LASILIUM®
O.S. LASILIUM 0.35

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.

The results show that:
- LASILIUM® is not irritant according to the procedure of ocular irritation,
- LASILIUM® is not irritant according to the procedure of primary cutaneous irritation,
- LASILIUM® is not mutagenic.

Formulation
The suggested concentration for an optimum activity is from 3 to 4 %.

Important remark: LASILIUM® must not be stored at temperature inferior to 0°C otherwise an irreversible polymerization might occur.

Shelf-life
LASILIUM® should be recontroled after a 6 month storage whereas O.S. LASILIUM 0.35 should be recontroled only after 12 months.

Information available
Technical document
Evaluation of moisturization by corneometry
Study of cytostimulation in vitro: fibroblast culture
Reorganization of cell membranes
Anti-glycation properties
Serine-protease regulation
Tolerances

LASILIUM
INCI name: SODIUM LACTATE METHYL SILANOL
Ingredient code CLS: 532245
O.S. LASILIUM 0.35
INCI: SODIUM LACTATE METHYL SILANOL (and) WATER

Origin
LASILIUM® is a SILANOL obtained by condensation of a synthetic derivative of silicon on lactic acid. The silicon derivative is obtained by synthesis, no derivative of animal origin is used. Lactic acid is obtained by fermentation from sugar, no derivative of animal origin is used. On the other hand, the strain and the raw material used are not genetically modified.

O.S. LASILIUM 0.35 is a stable dilution of 35% LASILIUM® in water.

Analytical composition (*)
methylsilanetriol 0.51%
of which silicon is 0.15%
lactic acid 0.49%
water sq 100.0%

Technical characteristics (*)
colorless to slightly pink, limpid liquid
pH: around 5.5
density at 20°C: around 1
miscible with water, alcohol and glycols

Preservation
LASILIUM® is preserved with sodium methyl paraben, propyl paraben and salicylic acid.

Availability
5, 30 or 60 kg drums

Uses
Face and body moisturizers
Dry skin
Serine-protease regulation
Anti-glycation
Anti-aging: prevention and reparation

(*) for LASILIUM
Cutaneous cell cytostimulation, in particular for fibroblasts, is a key factor of the young connective tissue. LASILIUM® responds to this need by stimulating fibroblasts division, and therefore contributes to maintain a normal cellular metabolism in aging tissue. The cytostimulating and regenerative effect of LASILIUM® 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 inc... living cells, is measured by U.V.(Optical density). A high O.D. value is characteristic for an important cytostimulation.

LASILIUM® stimulates the multiplication of «aged» cells and is capable to enhance the cellular regeneration in a very significant manner.

The very close relation between extra-cellular matrix (ECM) and tissue metabolism led us to study the effect of silanols, e.g. LASILIUM®, on some enzymes like serine-proteases (e.g. chymotripsine), known to be involved in the processes of desquamation and moisturization. We have designed an in vitro experiment in which the enzymatic activity of chymotryptpsine is studied under permanent control of glycan structures (e.g. chondroitin sulfate). However no inhibition of this protein is observed when a silanol (e.g. LASILIUM®) is incubated in the presence of the pure enzyme, we have been able to confirm that the overall enzymatic activity is partially inhibited by chondroitin sulfate (CS) (red curve). In presence of silanol, together with glycoaminoglycane (CS), the enzymatic activity is fully and constantly preserved, keeping then a higher moisturization of the tissue (blue curve). The complete epiderm fraction is compulsory for the silanol to efficiently regulate and counteract the negative effect of chondroitin sulfate on the enzymatic activity, which confirms that the ECM and the metabolic activity of the tissue are very much interconnected.

The glycation rate is measured by the quantity of 5-hydroxymethyl furfuraldehyde (HMF), liberated during the hydrolysis. The anti-glycation activity of LASILIUM® was demonstrated on a reference protein (BSA) submitted to glycation by glucose. With a concentration of LASILIUM® corresponding to 150 mg/l in silicon, an inhibition of glycation of the protein of about 85% can be reached. Based on our knowledge on silanols’ reactivity and affinity for proteins and glucose derivative, it is very likely due to a competitive reaction between the silanol and the protein, on the one hand, and the silanol and the glucose on the other hand.

The moisturizing capacity is evaluated with a corneometer by measurement of the dielectric constant of the skin on a group of 10 people (6 females and 4 males) aged between 28 and 52. The probe of the corneometer is applied on a predefined area of the forearm and the dielectric constant (ε) is measured regularly for 3 hours.

All products applied generate an immediate moisturization on the skin after up to 2 hours. Both propylene glycol and EMULZOME® increase the dielectric constant of about 15% while LASILIUM® increases it of about 35%. (The red line indicates the basic dielectric constant of the non-treated reference skins). Moreover, LASILIUM® is able to maintain the same moisturization degree for 3 hours or more.
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