

SPHINGOCERYL™ VEG LS 9948

**Complex of botanical Phytoceramides-6 for
cosmetology**

Skin care

SPHINGOCERYL™ VEG LS 9948

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DEFINITION/COMPOSITION

SPHINGOCERYL™ VEG LS 9948 is an active ingredient with a lipid composition functionally analogous to epidermal lipids. **SPHINGOCERYL™ VEG LS 9948** contains purified ceramides, glycolipids and phospholipids extracted from sunflower.

The group of lipidic constituents (fig. 2) is specific to:

- transitional epidermal layers: phospholipids,
- horny layers: synergic association of true (free) trihydroxylated phytoceramides-6 and sterols (β -sitosterol derivatives).

Sunflower (*Helianthus annuus*) was chosen as a source as it is one of the few plants in which the constitutive native α -OH ceramides are not glycosylated, as in *Stratum corneum*.

They are called α -OH ceramides (phytoceramides-6), because they result from amidification of:

- (fig.1) dehydrophytosphingosine (3 free hydroxyl functions),
- α -hydroxy fatty acids (in C22 and C24).

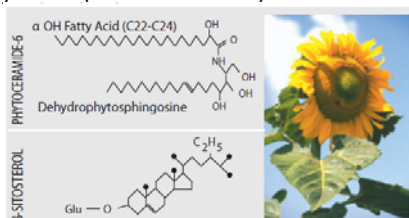


Fig. 1 - Chemical structure (obtained from mass spectrometry) of the active components in **SPHINGOCERYL™ VEG LS 9948**: true ceramide and glycosyl β -sitosterol. Source: Sunflower (*Helianthus Annuus*)

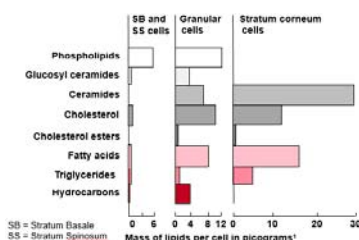


fig. 2 - lipidic composition of the epidermal layers.

Cosmetic properties

- Skin barrier strengthening
- Improves skin comfort
- Structuring and repair of the skin microrelief

Cosmetic use

- Sun and after-sun protective face
- Lips and hand care

SKIN BENEFITS

SPHINGOCERYL™ VEG LS 9948:

- is a structuring and repair lipocomplex the skin, analogous to the intercellular lipids of the *Stratum corneum* (ceramides and sterols), key factors of the barrier function,
- it strengthens agent of the water-retaining capacity of *Stratum corneum*, by regulating the passage of water and water-soluble molecules (NMF) thanks to this semi-permeable and protective lipidic intercellular cement
- it improves horny cell cohesion, it is a bioprotector of the epidermal living layers, against environmental attacks (UV, pollution, mechanical aggression...),
- it improves skin comfort, softness and nutrition, for dry rough skin.

Regulatory Data

INCI: Octyldodecanol (and) hydrogenated Coco-Glycerides (and) *Helianthus Annuus* (Sunflower) Seed Extract (and) Tocopheryl Acetate.

China: Each component listed in International Cosmetic Ingredient Standard Chinese name (2007 and 2010 versions) and IECIC 2014.

CAS#: 5333-42-6, 917 44-42-2, 16 3661-75-4, 7695-91-2

EINECS #: 226-242-9, 294-604, 231-710-0

Appearance: semi-fluid light brown product, with a characteristic odor.

Preservative: None

Formulation Data

Concentration of use: 2-5 %

Solubility: dispersible in oils and fats, is insoluble in water.

Mode of incorporation: **SPHINGOCERYL™ VEG LS 9948** is dispersed under stirring in the fatty phase, after heating to approximately 70-80°C, just prior to emulsification. Good resistance to oxidation.

Storage: In its original packaging at 15 - 25°C.

Patent family: None

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IN VITRO

Cytoprotective effect on cellular membranes epidermal keratinocytes.

