



# The technological revolution in personalized cosmetic ingredients

CBD - CANNABIDIOL





Cutting-edge solutions for a technologically demanding sector.

OPTIDEL offers an advanced solution to dissolve and concentrate natural active ingredients with low stability and insolubility, significantly enhancing their bioavailability and efficacy.



Ready-to-use technology for formulation:

Versatile solutions for both hydrophilic and hydrophobic ingredients, even the most unstable or poorly soluble compounds.



Enhances bioavailability and efficacy:

Maximizes stability by up to 90%, increases skin bioavailability by up to 60%, and multiplies efficacy up to fourfold.



Sustainability driven by innovation:

Technological solutions that enable cleaner, more efficient formulations with a lower environmental impact.



Adapted to today's market:

Protects actives from degradation and enables the development of customized formulas aligned with the latest trends.



## **CBD\_40 MAX y CBD\_10 NAT**

*"Advanced anti-blemish technology: regulating, soothing and protective action."*

Multifunctional active that targets the main causes of acne and hair loss, offering an innovative, safe, and effective alternative for skin and hair care.



🌟 **Dysbiosis: an imbalance in the microbiota causes acne and hair loss.**

An imbalance in the microbiota, known as dysbiosis, can trigger inflammation and negatively impact the health of the skin and scalp, contributing to the development of acne and hair loss.

### 🔬 CELL CONSEQUENCES

Local chronic inflammation

Cellular oxidative stress

Follicular hyperkeratinization → (pimple formation)

Seborrhea

Pruritus (itching or tingling sensation)

### 👁️ VISIBLE CONSEQUENCES



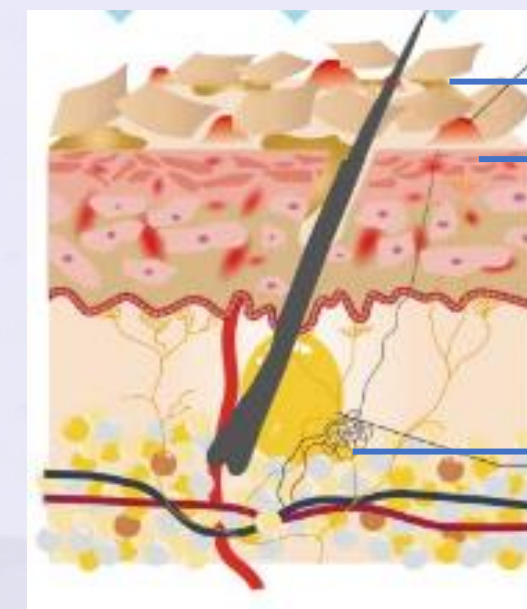
Greasy shine

Blackheads & bumps

Pustules

Erythema

Post-acne marks



Flaking (dandruff)

Inflammation & irritation

Sebum

In some cases,  
alopecia





## CBD: Biological sebum-regulating shield with anti-inflammatory, antioxidant, and antimicrobial action

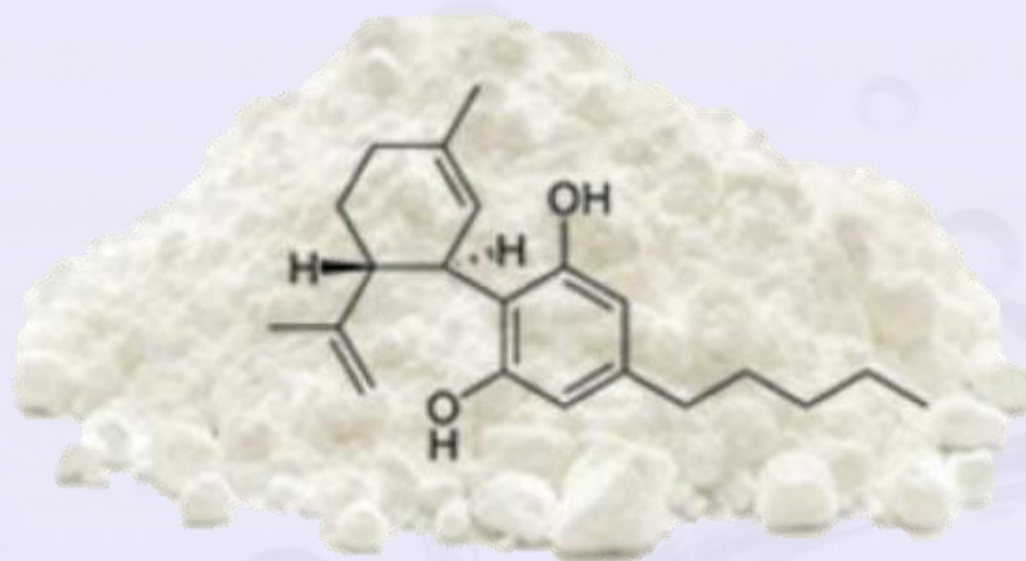
Cannabidiol (CBD) is a non-psychoactive bioactive compound extracted from Cannabis sativa, widely recognized for its powerful antioxidant and anti-inflammatory properties. It helps reduce oxidative stress, modulate the inflammatory response, and promote skin regeneration, making it a key ingredient in current cosmetic innovation.

Thanks to Optidel technology, its solubility, bioavailability, and stability are enhanced, boosting its effectiveness in cosmetic and hair care products.

This optimized CBD hydrates, soothes, repairs, and protects, offering visible and long-lasting benefits supported by evidence.

 Optidel's innovative technology maximizes **CBD** concentration, ensuring its stability and bioavailability to visibly transform your hair health and enhance its effects on your skin.

 Thanks to their advanced structure, **CBD\_40 MAX** and **CBD\_10 NAT** are the simplest and most effective way to incorporate cannabidiol into all types of cosmetic and hair care formulations, taking skin and hair care to the next level.



How does it work?

**CBC\_40 MAX** and **CBD\_10 NAT** act directly on the **cutaneous endocannabinoid system**, modulating key responses involved in inflammation, aging, and skin imbalances.

What pathways does CBD act on?



Pathological factor	Main Route	Action of CBD
Inflammation	NF-κB / TRPV1 / CB2	Local anti-inflammatory
Seborrhea	PPARγ / mTOR / AMPK	Seboregulating without dryness
Microbial dysbiosis	Biofilm / selectivity	Microbiome balance
Oxidative stress	Nrf2 / antioxidant enzymes (ROS)	Advanced antioxidant protection



🧪 Sebum Production Regulation

Helps control the excessive production of sebum by the sebaceous glands. This sebum overproduction is one of the main causes of acne, as it clogs pores and promotes bacterial proliferation.

On the scalp, it prevents both dryness and oiliness, which helps reduce dandruff and maintains a healthy environment for the hair.

🕒 Specific Benefits for the Scalp

**Hydration and Nutrition**  
Thanks to its high content of essential fatty acids (omega-3 and omega-6), vitamin E, and antioxidants, CBD deeply nourishes and hydrates both the scalp and hair, improving elasticity and strength.

🌐 Improved Skin Recovery and Appearance

Contributes to skin repair by promoting collagen production and helping to reduce the appearance of acne scars and residual marks.

