



TECHNICAL BULLETIN CURVELINI

INCI Name: Water (and) Polisorbate 80 (and) Linum Usitatissimum Seed Extract

Creating a new formula aimed to define or hold curls is always a challenge for the formulator. In order to form beautiful curls and/or to keep them holding in place the formulator needs to prepare formulas with a high polymer load. However, if the polymer is not correctly chosen, the formula may leave the hair crunchy and stiff, without the desired natural shiny and bouncy look.

Furthermore, if the hair is damaged and brittle, forming and holding the curls with the desired properties may represent a great challenge for the formulators.

ORIGIN

CURVELINI is a new ingredient created by ASSESSA based on the extraction of the precious active ingredients from the seeds of the golden flax. Using a proprietary technology (DME -Dynamic Microemulsification Extraction) the scientists were able to obtain, in a single product, the perfect combination of bioadhesive soluble fibers, proteins and oil rich in omega fatty acids.

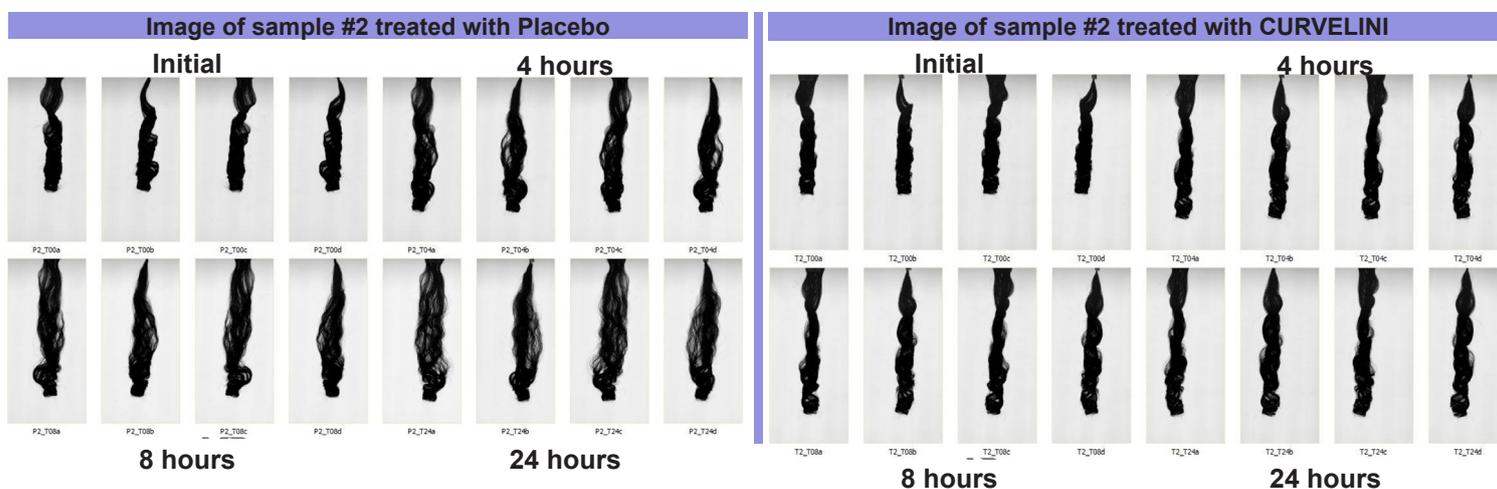
The bioadhesive polysaccharides extracted from flaxseeds present in CURVELINI form and keep beautiful, natural-looking curls, while it's proteins, rich in Glutamic Acid, Aspartic Acid and Arginine condition and treat damaged hair.

The flaxseed oil fraction of CURVELINI is a source of the essential fatty acid (EFA) named alpha linolenic acid, or ALA. Such EFAs are important to hair health, adding softness and shine to the hair curls.

TESTS: RETENTION OF CURLS: IMAGE ANALYSIS

Samples (tresses) of virgin curly hair weighing 3g and measuring 25cm were treated with a shampoo, conditioner and leave-on conditioning formula. CURVELINI was applied at 3% in all formulas. Placebos used the same treatment with formulas without Curvelini. Quantities of products were standardized for all treatments (0.5g of shampoo and conditioner, 0.2g of leave-on).

After the application of leave-on tresses were curled with a hot iron for standardization of thermal damage and curls and kept in a standardized environment at $85 \pm 5\%$ RH and 22 ± 2 °C for 24 hours. Tresses were photographed for digital analysis at times zero (initial), 4, 8 and 24 hours.



