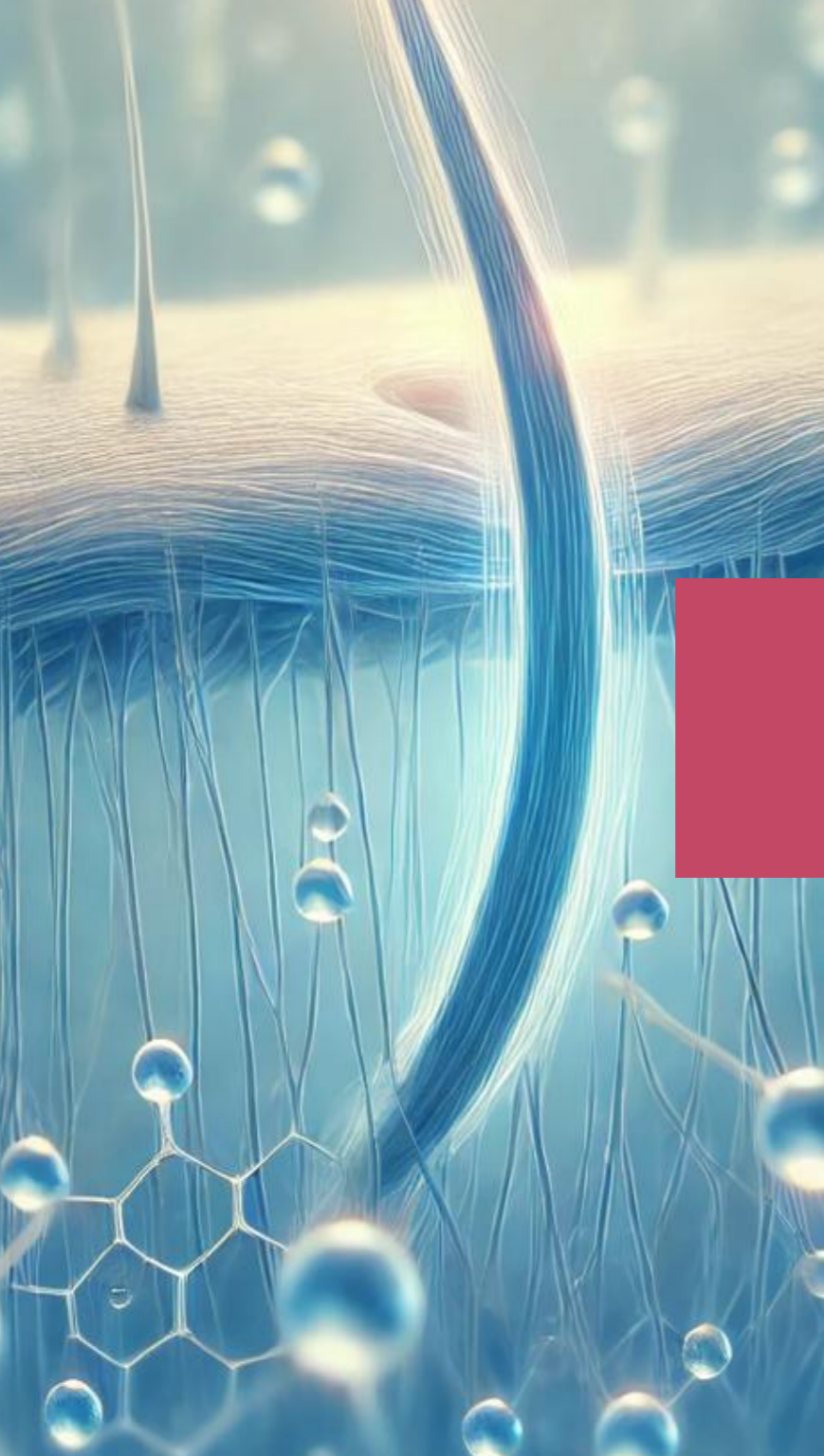


NUTRAMIDE CS

Unlock the Cellular Blueprint for Hair Vitality

EPHYLA
Natural Active Design

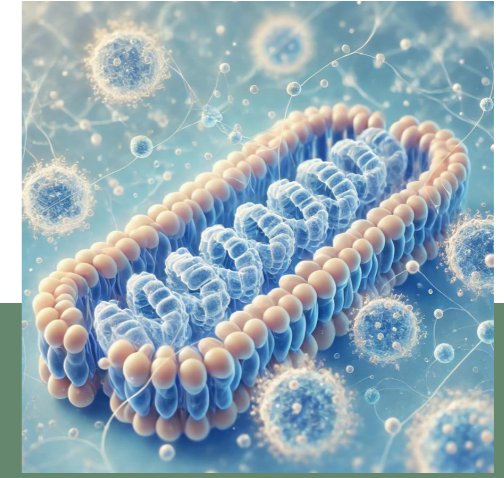
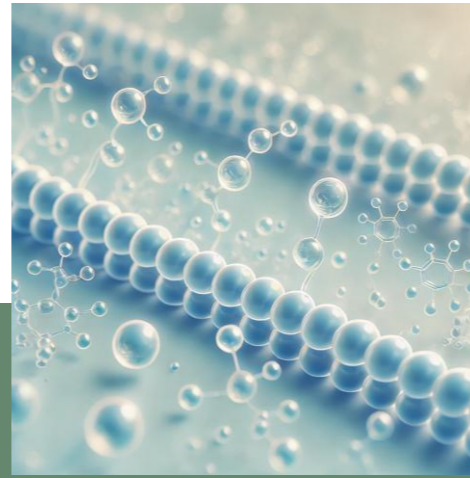
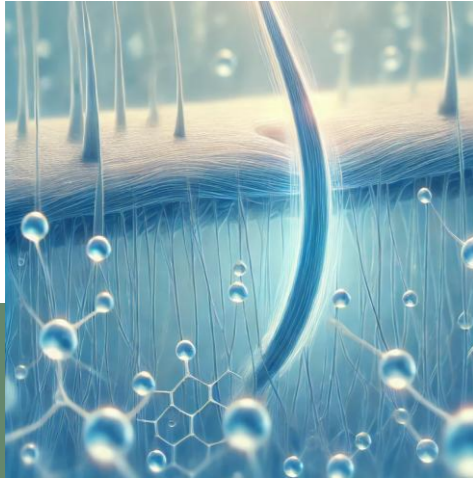


A Lipidomic Breakthrough Innovation for Hair Care

Nutramide CS represents a breakthrough in hair and scalp care, combining advanced lipid science with proven results in promoting hair density and rejuvenation.

This innovative extract is rich in ceramides and a diverse array of phospholipids, including