HYDROXYPROLISILANE C N®

EXSYMOL

INCI name : METHYLSILANOL HYDROXYPROLINE ASPARTATE
Ingredient code CLS (Japan) : 532273

CHEMICAL FAMILY

HYDROXYPROLISILANE C N® belongs to the chemical family : ***Silanols.***
Silanols are hydrosoluble derivatives of ***organic silicon***, obtained by condensation of methylsilanol, an organosilane, with numerous silanols functions, on a specific radical which confers to the ***Silanol*** obtained, its specific action mode.

ORIGIN

HYDROXYPROLISILANE C N® is a non-animal derivative resulting from the reaction of methylsilanetriol with hydroxyproline, obtained by **biotechnology**.

ANALYTICAL COMPOSITION

Methylsilanetriol	0.41%
in which silicon	0.125%
Hydroxyproline	0.58%
Aspartic acid	0.10%
Water sq	100.00%

TECHNICAL CHARACTERISTICS

Colorless to slightly pinkish limpid to slightly opalescent liquid
pH : about 5.5
Density at 20°C : about 1.0
Miscible with water, alcohols and glycols.

AVAILABILITY

5, 30 or 60 kg drums

USES

Anti-aging : prevention and repair
*
Body, Neck, Bust-firming products
*
Anti-stretch mark products
*
Treatment post radiotherapy or laser
*
Healing process on small scars
*
Eye-contour
*
Anti-free radical activity
(products for skins prone to acne, sensitive skins, babies and children, sun and after-sun products, after-shaves, depilatory products...)

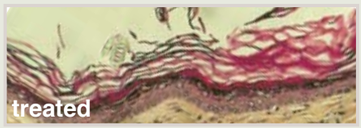
BIOLOGICAL ACTIVITIES

HYDROXYPROLISILANE C N® : THE ULTIMATE SILANOL FOR TISSUE REGENERATION AND SKIN-FIRMING

SKIN REGENERATION *

The skin regeneration is studied on an artificially aged skin (after scarification) on which HYDROXYPROLISILANE C® has been applied, versus non-treated skin. HYDROXYPROLISILANE C® , formulated at 4% in a gel, or the same placebo gel is applied, after a 7-day healing period, for 2 weeks on a daily basis.

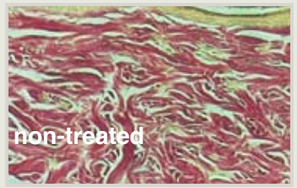
EPIDERM

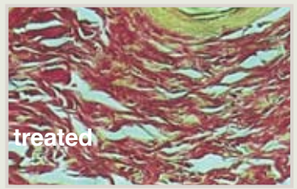


Biopsies allow the observation of epiderm and derm.
A characteristic hyperplasia (important thickness of the epiderm) is visible on the non-treated epidermis while the skin treated with 4% HYDROXYPROLISILANE C® shows a «back to normal» epiderm (scales and magnification are the same on the 2 pictures).

In the case of the non treated derm, the regeneration has occurred in an «anarchic» way where the collagen fibbers (light blue on the picture) are disorganized. In the case of the treated derm, the collagen fibbers appear much better organized (parallel to each other and to the surface of the skin), which results in a better skin appearance and elasticity.

DERM



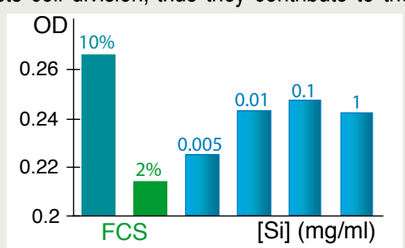


Other pictures (not shown here) using appropriate coloration display higher number of fibroblasts in the treated skin.

The excellent activity of HYDROXYPROLISILANE C N® as a skin regenerator is the logical consequence of the cytostimulation (evidenced *in vitro*) : the more numerous fibroblasts will be able to produce more proteins, in particular collagen whose main constituent is hydroxyproline. HYDROXYPROLISILANE C N® would complementary behave as a pool of hydroxyproline.

CELL RENEWAL (CYTOSTIMULATION) *

Cutaneous cell cytostimulation, in particular for fibroblasts, is a key factor of the young connective tissue. HYDROXYPROLISILANE C® responds to this need by stimulating fibroblasts cell division, thus they contribute to the maintain of a normal cellular metabolism in aging tissue.
The cytostimulating and regenerative effect of HYDROXYPROLISILANE C® was evidenced *in vitro* on a human fibroblast deprived culture medium (Fetal Calf Serum (FCS) 2 %). Neutral Red is added to the incubation medium and the incorporation of it, which occurs only into living cells, is measured by U.V. (Optical density). A high OD value is characteristic for an important cytostimulation.



HYDROXYPROLISILANE C® stimulates the multiplication of «aged» cells and is capable to enhance the cell renewal in a very significant manner.

**Those tests were performed with the former animal version : HYDROXYPROLISILANE C®. Providing that the only difference with the sole currently available non-animal version (HYDROXYPROLISILANE C N®) is the biotech origin of hydroxyproline, used as a reagent for the synthesis of HYDROXYPROLISILANE C N®, we consider that the efficacy of both materials is identical.*

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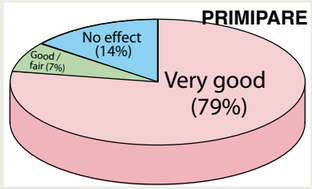
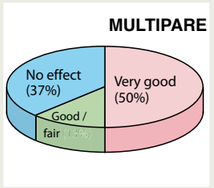
ANTI-STRETCH MARKS : CLINICAL EVIDENCE *

A direct application of the skin regeneration property of HYDROXYPROLISILANE C N® is against stretch-marks that generally appears after pregnancy or after a slimming diet and a loss of weigh …
A cream containing 6% HYDROXYPROLISILANE C® is applied on the abdomen of 23 pregnant women from the beginning of the 3rd month until one month after delivery.