🌿 Soothing and Anti-inflammatory Effect

**Reduces inflammation and redness** associated with acne breakouts. By interacting with the receptors of the endocannabinoid system in the skin, it helps decrease the inflammatory response and relieve symptoms of inflammatory acne.

**Reduction of Flaking and Sensitivity**

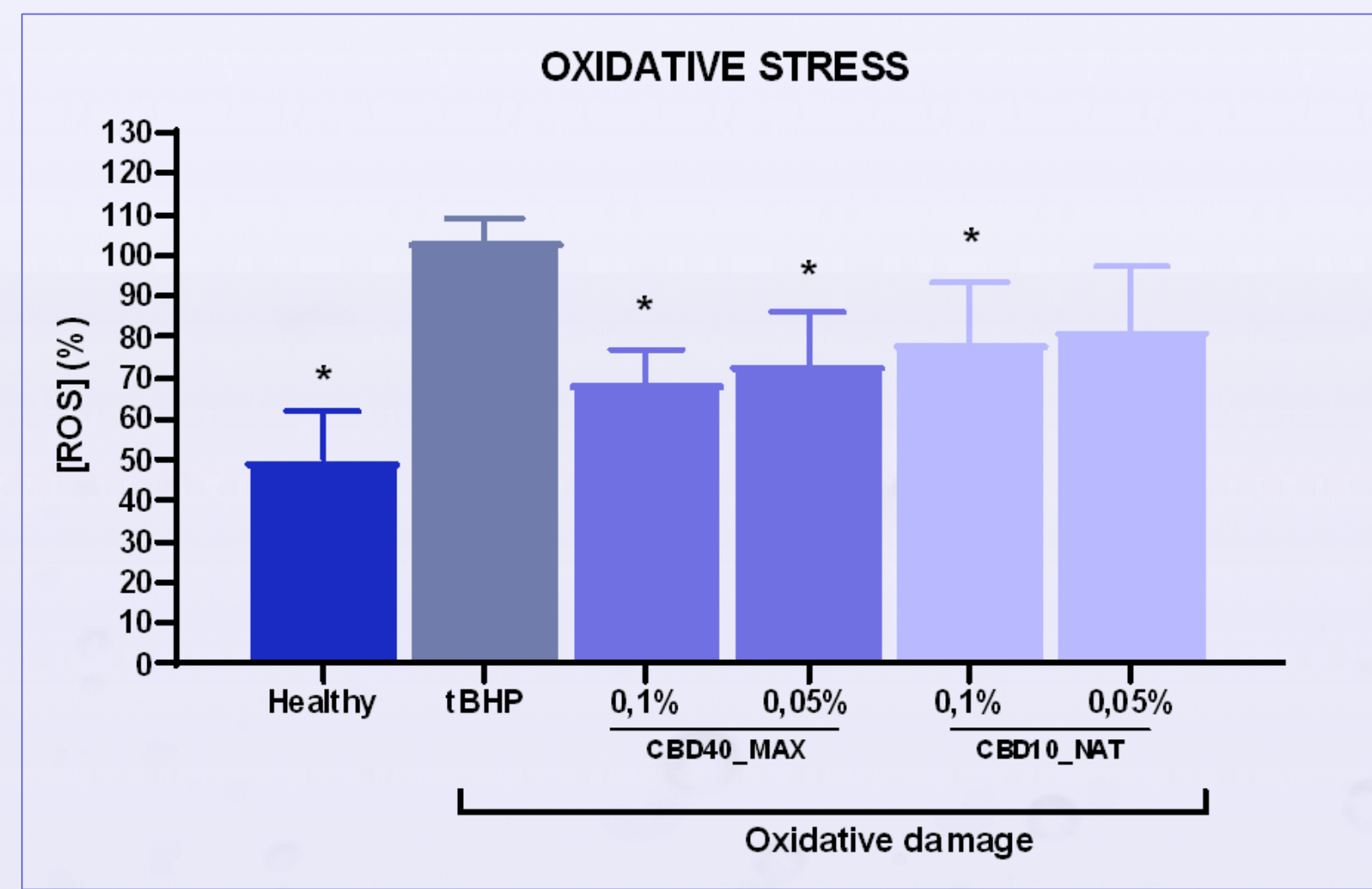
Its reparative and soothing properties help reduce flaking, sensitivity, and symptoms of conditions such as dandruff and dermatitis.

🌟 Antimicrobial and Antibacterial Properties

Helps fight bacteria and fungi involved in the appearance and aggravation of acne, flaking, and other scalp issues.


Oláh, A., et al. (2014). Cannabidiol exerts sebostatic and antiinflammatory effects on human sebocytes. *Journal of Clinical Investigation*, 124(9), 3713–3724.  
Palmieri, B., et al. (2019). A therapeutic effect of CBD-enriched ointment in inflammatory skin diseases and cutaneous scars. *La Clinica Terapeutica*, 170(2), e93-e99.  
Healthline (2019). CBD for Acne: Research, Efficacy, Cautions, and More.  
MDPI Pharmaceuticals (2025). Discovering the Potential of Cannabidiol for Cosmeceutical Development at the Cellular Level.  
MA Switzerland (2023). The Benefits of CBD for Hair and Scalp Health.  
The Beemine Lab (2023). Sebum-regulating effect of CBD.