cardiolipin, a key component in cellular energy production within mitochondrial membranes. These elements play a vital role in strengthening the scalp structure and supporting hair growth

The Lipidomic Science behind Nutramide CS



01 Ceramides

Strengthen the hair cuticle, lock in moisture, reduce breakage, and enhance hair resilience.

The ceramide-rich profile of Nutramide CS fortifies hair strands, aiding in overall density and preventing thinning.

02 Phospholipids

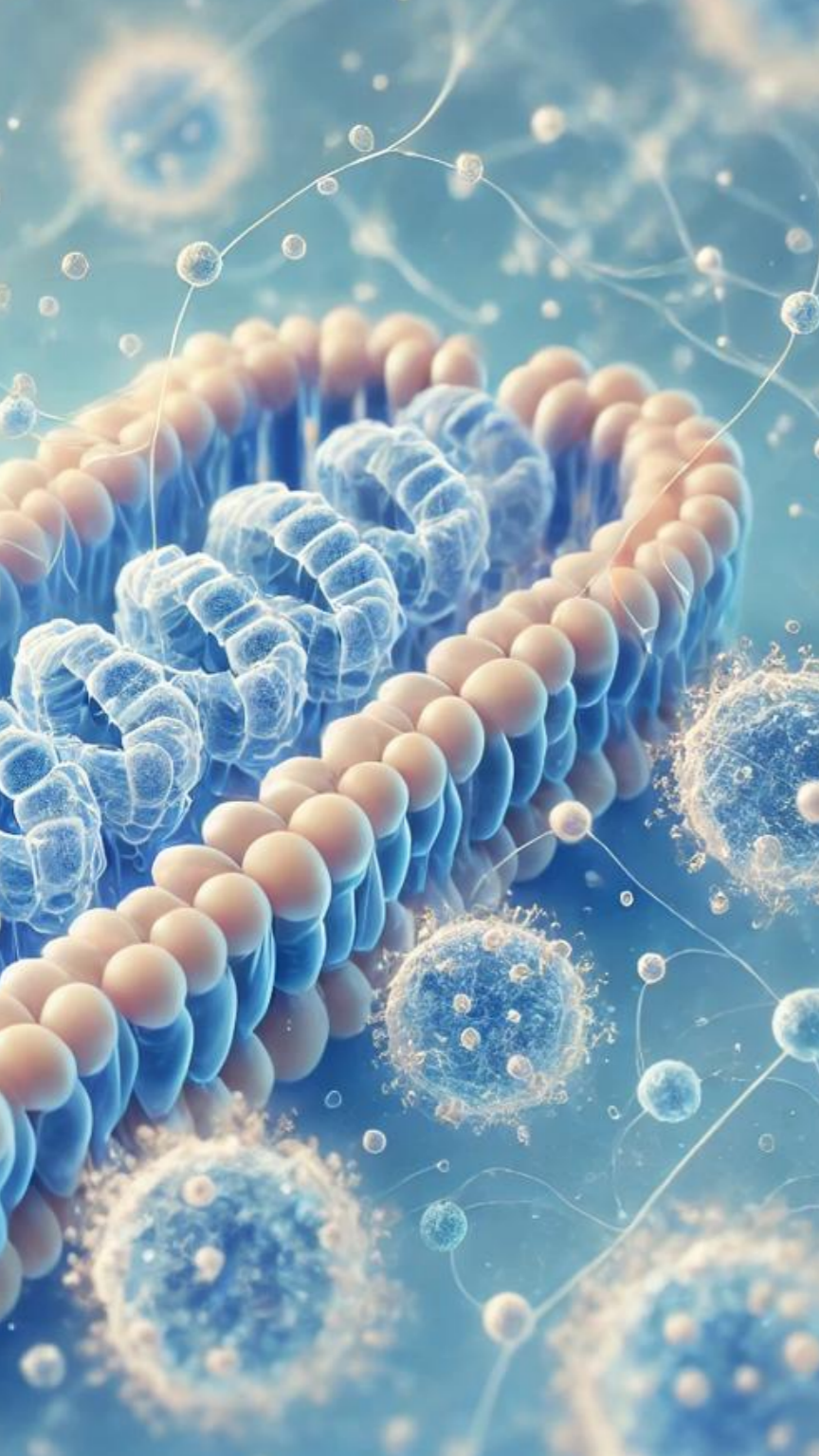
Maintain the integrity of the hair and scalp.

