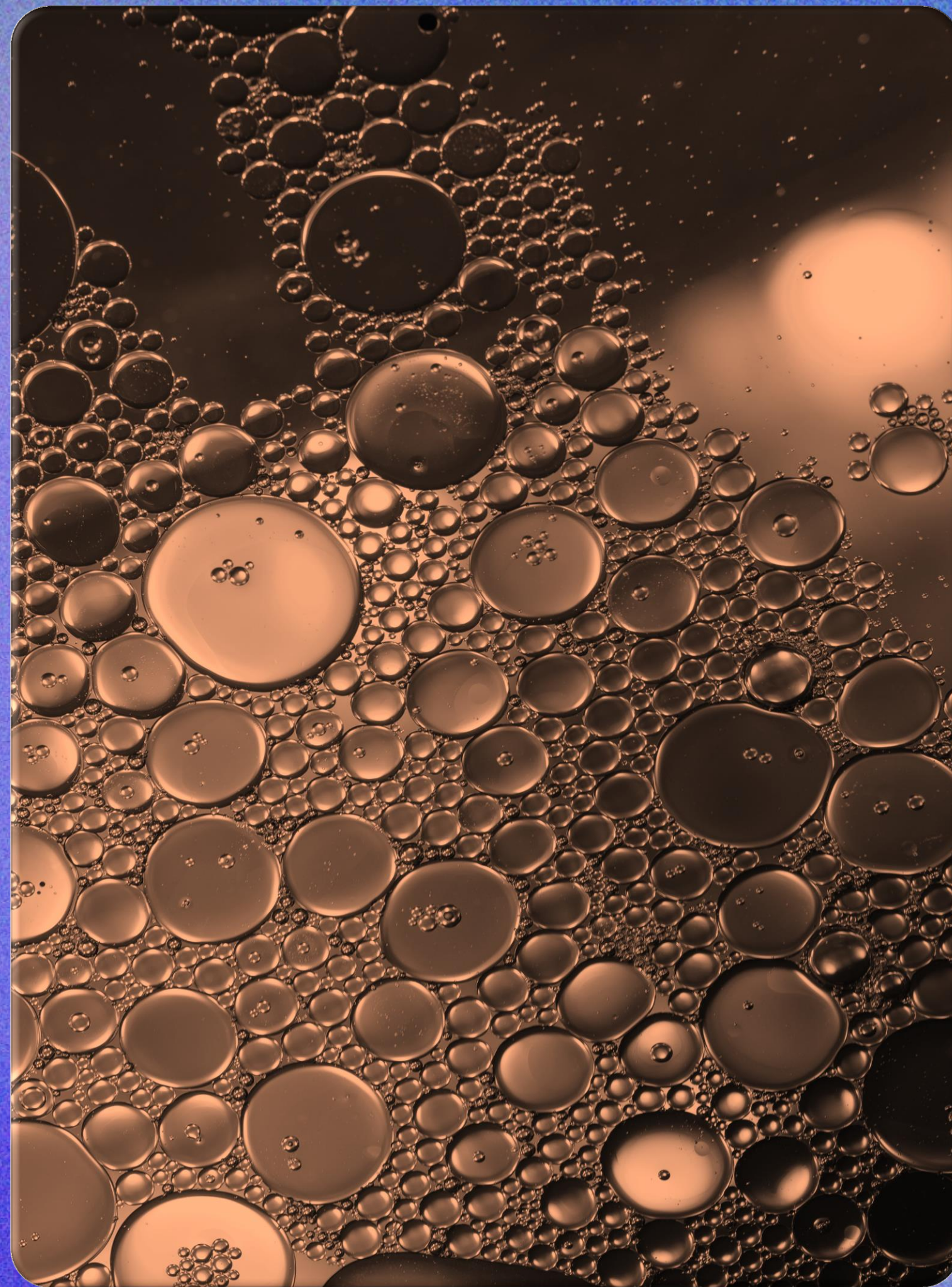




The technological revolution in personalized cosmetic ingredients

MANGOSTEEN_10



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.

Mangosteen_10

Multitarget dermocosmetic active

Advanced protection against inflammatory skin ageing.



Inflammaging: the silent accelerator of skin ageing

Continuous exposure to UV radiation, pollution and environmental stress triggers chronic low-grade inflammation, known as **inflammaging**.

