SCH AlgaeTech™ Porphyridium

Actives for the skin

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01
Introduction

01
Introduction

SCH AlgaeTech™ Porphyridium is a natural extract resulting from the evolutionary strategy developed by the red microalgae *Porphyridium cruentum*. This alga, before the threat of certain external agents and/or changes in the natural environment that put its survival at risk, has been able to generate a protective film around the cell that has allowed it to survive from its origin millions of years ago to the present day.

Main activities

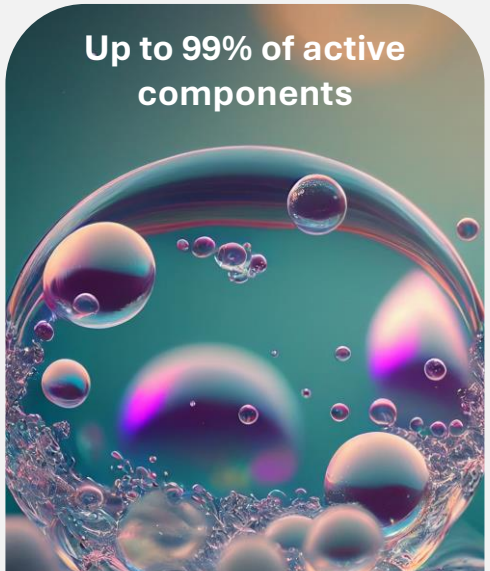
Porphyridium cruentum is a red microalga known for its ability to produce sulfated exopolysaccharides (SEP) of complex structure. These SEP are natural compounds that have multiple beneficial functions for skin care:

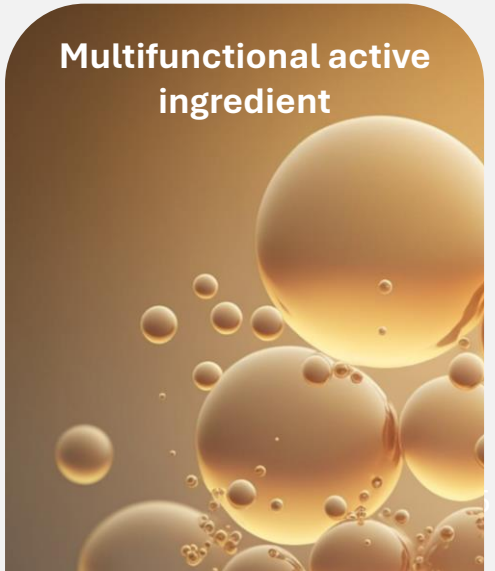
- **Hydration**: SEP acts as a moisturizing agent, creating a barrier that helps retain moisture in the skin, thus improving its hydration and elasticity.
- **Anti-aging**: These compounds contribute to the synthesis of collagen and elastin, essential for maintaining the firmness and elasticity of the skin, visibly reducing wrinkles and fine lines.
- **Reduced inflammation**: SEP has anti-inflammatory properties that help soothe irritated skin and reduce inflammation, providing significant relief for sensitive skin or skin affected by inflammatory conditions.

01
Composition

INCI	%	FUNCTION
Porphyridium cruentum extract	99	Active
Benzyl alcohol	< 1	Antimicrobial agent
Glyceryl caprylate	< 1	Antimicrobial agent
Glyceryl undecylenate	< 1	Antimicrobial agent

INCI	%
Neutral monosaccharides	35 - 40
Sulphates (polysaccharide-bound)	3,5 – 4,5
Uronic acid	55 – 65
Proteins	< 0,5
Marine minerals	< 0,1





02
Ingredients

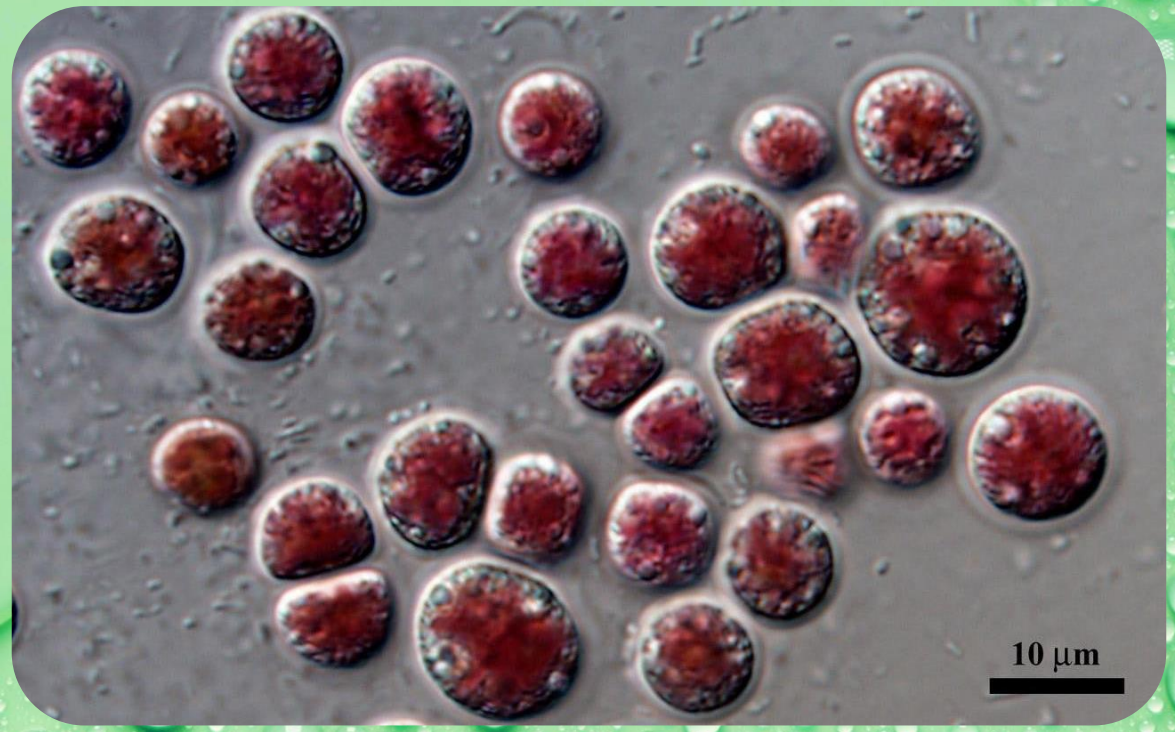
02 Ingredients

1. Porphyridium cruentum extract

Sulphated extracellular polysaccharides
Neutral sugars and uronic acid
Sulphates
Proteins
Marine minerals

Porphyridium cruentum extract, derived from red algae, is a potent active ingredient rich in polysaccharides and bioactive compounds.

The synergistic action of its components makes *Porphyridium cruentum* extract a powerful and multifunctional ingredient for skincare. The combination of hydration, barrier protection, anti-inflammatory properties, structural support, and cellular nutrition ensures comprehensive skin benefits. This extract not only provides immediate hydration and protection but also supports long-term skin health by promoting regeneration and resilience.

