

# NANO MATURE SKIN



## Actives

Ammonium Lactate and oat oil.

## Description

Nano Mature Skin is a blend of encapsulated actives in lipid nanoparticles (VAM® - Multifunction Actives Vectors)\*, with an enzymatic release trigger. It has extended release, releasing about 80% of its content in the course of 8 hours after the product's application. The encapsulation of this blend by Nanovetores Technology allows the reduction of odor and irritability caused by the ammonium lactate and the stabilization of the oat oil, that is extremely sensitive to oxidation. The Nanovetores technology also grants that the actives have a higher permeation on the skin, a controlled release, prolonged action and promotes the improvement of the final product's sensorial. The multifunctionality of the system is to promote great hydration, once the lipids present in the capsule act in the lipid reposition and prevent the transepidermal water loss because of the occlusive characteristic of the nanoparticles. The ammonium lactate is an alpha-hydroxy acid (AHA) capable of restoring the skin's pH and improving the keratolysis of hyperkeratotic skins. The ammonium lactate, in its free form, may cause burning and irritation in dry skins with cracks and crevices, limiting its use. (Chang, A.L.S. et al, 2013). In its encapsulated form, this irritation does not happen, allowing a safe and efficient application of the product.

The ammonium lactate acts through the humectation (hygroscopic property) and active hydration (water retention in the stratum corneum) mechanisms, with maintenance of the barrier function (hydrolipic mantle maintenance).

The oat oil is frequently used in skin treatments to reduce irritation and dryness of the skin. Studies have demonstrated the efficacy of formulations containing oat for the skin. In a study published in 2014 in the Journal of the American Academy of Dermatology, researchers demonstrated that the oat oil was capable of improving the epidermal barrier through the increase of the ceramides synthesis by the keratinocytes (peroxisome proliferator-activated receptor (PPAR)). During the aging process, the skin goes through different changes becoming thin, dehydrated and with low elasticity. Because of its differential hydration process, Nano Mature Skin is an excellent active for the treatment of the elderly thin and sensitive skin, and for skins with hydration related disorders.

\*VAM biopolymer and lipid particles from natural origin, biocompatible and biodegradable, produced in an aqueous medium which add multifunctionality to active and have specific release trigger (patented Nanovetores technology).

# Efficacy Screening

## Intense hydration protocol

**Objective:** Evaluate the tested product's effect for the intense hydration of the skin.

**Tested product:** Nano Mature Skin 10% Body Lotion.

**Number of Volunteers:** 10.

**Equipment used:** Softplus (Hydrations probes, micro camera photos).

**Application area:** Three spots located on the volunteer's right forearm.

**Time measures:** The measures were taken it triplicate at To (zero), T 15 minutes, T2 hours, T4 hours, T24 hours, T48 hours, T7days.

**Application methodology:** A controlled quantity of lotion was applied homogeneously in the right forearm of each volunteer. It was indicated that each volunteer applied the lotion two times a day: at morning and at night.

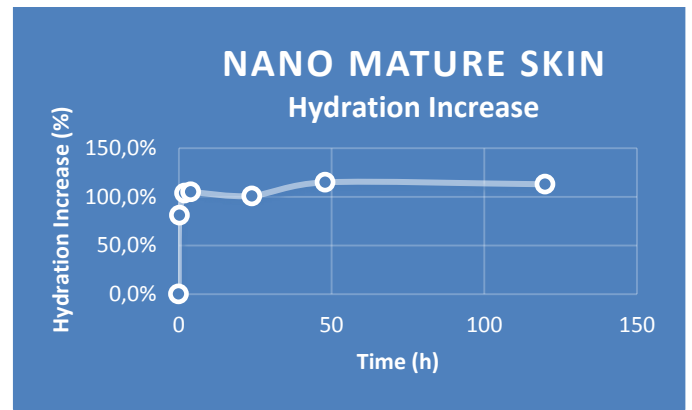
**Procedures during the test:** The test started with the inicial measures (To) of hydration. After the To measures, in triplicate and in random spots of the right forearm, the product was applied and the measures were taken (T15 min, T2h, T4h, T24h, T48h and T7D), respecting the time break between each of them.