These lipids support the scalp's cellular structure, improving nutrient absorption and boosting hair density. Nutramide CS contains a diverse set of phospholipids such as phosphatidylcholine, phosphatidylserine, and phosphatidylethanolamine.

03 Cardiolipin

Crucial for energy production within scalp cells.

By promoting cellular energy, cardiolipin supports hair follicle health, contributing to stronger and denser hair growth.



Cardiolipin: The Premium Lipid for Scalp and Hair Revitalization

Cardiolipin is a rare and unique phospholipid concentrated in the inner mitochondrial membrane, the energy powerhouse of cells

Cardiolipin supports mitochondrial function in Dermal Papilla Cells, enhancing their ability to promote hair growth and maintain follicle health

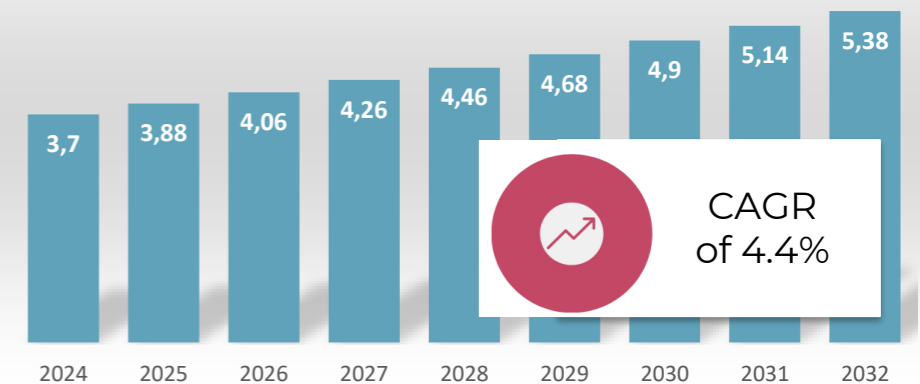
With 1570 ppm of cardiolipin in Nutramide CS, its value based on market pricing is approximately \$158,000 per kilogram

The pursuit of dense, vibrant hair is a deeply personal quest, driven by the desire for a youthful and confident self-image.

Regardless of age, ethnicity, gender, or hair type, concerns about thinning hair, reduced volume, and a lack of overall vitality can significantly affect an individual's self-perception and confidence, often manifesting as visible scalp, weakened strands, and lackluster texture

The Hair Revitalization Global Market

Current Market and expected developments for global hair loss treatment (USD Billion)