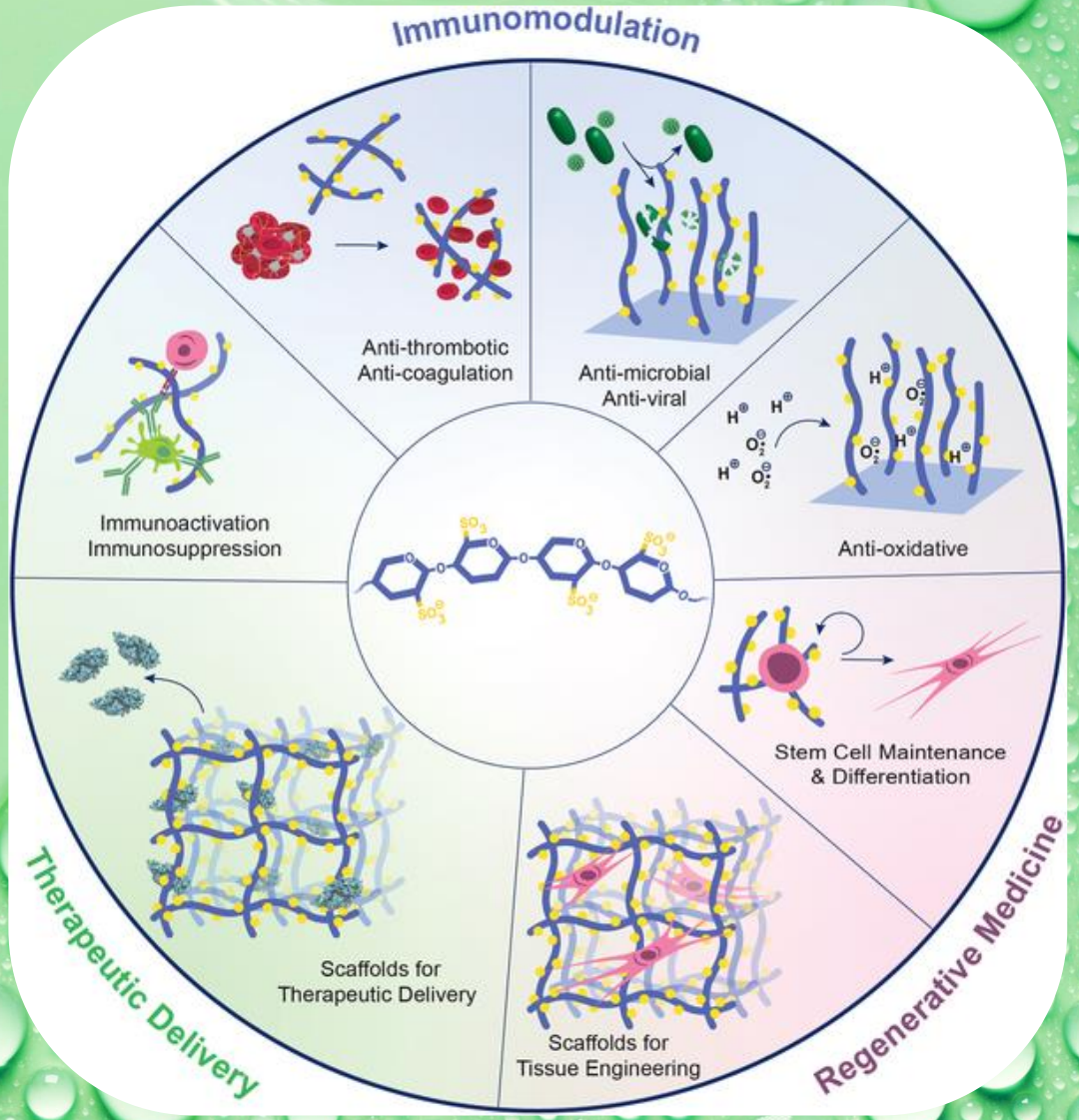


02 Ingredients

Sulphated extracellular polysaccharides

Activity → Hydration, protective barrier, and anti-inflammatory action.

Function → These polysaccharides form a protective film on the skin, effectively retaining moisture and shielding the skin from external aggressors. They also have anti-inflammatory properties that help soothe and calm irritated skin. Mechanistically, the film-forming capability creates a barrier that minimizes transepidermal water loss (TEWL), ensuring prolonged hydration and protection.

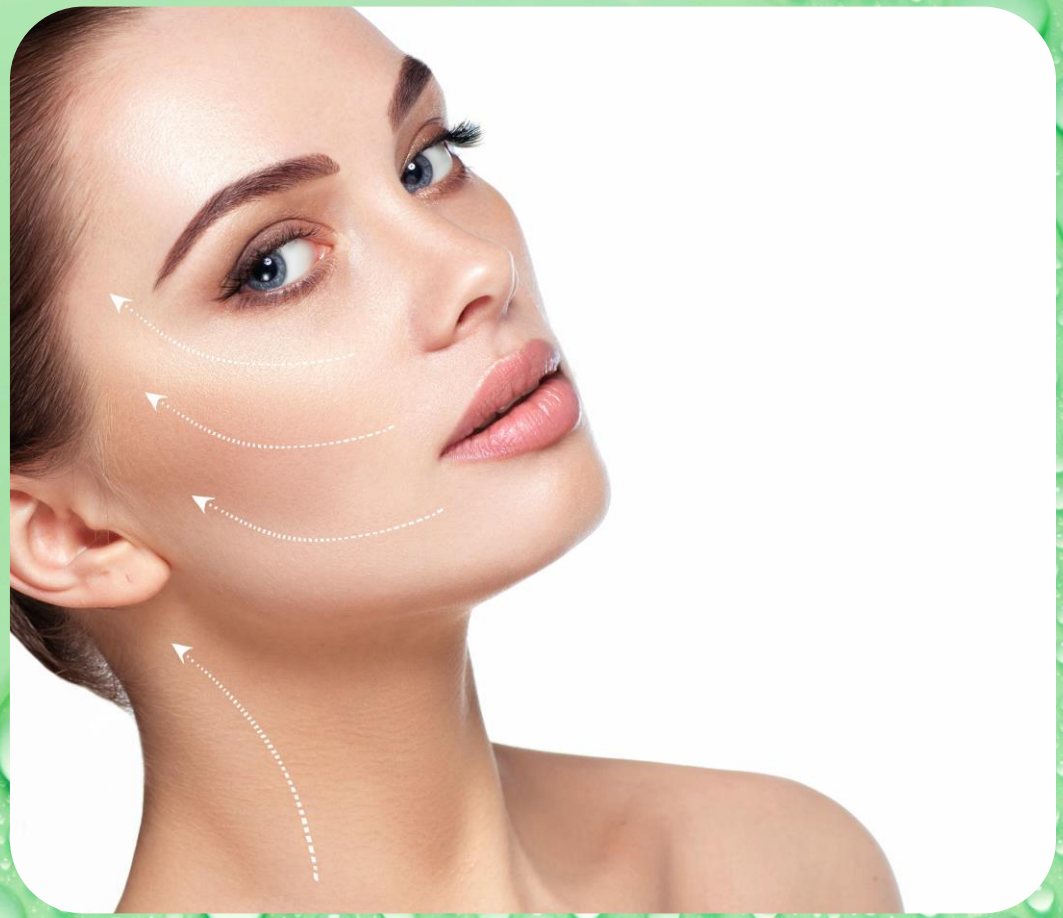


02 Ingredients

Neutral sugars and uronic acid

Activity → Skin hydration and repair.

Function → Neutral sugars and uronic acid are highly effective at trapping water within the skin, contributing to sustained hydration. They play a key role in the reconstitution of the extracellular matrix (ECM), a crucial component for skin structure and integrity. These molecules enhance the ECM's ability to retain moisture and support cellular communication, thereby aiding in skin repair and maintenance.

