

MReload Sequoia

Better protection for skin against ageing



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A STORY

Sequoia | *Sequoia sempervirens, Cupressaceae*
A thousand-year-old protected giant

Discovered in the 18th century, this tree is a survivor from the ancient forests of North American. Growing up to 100 metres high, it is a pyrophyte: the mineral-rich ash facilitates the germination of its seeds, and it can live for more than 1,000 years. Despite its comparatively shallow roots, it is very resistant to fire. Drawing in large quantities of water, it plays a very important role in the ecosystem of California's forests. Finally, it is also a symbol in the mythology of the native Californian Indians, who consider it to be a sacred, protecting tree that links them to their ancestors in their original tribes.

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 general anti-ageing action

Helps to gives skin a more youthful appearance.

Because men's skin can be damaged by an intensive lifestyle, particularly in the case of city dwellers (pollution, stress, sun, lack of sleep, etc.), it needs to be simultaneously toned and protected, by acting on the key mechanisms on a daily basis. For recharged skin that stays younger-looking for longer.



PRODUCT BENEFITS

General anti-ageing

Anti wrinkle

Decreases deep and superficial wrinkles on the face, including mature skins, especially crow's feet.

Firming

Contributes to densify the dermis. Helps to improve or restore the dermis functions, skin resistance.

Moisturizing

Keeps water in the whole epidermis. Strengthens the cutaneous barrier.

Antioxidant

Reduces the formation of free radicals, strengthens internal antioxidant protection, especially the action of anti-oxidant enzymes.

Soothing

Calming, reduces temporary inflammatory processes. Regulates inflammation.

To be used in products such as creams, oils, masks, serums, essences, etc. Any cosmetic product for men intended to strengthen skin and limit skin ageing. All skin types.

HOW IT WORKS

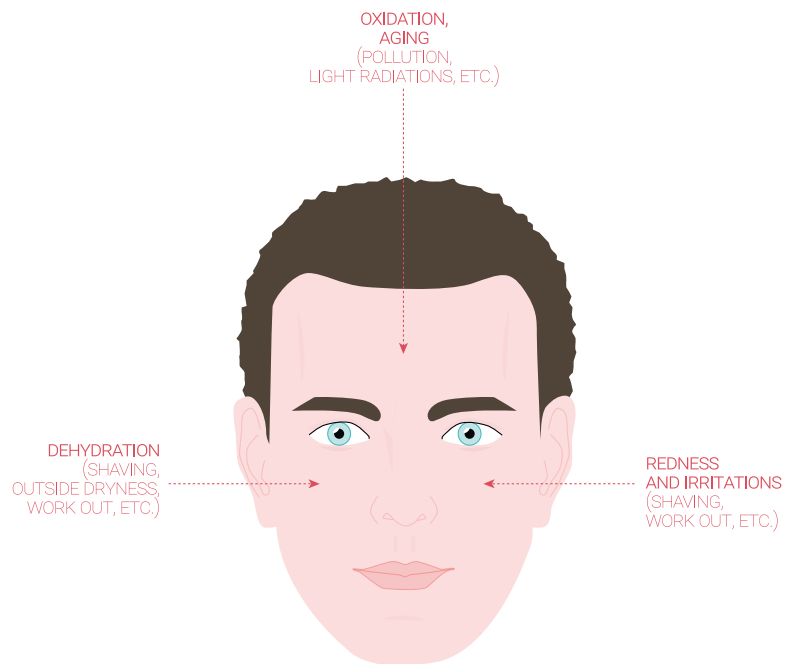
MReload Sequoia: slowing the ageing of men's skin

Men's skin on a daily basis

Men's skin is naturally thicker (60 µm vs. 50 µm for women) and oilier (due to higher levels of sebum, caused by a 10-times-higher level of testosterone than women) and firmer (due to a greater quantity of collagen). The current trend for beards in the West protects men's skin from the damage caused by daily shaving (dehydration, irritation, redness) but in Asia, in urban environments, because they tend to have less full beards, men's skin can still be damaged (due to practising sports, air conditioning, etc.), particularly as men have more developed microcirculation, making them more prone to redness.

These three factors (thickness, sebum and collagen) enable the ageing of men's skin to be slowed down. However, from the age of 40, this accelerates, and deep wrinkles can appear relatively quickly; the area around the eyes is particularly affected.