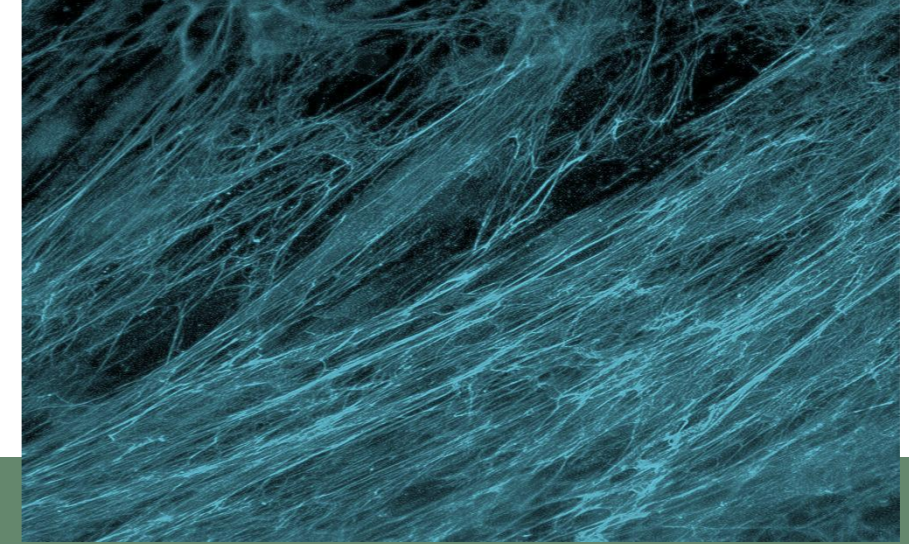
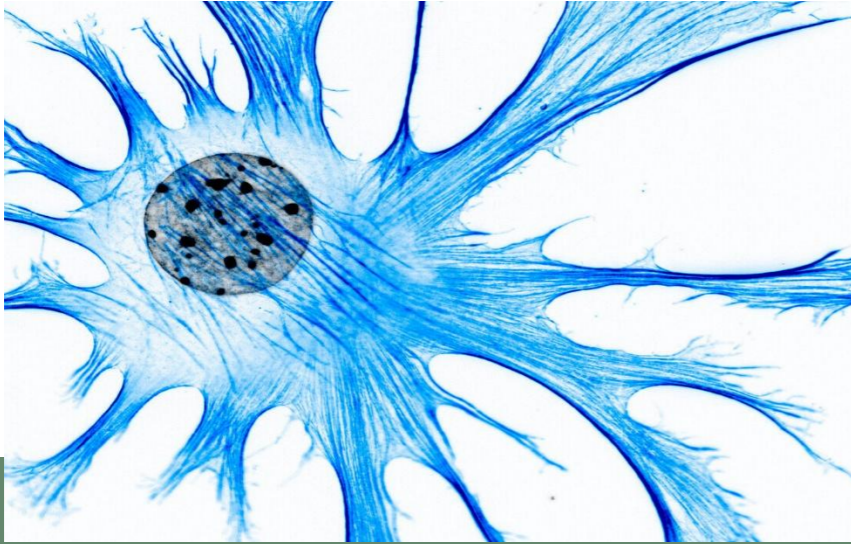
Giving New Life to Nature's Resources: The Nutramide CS Upcycling Story

- Nutramide CS is the result of an upcycling approach, valorizing the co-products of *Camelina sativa* oil extraction.
- This process transforms a waste stream, the seed cake, into a high-performance skincare ingredient.
- Environmentally responsible beauty that reduces waste and supports local French farming using exclusively non-GMO rapeseed



Nutramide CS demonstrates how upcycling can drive innovation in the beauty industry while promoting sustainability