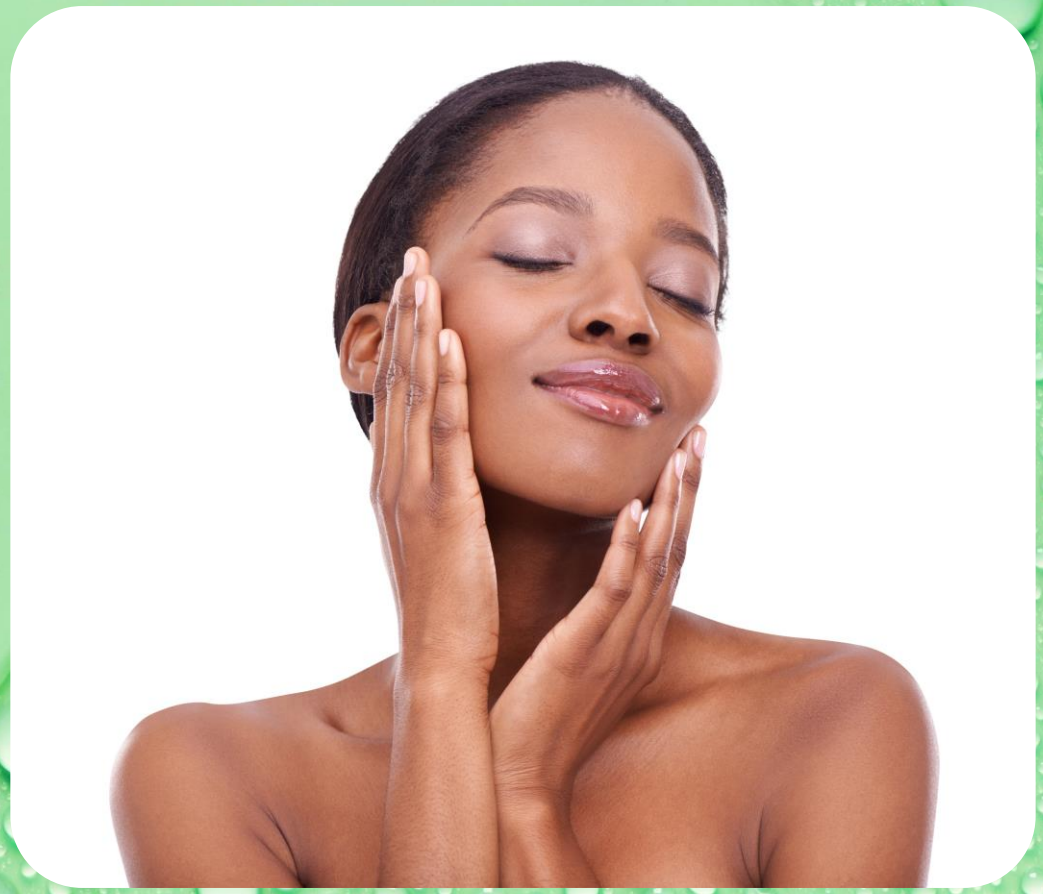


02 Ingredients

Sulphates

Activity → Emollient action and protection of the skin barrier.

Function → Sulphates help maintain the integrity of the skin barrier, which is essential for protecting the skin from environmental stressors. They provide an emollient effect, leaving the skin feeling soft and smooth. By reinforcing the barrier function, sulphates ensure that the skin remains resilient and well-protected.



02 Ingredients

Proteins

Activity → Regeneration and structural support.

Function → Proteins in *Porphyridium cruentum* extract promote the synthesis of collagen and elastin, essential proteins for skin firmness and elasticity. This activity is mediated through the activation of fibroblasts and the upregulation of growth factors like TGF-β, which stimulate collagen production and enhance skin structural support. Improved collagen and elastin synthesis leads to firmer, more elastic skin with reduced signs of aging.

02 Ingredients

Marine minerals

Activity → Cellular nutrition and regeneration.

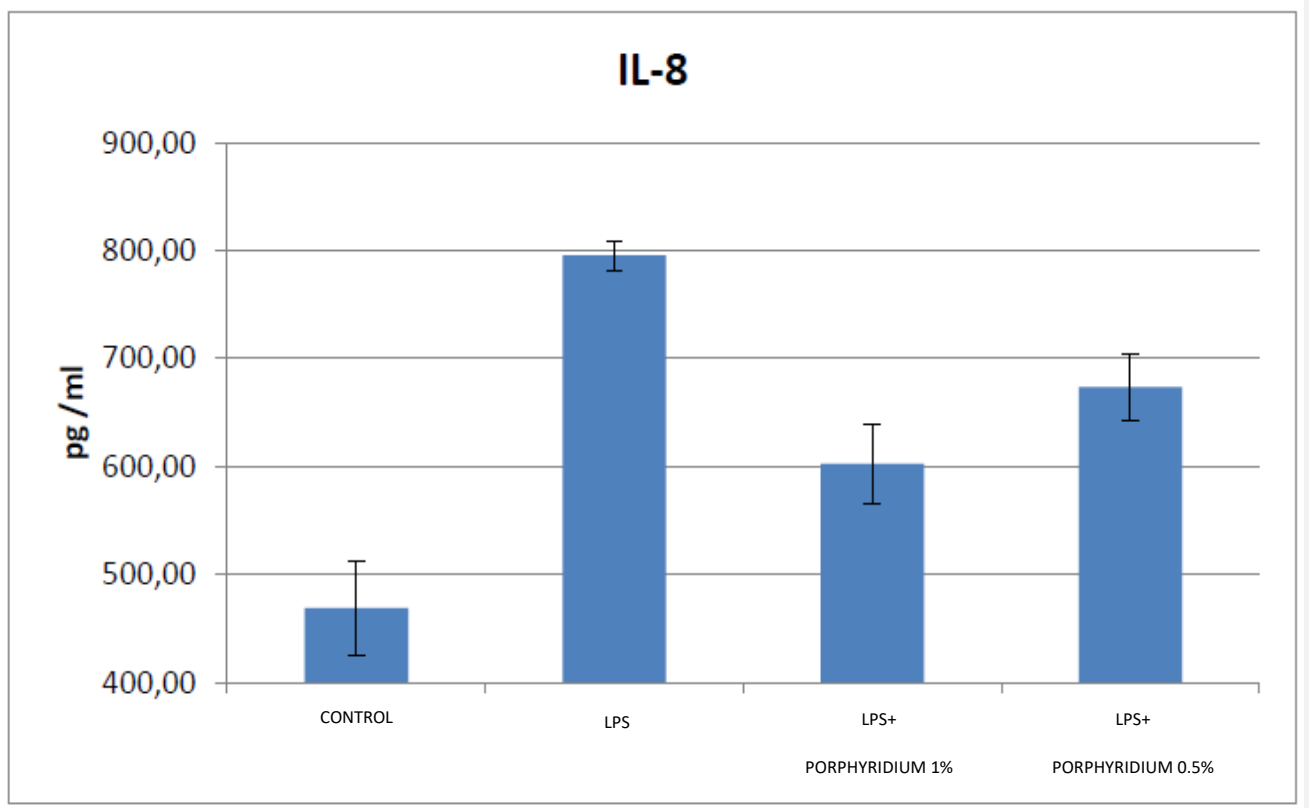
Function → Marine minerals provide essential trace elements that are vital for cellular functions and tissue repair. They support cellular metabolism and regeneration, contributing to overall skin health. Additionally, these minerals have antioxidant properties, protecting the skin from oxidative stress and environmental damage. By supplying essential nutrients, marine minerals enhance cell vitality and promote the repair of damaged tissues.