This process disrupts cellular balance and accelerates the structural and functional deterioration of the skin.



🌟 INFLAMMAGING: INFLAMMATORY SKIN AGEING

Mechanisms of action in sensitive skin

Continuous exposure to external aggressors induces persistent low-grade inflammation, known as inflammaging, which accelerates skin ageing.

CELLULAR CONSEQUENCES

Oxidative stress

Excess ROS damages cell membranes, proteins and cellular DNA, compromising the function of keratinocytes and fibroblasts.

➡ The skin loses its ability to defend, repair and remain resilient against external aggressors.

Persistent inflammation

NF-κB activation induces the release of pro-inflammatory mediators (TNF-α, IL-6, IL-1β), maintaining a chronic inflammatory state.

➡ The inflammaging process is accelerated.

Extracellular matrix degradation

Increased MMP activity promotes the degradation of collagen and elastin.

➡ Skin firmness, elasticity and regenerative capacity are reduced.

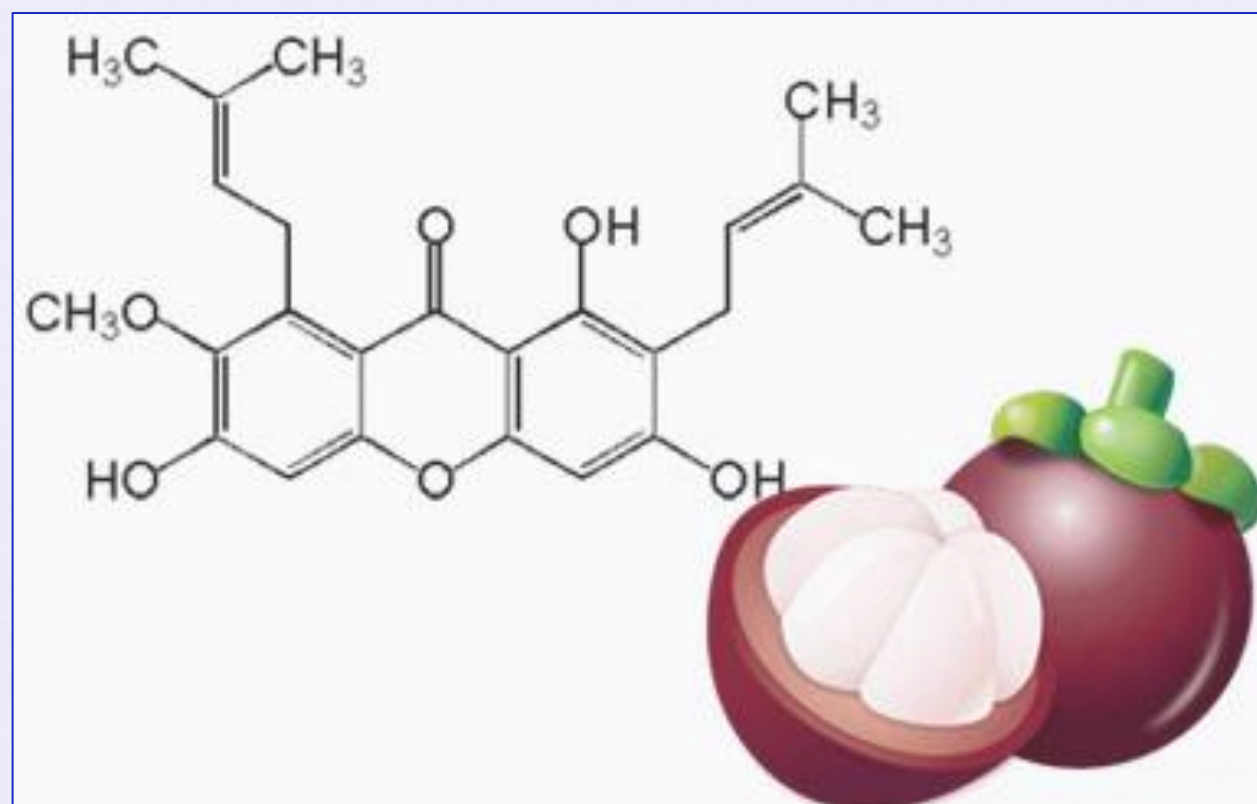
VISIBLE CONSEQUENCES



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Mangostin (C₂₄H₂₆O₆) is the main xanthonoid found in the pericarp of the fruit of *Garcinia mangostana* (mangosteen). It is a lipophilic polyphenol of high natural purity and may be found as α-mangostin, its most active isomer.