Fibroblasts: The Architects of the Dermal Papilla

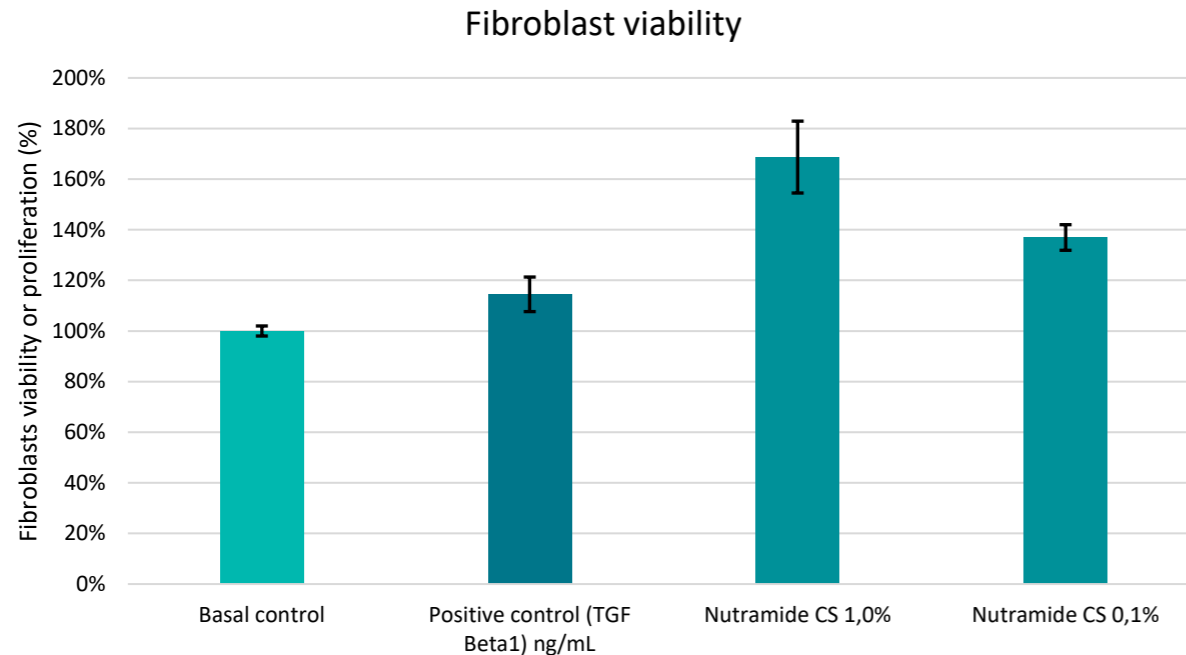


Fibroblasts and Dermal Papilla Cell Formation

- Fibroblasts can differentiate into DPCs, which are essential for activating epithelial stem cells to form new hair follicles
- Fibroblasts can be chemically induced to transform into DPC-like cells that promote hair follicle regeneration, maintaining the ability to trigger HF formation and stimulate surrounding epithelial cells." - Adapted from Osada A, et al. *In vitro* induction of hair follicles from murine dermal papilla cells.

ECM Remodeling: Creating a Regenerative Niche

- Fibroblasts secrete extracellular matrix components that provide a supportive environment for follicle development and regeneration.
- The Extra Cellular Matrix (ECM) provides structural support and biochemical cues essential for hair follicle morphogenesis and cycling. Fibroblasts actively remodel the ECM, influencing cell behavior and tissue regeneration.



Stimulating fibroblast activity promotes scalp regeneration, enhancing hair follicle health and ultimately improving hair density and vitality through pathways like WNT/ β -catenin

+ *In Vitro*

MATERIAL AND METHOD

Fibroblast Isolation: Normal human fibroblasts are isolated from healthy scalp tissue obtained from female volunteer donors.

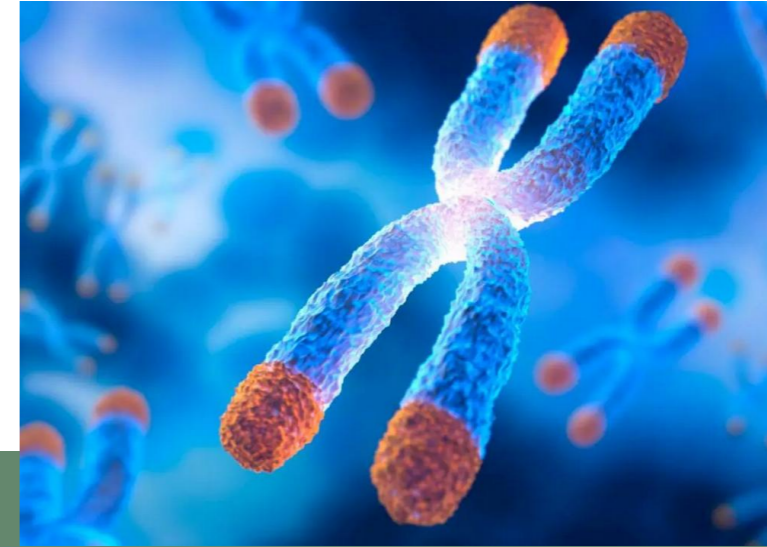
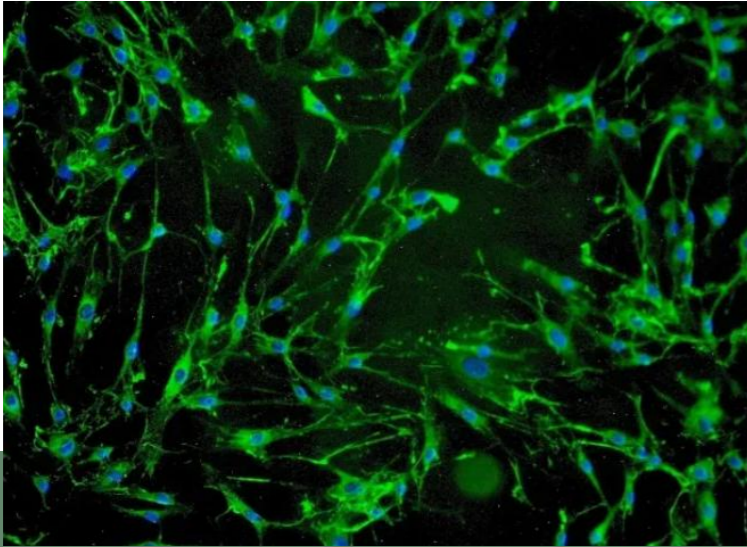
Culture Conditions: Cells were maintained at 37°C in a humidified atmosphere containing 5% CO₂.