When the cytoplasmic membrane no longer plays its role as a selective filter, for example due to free radical damage, some small soluble molecules can leak out of the cytoplasm: e.g. ATP (adenosine triphosphate).

Protocol

Human keratinocytes were seeded in a complete medium with fcs (fetal calf serum).

Then, after 3 days of incubation at 37°C, the growth medium was replaced by a standard medium (Hank's solution) supplemented by peroxides (cumene hydroperoxide) mixed with **SPHINGOCERYL™ VEG LS 9948** at different concentrations (0.003% and 0.006%). After 24 hours of incubation at 37°C, the intracellular ATP was evaluated by luminescence. The tests were carried out in triplicate and repeated 3 times.

Results

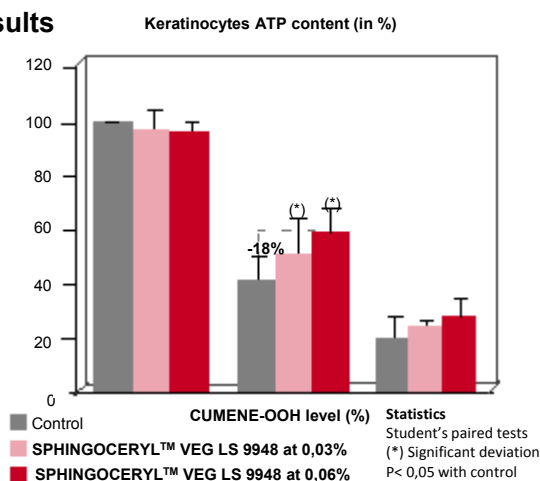


Fig. 1 – Cytoprotective effect of SPHINGOCERYL™ VEG LS 9948

Conclusion

SPHINGOCERYL™ VEG LS 9948 has good capacities. for protecting the biological membranes against peroxides in a culture of human keratinocytes.

Cutaneous Barrier Strengthening

Aim

Demonstration of the cutaneous barrier strengthening *in vitro* by reduction of insensible water loss of **SPHINGOCERYL™ VEG LS 9948** at 3% in an emulsion comparatively to placebo emulsion by gravimetric method.

Tested products

- Placebo emulsion.
- Emulsion containing 3% **SPHINGOCERYL™ VEG LS 9948**, batch F61091.

Protocol

Preparation of Stratum corneum and treatment (fig.1) The test was done on isolated stratum corneum from human skin biopsies.

The epidermis was separated from dermis. *Stratum corneum* was isolated from living layers and divided in 2 parts:

- control *Stratum corneum*,
- damaged *Stratum corneum*.

The damage was done by soaking in a solution of sodium lauryl sulfate at 3%.

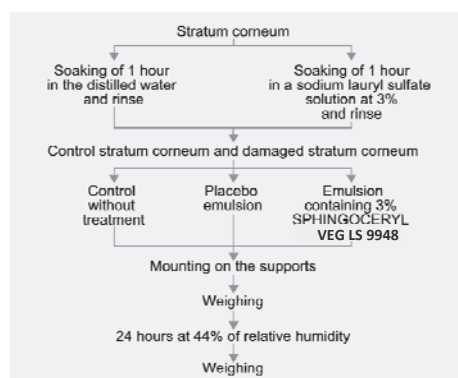


Fig. 1 – Protocol of gravimetric evaluation of the insensible water loss.

The treatment was done by application of a definite dose of product (i.e. 2 mg/cm²) on the surface of the *Stratum corneum*.

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In vitro model for measurement of insensible water loss

The *Stratum corneum* was mounted on the supports.

The system was hermetically closed in that way that the water loss could be accomplished only via the *Stratum corneum*.

The weight of supports was monitored at the beginning of the test and after 24 hours in the conditions of controlled relative humidity (44%).

The water loss (mg/h/cm²) was evaluated according to the weight loss during the period of 24 hours.