Mangostin stands out in dermatology and cosmetics for its multitarget activity: antioxidant, anti-inflammatory, protective against photoageing and supportive of extracellular matrix preservation. Its action contributes to calmer, more protected, firmer and more resilient skin against environmental aggressors and premature ageing.



The mangostin used by Optidel Biosystems is extracted and purified from mangosteen peel.



Optidel technology enables a high concentration of active ingredient to be incorporated while keeping it stable and bioavailable, thereby enhancing its efficacy.



Thanks to its structure, it provides the easiest way to add mangostin from **Garcinia mangostana** to a wide range of cosmetic formulations.



An ingredient with triple biological action: antioxidant, photoprotective and anti-inflammatory, for comprehensive cellular protection.



An excellent botanical shield against photo-stress, inflammation and premature skin ageing.

Mangostin acts on the three key pillars of skin ageing: oxidative stress, inflammation and extracellular matrix degradation.



Advanced antioxidant activity

Neutralises ROS and reduces cellular oxidative stress. Activates endogenous antioxidant systems such as SOD and GPx.

➔ Protection against cellular damage and premature ageing.

Inflammation modulation

Inhibits pro-inflammatory mediators (COX-2, iNOS, TNF- α , IL-1 β , IL-6). Reduces NF- κ B activation, a key pathway involved in inflammaging.

➔ Reduces chronic inflammation and soothes sensitised skin.

Protection against photoageing

Reduces UVB-induced oxidative stress.

Limits collagen and elastin degradation.

➔ Previene arrugas y pérdida de elasticidad.

Extracellular matrix defence

Inhibits matrix metalloproteinases (MMPs). Stimulates the synthesis of type I and III collagen.

➔ Maintains dermal firmness and structure.

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2. Widowati, W., Ginting, C. N., Lister, I. N. E., Girsang, E., Amalia, A., Wibowo, S. H. B., Kusuma, H. S. W., & Rizal (2020). Anti-aging Effects of Mangosteen Peel Extract and Its Phytochemical Compounds: Antioxidant Activity, Enzyme Inhibition and Molecular Docking Simulation. Tropical life sciences research, 31(3), 127–144. <https://doi.org/10.21315/tlsr2020.31.3.9>
3. Li, X., Zhu, X., Wang, B. et al. α -Mangostin, a safe and natural product as a candidate skin-whitening agent. Sci Rep 16, 1474 (2026). <https://doi.org/10.1038/s41598-025-31047-5>
4. Luangpraditkun, K., Kasemkiatsakul, P., Sangnim, T., Yammen, S., Pajoubpong, J., & Vongsak, B. (2025). Anti-Senescence and Anti-Photoaging Activities of Mangosteen Pericarp Extract on UVA-Induced Fibroblasts. Cosmetics, 12(3), 108. <https://doi.org/10.3390/cosmetics12030108>
5. Abate, M., Pagano, C., Masullo, M., Citro, M., Pisanti, S., Piacente, S., & Bifulco, M. (2022). Mangostanin, a Xanthone Derived from Garcinia mangostana Fruit, Exerts Protective and Reparative Effects on Oxidative Damage in Human Keratinocytes. Pharmaceuticals, 15(1), 84. <https://doi.org/10.3390/ph15010084>

Powerful cellular antioxidant protection

MANGOSTEEN_10 demonstrates a strong ability to protect skin cells against oxidative stress.

