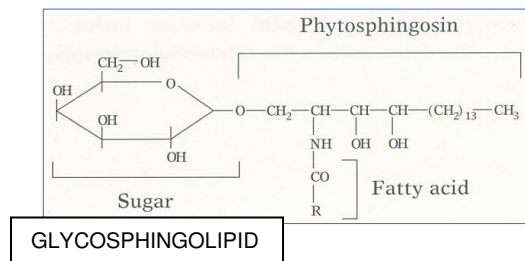


CENNAMIDES VEGETAL CERAMIDES

Ref: CERP50 / CERW05

► DEFINITION

CENNAMIDES, an exclusive patent of **ENNAGRAM**, are refined wheat lipids containing about **50 % Ceramides** (sphingolipids & glycosphingolipids), **40 % DGDG** (digalactosyldiglycerids), and **10 % Phospholipids**.



Two products are available:

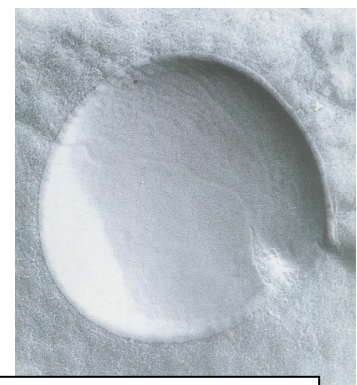
CENNAMIDES CERP50, a water-dispersible powder, free of preservatives and additives.

CENNAMIDES CERW05, a 5 % water-soluble emulsion.

► A NEW GENERATION OF CERAMIDES

Ceramides are an important component of the stratum corneum and play an essential role in maintaining and structuring the lipid barrier of the skin. Ceramides make up 40 to 65 % of the lipids present in the stratum corneum but it has been shown that the levels of Ceramides diminish with increasing age. The topical application of Ceramides may increase the water retention capacity and thus decrease the roughness of the skin. But pure ceramides are highly hydrophobic substances and have a tendency to cristalize. They are thus very often formulated in liposomes.

CENNAMIDES are changing the utilisation of Ceramides. Thanks to the presence of **DGDG**, which are acting as a natural emulsifier, **CENNAMIDES** are completely water-dispersible and can be readily added to your formulations. They also have a great bioavailability, penetrating the upper layers of the skin without the need of any special carrier, and offering a big spectrum of activities.

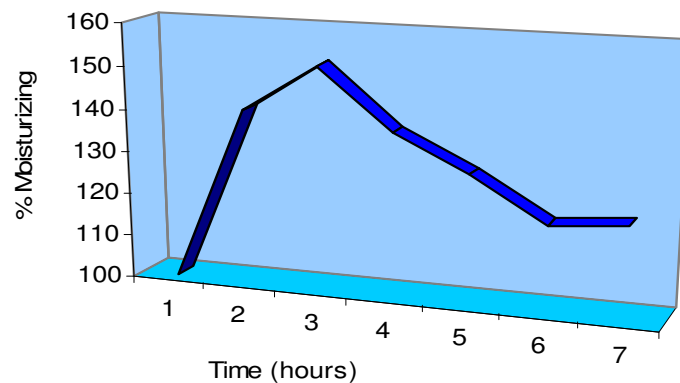


GLYCOSPHINGOLIPID
Electronic microscopv x 40000

▶ PROPERTIES

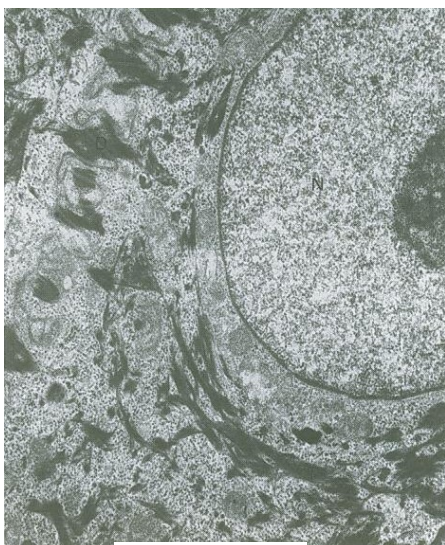
CENNAMIDES ARE MOISTURIZING:

A clinical study has been performed on 7 patients after application of a cosmetic cream containing 0.5 % **CENNAMIDES**. Moisturizing measurement is done by Corneometer. Mean result of 7 values is expressed.