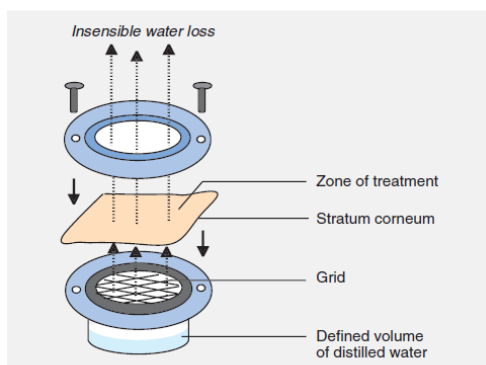


Fig. 2 – In vitro model for insensible water loss measurement.

Results

The damage of *Stratum corneum* with sodium lauryl sulfate has increased the insensible water loss of 93% (significant) in comparison to the control *Stratum corneum*.

* Control *Stratum corneum* (not damaged)

A decrease of the insensible water loss of 37.5% was obtained after the treatment with emulsion containing 3% SPHINGOCERYL™ VEG LS 9948 referring to placebo emulsion.

* Damaged *Stratum corneum*

The treatment with the placebo emulsion has decreased the insensible water loss of 19.0% (not significant) (the occlusive effect of emulsion).

A decrease of the insensible water loss of 40,1%(significant) as obtained after the treatment with emulsion containing 3% SPHINGOCERYL™ VEG LS 9948 referring to control without treatment and of 25.7% (not significant) referring to placebo emulsion.

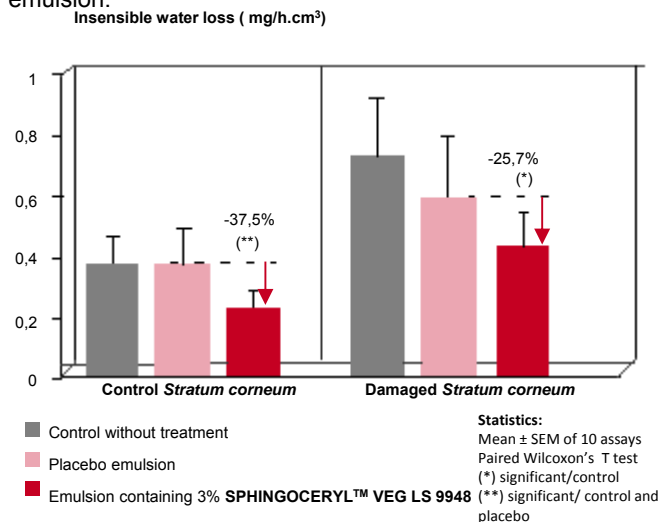


Fig. – 3 Emulsion containing 3% SPHINGOCERYL™ VEG LS 9948. Gravimetric evaluation of insensible water loss with *Stratum corneum* at 44% of relative humidity.

Conclusion

The treatment with SPHINGOCERYL™ VEG LS 9948 at 3% in an emulsion has significantly decreased the insensible water loss through the *Stratum corneum* in this in vitro model

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IN VIVO

Repairing of the cutaneous microrelief

Aim / protocol

Clinical study in 15 volunteers (22 to 72 years old) with dry and squamous skin on the forearms or on the legs. Bidaily treatment (morning and evening) for 21 days of the left limb, with a cream containing 5% **SPHINGOCERYL™ VEG LS 9948**, the untreated right limb served as a control.

The moisturization, the anti-desquamating and repairing effect, the softness and the suppleness of the skin were evaluated, before and after treatment, by clinical examinations of a dermatologist, according to an arbitrary scale as follows: 6: very important / 5: important / 4: rather important / 3: medium / 2: slight / 1: very slight / 0: none.

The repairing effect of the cutaneous microrelief and the lipostructuring effect of the *Stratum corneum* were controlled by sem (scanning electron microscopy) on skin replicas (before and after treatment).