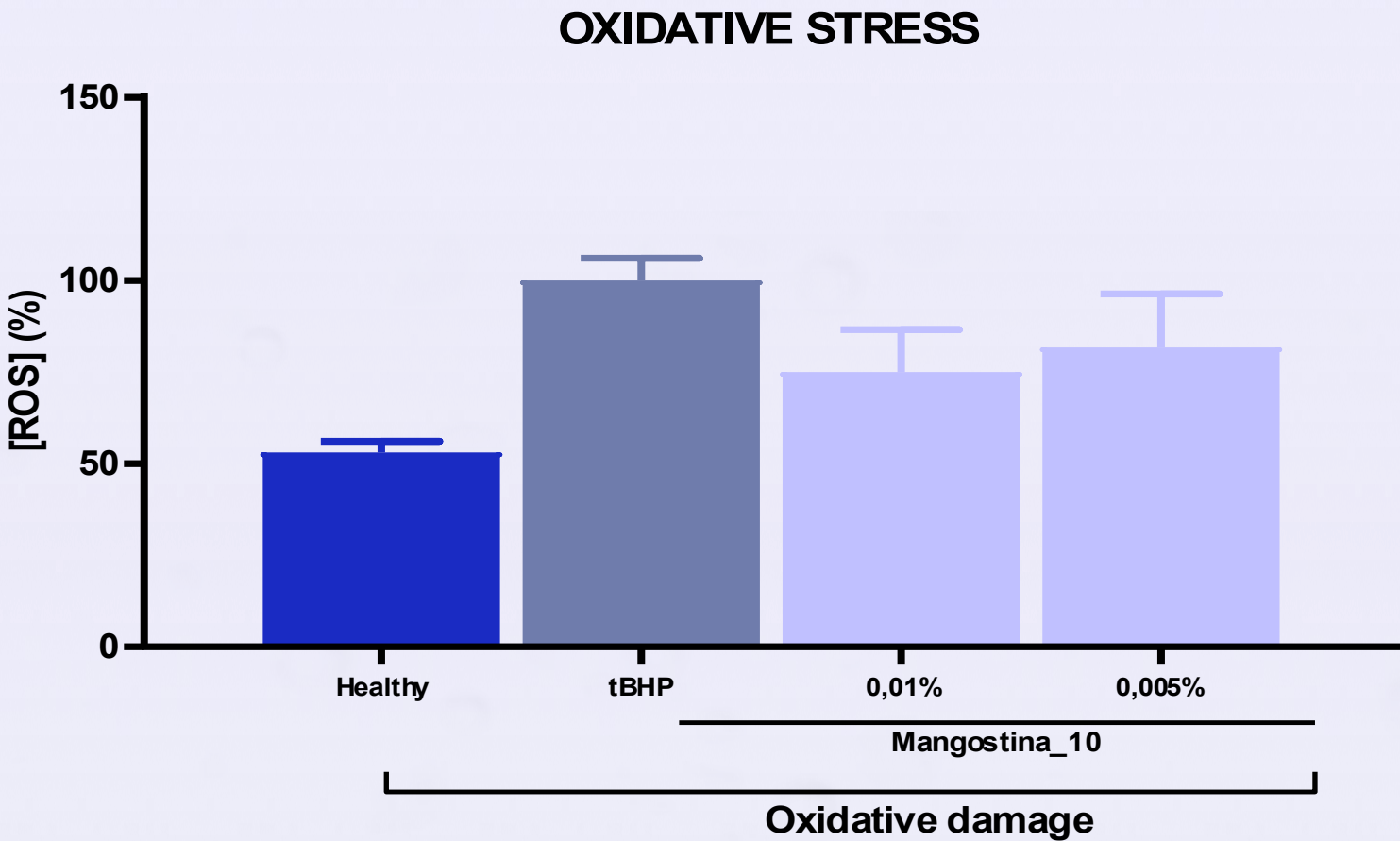
Key result:

- Restores up to ~75% of cell viability after oxidative damage.
- Significantly reduces intracellular ROS production.

Biological impact:

- Prevents oxidative cellular damage.
- Improves cell survival under stress conditions.
- Strengthens the skin’s natural antioxidant defences.

MANGOSTEEN_10 acts as a highly effective antioxidant shield, helping to maintain cellular vitality and youthfulness against oxidative ageing.



ROS production (%) in HaCaT keratinocytes after oxidative stress induction with tBHP and treatment with Mangostin 10.

✎

Photorepair activity: Cellular recovery after UV damage

Mangosteen demonstrates clear photorepair activity, supporting keratinocyte recovery after exposure to UV radiation.