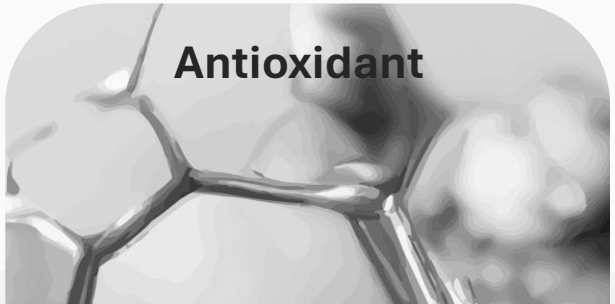
03
Studies

03 In vitro

Evaluation of anti-inflammatory activity in human keratinocytes

The product **reduced the production of interleukin IL-8 in inflamed HaCaT cells** compared to the control group. At concentrations of 1% and 0,5%, a significant decrease in IL-8 levels was observed, indicating an anti-inflammatory effect.

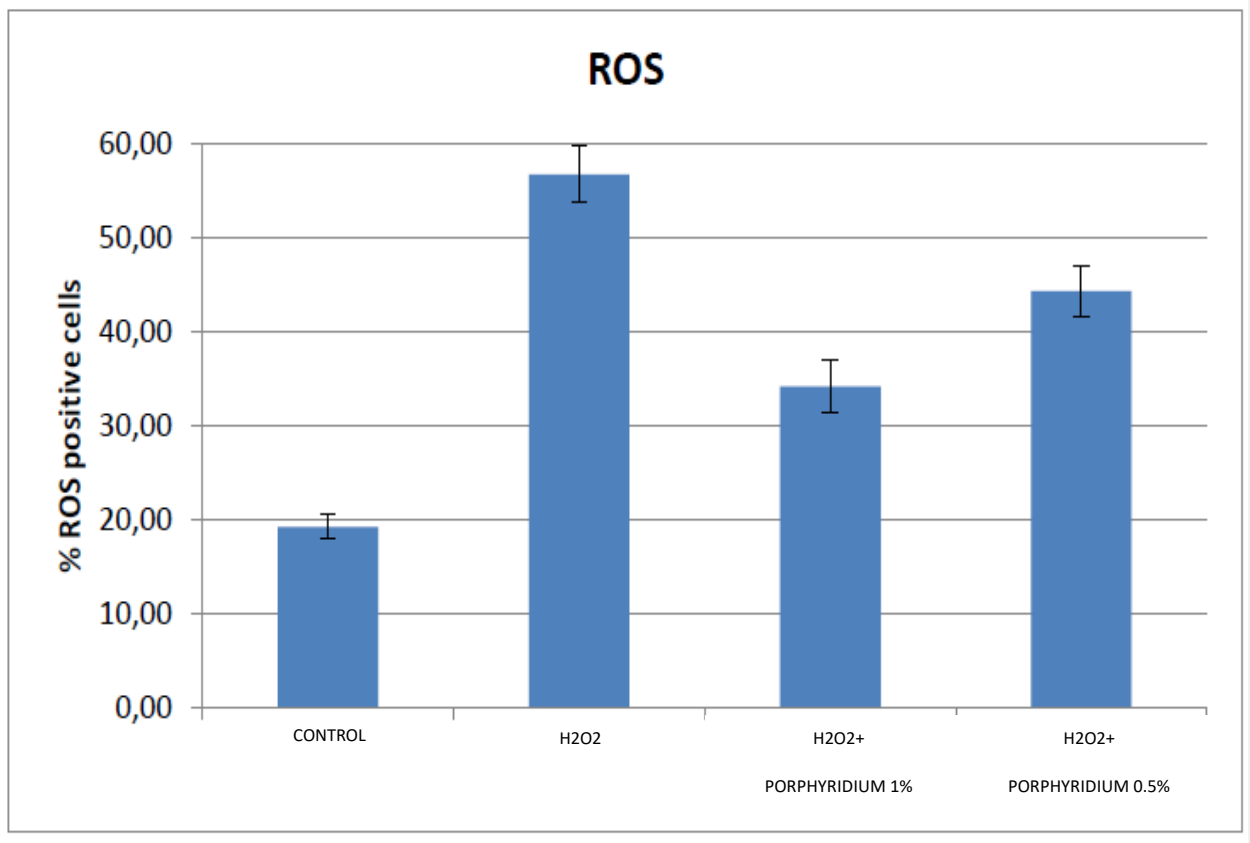


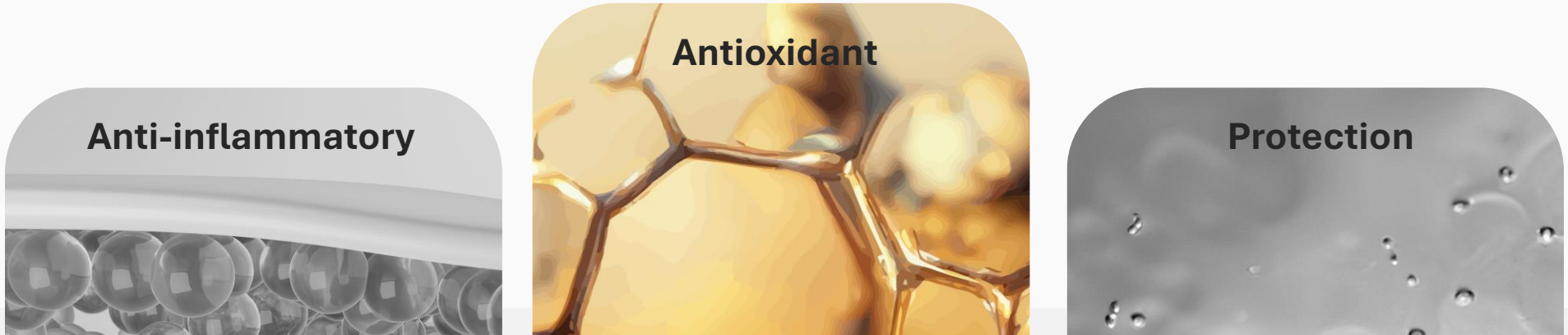


03 In vitro

Study of the efficacy in the reduction of free radicals in human keratinocytes

The product was soluble in the culture medium at a maximum concentration of 1%. Concentrations greater than 1% solidified the medium, forming a gel and not being useful for in vitro tests. The cells treated with the product were shown to be able to **generate an antioxidant effect, being able to reduce ROS-positive cells.**

