THEOPHYLLISILANOL CARBOXYMETHYL THEOPHYLLINE ALGINATE
CAS number: 128973-73-9

Origin

THEOPHYLLISILANOL C® is a silanol obtained by condensation of a silicon derivative on theophylline acetic acid and alginic acid. The silicon derivative and theophylline acetic acid are obtained by synthesis, no derivative of animal origin is used. Alginic acid is obtained after extraction from brown algae, no derivative of animal origin. All silanols are endowed with some particular biological activities; THEOPHYLLISILANOL C® has been specially designed for lipolysis.

Analytical composition

- Monomethylsilanetriol in which silicon: 0.34% / 0.1%
- Theophylline acetic acid: 0.87%
- Alginic acid: 0.1%
- Water sq: 100%

Technical characteristics

- Limpid to slightly opalescent liquid, colorless to slightly yellow
- pH: around 5.5
- Density, 20° C: around 1.0
- Miscible with water at room temperature, not miscible with concentrated alcohols

Availability

- 5, 30 or 60 kg drums

Uses

- Body contour (LIPOLYTIC, ANTI-CELLULITE)
- Body and face firming
- Bags under the eyes / puffy eyes
- Body and face moisturization
THEOPHYLLISILANE C® has a notable lipolytic activity. This activity is directly linked to silicon content; liberated glycerol content increases with silicon content.

After treating adipose tissue with THEOPHYLLISILANE C®, intracellular cyclic AMP concentration is increased in a significant way. The lipolytic activity obtained with THEOPHYLLISILANE C®, compared with results obtained with phosphodiesterase inhibitors, cannot be only linked to this cAMP increase in concentration.

Hypothesis of a stimulative action on cAMP is advanced; it can be due to silicon. The lipolytic activity could be the answer to an activation of the membrane system, leading to adenylate cyclase formation, thus to cAMP synthesis which activates, by a series of reactions, the hormono-sensitive lipase.

THEOPHYLLISILANE C® and ALGISIUM C® have been tested for glycerol production due to their activity on adenylate cyclase, promoting lipolysis. In vitro study has shown that the lipolytic activity induced by THEOPHYLLISILANE C® was higher than the lipolytic activity of ALGISIUM C® and theophylline. This slimming activity comes along with the regeneration of the surrounding connective tissue, leading to a better microcirculation which normalizes cellular exchanges and improves the skin aspect.

THEOPHYLLISILANE C® has remarkable effects on:
- lipolysis in the adipocytes which confirms the results of the experiment on adipocytes in vitro.
- the trophicity and degeneration of the proteoglycans or acid mucopolysaccharides in elastic fibres and collagen.
- on tissular permeability and thus the resorption of local oedema.

THEOPHYLLISILANE C® is obtained from theophylline acetic acid. This compound is well known to inhibit phosphodiesterases and enhance the cAMP concentration in the cells. Cosmetic application of this pharmacologic activity is the cAMP dependent lipolysis. Concerning its activity on fatty acids metabolism, theophylline acetic acid inhibits the lipoprotein lipase (LPL). Inhibition of LPL by theophylline acetic acid was studied in vitro. The graph on the left shows the activity level of the lipoprotein lipase depending on the concentration in theophylline acetic acid (THEOPHYLLISILANE C® is obtained from 0.87% of theophylline acetic acid).

As other compounds of the same family (caffeine and theophylline derivatives), results show that theophylline acetic acid inhibits the activity of LPL in a dose dependent manner.

**RESULTS ON THEOPHYLLISILANE C® AND ALGISIUM C® FOR GLYCEROL PRODUCTION**

**SLIMMING ACTIVITY**

Theophyllisilane C® and Algisium C® have been tested for glycerol production due to their activity on adenylate cyclase, promoting lipolysis. In vitro study has shown that the lipolytic activity induced by Theophyllisilane C® was higher than the lipolytic activity of Algisium C® and theophylline. This slimming activity comes along with the regeneration of the surrounding connective tissue, leading to a better microcirculation which normalizes cellular exchanges and improves the skin aspect.
Tolerance study

The product is neither toxic nor irritant.

Tolerance has been studied in vitro by alternative methods on both cell culture and reconstituted epidermis. Ocular tolerance is evaluated by studying cytotoxicity on cornea isolated fibroblasts culture. Cutaneous tolerance is evaluated on reconstituted epidermis by valuation of cells viability after a contact period of 24 hours with the product.

Formulation

THEOPHYLLISILANE C® is stable for pH included between 3,5 and 6,5. On average, the recommended concentration is 3 to 6%.

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

Existing studies

Technical document

* Lipolytic activity in vitro : adipocytes
* Tolerances investigations
* Activity on lipidic overloads “clinical test”
* Toxicity Tolerance - alternative methods