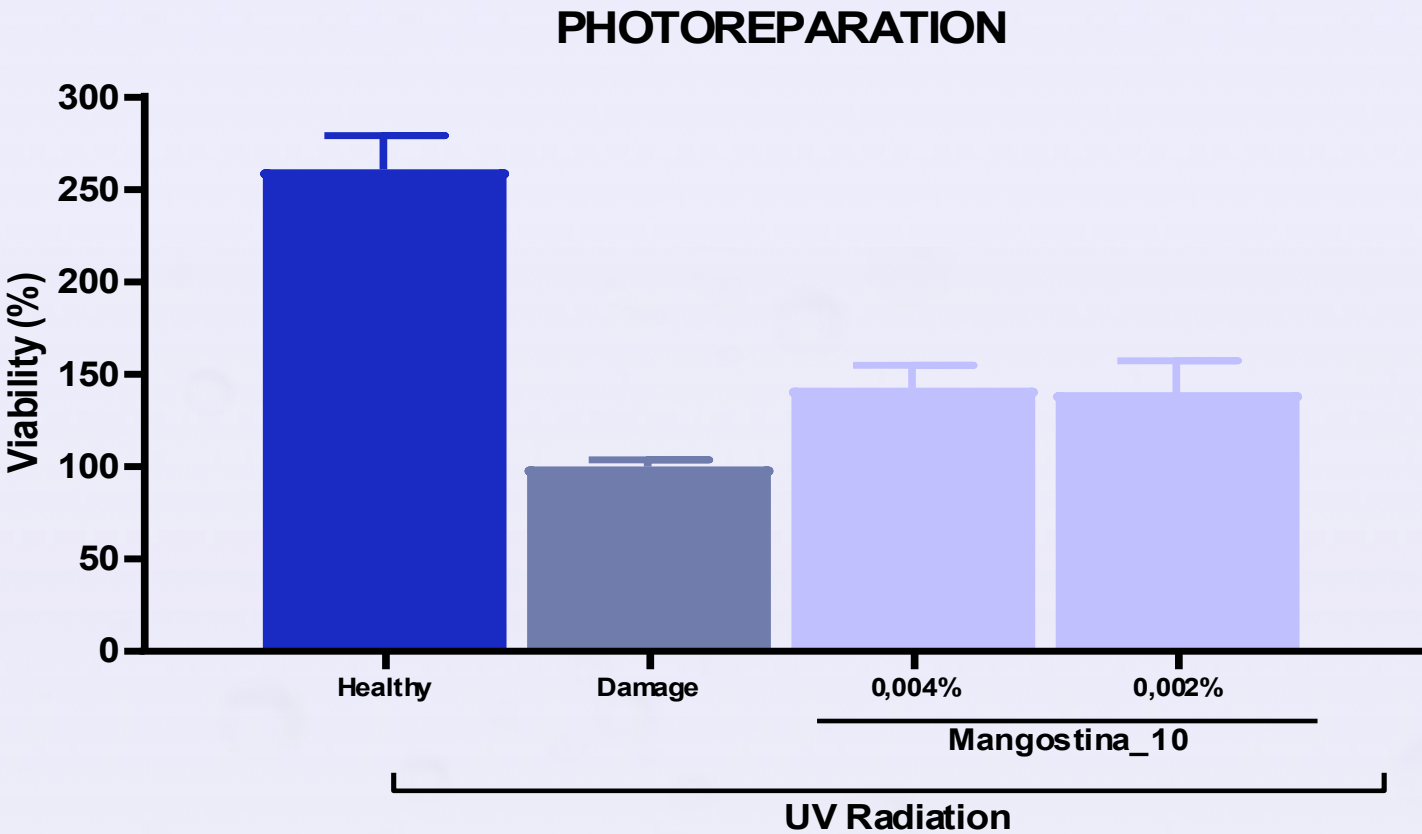
Key result

- MANGOSTEEN_10 increases cell viability by 42% after UV damage, restoring approximately 25% of the lost cellular balance.
- It promotes cellular recovery even at very low concentrations (<0.005%).

Biological impact

- Supports cellular repair after UV stress.
- Improves the viability of damaged keratinocytes.
- Contributes to the recovery of photo-stressed skin

MANGOSTEEN_10 boosts the skin cells’ natural photorepair mechanisms, helping protect the skin against UV-induced photoaging.