Treatment with Nutramide CS
Fibroblast culture was treated with Nutramide CS at concentrations of 1,0% and 0,1% for 72h.

Cell Proliferation Assay (MTT Assay): Cell proliferation was assessed using the MTT assay.

Data Analysis The resulting formazan crystals were dissolved in HCl 0.01M + 10% SDS, and absorbance was measured at 570 nm. Cell proliferation was expressed as a percentage relative to the control group.

Dermal Papilla Cells and Telomeres, A Powerful Partnership for Hair Regeneration



The health and regenerative capacity of hair follicles depend on the intricate relationship between dermal papilla cells (DPCs) and telomeres. Maintaining telomere length within DPCs is crucial for sustaining hair growth cycles, delaying aging, and combating hair loss.

Dermal Papilla Cells (DPCs): The Hair Growth Orchestrators

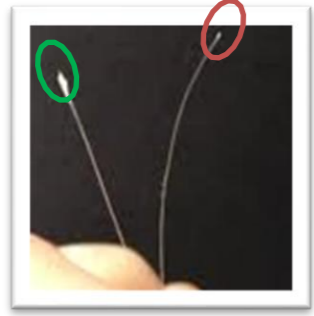
- DPCs are fundamental in promoting hair growth through their critical role in follicle formation and optimization of the hair cycle.

Telomeres: Protectors of Cellular Vitality

- Fibroblasts secrete extracellular matrix components that provide a supportive environment for follicle development and regeneration.
- The Extra Cellular Matrix (ECM) provides structural support and biochemical cues essential for hair follicle morphogenesis and cycling. Fibroblasts actively remodel the ECM, influencing cell behavior and tissue regeneration.

Sampling and qualification of a root bulb

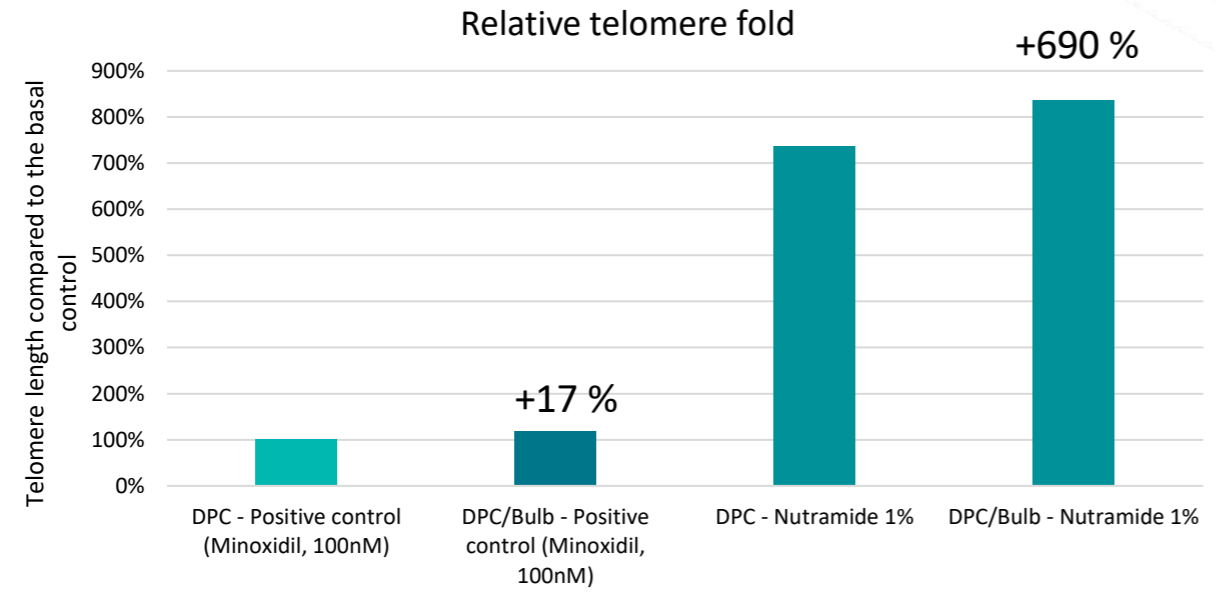
Telogen phase bulb **not retained**
Anagen phase bulb **retained**