It is therefore important to take preventive measures, and to repair physiological and environmental damage resulting in the appearance of wrinkles, dryness and irritation.



ORIGINS OF ALTERATIONS OF MEN SKINS

MReload Sequoia : double action on skin ageing, prevention and repair

Firms the skin

By increasing and maintaining water in the upper layers of the skin, which tends to evaporate more quickly with age MReload Sequoia enables drying to be reduced and maintains the skin barrier against daily physical and chemical damage. The skin keeps its original smooth appearance and is better protected against external threats.

By relaunching the production of the skin's support elements (collagen and proteoglycans), which declines with age, MReload Sequoia enables the skin's resistance to be maintained and for slackening to be prevented.

MReload Sequoia consolidates the skin's two strategic layers.

Protects the skin

By reducing the inflammatory response, through regulation of the immune system mechanisms that increase with age and exposure to daily light radiation, MReload Sequoia enables the skin's tolerance threshold to be increased.

By reducing general oxidation - through a reduction in the formation of ROSs and an increase in antioxidant enzyme activity - which increases with age and exposure to daily light radiation, MReload Sequoia helps to maintain normal cell activity for longer.

MReload Sequoia strengthens the general defence system for the upper layers of the skin.

Thanks to its firming and protective action, MReload Sequoia helps the skin to age more slowly and to reduce wrinkles.

CLINICAL TEST RESULTS

Reduction in wrinkles after 28 days on male skin

Declaration of the men in the panel

61% said wrinkles appeared to be reduced,
65% fine lines

52% said their skin looked firmer

57% said their skin looked younger

74% said their skin looks brighter

At a concentration of 0.5%

IN VITRO TEST RESULTS

General repair and protection

Firming effect

→ Due to an increase of the proteoglycans rate of **19%** (average) and the collagens rate of **19%**

Moisturizing effect

→ Due to an increase in water retention in epidermis by **29%**, after 30 min

→ Due to a decrease in transepidermal flow by **20%**, after 60 min

Antioxidant effect

→ Due to a decrease in the creation of reactive oxygen species (ROS) induced by UVA and UVB, **26%** after 3 hours

→ Due to an increase in antioxidant enzymes (superoxide dismutase, **15%** and catalase activity, **18%**) after 3 hours

Soothing effect

→ Due to a decrease in the inflammation mediators: IL1-alpha by **21%**, IL-6 by **18%**, PGE2 by **17%**

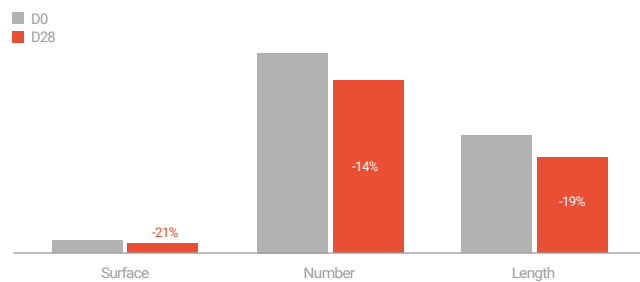
At a concentration of 0.5%

Clinical study

Reduction in crow's feet wrinkles after 28 days

Decrease of wrinkles

Assessment of anti-wrinkle effect (mean data)



At three levels

Decrease of the total surface of wrinkles of **21%**

Decrease of the number of wrinkles of **14%**

Decrease of the length of the wrinkles of **19%**



DAY 0

DAY 28

Study conditions:

- Tests were carried out for 28 days on a sample of 22 men aged 41 to 60 years, with different types of skin (regular, dry skin, combination skin or oily skin)
- Application twice a day
- Emulsion with 0.5% of MReload Sequoia (liquid form, 20% cells)

Technical information on the formulation of MReload Sequoia

INCI name of cells
sequoia sempervirens
leaf cell extract

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

aspect
liquid

concentration
starting at 0.5%

dispersible
in any formulation
(emulsion, lotion, fluid)