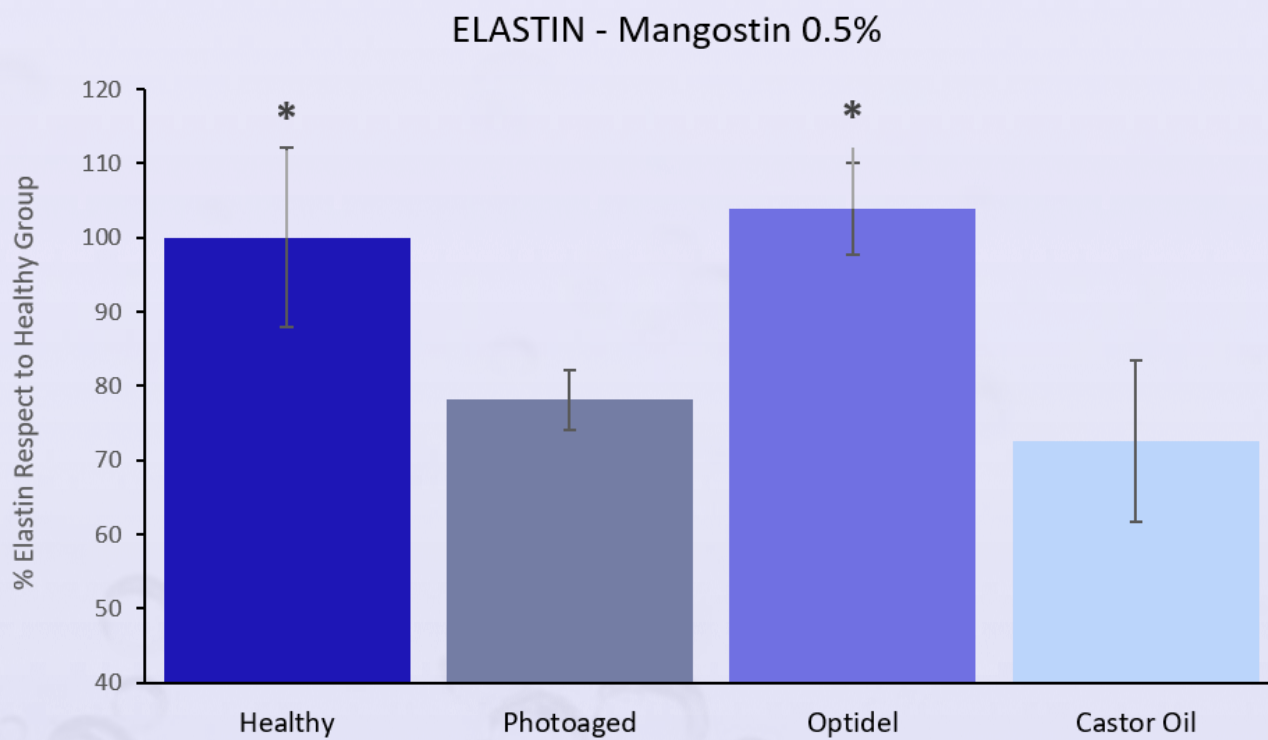
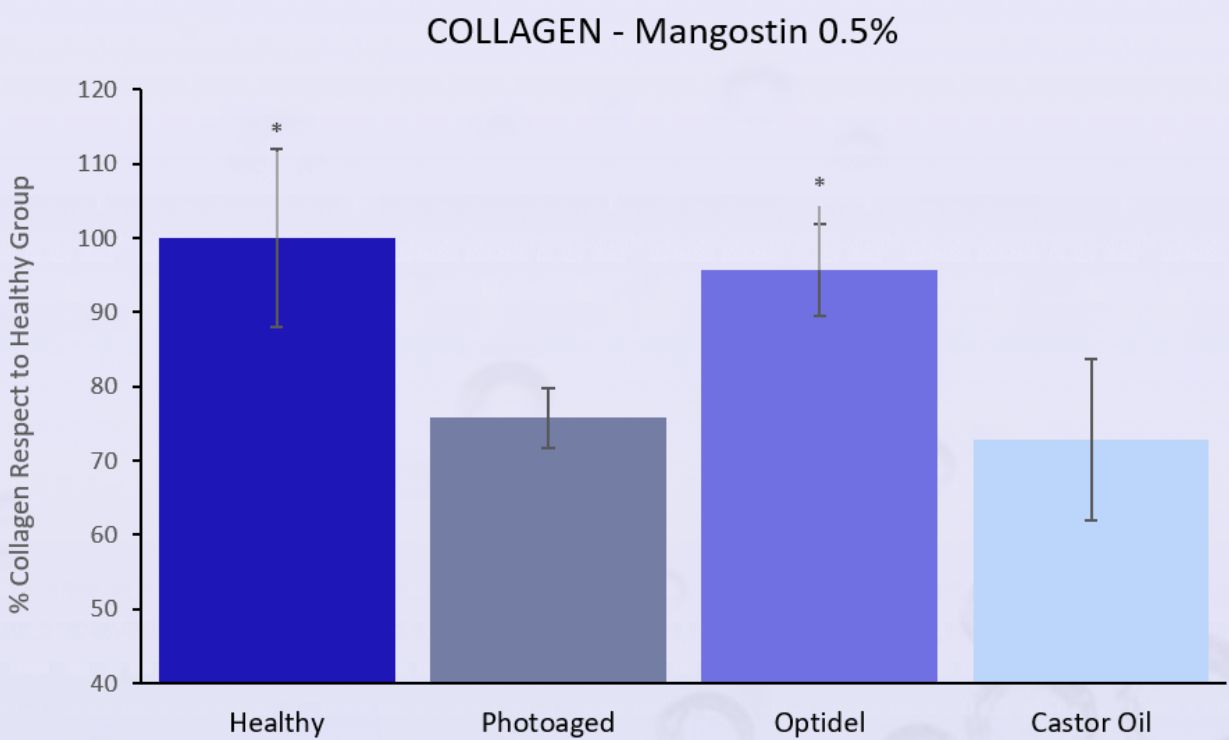