## Antioxidant effect: ROS activity test



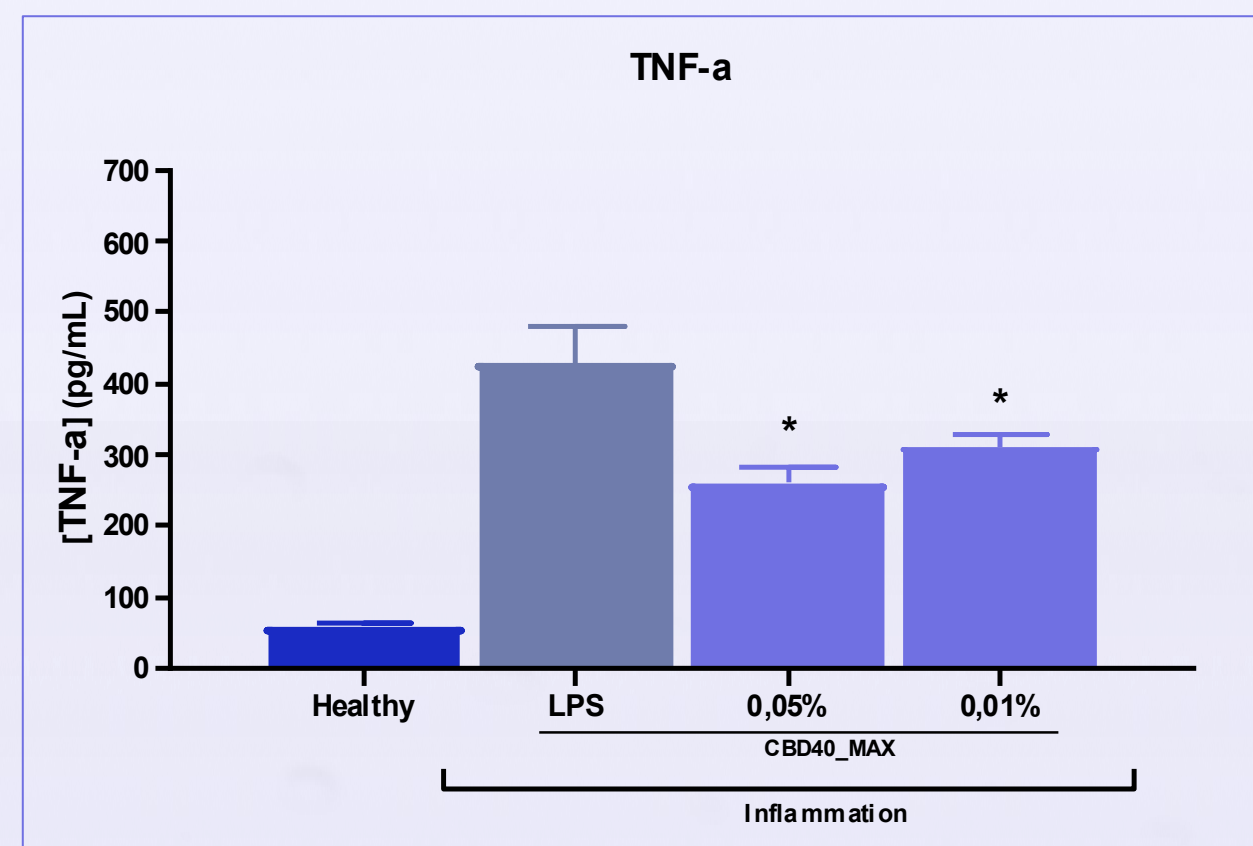
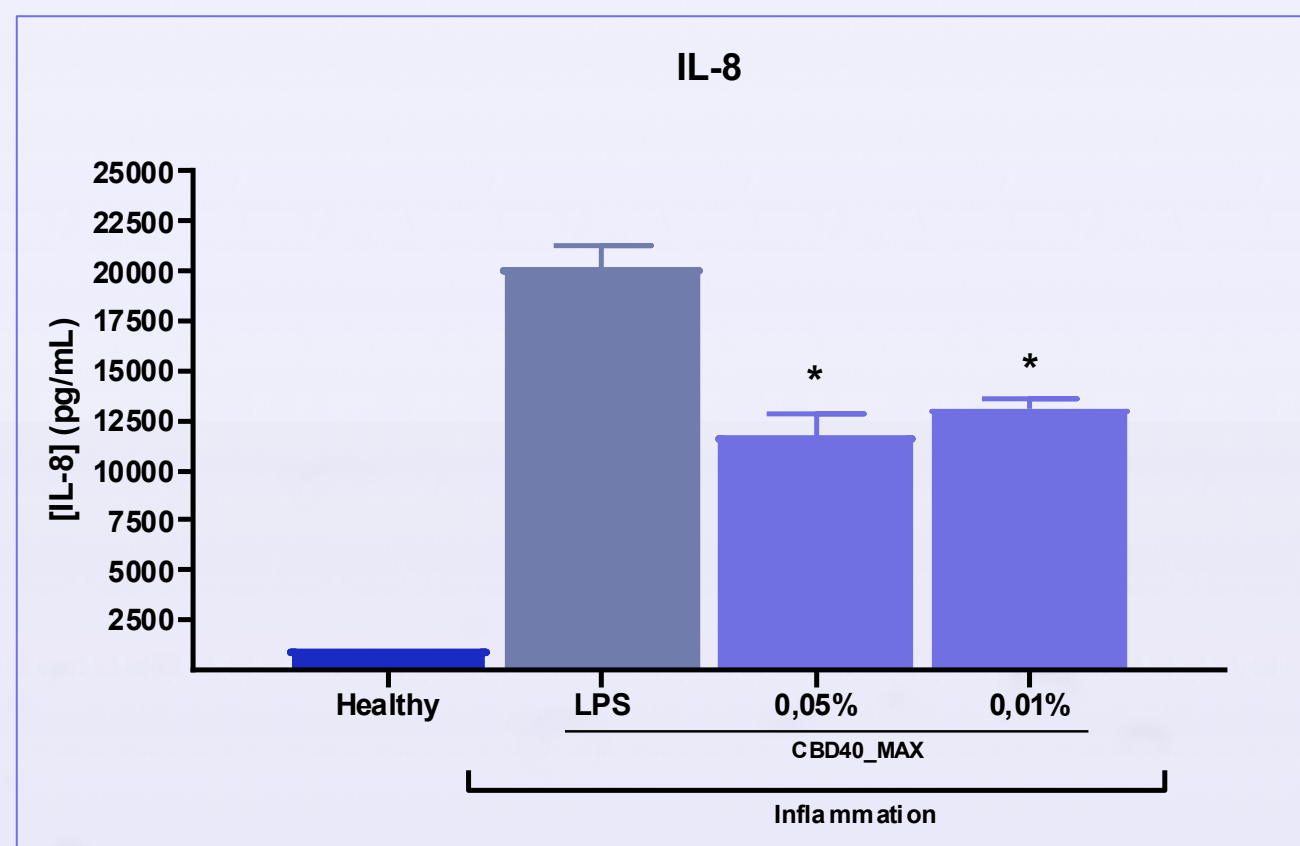
The treatment with **CBD40\_MAX at 0.1% (0.04% CBD)** achieved a **65% reduction** in ROS production in damaged cells.

With **CBD10\_NAT at 0.1% (0.01% CBD)**, the observed reduction was **47%**.

 ROS production (percentage) in the HaCaT keratinocyte cell line obtained in the antioxidant assay after 4 hours of exposure to tBHP with the test ingredient at the indicated concentrations. The positive control, tBHP insult, represents the cells exposed only to the oxidizing agent. Bars represent the average of six technical replicates from an independent experiment. Error bars represent standard deviation. Statistical significance: \* p < 0.005.



