

Initial E **PT + TMG**

For a radiant new look

NÆOLYS
NATURE EXPANDED



Initial E PT + TMG

For a radiant new look

A STORY

Tuberose + betaine

Naolys' objective with this new plant cell complex, that combines tuberose cells and betaine (trimethylglycine or TMG) integrated into the cells for the first time, is to provide comprehensive action on the three major changes that occur in the area around the eyes: dark circles, puffiness and wrinkles, using the molecular synergy between the cells and natural betaine.

Tuberose is a white heliotrope flower that originated in Mexico and was introduced to Europe in the 16th century; it is now cultivated in India, North Africa and China, for use in perfumery. It releases a heady, sweet, penetrating fragrance which intensifies with nightfall. Extracted from beetroot (*beta vulgaris*), glycine betaine was the first betaine of plant origin to be discovered in the 19th century.

Enriching a plant cell in this way increases the bioavailability of all the active molecules that it contains.

Key points

A biotechnological complex

A reinforced assimilation of active molecules.

Innovative design

A fragrant plant species combined with a well-known active plant molecule.

Complete revealing action

Helps re-establish the original appearance of the area around the eyes.

Because the eye area can change in many ways in two key locations - the eyelids and corner of the eyes - it is necessary to act simultaneously to slow these changes, that are mainly due to a lack of hydration, a slackening of the tissue or a slowing of micro-circulation in the skin. For a more uniform, smoother, brighter look and a more youthful appearance.



PRODUCT BENEFITS

Anti-ageing & Balancing

Anti-wrinkle, anti-circle, anti-puffiness

Reduces circles, puffiness, crow's feet and wrinkles on the eyelids.

Brightening

Enhances radiance, uniformity of skin colour; promotes the elimination of toxins, increases micro-circulation in the skin.

Firming

Contributes to the densification of the dermis. Helps to improve or restore dermis functions, increases skin resistance.

Soothing

Reduces skin irritation.

Moisturizes

Keeps water in the epidermis and the quality of the hydrolipid film. Helps to restore the skin barrier.

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 intended to combat changes in the area around the eyes.

NAOLYS

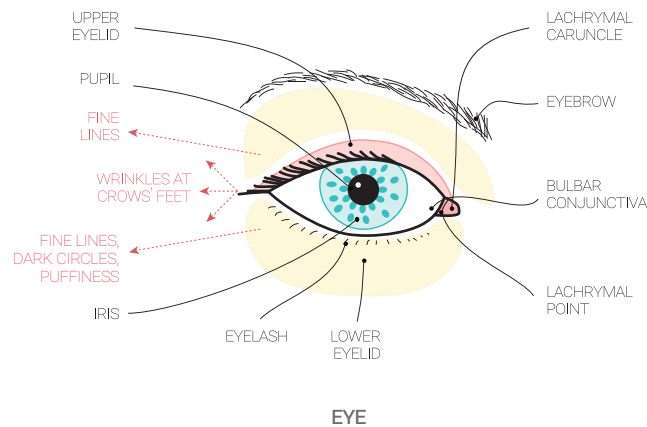
Related products: ALL EVEN SWEET IRIS | SOOTHING LIGHT APPLE TREE | STANDSTILL ROSE FROM DAMAS | PURIFY ALOE VERA

HOW IT WORKS

InitialE [PT+TMG]: restimulates circulatory and tissue mechanisms

We make our first contact with others via our eyes. Our general appearance counts to a large extent on our face, because its expressiveness reveals much of our personality. We take particular care of it during our daily beauty treatments.

The skin around the eyes is very delicate. It is three to five times thinner than on most of the face (0.5 to 0.001 mm). It is therefore very sensitive to the slightest internal or external pressures to which it is subjected: ageing, poor lifestyle (lack of sleep, smoking), and also the inherent fragility of the blood and lymphatic micro-circulation system that deteriorates with time. Furthermore, it is constantly worked by the orbicular muscle. It is thus the first part of the face to show signs of age.



With age, the area around the eyes changes; it can alter its shape and colour; it is therefore necessary to act on several of the mechanisms involved in order to reduce these changes.

