

# Global Protect Common juniper

*The global cell protection*

## A STORY

The Common juniper | *Juniperus communis*, *Cupressaceae*  
**An aromatic shrub from the cold**

*As it grows slowly, Common juniper is less cultivated, therefore not well known. But it has a balsamic fragrance, evergreen leaves, and grows spontaneously in sunny and dry areas in the Northern hemisphere. It resists to cold, wind and pollution, doesn't need a lot of water, can live 150 years and adapts itself to hard climate till 2500m high. It is therefore an ornamental shrub useful on rocky soils. Its berries, and its essential oil, are still used for medicinal uses (antiseptic, diuretic effects, ...) and their resinous aroma is also appreciated to perfume dishes and drinks (liquor, tea, beer) in the North of Europe. Its wood is appreciated to cook meat.*

## Key points

### An active plant cell

Developed to deliver the highest amount of original active molecules.

### A high tech natural ingredient

Created to preserve and improve the identity and the benefits of a natural product.

### A protective action for skin in the city

Protects and repairs from damages induced by UVB and pollution

Because skin is aggressed by different sources of oxidation at different levels (pollution, UV, global oxidation), it is necessary to protect it by activating several defense systems. To get a skin better protected, more resistant, longer.



## PRODUCT BENEFITS

### Protection

#### Protective

Decreases damages made on skin cell DNA. Protects from environmental aggressions.

#### Antioxidant, antipollution

Reduces the creation of free radicals due to UVB and pollution.

#### Repairing

Helps to repair damages caused by free radicals.

*To be used in skincare or make-up products like cream, fluid, serum, balm, lotion, milk, foundation, concealer, etc., in any cosmetic or skincare product dedicated to protect skin.*

**NÆOLYS**

Related products | WHOLE PROTECTION EDELWEISS | OXYRELAX CHERRY TREE | GLOBAL PROTECT BLACKBERRY

**HOW IT WORKS**

# Global Protect Common juniper: focusing on major external aggressions in the epidermis

Global Protect Common juniper acts as if it wraps cells in a protecting net, that consists in a activation of the cell protection to the heart of skin cells. Because attacks against cells induce all internal serious damages, that translate in an anticipated ageing. Global Protect Blackberry acts by limiting the destruction of cell DNA, by activating the synthesis of defense proteins (HSP70) and by limiting cell oxidation created by specific pollutant components.

Thanks to those actions, cells are better protected in a global way. Then skin can betterfight against environmental aggressions, especially when living in the city.

## *In vitro* testing results

### Study of the natural protection, HSP 70 - Heat Shock Proteins 70

To counterfight the stress coming from different origins (chemical or mechanical, either environmental, physiological or pathological), human cells produce specific defense proteins, especially stress proteins or heat shock proteins, that appear when the body experiences heat shocks. Because any temperature increase in our body, then in our skin, induces a protein modification, then damages their function.

Heat shock proteins are bioprotectors that preserve cells and their walls, by repairing special proteins, destroying too damaged proteins, and transporting proteins. The HSP 70 (70 Kdaltons is their molecular weight) regulate especially the stress coming from chemical aggressions (like heavy metals) and heat.

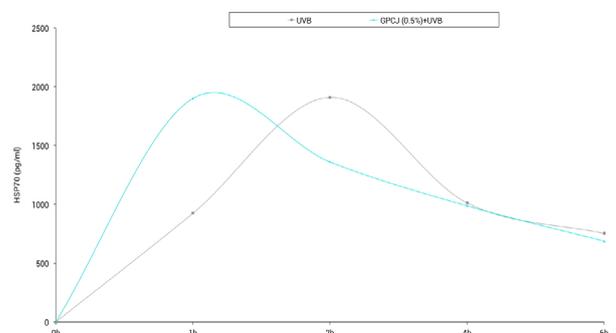
Therefore Naolys tested the protective effect of Global Protect Common juniper in its capacity to increase more rapidly the apparition of stress proteins (HSP70), that leads a preventive protection against damaging effects of UVB.

With that mechanism, Global Protect Common juniper allows talso o repair more quickly damages induced by UVB rays and a better control of their synthesis.

#### Kinetik of HSP70

→ In the test run by Naolys, the quantification of stress proteins has been performed with and without Global Protect Common juniper after irradiation of reconstructed epidermis to UVB. At the concentration of 0.5%, the protective effect has been translated by the speed of the apparition of stress proteins (HSP70) while maintaining the concentration of those proteins at the same level as the one induced by UVB rays only.

#### Study of HSP 70 (Heat Shock Proteins 70)



### Technical information on the formulation of Global Protect Common juniper

**INCI name of cells**  
juniperus communis callus extract

**form**  
cells (20%) in glycerin or sunflower oil (80%)

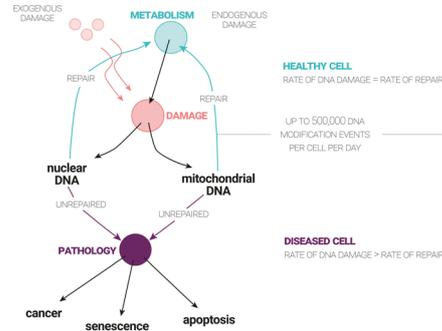
**aspect**  
liquid

**concentration**  
starting at 0.5%

**dispersible**  
in any formulation

## The skin, UVB and DNA

The exposition of skin to solar rays, UVA and UVB, stimulates skin ageing through the combination of several modifications at the level of epidermis and the dermis. Because UV rays constitute the most active part of the solar radiation that affect living organisms. UVB are absorbed essentially at the level of the epidermis and superficial dermis. When they have become damaged, cells become fragile and don't work properly. UV induce genetical mutations in cell DNA, especially UVB. According to new studies (2006), in skin, the global rate of de lesions made in DNA following a UVB irradiation is about 156 lesions/cell/J.m<sup>-2</sup> when it is only about 0,024 lesion/cell/J.m<sup>-2</sup> after a UVA irradiation.