In vitro tests results

Firming skin

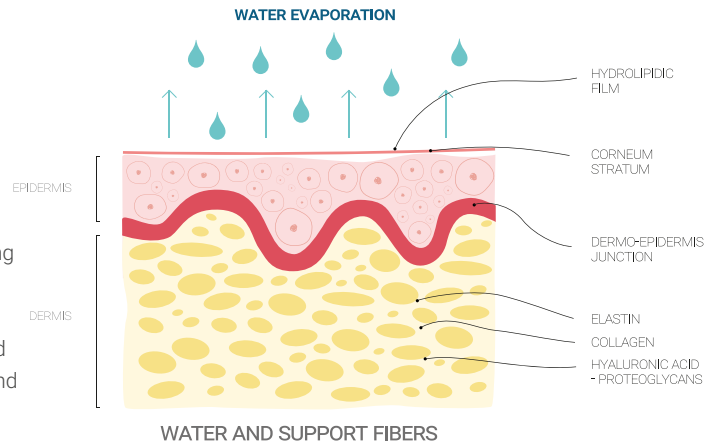
Increasing the synthesis of fibers in the dermis

Study of the extra-cellular matrix

In the dermis, the extra cellular matrix (ECM) is made of different non cellular components, and provides not only essential physical scaffolding for the cellular constituents but also initiates crucial biochemical and biomechanical cues that are required for tissue morphogenesis, differentiation and homeostasis. It is made of water, polysaccharids and proteins; the two main classes of macromolecules are proteoglycans and fibrous proteins like collagens, elastins, fibronectins and laminins synthesized by fibroblasts, the dermis cells.

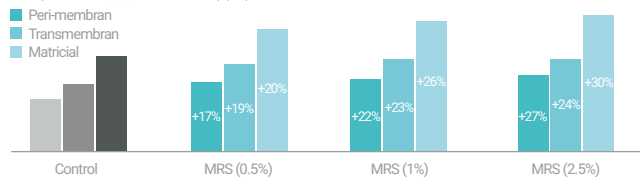
Actually the ECM is a highly dynamic structure that is constantly being remodeled, either enzymatically or non-enzymatically. The ECM generates the biochemical and mechanical properties of skin, such as its tensile and compressive strength, elasticity, and also mediates protection by a buffering action that maintains extracellular homeostasis and water retention. With ageing, the synthesis of the different macromolecules made by fibroblasts decreases, then the biochemical cues in the ECM are modified, therefore its properties decrease too.

Naolys studied two main components of the ECM : proteoglycans and collagens. Proteoglycans are made of a combination of a protein and a GAG. As they are made of long O-glycosylated chains, they are like «water traps». They have buffering, hydration, binding and force-resistance properties. Collagen is the most abundant fibrous protein within the interstitial ECM and constitutes the main structural element of the ECM; collagens provide tensile strength, regulate cell adhesion, support chemotaxis and migration, and direct tissue development.



Study of the synthesis of proteoglycans

Incorporation of [³H]-Glucosamine (cpm)

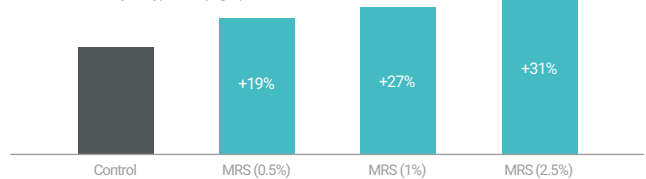


Increase of the synthesis of proteoglycans

→ At concentrations of 0.5%, 1% and 2.5%, the perimembran proteoglycans rate increases by 17%, 22% and 27% respectively ; the transmembran proteoglycans rate increases by 19%, 23% and 24% respectively ; the matricial proteoglycans rate increases by 20%, 26% and 30% respectively.

Study of the neosynthesis of collagens

Concentration of hydroxyproline (mg/L)



Increase of the neosynthesis of collagens

→ At concentrations of 0.5%, 1% and 2.5%, the neosynthesis of collagens rate increases by 19%, 27% and 31% respectively.

Most of the skin's water is found in the dermis, thanks to protein-based macromolecules known as proteoglycans. The glycosaminoglycans (GAGs) that are attached to the matrix can fix large quantities of water. Water in the dermis does not circulate much, however a small proportion of this water passes through the epidermis.

Increasing water in the epidermis

Study of hydration

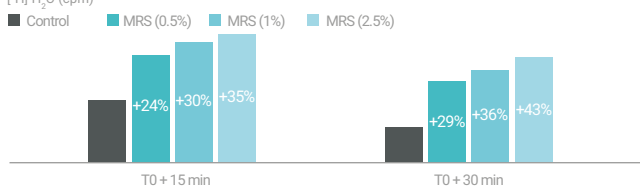
Dehydrated skin contains less than 10% water in the corneous layer, as a result of shaving, which damages the hydrolipidic film: the corneous layer becomes rough and brittle, and its structure is compromised.