In vitro assay performed on human keratinocytes (HaCaT) to evaluate the compound’s repair capacity against solar damage. Cells were irradiated with simulated sunlight and treated with different concentrations of the compound for 24 h. Cell viability was measured using the MTT assay.

Optidel technology enhances topical bioavailability and efficacy

Comparative **ex vivo** study evaluating the impact of the solubilization strategy on the topical efficacy of mangostin.

Compared to a conventional lipophilic medium (castor oil), in which mangostin shows higher affinity and apparent solubility, Optidel technology demonstrates greater demonstrates greater functional bioavailability, resulting in improved preservation of collagen and elastin and enhanced recovery from photoaging-induced damage.



Ex vivo evaluation in human skin explants to determine collagen and elastin levels after treatment with mangostin. Data are expressed relative to the healthy and photoaged controls; statistical significance *p < 0.05.

MANGOSTEEN_10 acts as a multifunctional active ingredient against the skin exposome, helping to protect, repair and soothe the skin to keep it more resilient, healthy and radiant.

✿ Powerful antioxidant defense

MANGOSTEEN_10 protects cells against oxidative damage, helping to neutralize free radicals and restore cell viability.

✿ Protection and repair against photostress

It provides photoprotective and photorepair activity, supporting cellular recovery after UV damage and helping to prevent photoaging.

✿ Soothing anti-inflammatory action

By counteracting oxidative stress and UV-induced damage, it helps preserve cellular integrity and delay the visible signs of aging.

✿ Prevention of premature aging

By counteracting oxidative stress and UV-induced damage, it helps preserve cellular integrity and delay the visible signs of aging.

✿ Comprehensive protection against environmental aggressors

Thanks to its triple antioxidant, photoprotective and anti-inflammatory action, MANGOSTEEN_10 strengthens the skin's natural defenses against solar radiation, pollution and environmental stress.



MANGOSTEEN_10: MNG_10**Application:**

▪ O/W creams and lotions ▪ Sun care products ▪ Post-procedure or after-sun formulas ▪ Soothing treatments for sensitive or irritated skin ▪ Products for acne-prone or rosacea-prone skin ▪ Anti-aging products

Recommended dosage:

0,5% - 2%

Formulation tips:

Add to the bulk during the final stage of the production process, ensuring that the temperature does not exceed 40°C.

Add to the mixture and keep under stirring until homogeneous.