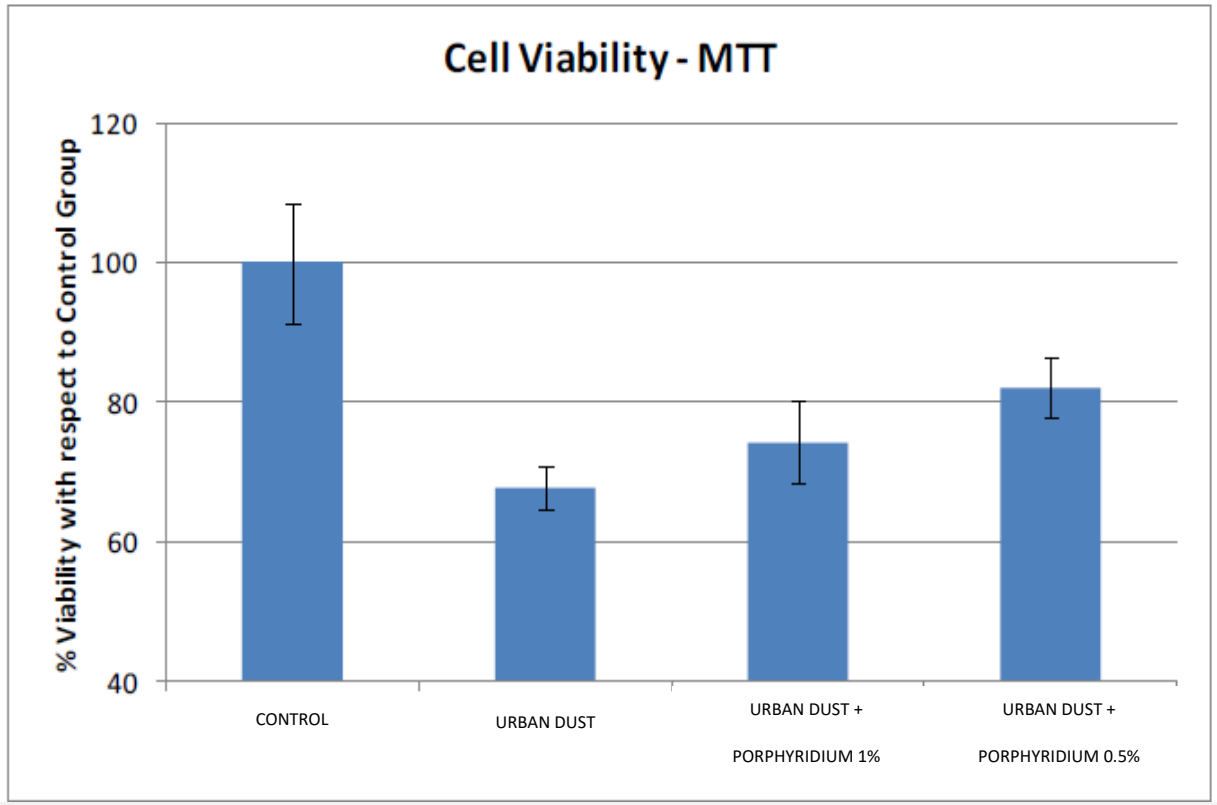


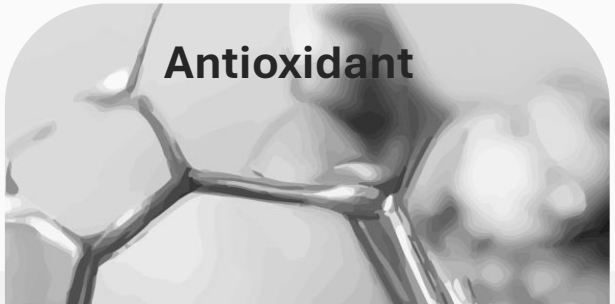


03 In vitro

Study of detoxification and anti-pollution efficacy

The ability of the product to produce an anti-pollution activity is clear, **reducing cell death** in HaCaT cell cultures incubated with urban powder.

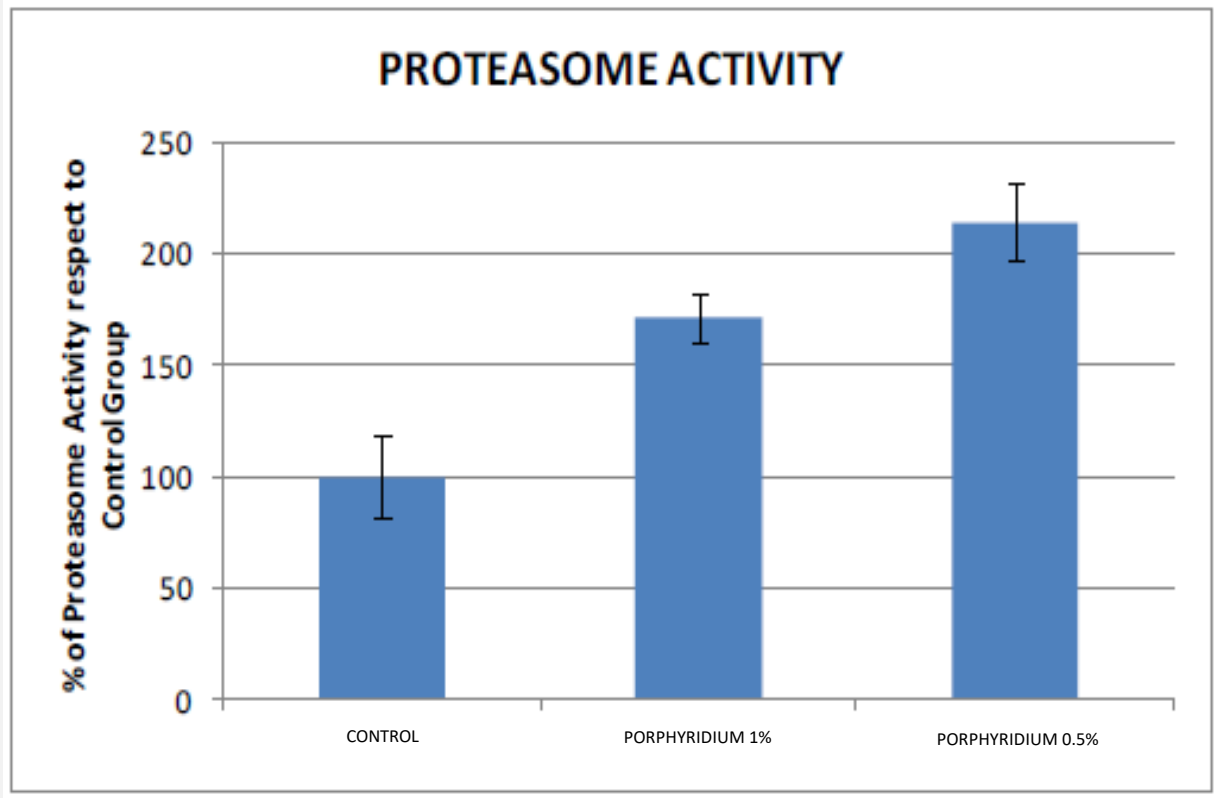


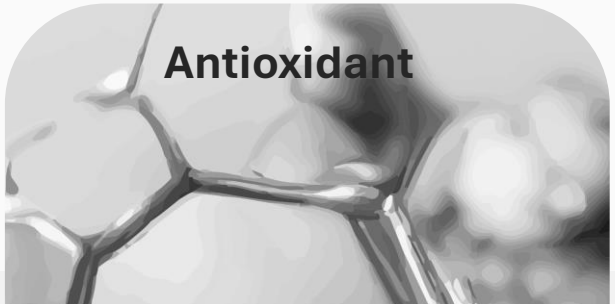


03 In vitro

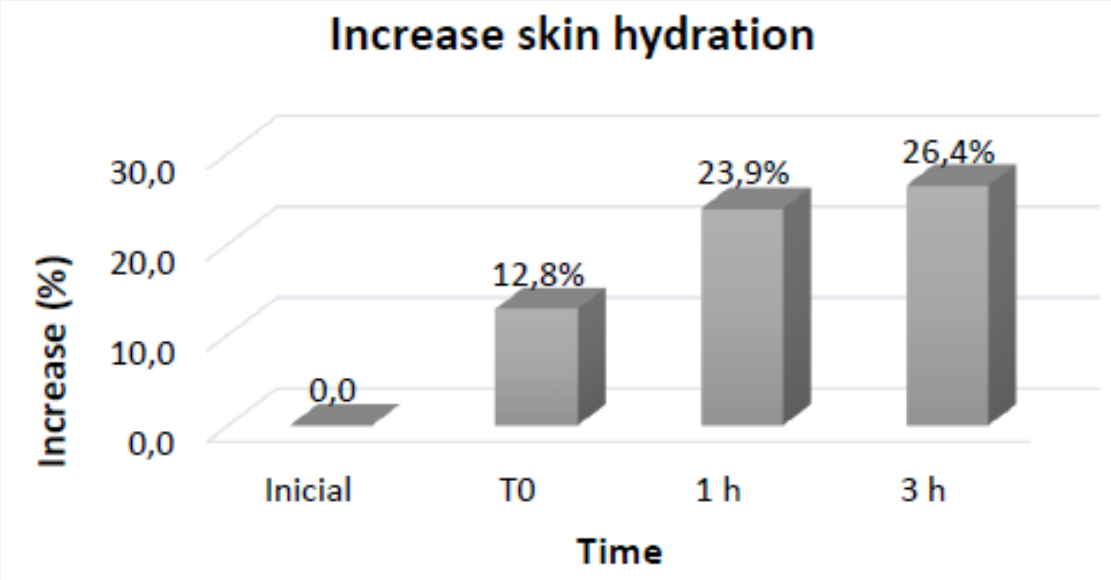
Study of detoxification and anti-pollution efficacy

The study also indicates that the ability of the product to **stimulate the activity of the proteasome** is clear, increasing this activity, favoring skin detoxification.