To study the effect of MReload Sequoia activity on water in the epidermis, Naolys looked at two types of water in the epidermis with different functions, both of which are essential to maintaining epidermal health.

- A static water, that can't move, located in stratum corneum,

Study of the static water

[³H]-H₂O (cpm)



Increase of water retention

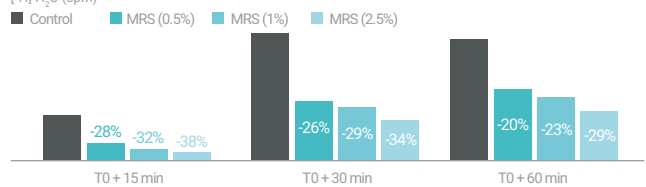
→ At concentrations of 0.5%, 1% and 2.5%, increase of water retention in the dehydrated epidermis at T0+15 min respectively by 24%, 30% and 35% ; and at T0+30 min, respectively by 29%, 36% and 43% compared to non treated controls.

or called "water linked to corneocytes" thanks to the NMF (Natural Moisturizing Factor) and between corneocytes, where water is trapped by lipids, especially ceramides, that are located in the hydrolipidic film. It gives elasticity and suppleness to skin.

- A dynamic water that moves, circulates from the dermis to the several layers of the epidermis, called also transepidermic flux. That water from the dermis is essential to the epidermis nutrition for the nutrients it brings. It helps to protection and homeostasis in the epidermis.

Study of the dynamic water (TEWL)

[³H]-H₂O (cpm)



Decrease of trans-epidermic transfer of the treated water

→ At concentrations of 0.5%, 1% and 2.5%, decrease of the trans-epidermic transfer of the [³H]-H₂O at T0+15min respectively by 28%, 32% and 38% ; at T0+30 min respectively by 26%, 29% and 34% ; and at T0+60 min, and respectively by 20%, 23% and 29%, compared to non treated controls.

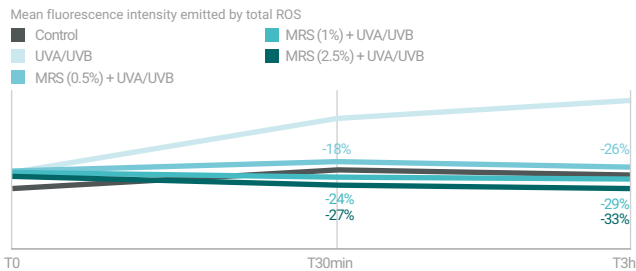
Protecting skin

Strengthening natural antioxidant protection in the epidermis

Because oxidation (due to numerous environmental factors, such as UV and pollution, and internal factors such as the metabolism and stress) is a general phenomenon that affects all skin cells, damaging the components of their structure. However, the production of free radicals attacks our skin in different ways: oxidizing cell membranes (lipid peroxidation), and proteins generally, ultimately damaging the cell DNA. Naolys decided to verify MReload Sequoia activity in terms of the overall production free radicals, and also its action on the two main antioxidant enzymes: SOD (superoxide dismutase) and catalase.

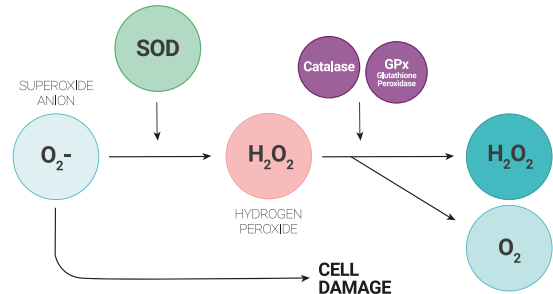
SOD accelerates the transformation of superoxide ions into hydrogen peroxide which catalase then converts into water and oxygen, thereby preventing the formation of carbon dioxide in the blood and also the formation of toxins and mutations in the DNA.