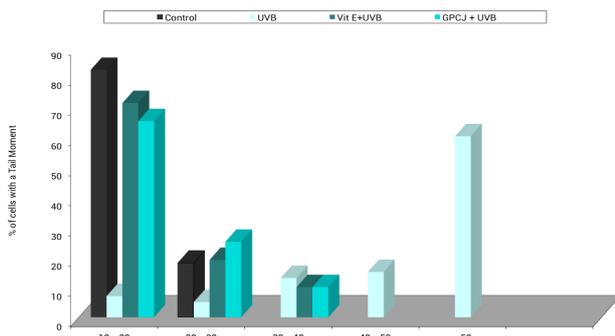
DAMAGES ON SKIN CELLS DNA BY UV AND OTHER SOURCES

## Study of the cell DNA

To evaluate the effect of Sun Protect Commiphora on damages made by UV on DNA of epidermis cells, Naolys used the Comets test, also called «Single Cell Gel Electrophoresis» (SCGE). It is an electrophoresis technique on agarose microgel created at the end of seventies. It allows to detect and measure the deterioration of DNA induced by specific agents individualized cells. It is also used to evaluate DNA repairs after a chemical exposition or an irradiation.

Naolys used this test to measure damages caused on DNA of keratinocytes, by estimating the size of DNA in the tail of the comets after an irradiation of UVB rays. That size of DNA changed according to the irradiation dose.

## Study of DNA fragmentation



### Decrease of the DNA fragmentation

→ At the concentration of 0.5%, the majority of irradiated cells (88%) have a «tail moment» higher than 30, and that 60% of cells have a «tail moment» higher than 50. That result means that DNA of cells was very fragmented by UVB rays. Only 12% of cells present a «tail moment» lower than 30.

In conclusion, in the conditions of irradiation, the product Global Protect Common juniper (GPCJ) induces a significant decreasing of the DNA fragmentation due to UVB rays, after 24 hours of treatment.

## Study of the lipid peroxidation

Because it is a reaction indicating oxidative stress, Naolys chose to study the release of MDA during physiological lipid peroxidation and lipid peroxidation induced by UVB.

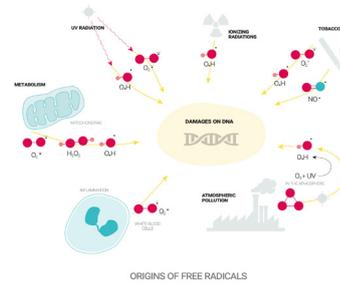
When we measure the MDA (malondialdehyde), one of the chemical products created by the chemical chain reaction induced by the free radicals, indicating of cytotoxicity by oxidative processes, then we have a good information about the anti-oxidant activity of a substance.

Normally, the endogenous production of free radicals (physiological lipid peroxidation) is counterbalanced by various defense mechanisms.

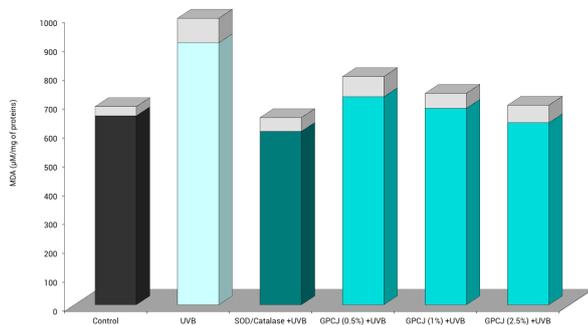
However, many situations can induce the appearance of an excess of free radicals (induced lipid peroxidation) such as intense exposition to sun, intoxication by certain chemical products, contamination by toxins, intense inflammatory reactions, etc.

These oxygenated free radicals attack phospholipid membranes, thereby altering the properties of the cell membrane.

They also induce the formation of lipid derived cytotoxic mediators which react with proteins. The consequences are numerous and can lead to several pathologies (inflammation, arteriosclerosis, etc.)



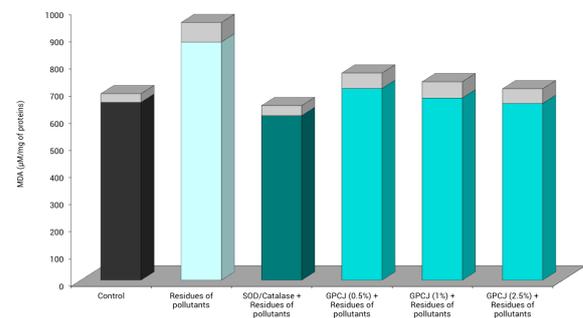
### Lipid peroxidation induced by UVB



#### Decrease of MDA (Malondialdehyde) rate

→ At concentrations of 0.5%, 1% and 2.5%, decrease of the lipid peroxidation induced by UVB which was translated by a decrease of the MDA rate respectively by 21%, 25% and 31% compared to SOD/catalase (-34%)

### Lipid peroxidation induced by pollution (residues of pollutants)



#### Decrease of MDA (Malondialdehyde) rate

→ At concentrations of 0.5%, 1% and 2.5%, decrease of the lipid peroxidation induced by residues of pollutants which was translated by a decrease of the MDA rate respectively by 20%, 24% and 26% compared to SOD/catalase (-34%)