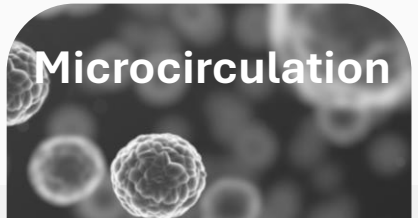


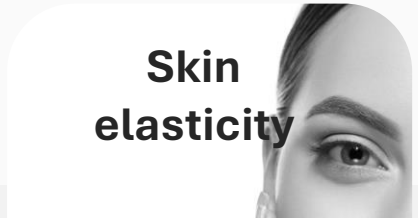
03 In vivo



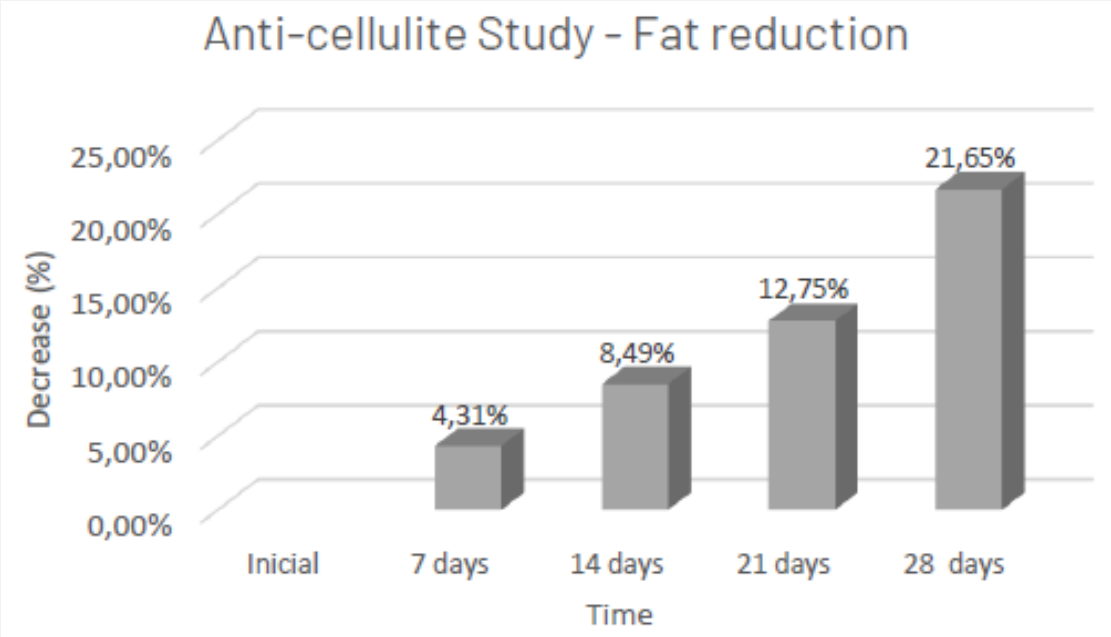
Study of skin hydration

It was observed that there was an **instantaneous hydration** of the dermis, reaching 24% during the first hour and 26,4% after 3 hours, which represents a great increase in hydration in a short time, with the first hour having 90% of total hydration. The dermis is wrapped from the first moment and stretches the epidermis, with the effect being instantaneous (**lifting effect**).



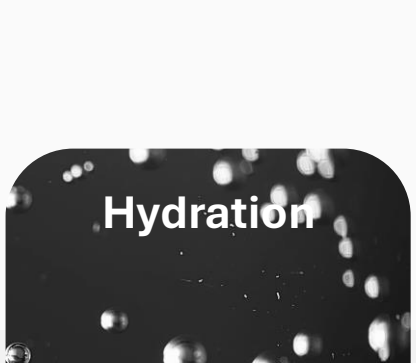


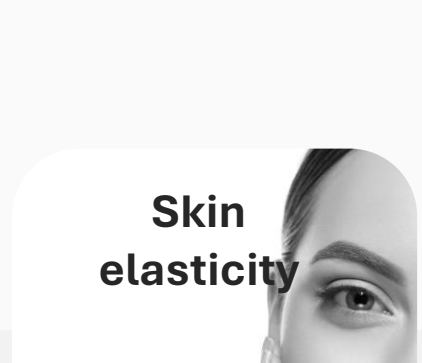
03 In vivo

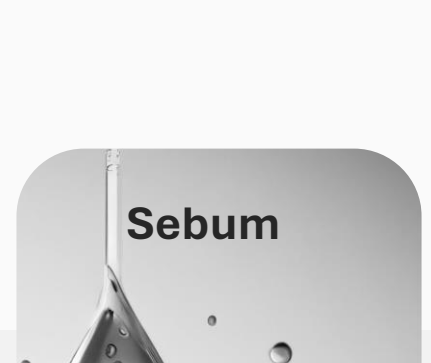


Evaluation of anti-cellulite and fat reduction activity

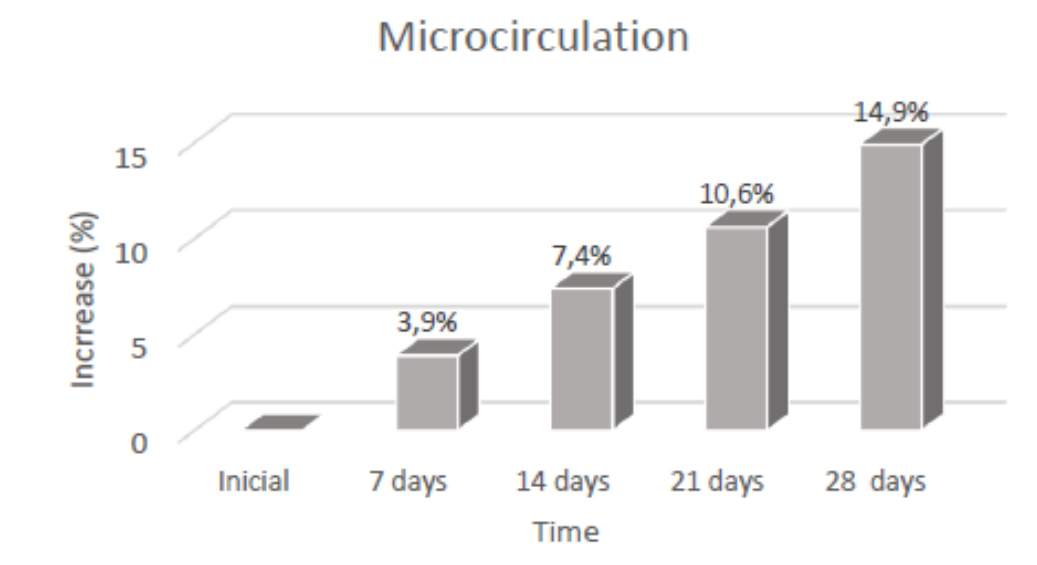
We can see that there is a **decrease of 21,65% in the perimeter**, obtaining an optimal result in its ability as an anti-cellulite and fat reduction.