Study of total ROS Induction by UVA/UVB



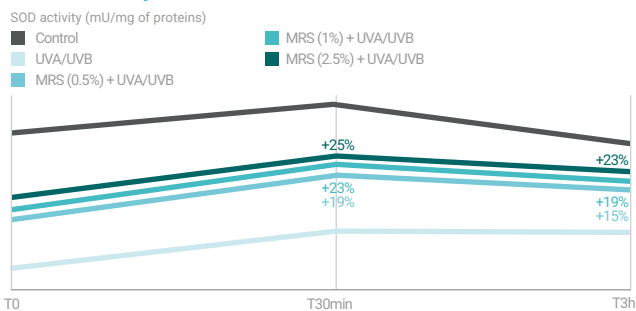
Decrease of ROS

→ At concentrations of 0.5%, 1% and 2.5%, decrease of the reactive oxygenated species (ROS) after 30 min of irradiation of the keratinocytes treated with MReload Sequoia before, respectively by 18%, 24% and 27% and, after 3 hours of irradiation of 26%, 29% and 33%, compared to the non treated control.



ACTIONS OF SUPEROXIDE DISMUTASE AND CATALASE

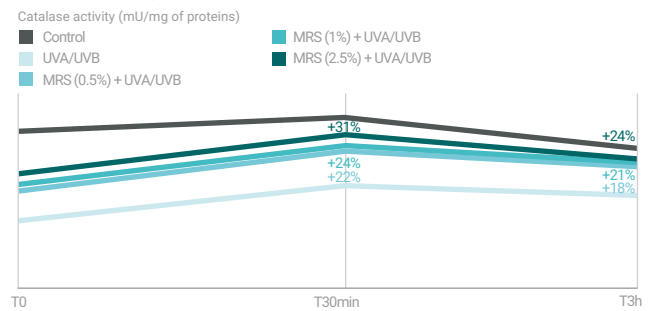
Study of the SOD activity Induction by UVA/UVB



Increase of the SOD activity

→ At concentrations of 0.5%, 1% and 2.5%, after irradiation of the keratinocytes treated with MReload Sequoia before, increase of the SOD activity respectively by 19%, 23% and 25% and, after 30 min, of 15%, 19% and 23%, after 3 hours, compared to the non treated control.

Study of the catalase activity Induction by UVA/UVB



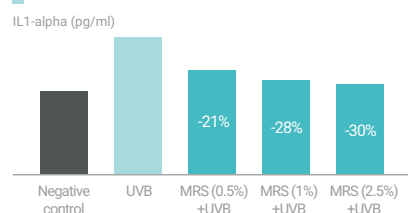
Increase of the catalase activity

→ At concentrations of 0.5%, 1% and 2.5%, after irradiation of the keratinocytes treated with MReload Sequoia before, increase of the catalase activity respectively by 22%, 24% and 31% and, after 30 min, of 18%, 21% and 24%, after 3 hours compared to the non treated control.

Decreasing irritation

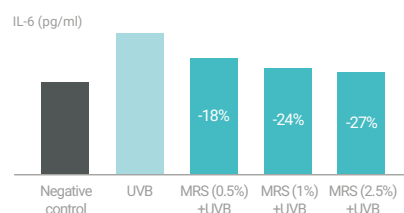
The inflammation is the answer of tissues to aggressions: all defense mechanisms through which they recognize, destroy and eliminate any foreign substances. Different types of cells take part in those mechanisms but in the epidermis, it is the keratinocytes we will study. The beginning of inflammation, its diffusion starting from the initial location involve chemical factors that are locally synthesized or at the state of inactive precursors. Naolys decided to study three inflammation mediators synthesized at the level of the keratinocytes, 2 famous cytokines (IL1- α and IL6) and a prostaglandine (PGE2).

Study of the inflammation mediators



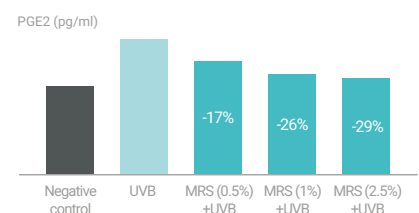
Decrease of IL1-alpha

→ At concentrations of 0.5%, 1% and 2.5%, after 24 hours of incubation, the IL1- α decreases by 21%, 28% and 30% respectively.



Decrease of IL-6

→ At concentrations of 0.5%, 1% and 2.5%, after 24 hours of incubation, the IL-6 decreases by 18%, 24% and 27% respectively.



Decrease of PGE2

→ At concentrations of 0.5%, 1% and 2.5%, after 24 hours of incubation, the PGE2 decreases by 17%, 26% and 29% respectively.