Isolation and cutting of the bulb



Planting bulbs on hDPC mats in *in vitro* culture



+ *In Vitro / In Cellulo* *Ex Vivo*

MATERIAL AND METHOD

Bulb Isolation: Root bulbs were obtained from hair follicle isolated from female volunteer donor and DPC

Culture Conditions: Bulbs were positioned/conserved in DPC cultures. Cells and bulbs were maintained at 37°C in a humidified atmosphere containing 5% CO₂

Treatment with Nutramide CS Fibroblast culture was treated with Nutramide CS at concentration of 1,0% for 72h

DNA extraction and qPCR: gDNA was extracted from cells pellets using a purification kit before qPCR analysis.

Data Analysis: qPCR results were analyzed using QuantStudio software and telomere length was determined/calculated.

This strategy paves the way for innovative treatments to combat hair thinning and promote overall scalp health through cellular and epigenetic interventions



+ *Clinical Results*

MATERIAL AND METHOD

Panel: A total of 22 persons, including men and women, from 43 to 72 years old.

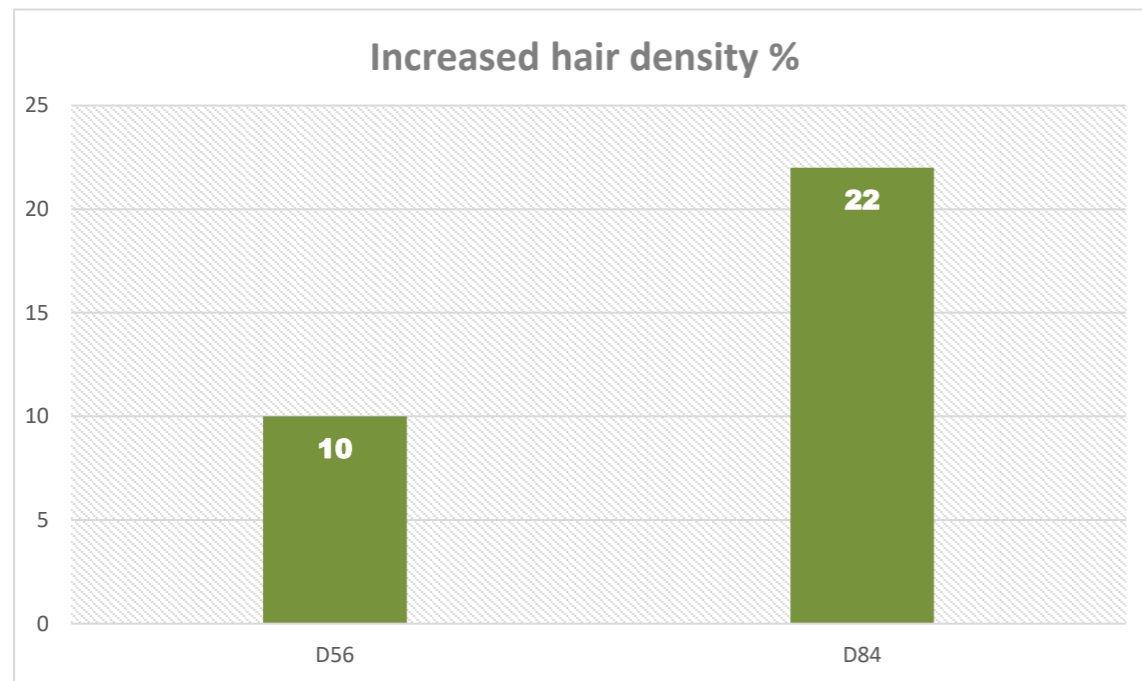
Hair type: All.

Scalp type: Itchy scalp, significant or daily hair loss, dandruff.

Duration: 84 days.

Application instructions: Apply 3 drops of oil containing 8 mg of Nutramide CS to a dry scalp every morning and evening. Use the palm of your hand to spread the oil evenly over the entire scalp.

This application is equivalent to two or three sprays containing 2% Nutramide CS.