## CBD\_40 MAX Anti-inflammatory Activity



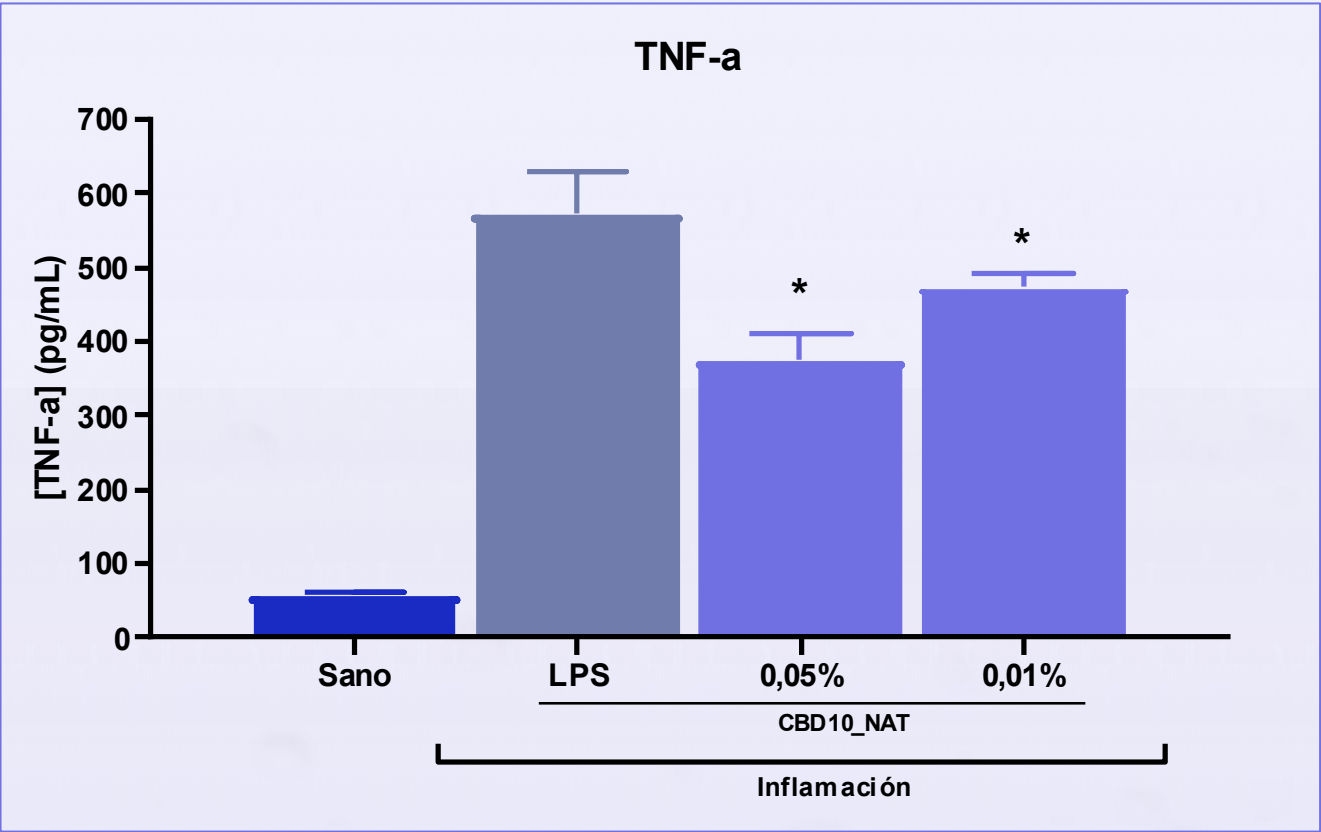
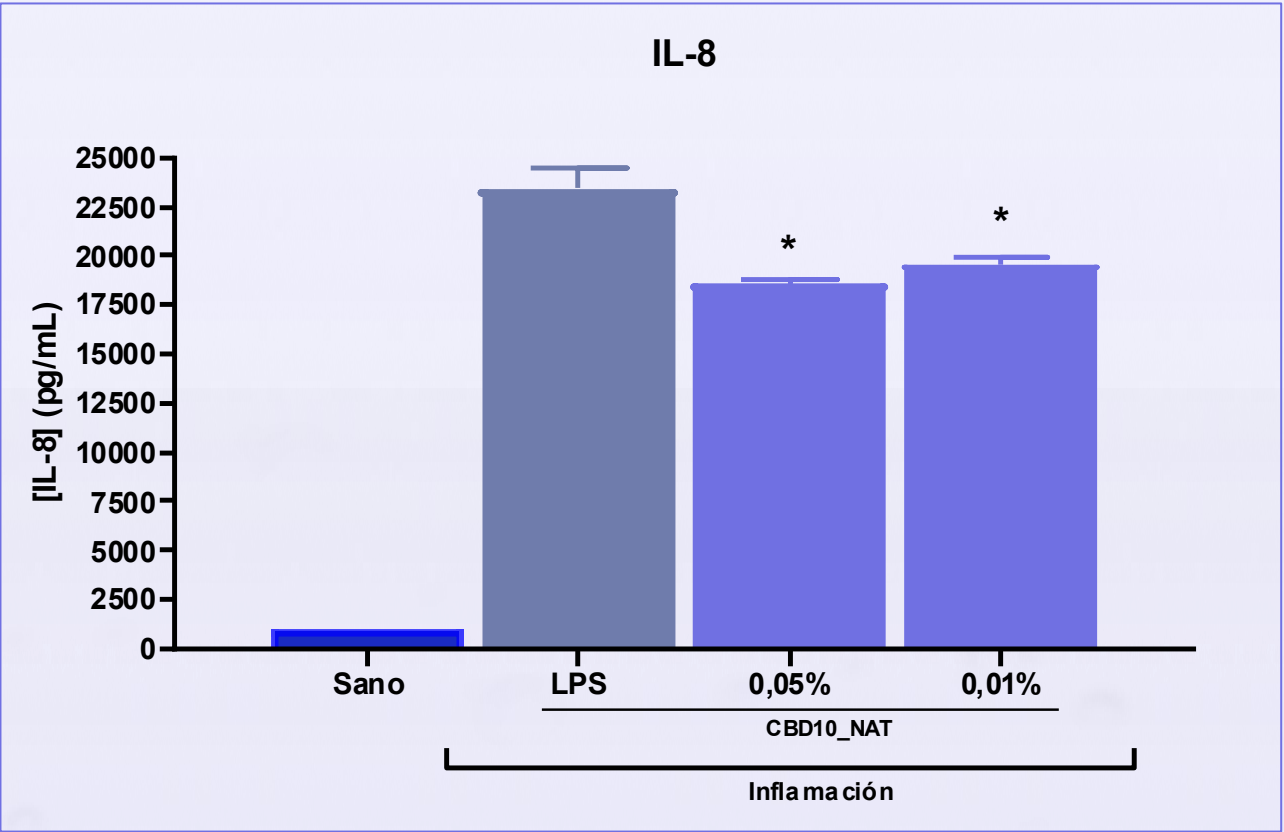
The anti-inflammatory efficacy of CBD40\_MAX was evaluated in a human immune system cell line (THP-1 monocytes) differentiated into macrophages. The insult was induced with LPS (lipopolysaccharides from E. coli), and the anti-inflammatory activity of the ingredients was determined by analyzing the secretion of inflammatory cytokines (IL-8) and pro-inflammatory TNF-α. Statistical significance: \*p < 0.005

CBD40\_MAX demonstrates potent anti-inflammatory capacity by significantly reducing levels of IL-8 (>42%) and TNF-α (>45%). This positions it as an innovative and effective ingredient for products aimed at soothing, repairing, and protecting the skin and scalp against intense inflammatory processes.

- Treatment with CBD40\_MAX at 0.1% [CBD: 0.04] resulted in a **45% reduction in inflammatory response (IL-8 and TNF-α secretion).**



## CBD\_10 NAT Anti-inflammatory Activity



The anti-inflammatory efficacy of CBD10\_NAT was evaluated in a human immune system cell line (THP-1 monocytes) differentiated into macrophages. Inflammatory insult was induced with LPS (lipopolysaccharides from *E. coli*), and the anti-inflammatory activity of the ingredients was determined by analyzing inflammatory cytokines IL-8 and pro-inflammatory TNF- $\alpha$ . Statistical significance: \*p < 0.005.

**Powerful soothing and protective action: less redness, less discomfort, visibly more balanced and resilient skin.**

CBD10 NAT reduces inflammation by up to 20% (IL-8) and lowers TNF- $\alpha$  levels by over 38%, two key markers of irritation and tissue damage.