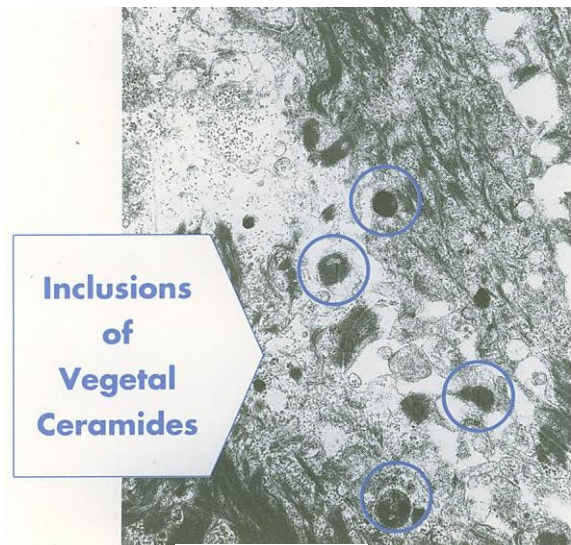


CENNAMIDES ARE RESTRUCTURING:

A clinical study has been carried out in the anatomico-pathology department of the Pitié-Salpêtrière Hospital in Paris. Photographs by electronic microscopy of human skin treated with **CENNAMIDES** are showing the presence of homogenous and local multilamellar inclusions of about 0.4 μm in the upper third of the epithelium. These inclusions take place in the cytoplasm of keratinocytes and in the intercellular spaces. They are showing the real restructuring action of **CENNAMIDES** which are able to bring complex lipids like ceramides within the skin.



Reference arm

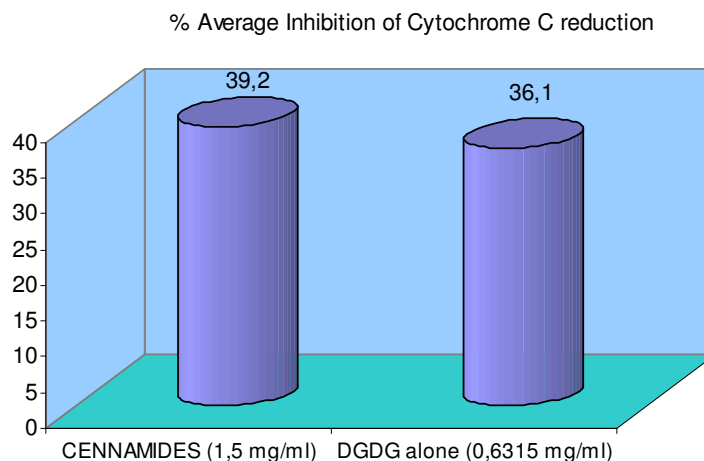


Treated arm

CENNAMIDES HAVE ANTI-RADICALS PROPERTIES

The determination of the anti-radicals effect is based on inhibition or decrease of cytochrome C reduction velocity by adding 1.5 mg /ml **CENNAMIDES** into the reactive medium. The same experiment is then conducted by adding 0.6315 mg /ml purified **DGDG** alone.