InitialE [PT+TMG] helps to restore the shape and original colour of the area around the eyes.

Rediscover the original shape of the area around the eyes

Several changes take place over time. Crow's feet and wrinkles on the lower eyelids appear due to a deficiency in tissue rigidity, since the very thin dermis lacks collagen and elastin; this phenomenon develops with time and is aggravated by the eyes' constant blinking (more than 1,000 times/day). Secondly, as the epidermis is also thinner, the hydrolipidic film has a reduced thickness and a tendency to dry out more frequently.

InitialE [PT+TMG] helps to redensify and rehydrate the area around the eyes.

Rediscover the original colours of the area around the eyes

The area around the eyes is rich in mast cells, making it susceptible to intolerances, irritations and allergies, which can cause it to redden. Furthermore, lymphatic micro-circulation and blood flow often slow down. This can lead to the appearance of circles, due to a deficiency in the return flow of blood (blue rings) and/or an accumulation of blood pigments in the connective tissue (brown rings). Also a swelling of the eyelids or puffiness, which can be caused by a slackening of the tissues.

InitialE [PT+TMG] contributes to the regulation of inflammation and revives circulation in the skin.

Through its action on the quality of the fibres and the colour of epidermis, InitialE [PT+TMG] enables the area around the eyes to regain brightness and its original shape.

CLINICAL TESTING RESULTS

A general improvement in the three major alterations that occur in the area around the eyes in 30 days

- **76%** of women reported that circles were less coloured
- **61%** of women reported that puffiness was reduced
- **52%** of women reported that crow's feet were reduced

At a concentration of 0.5%

IN VITRO TESTING RESULTS

Moisturizing effect

- Due to an increase in water retention in epidermis
- Due to a decrease in transepidermal flow

Lipid restoring effect

- Due to a **24%** increase in free fatty acids

Firming effect

- Due to an increase in the synthesis of the major components of the extracellular matrix, proteoglycans (**average 27%**), collagen (**22%**), elastin (**26%**) and GAGs (**25%**)

Soothing effect

- Due to a decrease in the expression of inflammation mediators, IL1-alpha (**-26%**), IL-6 (**-23%**) and PEG2 (**-24%**)

Detoxifying effect

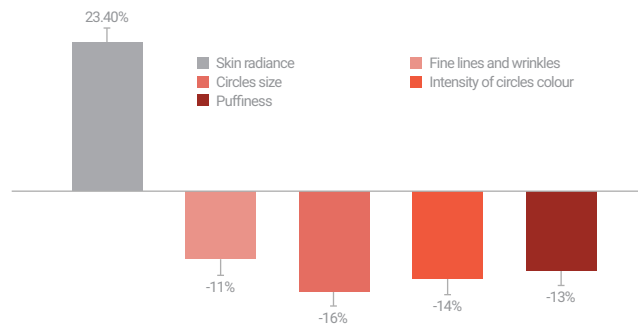
- Due to an increase in micro-circulation (decrease in nitric oxide of **24%**)
- Due to a **24%** and **28%** increase in cellular respiration

At a concentration of 0.5%

Clinical testing results

Circles, puffiness and wrinkles reduced in 30 days, application twice a day

EVOLUTION THROUGH TIME OF THE TREATED AREA
AFTER 30 DAYS (% OF VARIATION)



General increase in skin radiance of 23%
Decrease in circles of 16%
Decrease in puffiness of 13%
Decrease in fine lines and wrinkles of 11%



DAY 0



DAY 30

Study conditions:

- Test carried out for 30 days on 21 women aged 45 to 65 years, with circles, puffiness and crow's feet on the area around the eyes
- Measurement of circles, wrinkles and puffiness by a standardized visual scoring using an Evalux bench® (Orion concept) with calibrated lighting (leds - 6000°K)
- Emulsion with 0.5% InitialE [PT+TMG] (dispersion form, 20% cells)

Technical information on the formulation of InitialE [PT+TMG]