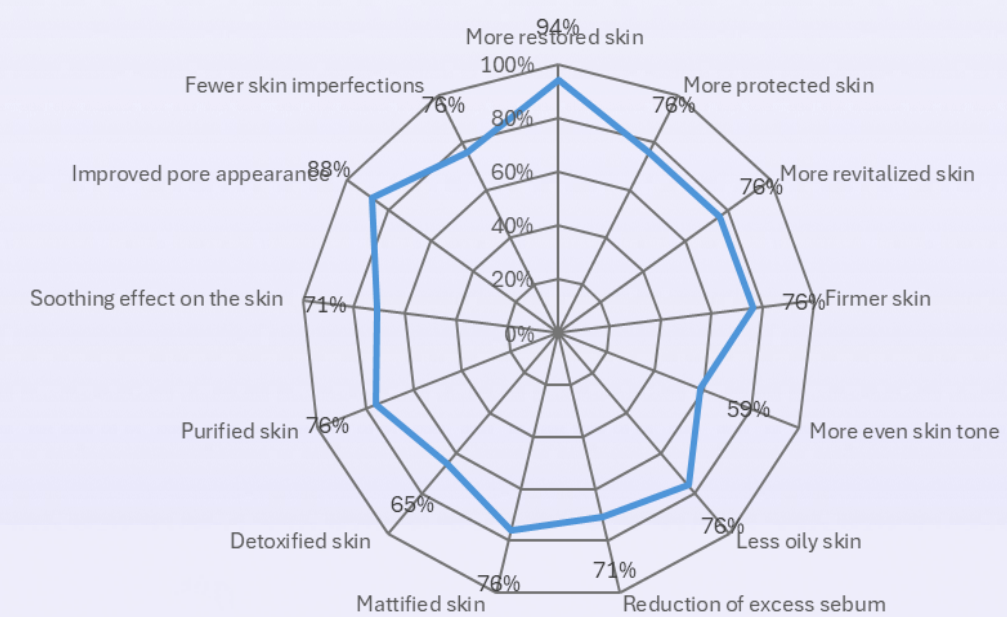
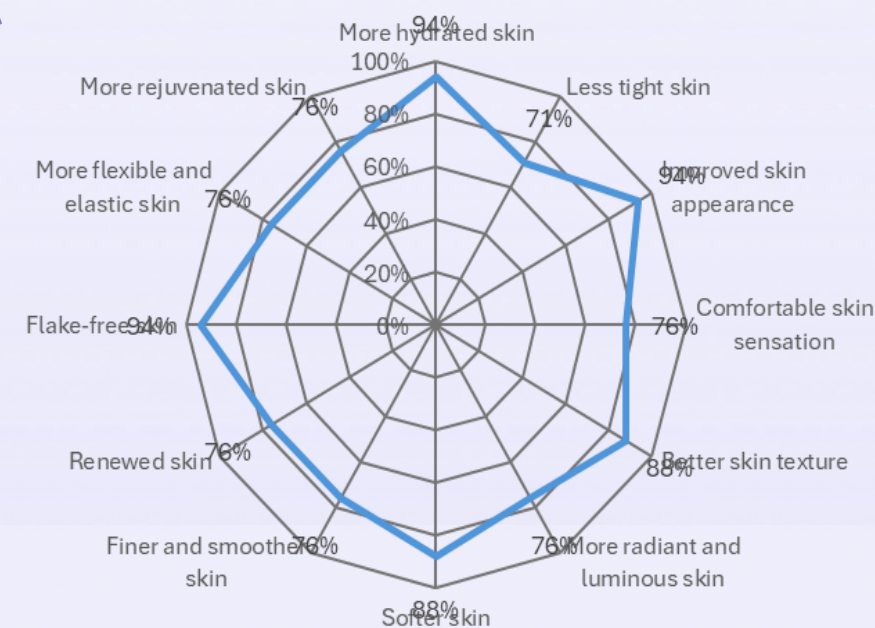
Soothing and protective efficacy even at low concentrations.



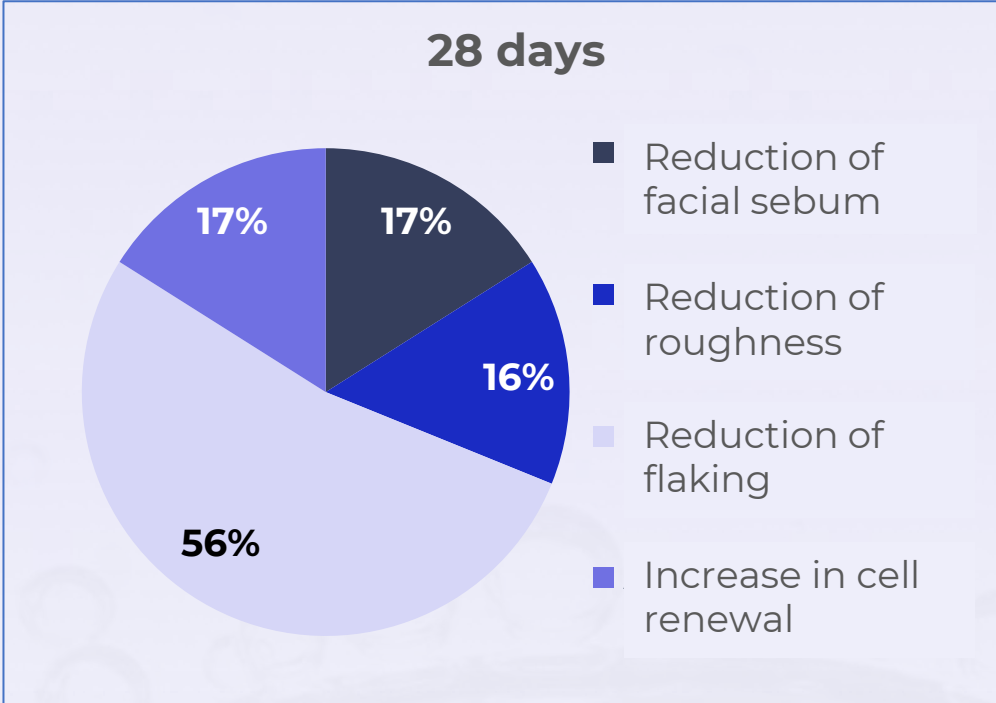
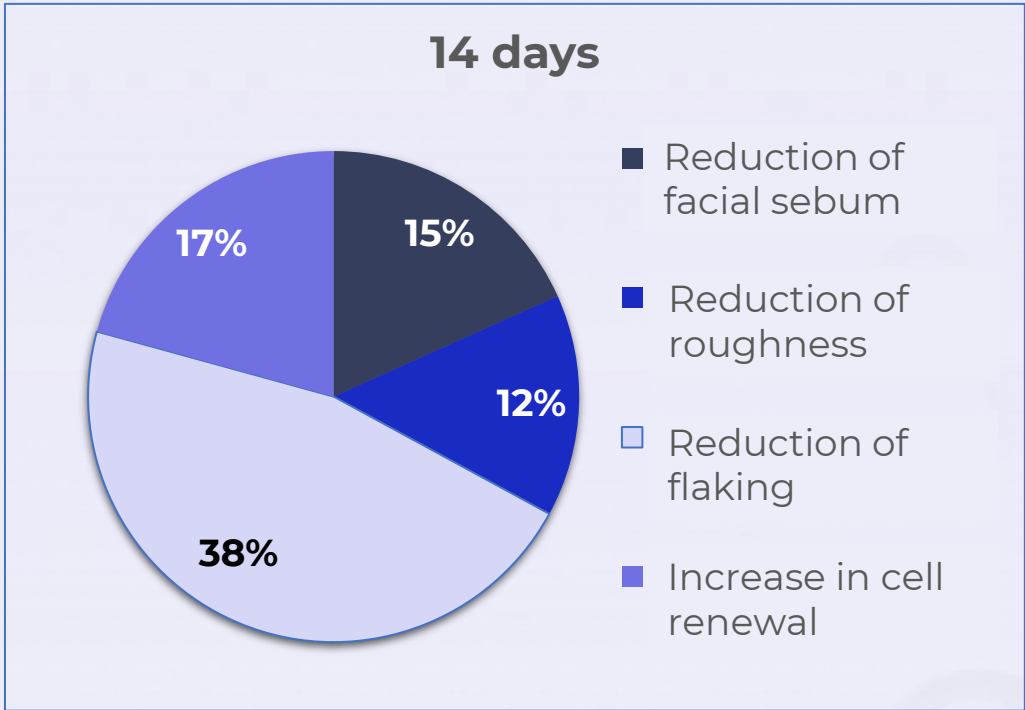
🧑🏻 In-vivo efficacy.