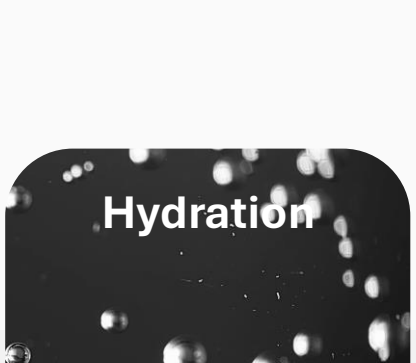


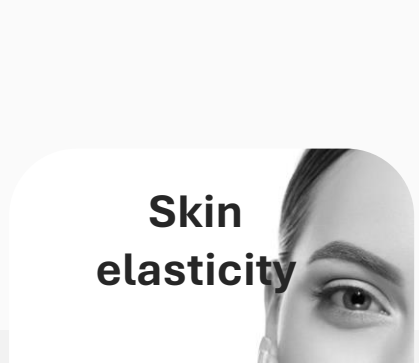
03 In vivo

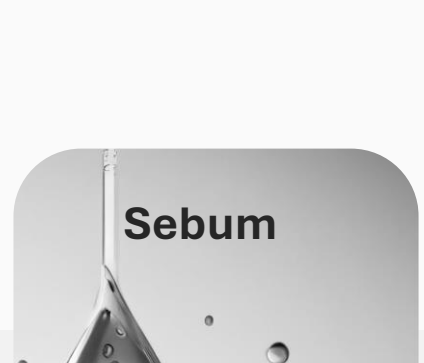


Evaluation of microcirculation in the skin

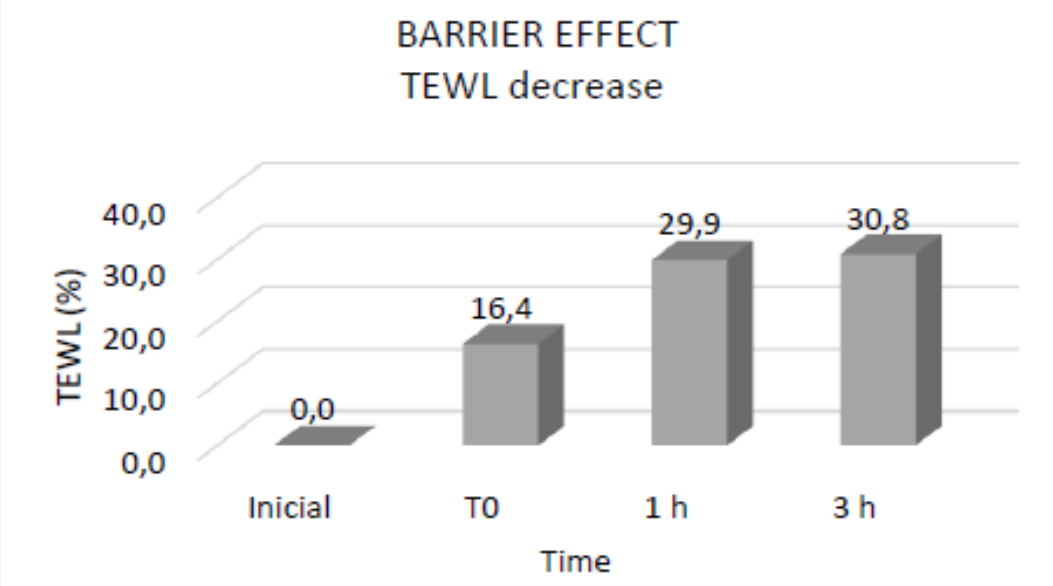
Microcirculation grows steadily reaching values of 14,9% in just 4 weeks, but there is a significant increase from the first moment. This means **better intercellular communication**, facilitating skin regeneration and hydration (the cells are healthier).







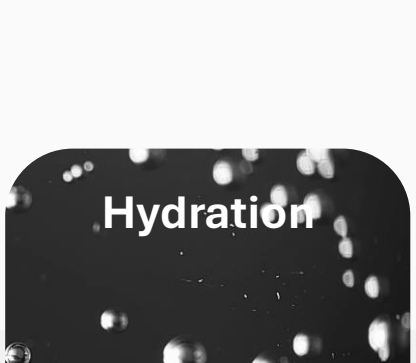
03 In vivo

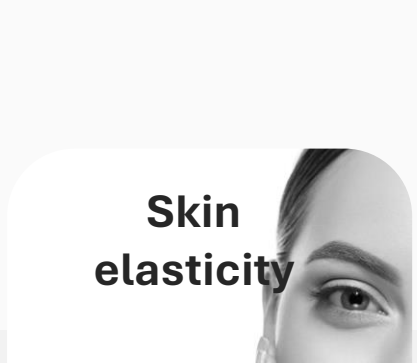


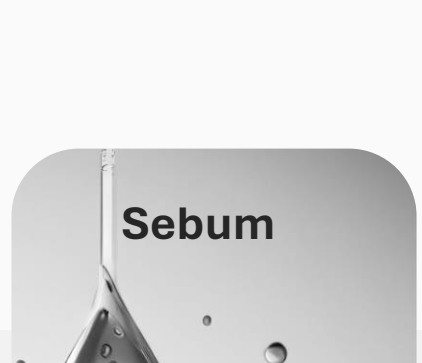
Study of TEWL and skin barrier function

We can see that we have achieved a 31% decrease in total TEWL, which is a great result in hydration.

If a skin has a high TEWL, according to the results obtained in this report, **Porphyridium can reduce it, retaining the content of water, ions and other essential elements**, thus helping to recover the structure of the dermis and thus the epidermis.







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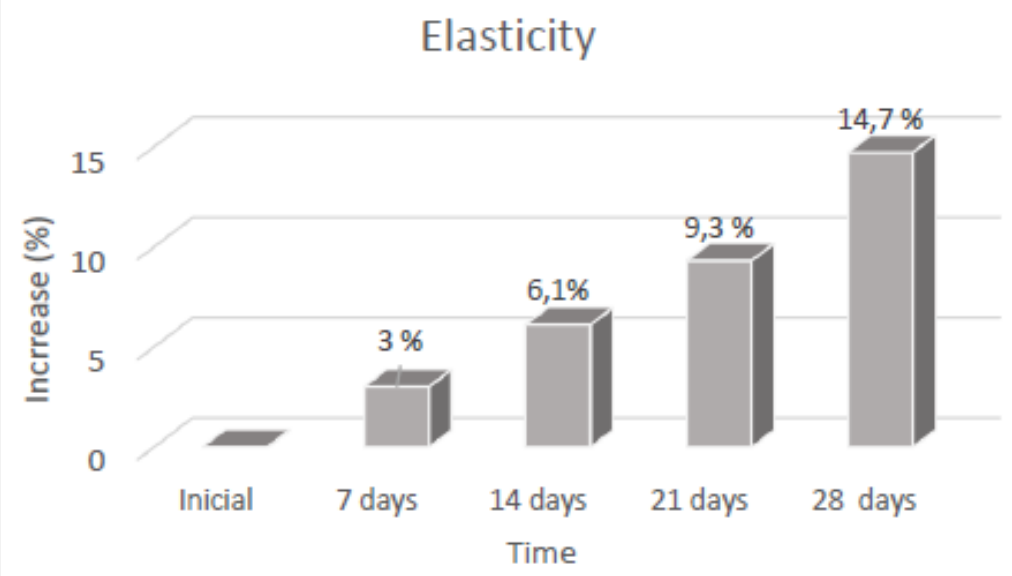
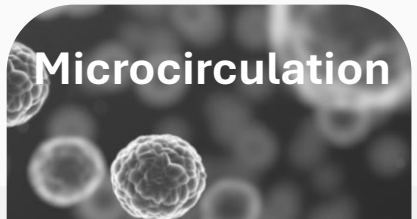


Study of skin elasticity

We can see that we have achieved an **increase of 14,7% in total elasticity**, which is an outstanding result. We can also see how the greatest increase in elasticity occurs between the S3 (21 days) and S4 (28 days) sessions, thus considering that the increase in elasticity occurs after 15 days of application, this parameter being related to skin renewal.