INCI name

Polianthes Tuberosa Callus Extract
(and) Betaine

form

cells (20%) dispersed in vegetal
glycerine (80%)

aspect

liquid

concentration

starting at 0.5%

dispersible

in any formulation
(emulsion, lotion, fluid)

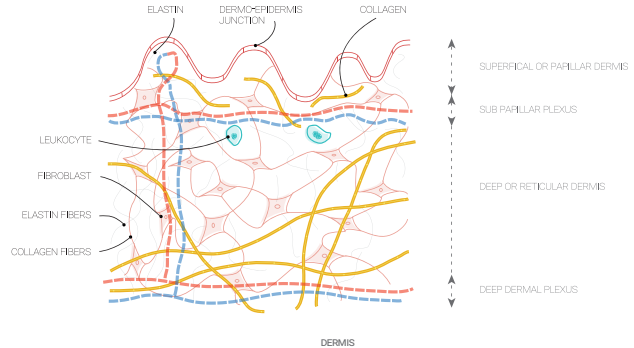
In vitro testing results

Rediscover the original shape of the area around the eyes

Firms tissue

In the dermis, the extra cellular matrix (ECM) consists 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 consists of water, polysaccharides and proteins; the two main classes of macromolecules are proteoglycans and fibrous proteins such as collagens, elastins, fibronectins and laminins synthesized by fibroblasts, the dermis cells.

In fact, the ECM is a highly dynamic structure that is constantly being remodelled, 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 contributes to its protection by a buffering action that maintains extracellular homeostasis and water retention.



With age, the synthesis of the different macromolecules made by fibroblasts decreases, the biochemical cues in the ECM and its properties are therefore modified.

Studies of 5 components of the ECM: proteoglycans, collagen, elastin, GAGs and MMP3

These various studies of the components of the ECM run by Naolys were carried out on fibroblast culture.

Naolys carried out a very delicate study of the synthesis of the 3 types of proteoglycans made by fibroblasts.

Proteoglycans are made of a combination of a protein and a GAG. As they consist of long O-linked glycosylated chains, they are like "water traps". They have buffering, hydration, binding and resistance properties.

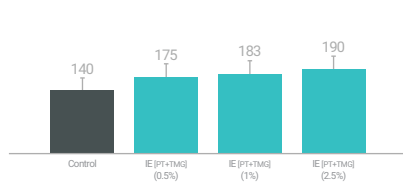
Collagen is the most abundant fibrous protein within the interstitial ECM and constitutes the main structural element of the ECM;

collagens provide tensile strength, regulate cell adhesion, support chemotaxis and migration, and direct tissue development. Elastin is another fibrous protein and the principal structural component of the elastic fibres in the ECM.

GAGs (glycosaminoglycans) are important acids that have very strong water retention capacities. There are several types of GAGs, including hyaluronic acid.

MMP3 (or Stromelysin-1) is an enzyme in the ECM that is involved in the breakdown of the ECM and tissue remodelling. It breaks down type II, III, IV, IX and X collagen, proteoglycans and other fibrous proteins.

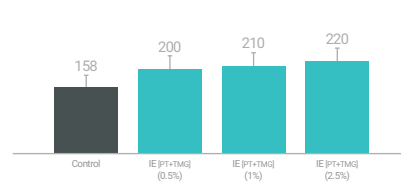
INCORPORATION OF [3H] GLUCOSAMINE (cpm)



Peri-membran proteoglycans

→ At concentrations of 0.5%, 1% and 2.5%, the peri-membran proteoglycans rate increases by 25%, 31% and 36% respectively.

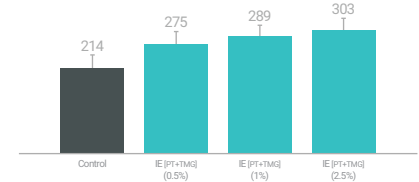
INCORPORATION OF [3H] GLUCOSAMINE (cpm)



Transmembran proteoglycans

→ At concentrations of 0.5%, 1% and 2.5%, the transmembran proteoglycans rate increases by 27%, 33% and 39% respectively.