## General evaluation of facial skin improvement

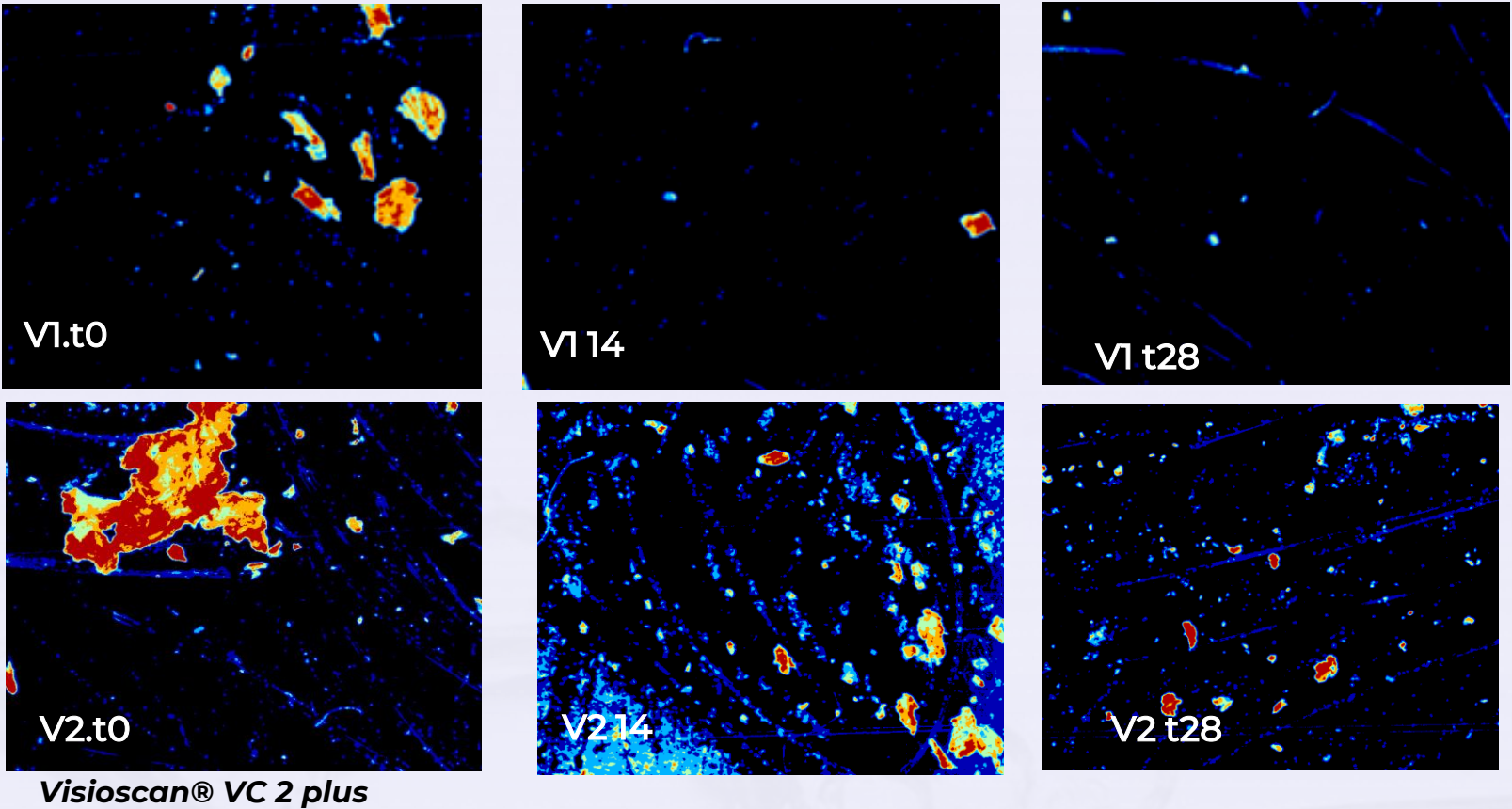
Protocol		
<b>Volunteers:</b> 20 volunteers ♀♂ Age: >20 years	<b>Study Duration:</b> 28 days	<b>Frequence:</b> 1 ampoule/day on cleansed face
<b>Results:</b> comparison with baseline (pre- treatment day)	<b>Application Area:</b> Facial	<b>Sample Tested:</b> Ampoule with a solution at 2.5% Optidel CBD10_NAT



Subjective Facial Efficacy (% of satisfied volunteers)