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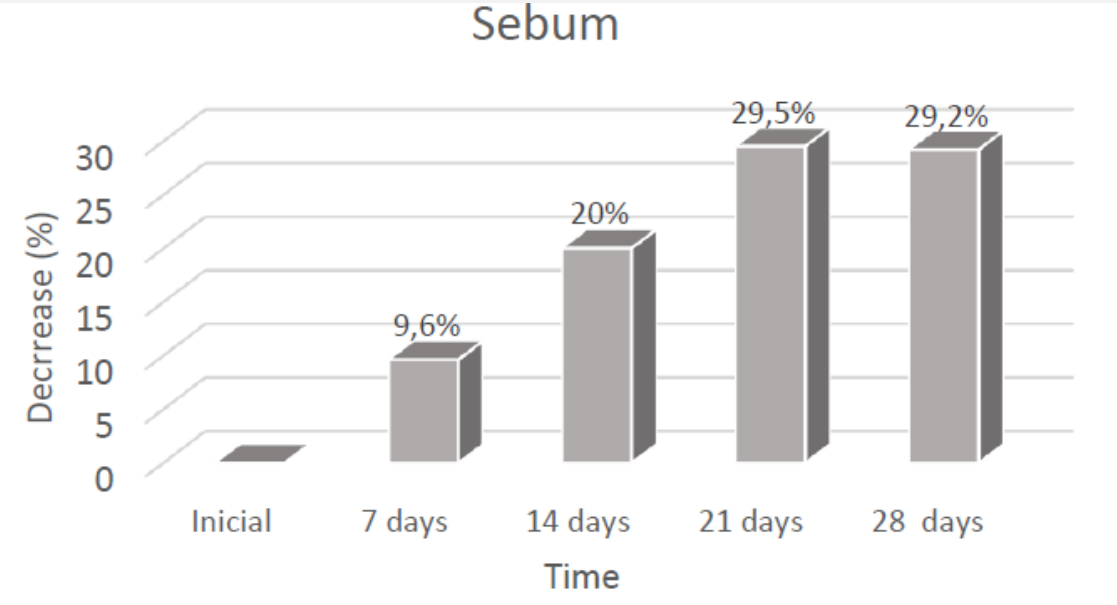
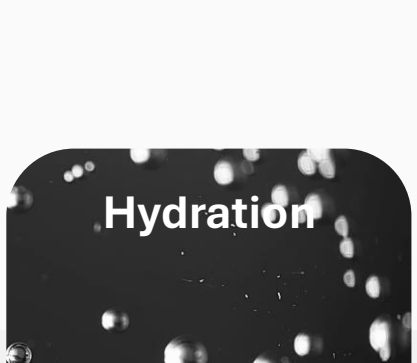
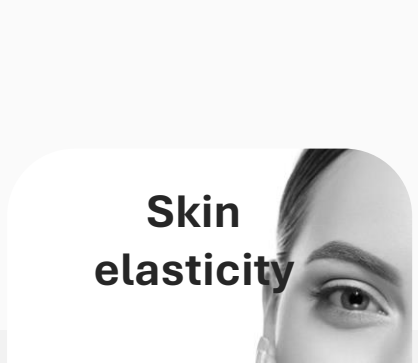


Study of sebum

Porphyridium helps regulate sebum, reducing it in 3 weeks by 29%, but the effect is noticeable from the beginning. The active does not act on the final problem, it acts on the origin of the problem, the sebum imbalance, and in consequence the epidermis regenerates.

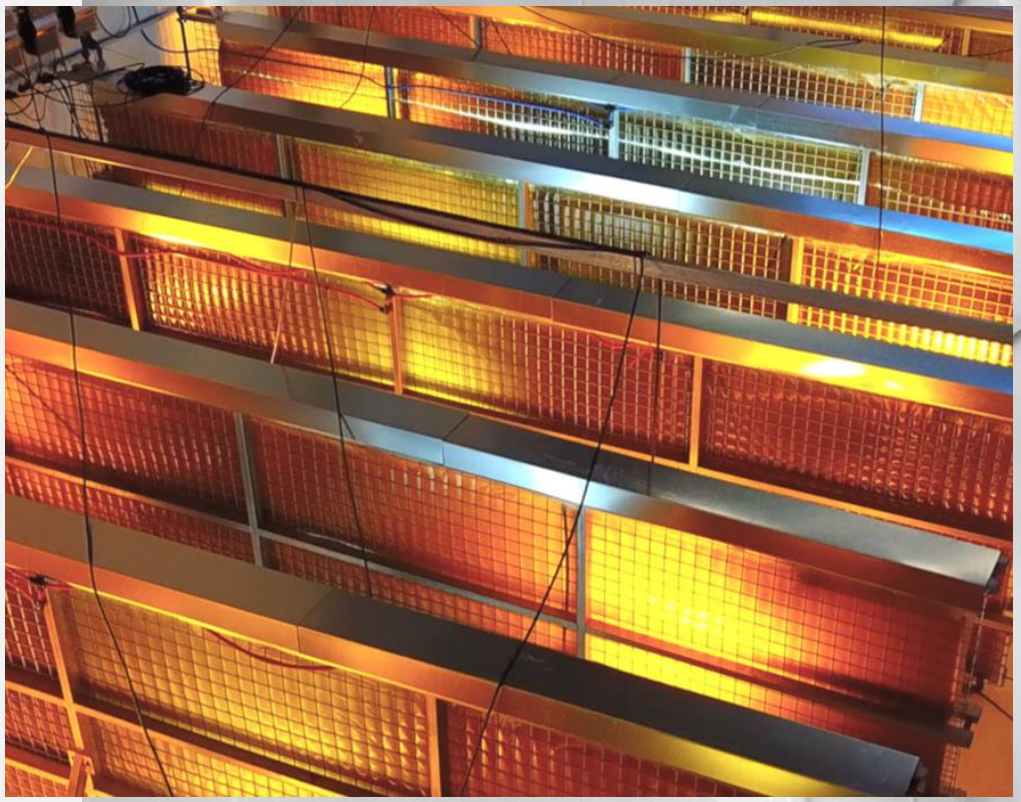




04
Innovative technology

04 Algae biotechnology

- Controlled and accelerated production
- Higher quality bioactives
- All parameters are monitored → Obtention of desired bioactives
- Environmental sustainability
  - Minimize pollution
  - Reduced water use
  - More efficient use of nutrients and energy
  - Less greenhouse emissions



05
Specifications

05 Technical specifications

CHARACTERISTIC	SPECIFICATION
Aspect	Viscous emulsion
Color	Pale yellow
Odor	Characteristic sweet
Viscosity (sp: 3; 12 rpm)	4500 – 7000 cP
pH	5,2 – 5,5
Dosage (%)	< 99
Expiration	12 months
Solubility	Water soluble and emulsion soluble
Additives	Preservatives

SCH AlgaeTech™ Porphyridium

Actives for the skin