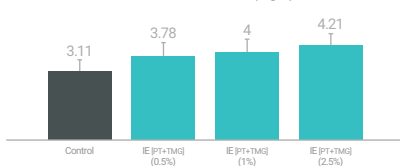
INCORPORATION OF [3H] GLUCOSAMINE (cpm)



Matricial proteoglycans

→ At concentrations of 0.5%, 1% and 2.5%, the matricial proteoglycans rate increases by 29%, 35% and 42% respectively.

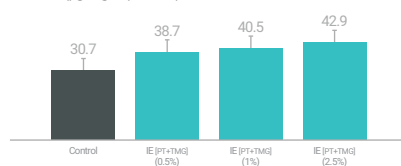
CONCENTRATION OF HYDROXYPROLINE (mg/L)



Collagens

→ At concentrations of 0.5%, 1% and 2.5%, the collagens rate increases by 22%, 29% and 35% respectively.

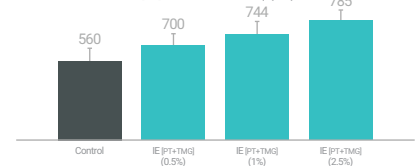
ELASTIN (µg/mg of proteins)



Elastin

→ At concentrations of 0.5%, 1% and 2.5%, the elastin rate increases by 26%, 32% and 40% respectively.

INCORPORATION OF [3H] GLUCOSAMINE (cpm)



GAG

→ At concentrations of 0.5%, 1% and 2.5%, the glycosaminoglycans rate increases by 25%, 33% and 40% respectively.

→ At concentrations of 0.5%, 1% and 2.5%, the MMP3 rate decreases by 24%, 30% and 35% respectively.

Maintains moisture in the epidermis

Skin contains between 60% and 80% water depending on its age; the stratum corneum contains 13% to 15%. Skin is considered to be hydrated when this percentage is above 10%, and dehydrated when it is below 10%, resulting in the stratum corneum becoming rough and flaky and losing its integrity.

Water follows a path from beneath the skin to its surface; when it arrives at the surface, the water evaporates. This occurs at a rate of about 5g water/m²/hour. 300 to 500 ml of water evaporates every 24 hours; its main obstacle is the skin barrier, so it is important that this barrier's integrity is maintained. This depends on external factors such as temperature and humidity, and internal factors, such as the state of the stratum corneum, the water gradient in the different layers of the epidermis and the integrity of the lipid network between corneocytes. It does not depend on the quantity of static water in the stratum corneum.

There are two types of water in the epidermis:

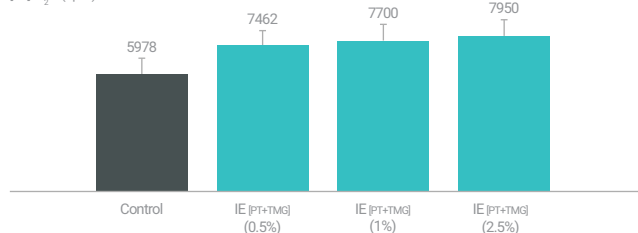
→ Static water in the stratum corneum that cannot move, this water is held in the corneocytes due to the NMF (Natural Moisturizing Factor) and between corneocytes, where it is trapped by lipids, especially ceramides, that are located in the hydro-lipid film. This gives the skin elasticity and suppleness.

→ Dynamic water that moves, circulating from the dermis to the various layers of the epidermis, also known as transepidermal flux. This water from the dermis brings essential nutrients to the epidermis. It helps to protect the epidermis and maintain homeostasis.

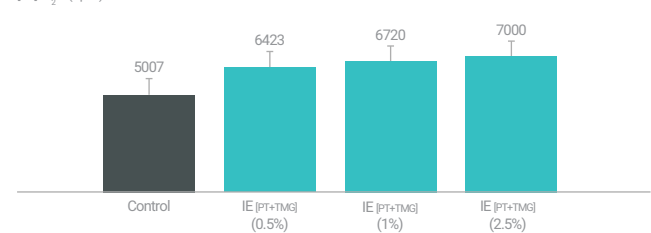
Naolys therefore studied these two types of water for a better appraisal of the effect of InitialE [PT+TMG].