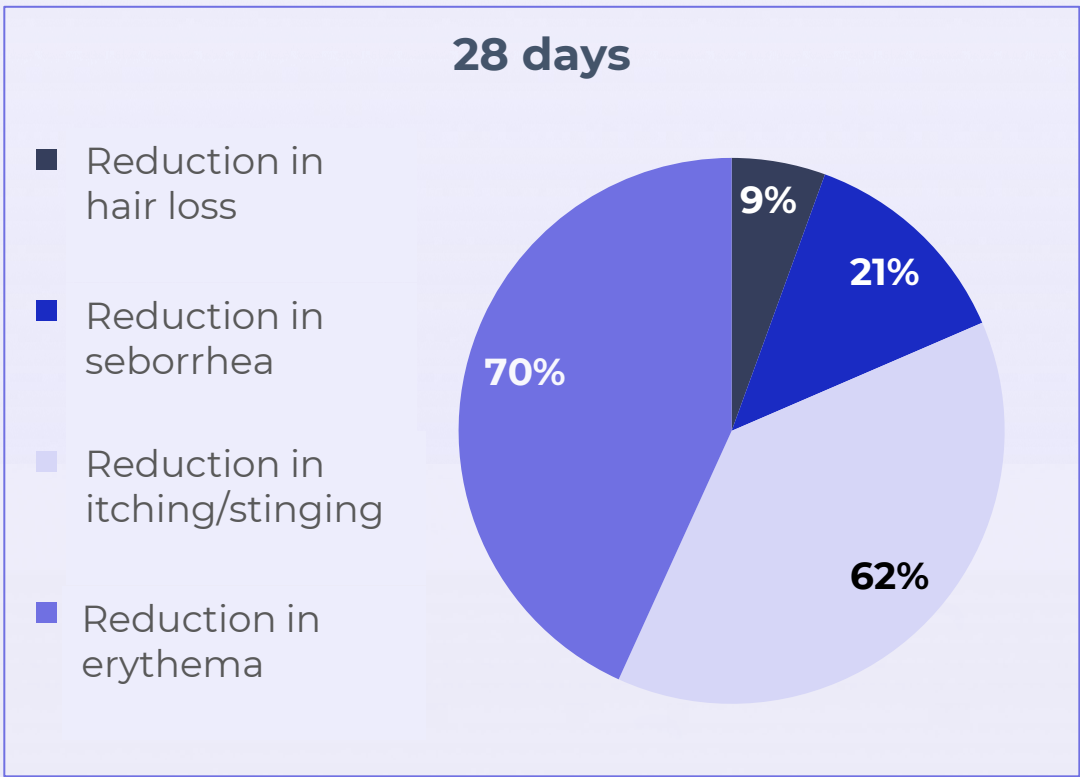
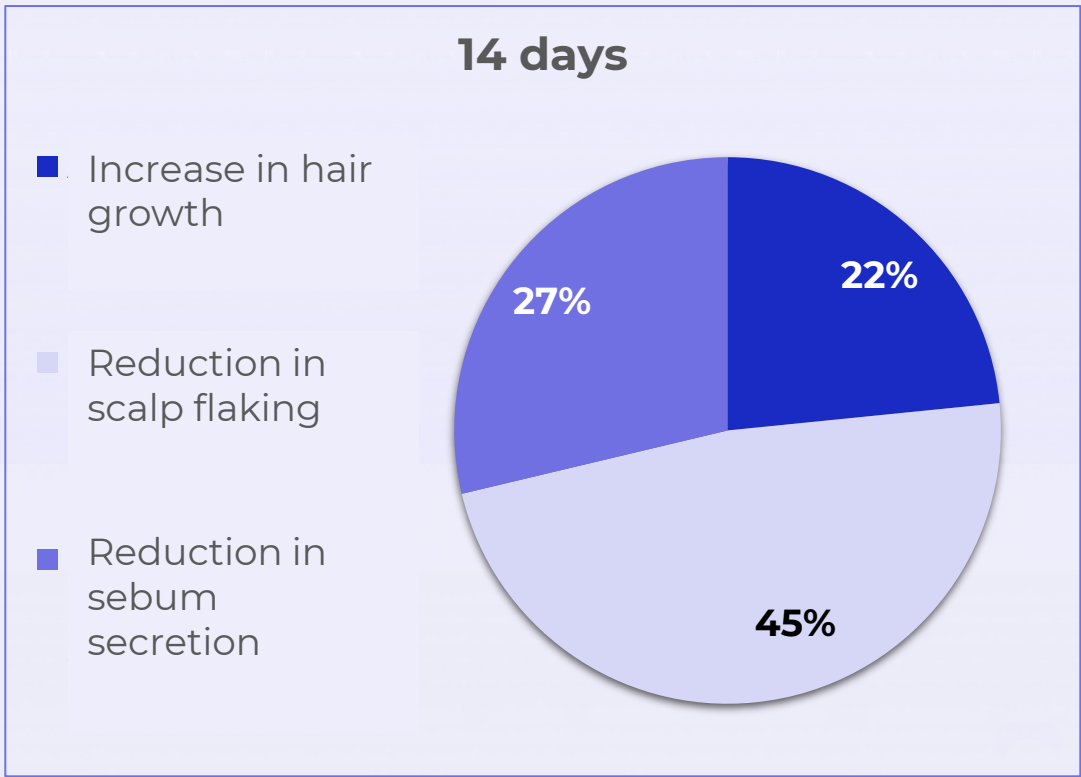
Facial improvement after 14 and 28 days of application



Visioscan® VC 2 plus



General evaluation of improvement on hair and scalp



Protocol		
<b>Volunteers:</b> 20 volunteers ♀♂ Age: >20 years	<b>Study Duration:</b> 28 days	<b>Frequency:</b> 1 ampoule/night on scalp. Rinse in the morning
<b>Results:</b> Comparison with day 0 (pre-treatment)	<b>Application Area:</b> Scalp	<b>Sample Tested:</b> Ampoule with a <b>2.5% Optidel CBD10_NAT</b> solution

Scalp improvement after 14 and 28 days of application





## Results

### CBD\_40 MAX and CBD\_10 NAT

Technology that acts at the root of skin and scalp imbalance

#### 🛡️ Natural Anti-inflammatory

Reduces the synthesis of inflammatory cytokines (such as  $\text{TNF-}\alpha$ , IL-6), helping to soothe irritated, reactive, or reddened skin and scalp.

#### ⚖️ Sebum-regulating and Anti-acne without Side Effects

Regulates the activity of sebaceous glands and reduces bacterial proliferation without causing irritation or dryness.

