



## SEBOCEA®

The effective marine sebum regulator

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*Decreases sebum production*

*Limits the resulting irritation*

*Improves the comfort of the oily skin*



Oily skin is characterized by high sebum secretion produced by sebaceous glands. It looks greasy and shiny with enlarged and clogged pores. This kind of skin can affect people of any age, teenagers men and women adults. For some people, the production and excretion of sebum result just in oily skin. In other cases, oily skin shows a tendency to break out into various disorders (e.g. seborrheic dermatitis and acne) linked to irritation and inflammatory reactions.

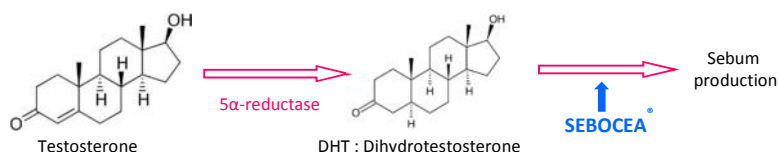
GELYMA proposes SEBOCEA® a patented innovative marine concept that helps to reduce sebum secretion and inhibit excessive inflammation.

SEBOCEA® combines the properties of two algae: the marine green microalga *Tetraselmis chui* and the brown seaweed *Fucus spiralis*. *Tetraselmis chui* is developed by biotechnology with controlled metabolic induction cultivation process in order to induce mineral bioaccumulation, presently bio-available zinc. *Fucus spiralis* is collected along the seashores of Brittany.

## Mechanisms of action

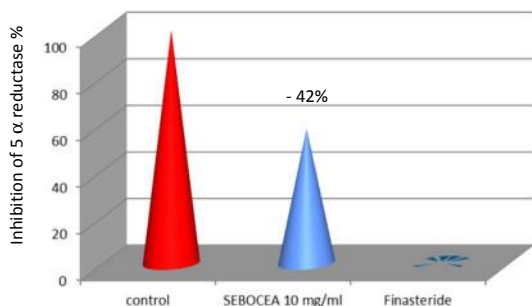
### SEBOCEA® reduces sebum secretion by inhibiting the 5 alpha-reductase activity

Sebum production is stimulated by androgens. The enzyme 5  $\alpha$ -reductase metabolises testosterone in the skin into its more potent form dihydrotestosterone (DHT) that is responsible for the overproduction of sebum.



#### Evaluation of 5-alpha reductase activity

Human fibroblasts (Hs68) treated with marked testosterone. Extraction of steroids. Chromatography. Evaluation of DHT. Standard: finasteride (Laboratory BIO-HC- FRANCE).



SEBOCEA® induces a reduced DHT level, thus inhibits 5 $\alpha$ -reductase.

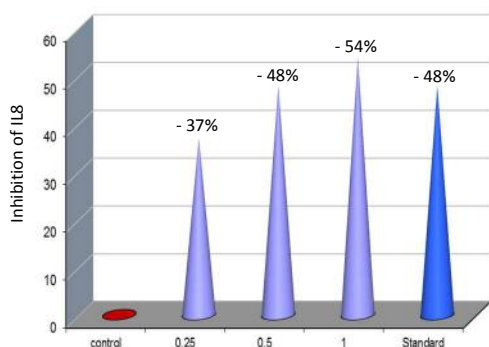
With 1 % SEBOCEA®, the significant reduction of the DHT level reaches 42% ( $p < 0.01$ ) vs control.

SEBOCEA® reduces sebum secretion.

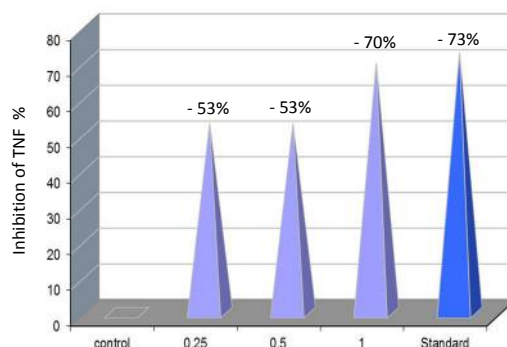
### SEBOCEA® combats inflammation by inhibiting the IL-8 and TNF $\alpha$ activities

The chemokine IL-8 is regarded as a key factor to a strong proinflammatory condition. Tumor necrosis factor alpha (TNF  $\alpha$ ) is a proinflammatory cytokine that elicits a large number of biological effects e.g. inflammatory and immunoregulatory responses.

Evaluation of IL-8 and TNF  $\alpha$  activities by Elisa testing - Human keratinocytes submitted either to IL-1b for inducing the release of IL-8 or to phorbol myristate acetate (PMA) for inducing the release of TNF  $\alpha$  (SEPhRA PHARMA-FRANCE).



With 1%, SEBOCEA® inhibits by -54 % the release of IL-8 ( $p < 0.01$ )



With 1%, SEBOCEA® inhibits by -70 % the release of TNF  $\alpha$  ( $p < 0.01$ )

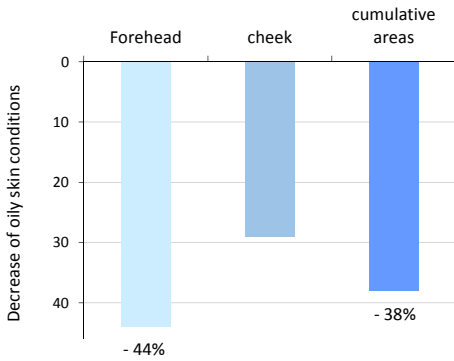
SEBOCEA® prevents skin irritation by inhibiting both cytokines with a dose dependent effect.

## SEBOCEA® shows sebum regulation efficacy

### Clinical studies

20 volunteers (7 males between 40 and 58 years old and 13 females between 27 and 53 years old) with oily skin or prone acne skin. Twice daily applications of a Carbopol gel with SEBOCEA® 3% active on the forehead and cheeks. Sebum collection using Sebutape applied to the skin for 6 seconds on day 0 and day 28. Spots observed by image analysis. Statistical validation: Student's test (Laboratory BIO-EC - FRANCE).

#### ► Improvement of cutaneous state



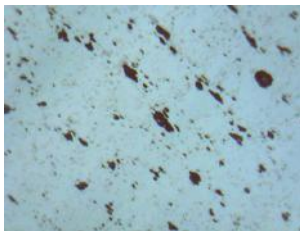
With 3 % in a gel, SEBOCEA® induces a significant decrease in the severity of oily skin conditions after 28 days of treatment:

- - 44% reduction on the forehead ( $p = 0.015$ ).
- - 38% reduction for cumulative forehead – cheek areas ( $p = 0.019$ ).

#### ► Decrease of sebum spots number

Forehead

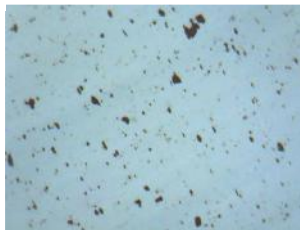
D0



D28



Cheek



Illustrations of the anti-seborrheic activity of 3% SEBOCEA® measured by image synthesis on Sebutape from one subject after 28 days application.

SEBOCEA® reduces the number of spots by:

- 71% for forehead
- 84% for cheek

**SEBOCEA® decreases sebum production.**

#### ► Consumer evaluation

The auto-evaluation by the volunteers confirms the sebo-regulating efficacy of SEBOCEA®.

SEBOCEA® improves the structure and the comfort of the oily skin.

SEBOCEA® enlightens complexion of oily skin in only 28 days.