Study of static water – epidermis

[³H]-H₂O (cpm): T0 + 15 min



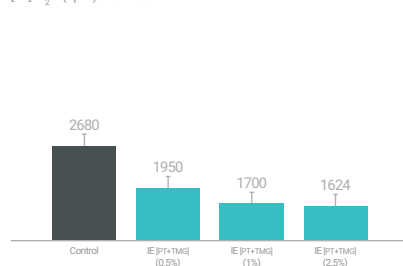
[³H]-H₂O (cpm): T0 + 30 min



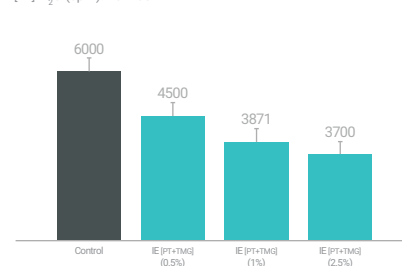
→ At concentrations of 0.5%, 1% and 2.5%, increase of water retention in the dehydrated epidermis at T0 + 15 min respectively by 25%, 29% and 33%, and at T0 + 30 min respectively by 28%, 34% and 40% compared to non treated controls.

Study of dynamic water - epidermis

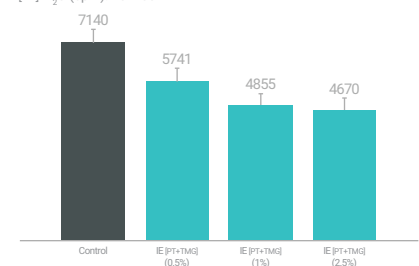
[³H]-H₂O (cpm): T0 + 15 min



[³H]-H₂O (cpm): T0 + 30 min



[³H]-H₂O (cpm): T0 + 60 min



→ At concentrations of 0.5%, 1% and 2.5%, decrease of the trans-epidermic transfer of the treated water [³H]-H₂O, at T0 + 15 min respectively by 27%, 32% and 36%, at T0 + 30 min respectively by 25%, 27% and 30% and at T0 + 60 min respectively by 20%, 23% and 26% compared to non treated controls.

Study of free fatty acids

In the epidermis, at the junction between the granular layer and the corneous layer, the lamellar bodies contained in the keratinocytes fuse with the plasma membrane in the form of lamellar granules that stack up parallel to the surface of the corneocytes and release their lipid content into the spaces between the corneocytes, forming a compact mortar.

The lipids in the lamellar granules consist of phospholipids, cholesterol and glucosylceramides, which are then modified in the spaces between the corneocytes, by specialized enzymes, into ceramides (SC Cer 1-7), cholesterol, cholesterol sulphate and free fatty acids.

Naolys thus studied the presence of free fatty acids, some intercellular lipids essential for corneocyte cohesion, and therefore the quality of the skin barrier, which prevents the evaporation of water.

INCORPORATION OF [¹⁴C] - ACETIC ACID (cpm)



→ At concentrations of 0.5%, 1%, and 2.5%, free fatty acids increase by 24%, 29% and 35% respectively.

Rediscover the original colour of the area around the eyes

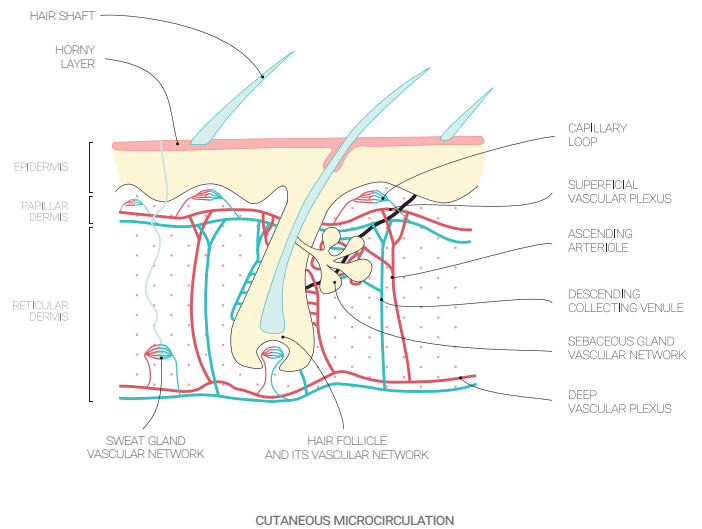
Strengthens micro-circulation in the skin

The dermis and hypodermis are vascularised by a blood network made up of arterioles, capillaries, and veinlets, and by a parallel lymphatic network made up of channels, which enable the transport of the interstitial fluid, between the blood capillaries and cells, into the blood. However the epidermis is not vascularised.