#### 🧬 Next-generation Antioxidant

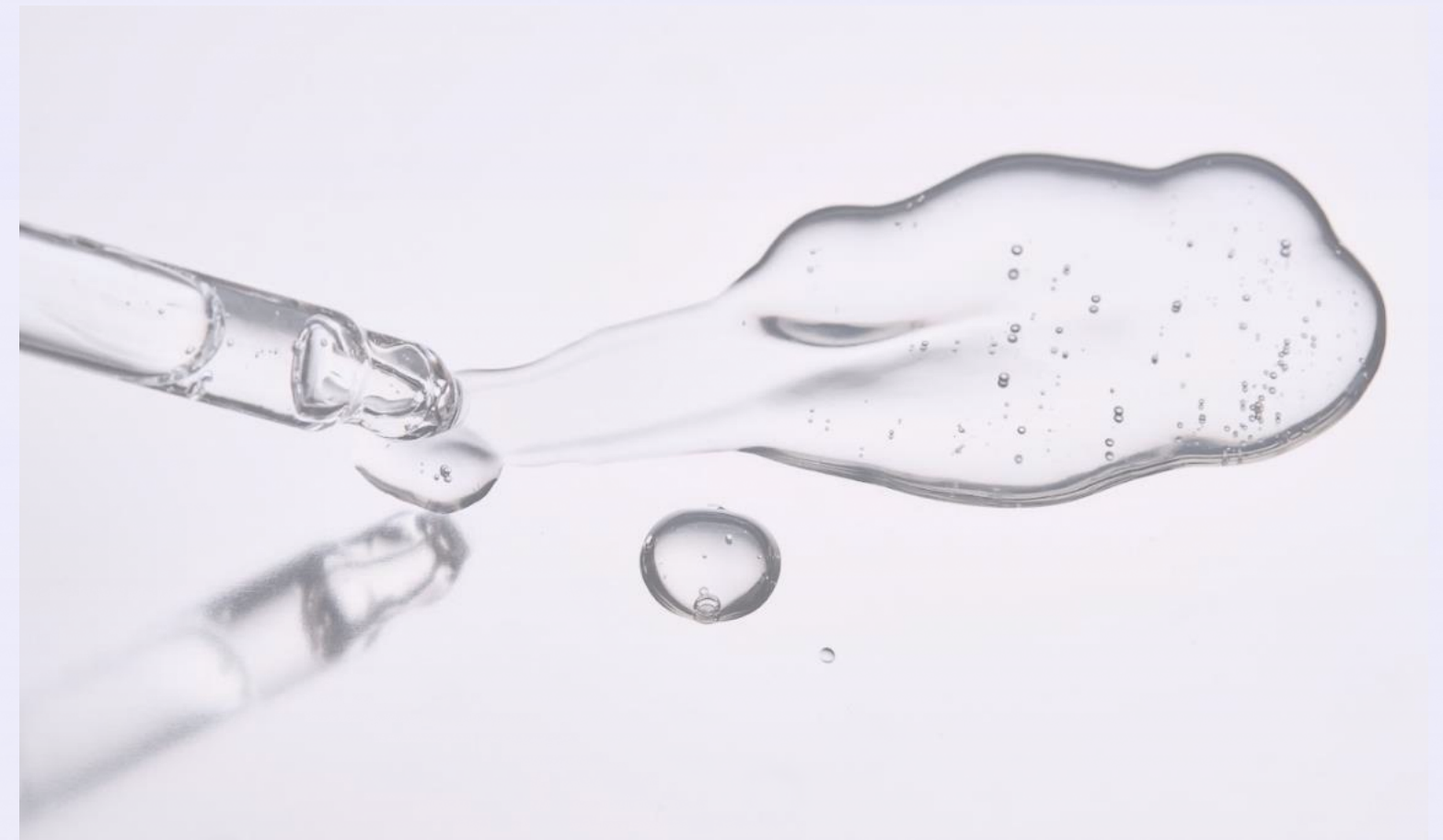
Neutralizes free radicals and protects against oxidative damage caused by UV, pollution, or stress.

#### 🌱 Neurosensory Soothing Effect

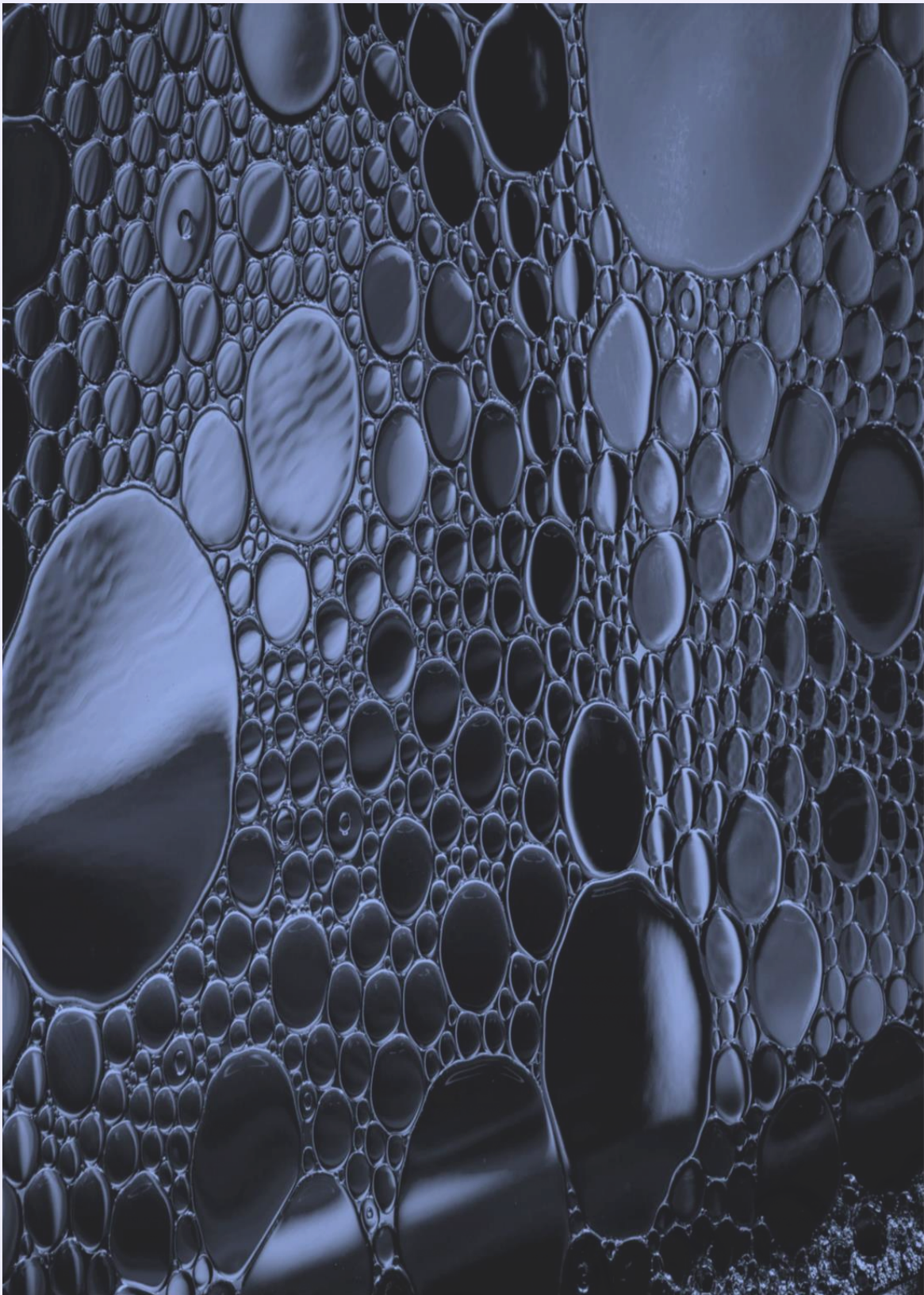
Reduces skin sensitivity by modulating peripheral nerve signal transmission.

#### 🧑 Restores Skin Homeostasis

Promotes the skin's natural balance by regulating key cellular processes.







**CBD\_40 MAX:** C2CBD\_40

**CBD\_10 NAT:** PNCBD\_10

**Application:**

- O/W creams and lotions
- Soothing treatments for sensitive or irritated skin
- Products for acne-prone skin or seborrheic dermatitis
- Anti-hair loss shampoos and lotions
- Scalp treatments for sensitive or seborrhea-prone skin
- Anti-dandruff products

**Recommended Dosage:**

0,5% - 5%

**Formulation advice::**

Add in bulk during the final phase of the production process, ensuring the temperature does not exceed 40°C.

Add to the mixture and maintain under stirring until homogeneous.

**Active content (% w/w):**

Cannabidiol (CBD) 40% and 10%

**INCI name**

**CBD\_40 MAX:** Propylene Glycol, Cannabidiol.  
CAS:57-55-6; 13956-29-1

**CBD\_10 NAT:** Propanediol, Cannabidiol  
CAS: 504-63-2 / 26264-14-2; 13956-29-1





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