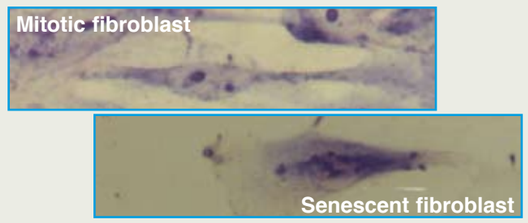
Among the primipare patients (never pregnant before), 79% considered the effect of the product as very good, 7% of them considered it as good or fair and 14% of them considered that it had no effect.

The ratio of very good or fair appreciation was smaller among the multipare patients (already had baby(ies) before) probably because of the previous pregnancies that already caused the formation of stretch-marks.

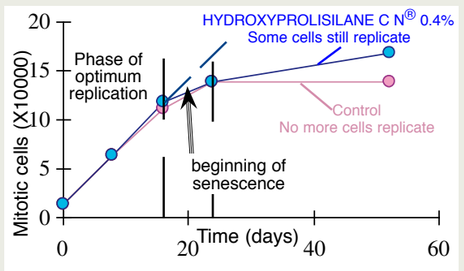


CELLULAR SENESCENCE

Cellular senescence is a genetically programmed mechanism responsible for an irreversible stop in the cell growth and multiplication. This phenomenon comes along with the appearance of a population of "senescent cells", with characteristic morphology and metabolism.



The replicative lifetime is defined as the time during which the cells do multiply (mitotic cells) ; when they still survive but do not multiply any more, they are said senescent.

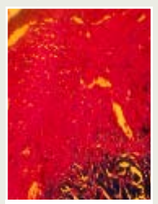


The anti-aging effect of HYDROXYPROLISILANE C N® is evidenced through the increase in the replicative lifetime of fibroblasts *in vitro*.

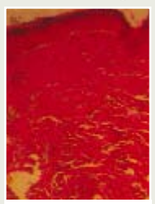
HEALING IMPROVEMENT

The application of HYDROXYPROLISILANE C N® on a skin, artificially aged, results in a significant improvement of its regeneration and healing capacities, while limiting the energy requirement.

Biopsies show that, after the same healing period, an aged skin (picture 1) produced a lot of compact neocollagen, few mature collagen and few interfibrillar volumes and still has not regained its young tissue aspect.
At the same time, an aged skin treated by HYDROXYPROLISILANE C N® (picture 2) was able to heal much more efficently while getting back its aspect of young skin much quicker.



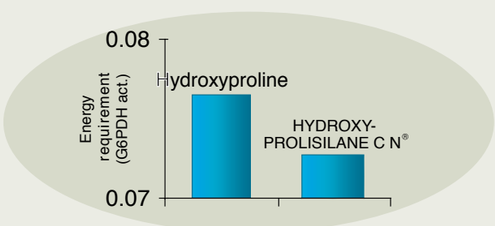
Picture 1 : Aged skin after healing.



Picture 2 : Aged skin treated with HYDROXYPROLISILANE C N®

The energy requirement (G6PDH activity) is measured during the healing of an aged skin submitted to Hydoxyproline or HYDROXYPROLISILANE C N® treatment.

The energy necessary to heal with HYDROXYPROLISILANE C N® is less than that necessary with hydroxyproline.



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TOLERANCE STUDY

The tests performed showed that the product is neither toxic nor irritant.
The tolerance has been studied *in vitro* by alternative methods on both cell culture and reconstituted epidermis. The ocular tolerance is evaluated by studying the cytotoxicity on cornea-isolated fibroblasts culture. The cutaneous tolerance is evaluated on reconstituted epidermis by measure of the cell viability after a contact period of 24 hours with the product.

FORMULATION

The suggested concentration for an optimum activity of **HYDROXYPROLISILANE C N®** is from 2 to 5 %.

Important remark :

HYDROXYPROLISILANE C N® must not be stored at temperature inferior to 0°C otherwise an irreversible polymerization might occur.

BODY FIRMING CREAM

PHASE A	
CETEARYL ISONONANOATE	7.0%
GLYCERYL STEARATE	6.0%
ISOPROPYL MYRISTATE	2.0%
DIMETHICONE	0.5%
DECYL OLEATE	1.5%
PHASE B	
HYDROXYETHYLCELLULOSE (sol 1%)	sq100
PROPYLENE GLYCOL	3.0%
IMIDAZOLIDINYLUREA	0.2%
PHASE C	
PHENOXYETHANOL + PARABEN	0.4%
PHASE D	
HYDROXYPROLISILANE C N®	5.0%
ALGISIUM C®	1.0%
PHASE E	
fragrance	sq

Heat ingredients of *PHASE A* to 80°C. Add ingredients of *PHASE B* while mixing gently. Add ingredients of *PHASE C* and mix gently for 15 min. Start to cool down and add ingredients of *PHASE D,* adjust viscosity, before incorporating fragrance.

EXISTING STUDIES

(available upon request)

Technical document

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Cosmetic activities

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Histological anti-ageing study

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Stretch mark clinical trial

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Effect of a cosmetic cream containing **HYDROXYPROLISILANE C N®** on the improvement of the healing properties of an aged skin. Comparison with hydroxyproline

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Effect of **HYDROXYPROLISILANE C N®** on cellular senescence

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Tolerances

EXSYMOL S.A.M. - 4 avenue Albert II - MC 98000 MONACO
Tél. : +377 92 05 66 77 - Fax : +377 92 05 25 02
E-mail : exsymol@exsymol.com - Internet : http://www.exsymol.com

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A3_0436GB0901D