**Orientation given:** During the test period, do not apply any other body products on the tested area.

## Results

### Hydration:

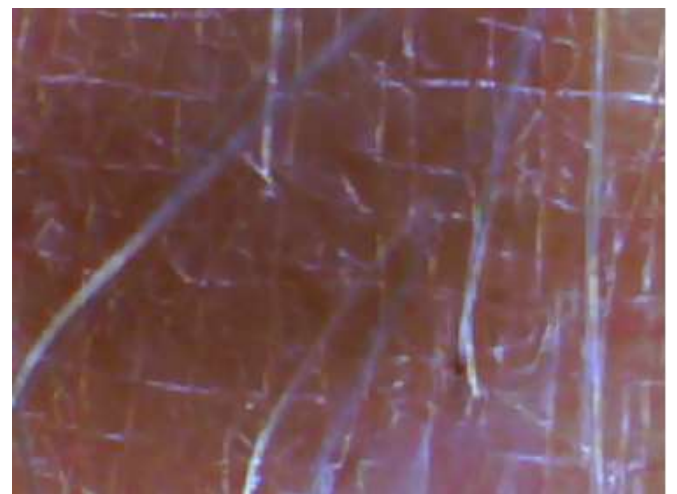
Nano Mature Skin was capable of providing an increase in hydration above 105 % after 4 hours of the application, followed by a maintenance of around 114% from 48 hours.



Graphic 1: shows the increase in hydration through the time.

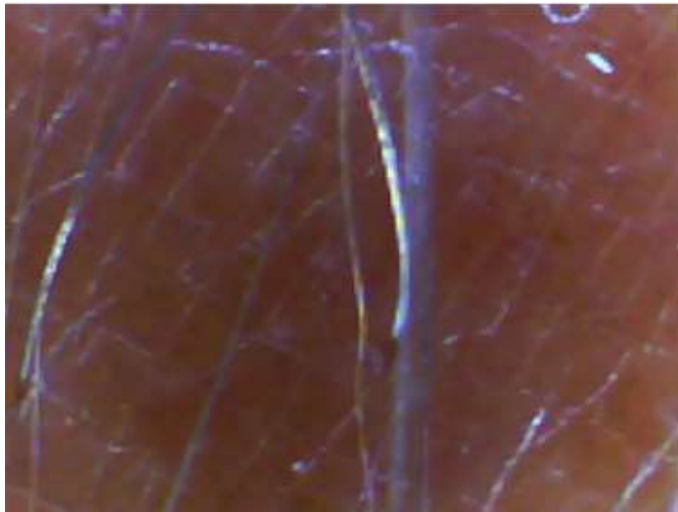
## Micro camera Images

This test evaluates the keratin level on the treated spots. Through images 1 and 2 it is possible to visualize a considerable increase at the keratin condition of the skin treated with Nano Mature Skin. At To the skin presented high levels of keratin, characterizing dry skin with disrupted cellular exchange. After 24 hours the keratin level was lower, which indicates a normal cellular exchange without signs of dry skin.



T<sub>0</sub> (zero)

**Image 1:** Keratin level: HIGH. The skin is much scaled. This can be caused by environmental conditions or sebum excess on the skin that imprisons the normal cells and blocks the cellular exchange volume. The environmental conditions are crucial to regulate the Keratin exchange volume.



T 48 hours

**Image 2:** Level of keratin: LOW. The cellular exchange is normal. There are no signs of dry skin on the surface, that causes the skin to be smooth, bright and with a uniform aspect.

## References

CHANG, A.L.S. MD, WONG, J.W. MS, JUSTIN O. ENDO, J.O. MD, NORMAN, R.A. DO. Geriatric Dermatology Review: Major Changes in Skin Function in Older Patients and Their Contribution to Common Clinical Challenges. JAMDA 14 (2013) p.724 - 730.

Oat (*Avena sativa*) oil activates the PPAR $\alpha$  and PPAR $\beta/\delta$  pathways, resulting in keratinocyte differentiation and upregulation of ceramide synthesis. Journal of the American Academy of Dermatology, May 2014, Vol.70(5), pp.AB64-AB64

## Technical Information

**INCI NAME:** AQUA, OLEIC ACID, STEARIC ACID, PALMITIC ACID, AVENA SATIVA KERNEL OIL, AMMONIUM LACTATE, PPG-15 STEARYL ETHER, STEARETH-2, STEARETH-21, POLYSORBATE 80, PHENOXYETHANOL, CAPRYLIL GLYCOL, BHT.

**Aspect:** Milky liquid.

**pH Stability:** 3,0 -7,0

**Solubility:** Dispersible in water. The product is a suspension in water medium and needs to be agitated before use.

**Storage:** 20-25°C.

**Compatibility:** Compatible with anionic and non ionic bases.

**Use concentration:** 2 - 10%

**Incompatibility:** ethanol