Each network has a specific function. Blood micro-circulation nourishes the skin cells, maintains blood pressure by vasoconstriction, enables the skin to tolerate prolonged periods of ischemia due to the body's weight, and ensures vasomotor reactivity necessary for regulation, in addition to the usual endothelial functions (coagulation, etc.).

The lymphatic system plays a vital role in regulating the pressure of the interstitial fluid: the excess interstitial fluid is collected by the lymphatic vessels. It enables the elimination of cells, proteins and waste products from the skin. Lastly, it plays a role in defending the skin, as it transports antigens and cells such as Langerhans cells and is involved in triggering immune responses.

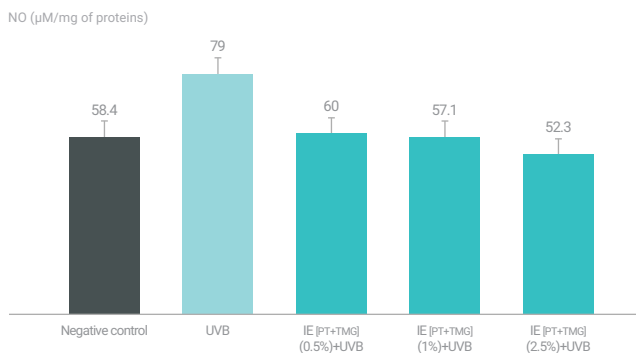
Given the thinness of the skin in the area around the eyes, the effects of vasodilatation and vasoconstriction are very quickly apparent, as are changes in the pressure of the interstitial fluid.



Study of nitric oxide, the primary EDRF

Blood vessels are made of several layers of fibrous cells, one of which is in direct contact with the blood: the endothelium. Made of flat cells, it has many functions, from haemostasis to vasoconstriction, for which it secretes vasodilator and vasoconstrictor factors.

Among the vasodilators is nitric oxide (NO), which has been identified as the primary EDRF (Endothelium Derived Relaxing Factor). This liposoluble gas activates a chemical reaction, leading to the relaxing of blood vessels or vasodilation.



→ At concentrations of 0.5%, 1% and 2.5%, the release of nitric oxide decreases significantly by 24%, 28% and 34% respectively.

Reduces sensitivity

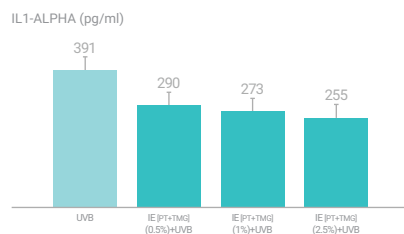
Inflammation is the tissues' response to external threats: it is part of the defence mechanisms through which they recognize, destroy and eliminate any foreign substances. Various types of cell take part in these mechanisms; in the epidermis, it is the keratinocytes that we will study. The start of inflammation, and its spreading from the initial location involves chemical factors that are synthesized locally or inactive precursors. Naolys studied 3 inflammation mediators synthesized in the area around the hair bulb: two well-known cytokines and a prostaglandin.

→ IL1-alpha is an intracellular mediator cytokine that is synthesized and then stored inside the cell as an inactive precursor. It has several local and systemic biological functions (in gene expression, cell proliferation, the nervous system, etc.).

→ IL-6 is a pro-inflammatory cytokine that regulates the activation, growth and differentiation of lymphocytes. It belongs to the group of proteins that direct the secretion of anti-bodies to fight against extra-cellular pathogens.