Results

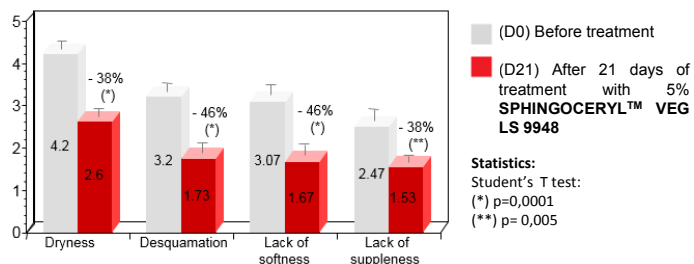


Fig. 4 – Improvement of the 4 skin parameters after 21 days of topical treatment with 5% **SPHINGOCERYL™ VEG LS 9948**. Results from 15 volunteers: appraisal using a semi-quantitative scale (0 to 6).

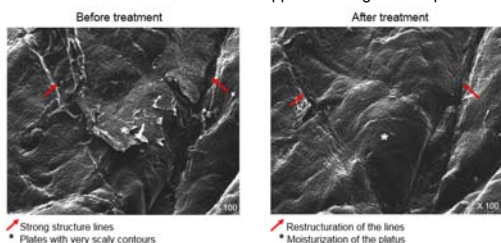


Fig. 5 – SEM photomicrographs (x 100): 5A – Before treatment: uneven, destructured, dry, squamous skin surface. 5B – After 21 days of treatment with **SPHINGOCERYL™ VEG LS 9948**: Good repair of the cutaneous microrelief, intracellular lipidic cement is restored, cell cohesion is restored.
Red arrows indicate: cell cohesion, crackles, cracks, squamae.

Conclusion

After 21 days of treatment, the cream containing 5% **SPHINGOCERYL™ VEG LS 9948** demonstrated significant moisturizing, anti-desquamative, softening and emollient effects as well as repairing effect on the microrelief and lipostructuring.

Strengthening of corneocyte cohesion

Aim / protocol

Clinical study in 2 groups of 10 volunteers with dry and squamous skin on the forearms or on the legs.

Bidaily treatment (morning and evening) for 21 days of one limb, the untreated other limb served as a control:

the first group tested placebo cream,

the second group tested a cream containing 5% **SPHINGOCERYL™ VEG LS 9948**. evaluation of the activity by standardized sampling (desquamator) of corneocyte agglomerates, then quantification by optical microscopy combined with image analysis (fig. 6).

Results

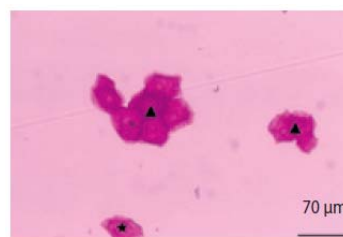


Fig. 6 – Suspension of corneocyte agglomerates observed with image analysis (⊠: isolated corneocyte, ⊞: agglomerate).

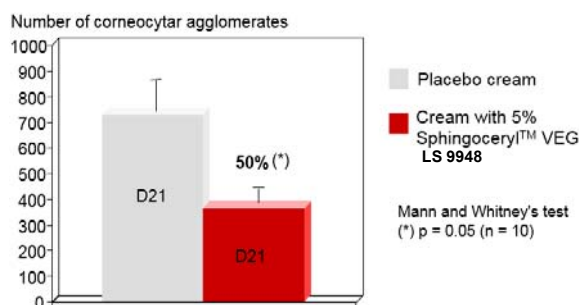


Fig.7 – Comparison of the strengthening activity of the corneocyte cohesion after 21 days of treatment between the cream containing **SPHINGOCERYL™ VEG LS 9948** and the placebo cream.

Conclusion

After 21 days of treatment, 5% **SPHINGOCERYL™ VEG LS 9948** has clearly improved corneocyte cohesion, and thus the functional properties of the cutaneous superficial layers (+50% versus placebo).

Pictures

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