**Total area of the tress was calculated and compared.
The increase in the area along the time indicates that the curls are losing their initial shape.**

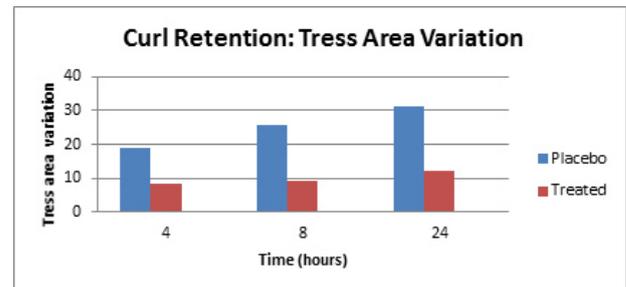
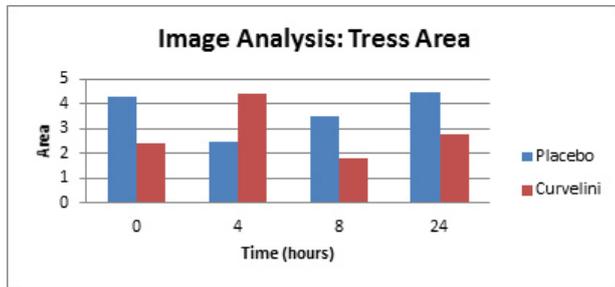
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IMAGE ANALYSIS: TRESS AREA

CURL RETENTION: TRESS AREA VARIATION



Treatment of hair tresses with products SHAMPOO WITH CURVELINI / CONDITIONER WITH CURVELINI / LEAVE ON WITH CURVELINI demonstrated a statistically significant efficacy ($p < 0.05$) in maintaining curls (holding) for up to 24 hours compared to placebo (SHAMPOO BASE / CONDITIONER BASE / LEAVE ON BASE).

Treatment of hair tresses with products SHAMPOO WITH CURVELINI / CONDITIONER WITH CURVELINI / LEAVE ON WITH CURVELINI increased the holding of curls by 27% after 4 hours, 44% after 8 hours and 50% after 24 hours compared to placebo (SHAMPOO BASE / CONDITIONER BASE / LEAVE ON BASE).

EVALUATION OF SENSORIAL PARAMETERS: PANEL TEST

Samples (tresses) of virgin curly hair weighing 3g and measuring 25cm were bleached to induce chemical damage and treated with a shampoo, conditioner and leave-on conditioning formula. CURVELINI was applied at 3% in all formulas.

Placebos used the same treatment with formulas without CURVELINI.

Quantities of products were standardized for all treatments (0.5g of shampoo and conditioner, 0.2g of leave-on).

After the application of leave-on tresses were allowed to dry in a standardized environment at $55 \pm 5\%$ RH and 22 ± 2 °C for 24 hours.

After drying, tresses were evaluated by 2 trained professionals (panelists) for hair softness; definition and formation of curls.

Results

Based on the answers provided by the panelists, it can be concluded that treatment with the products combined use SHAMPOO WITH CURVELINI / CONDITIONER WITH CURVELINI / LEAVE ON WITH CURVELINI performed better (more efficient) compared to placebo (SHAMPOO BASE / CONDITIONER BASE / LEAVE ON BASE) for both evaluators, for the parameters: softness, definition and formation of curls.

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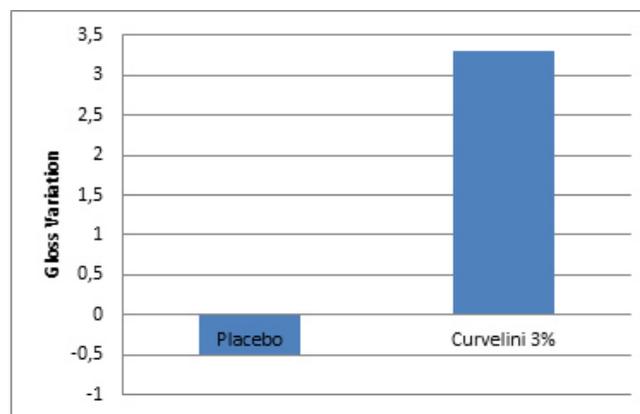
HAIR GLOSS: GLOSSMETER

Samples (tresses) of virgin straight caucasian hair weighing 3g and measuring 25cm were measured for initial gloss using a Micro TRI-Gloss glossmeter (BYK-Gardner Inc.).

Hair tresses were treated with a shampoo, conditioner and leave-on conditioning formula. CURVELINI was applied at 3% in all formulas. Placebos used the same treatment with formulas without CURVELINI. Quantities of products were standardized for all treatments (0.5 g of shampoo and conditioner, 0.2g of leave-on).

After the treatment, tresses were dried with a blow dryer under standard conditions until completely dried and measured for final gloss.

The changes in gloss were calculated as the difference between the initial and final measures for each sample.



Treatment of hair tresses with a shampoo/conditioner/leave-on with 3% CURVELINI promoted an increase of 36% of gloss after a single application in hair compared to the control (placebo). The results were statistically significant efficacy ($p < 0.05$).

CURVELINI improves the formation of hair curls with a soft, bouncy and lasting hold adding a natural satin-like gloss to the hair.

PRODUCT	%
Shampoos	3.0
Conditioners	3.0
Curl modeling creams	3.0
Curl holding products	4.0
Curl Moisturizers	3.0
Treatment masks	3.0