsaturated fatty acids are essential for preventing dryness of the epidermis and inflammatory diseases. As they cannot be produced by our body, they are critical and thus needed to be obtained through one's diet or skincare.

Figure 2 : Effect of LycoMega or Indometacine on cultured keratinocytes vitality after exposure to UVB radiation

Efficacy study

The protective effect of LycoMega® against UVB radiation has been evaluated with human keratinocyte culture. These cells are exposed to UVB radiations and the cell viability is quantified by measurement of the alive cell succinate dehydrogenase activity.

After the application of the test item onto cells during 48 hours, the cell viability is quantified by measurement of the alive cell succinate dehydrogenase activity. This enzyme is involved in the transformation of MTT into blue formazan crystal. A spectrophotometric measurement is performed after the crystal dissolution. The measured absorbances are proportional to the number of alive cells.

At least three dilutions of each test item are tested on three culture wells. A control is included for each analysis: Negative control : cells are not exposed to UVB without active compounds. Radiation control : cells are exposed to UVB but without active compounds. Protection control : cells are incubated during 24 hours with a 5µM Indometacin solution in the culture medium then exposed to UVB. Results show the mortality percentage compared to the negative control.

Figure 2 shows the vitality of fibroblast cultures with different concentrations of LycoMega® when exposed to UV radiations. The cells treated with LycoMega® prior to the exposure had significantly higher viability. This effect is dose dependent.

This viability is compared with indometacin (anti-inflammatory drug) and confirms the activity of LycoMega®.

The results show that under the experimental conditions retained, the LycoMega® shows a protective effect towards UVB on cell viability.

Safety

LycoMega® is obtained from tomato seeds and cranberry seeds by cold pressing in a non denaturing condition and solvent free. This process is agreed by all the organic certification bodies for the cosmetic ingredients.

Application and dosage :

Thanks to its photoprotection action, LycoMega® can be used in sun-care and anti-aging products. LycoMega® offers new possibilities for safer and greener sun-care and anti-aging cosmetic products.

In oily gel, scrub : 2 to 5%

In oil (dry or massage) : 2 to 5 %

In emulsion : 0,5 to 5 %

For information

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Lessonia in a nutshell

LESSONIA has its origins in the unique expertise in sourcing and transforming natural raw materials. The company started with algae as the seaweed industry has a very long history on the north coast of Finistere

in Brittany, a unique natural site in Europe where seaweed grows in abundance. Lessonia initially concentrated on transforming these marine raw materials into cosmetic ingredients. The company has progressively expanded its portfolio to include a wide variety of plants. As a leader in sourcing and transforming natural raw materials, LESSONIA manufactures a comprehensive range of natural cosmetic ingredients like exfoliates, plant pigments, botanical extracts and active ingredients tailored for cosmetic applications.

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