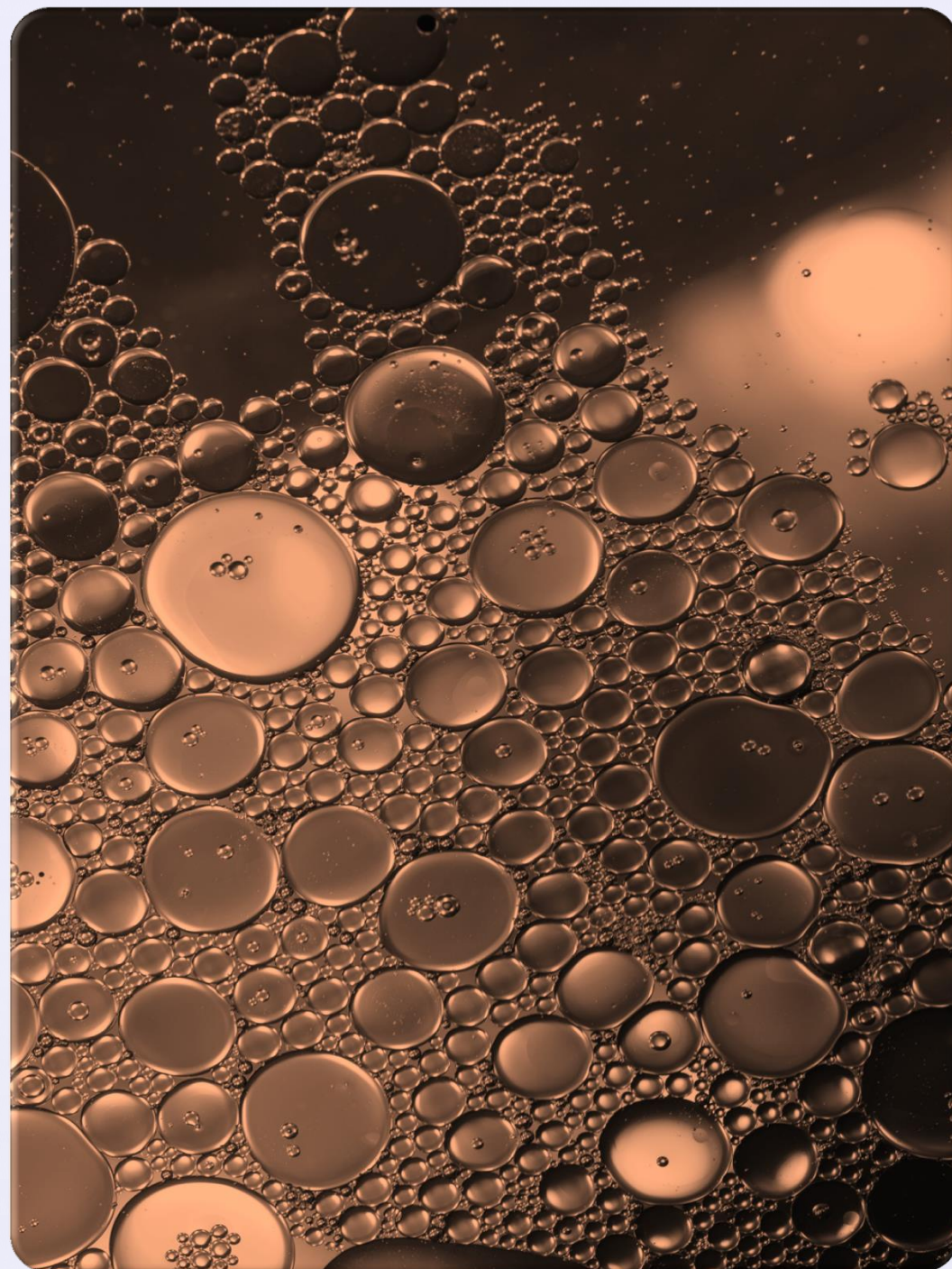
Active % (w/w):

α -Mangostin total: $\geq 5.5\%$

INCI Name

INCI Name: Propylene Glycol, Dimethyl Isosorbide, Garcinia Mangostana (Mangosteen) Peel Extract

CAS: 57-55-6; 5306-85-4; 90045-25-3





Optidel Biosystems S.L.
Technology Park of Bizkaia, Building 202
48170 - Zamudio, Biscay (Spain)
Phone: + (34) 673 76 74 24
info@optidelbiosystems.com