D0

D56

D84



100% of subjects with the positive effect
The responses are not gender-specific

A marked improvement in scalp quality was also observed, further confirming the effectiveness of the skinification approach

+ SEM analysis

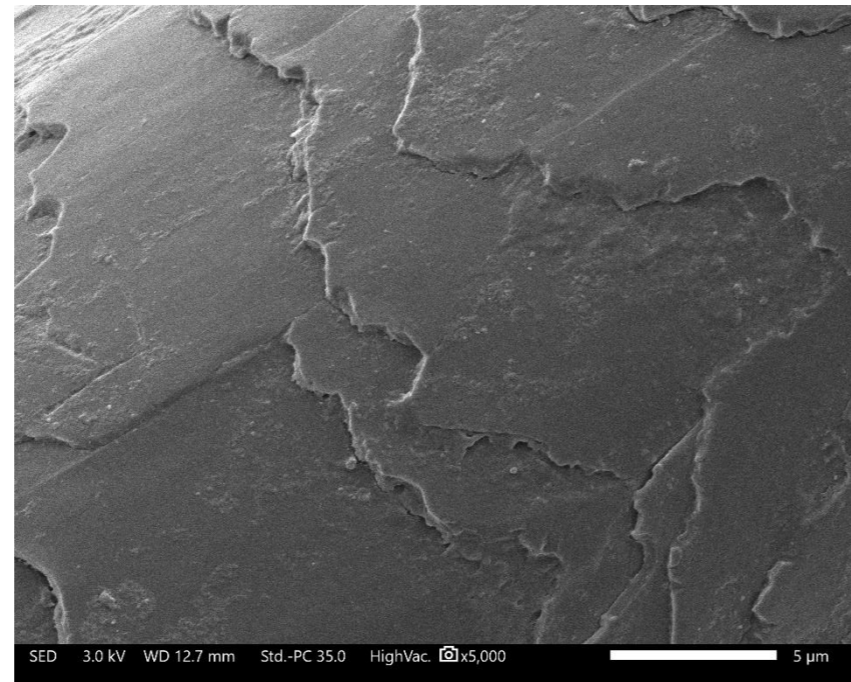
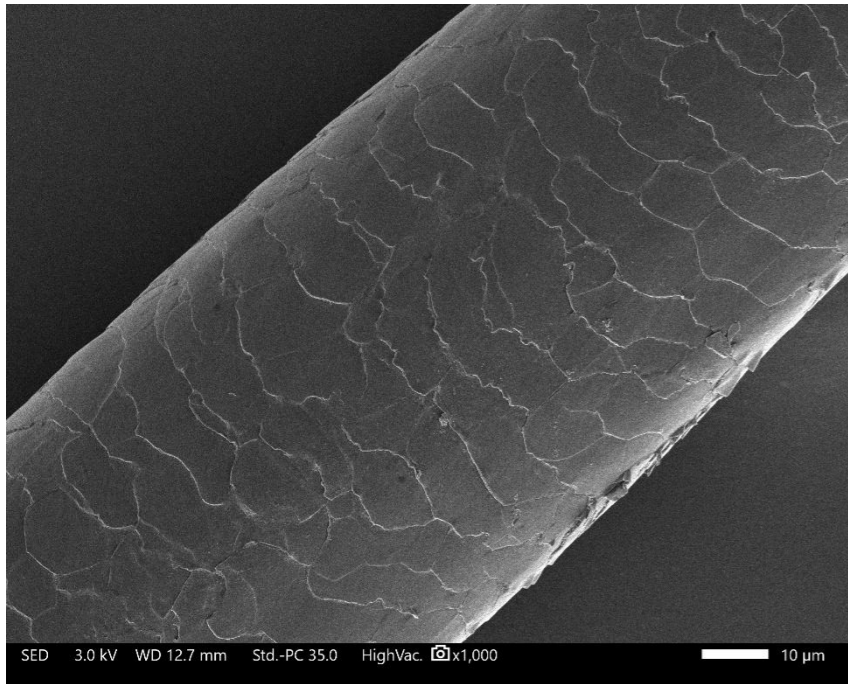
MATERIAL AND METHOD

Hair fiber: Hair fibers are obtained from voluntary donor.

Hair characteristics: Terminal part of the fiber; with more potential damage; is analyzed.

Application instructions: 1 to 2 drops of Nutramide CS at 2% are applied on hair fiber using hands.

Sample preparation: Hair fibers are fragmented before being placed on pads and subjected to a metallization cycle.



Well aligned cuticles sealed together and a smooth surface are observed, signs of a reinforced and protected fiber

Technical Specifications

INCI: Ethyl linoleate & Camelina sativa seed oil

APPEARANCE: brownish yellow liquid

FORMULATION: oil soluble

DOSAGE: 1-5 %

NOI: 1

SAFETY PROFILE:

Cutaneous: Non-Irritating, Non-Sensitizing

Eye irritation: moderate irritation

Phototoxicity: not phototoxic

Mutagenicity: non mutagenic ; non pro-mutagenic

Certified estrogen-like endocrine disruptors free