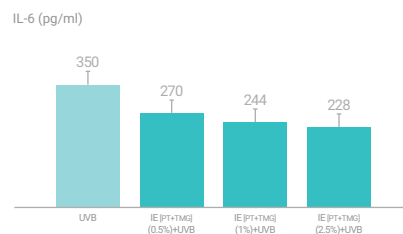
→ PGE2 is an eicosanoid, derived from phospholipids in the cell membranes. PGE2 acts on muscle fibres in the blood vessels, causing vasodilatation, increased permeability and oedema.

Study of inflammation mediators



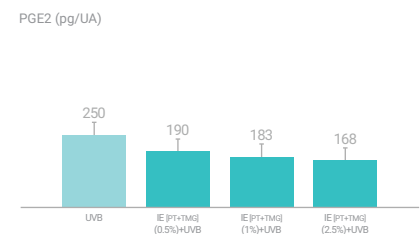
Study of IL1-alpha

→ At concentrations of 0.5%, 1% and 2.5%, after UVB induction, IL1-alpha decreases by 26%, 32% and 36% respectively.



Study of IL-6

→ At concentrations of 0.5%, 1% and 2.5%, after UVB induction, IL-6 decreases by 23%, 30% and 35% respectively.



Study of PGE2

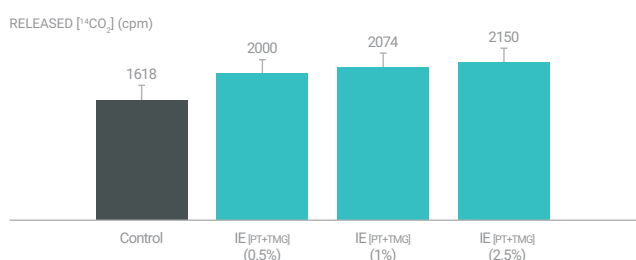
→ At concentrations of 0.5%, 1% and 2.5%, after UVB induction, PGE2 decreases by 24%, 27% and 33% respectively.

Increases detoxification

Cellular respiration is a redox chemical reaction which supplies energy to cells to grow and to function. Cells produce energy with glucides, as ATP through cell respiration. The activity of InitialE [PT+TMG] on the cell and respiratory metabolism has been evaluated by the metabolization of glucose by the cells of the epidermis in hypoxia conditions. *In vitro* hypoxia conditions induce deep alterations of cell electromechanical functions, with an increase in the production of lactate, a fall in the quantity of ATP, ADP, and a loss of LDH. Improved cellular respiration results in better functioning of the skin cells, with improved elimination of toxins.

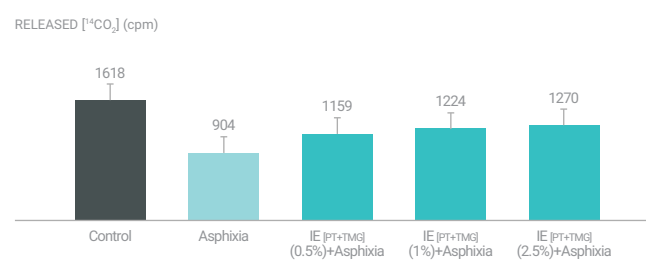
Naolys used the release of CO₂ as an indicator of cellular respiration because it enables verification of good oxygenation through to the end of the breathing process.

Study of cellular respiration



In the physiological conditions

→ At concentrations of 0.5%, 1% and 2.5%, in physiological conditions, the release of CO₂ increases by 24%, 28% and 33% respectively.



In the asphixia conditions

→ At concentrations of 0.5%, 1% and 2.5%, in asphixia conditions, the release of CO₂ increases by 28%, 35% and 40% respectively.



See also

PowerExtension [HSB+R]
All Even Sweet iris
Foreseen Shield Nopal
All Fiber Booster Olive tree
All Fiber Booster Chinese hibiscus
Fiber Booster Plus Sequoia and Vitis flower
Inside Heart Egyptian blue lily
Revive Commiphora and Rose from Damas
StandStill Rose from Damas
Total Generation Sequoia and Egyptian blue lily
Total Generation Curry plant