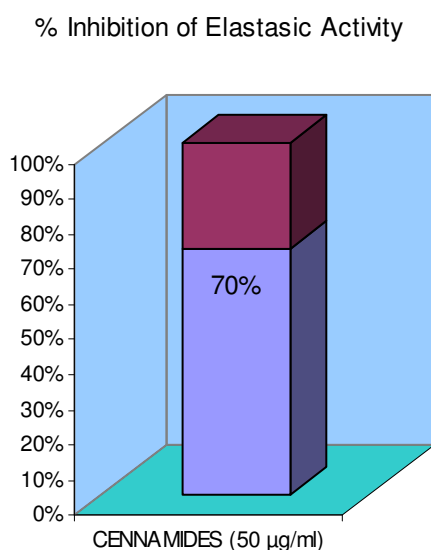
Results show that **CENNAMIDES** induce a significant inhibition of the oxidative reaction (in comparison with control). They also show that this inhibition is explained by the presence of **DGDG**.



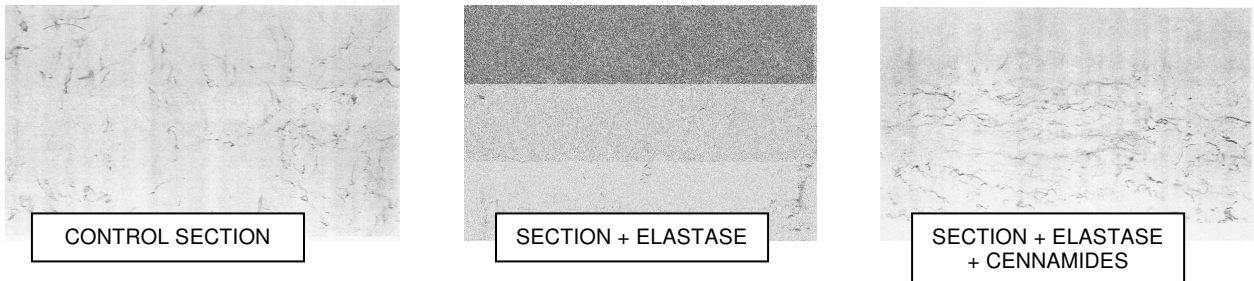
CENNAMIDES ARE ANTI-AGEING

CENNAMIDES are inhibiting the Human Leucocyte Elastase, an enzyme directly involved in the breakdown of connective tissue macromolecules, especially elastin fibres, inducing loss of elasticity, reduced resistance, and reduced water-retaining capacity. HLE is activated during the ageing process but also in case of inflammation, following an exposure to UV rays for example.

An in-vitro study has been conducted on elastin and synthetic substrates with the following result:

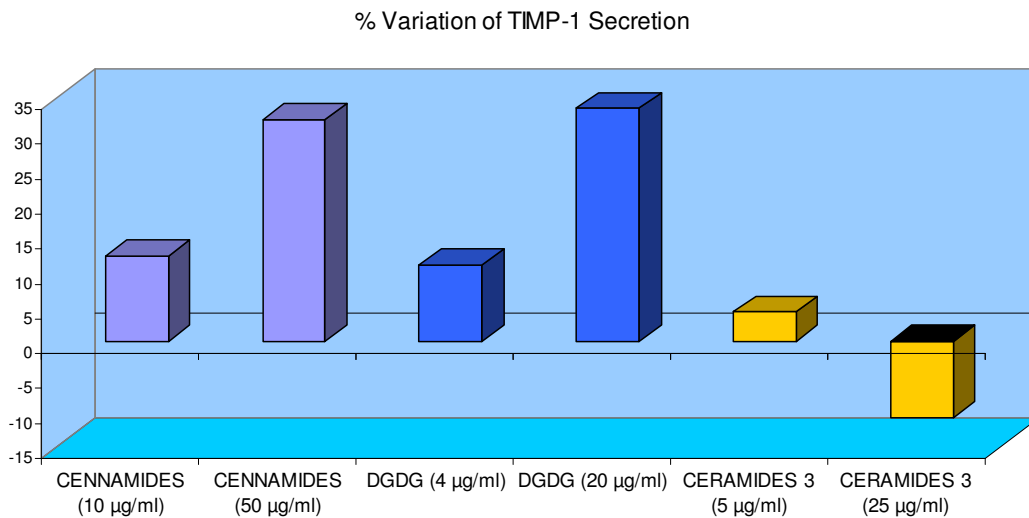


An ex-vivo study on skin biopsies (with specific coloration of elastin fibres) is confirming that **CENNAMIDES** are even protecting about 90 % of the elastin fibres in presence of elastase:



CENNAMIDES are also protecting collagen fibres by increasing TIMP-1 (Tissue Inhibitor of Metalloproteinase) secretion, which is the inhibitor of MMP-1 (interstitial collagenase), an enzyme involved in the breakdown of native collagen 1 and activated during the ageing process but also during inflammation reactions.

A study has been done on skin fibroblasts to evaluate the effect of **CENNAMIDES** on TIMP-1 secretion. We have also evaluated the effect of pure ceramides 3 and pure **DGDG** separately to show that the presence of **DGDG** is the key point of the anti-collagenase activity of **CENNAMIDES**.



▶ INDICATIONS

- Dry, dry-prone, dehydrated skin
- Dry hair
- Skin and hair impaired by sun, cold, pollution, detergents...
- Sensitive skin
- Mature skin

▶ APPLICATIONS

- Moisturising creams, milks, lotions, gels, serums, cleansers, toners...
- Anti-ageing products
- Sun care and after-sun care products
- Eye-contour products
- After-shave balms
- Make-up products (liquid foundations)
- Shampoos, hair masks, conditioners, protecting hair sprays, styling aids...
- Bath and shower gels
- Toothpastes for sensitive gums

Recommended dosage:

CENNAMIDES CERP50: 0.05 – 1 %

CENNAMIDES CERW05: 1 – 10 %

CENNAMIDES CERP50 can be dispersed in water at room or hot temperature (up to 70°C) with rapid stirring and then added to the water phase.

▶ SPECIFICATIONS

CENNAMIDES CERP50

| | | |
|--------------------|--|-------------------------------------|
| INCI name (EU): | Glycosphingolipids | |
| INCI name (US): | Triticum Vulgare (Wheat) Flour Lipids | |
| Appearance | Thin powder | |
| Colour | Beige to pale yellow | |
| Odour | Characteristic of wheat | |
| TLC Identification | Conforms to TLC of reference | |
| Ceramides content* | 50 ± 0.5 % | *sphingolipids & glycosphingolipids |
| Acid value | < 15 mg KOH /g | |
| Peroxide value | < 6 mEq /kg | |
| Moisture | < 5 % | |
| Apolar lipids | < 10 % | |
| Total germs | < 100 CFU /g | |
| Yeast and mould | < 100 CFU/g | |
| Pathogens | Absence | |
| Storage: | Keep at +4°C, in the original tightly-closed container, protected from light, heat and moisture. | |

CENNAMIDES CERW05

| | |
|------------------------|---|
| INCI composition (EU): | Aqua. Butylene Glycol. Glycosphingolipids |
| INCI composition (US): | Water (and) Butylene Glycol (and) Triticum Vulgare (Wheat) Flour Lipids |
| Appearance | Fluid liquid |
| Colour | Pale beige |
| Odour | Characteristic of wheat |
| TLC Identification | Conforms to TLC of reference |
| pH (direct) | 7.50 ± 1.00 |
| Density | 1.020 ± 0.020 |
| Refraction index | > 1.380 |
| Dry extract | > 5 % |
| Cennamides content | ≥ 5 % |
| Preservation system | 30 % Butylene Glycol & 0.4 % Phenoxyethanol |
| Total germs | < 100 CFU/g |
| Yeast and mould | < 100 CFU/g |
| Pathogens | Absence |
| Storage: | Before opening: at room temperature (20°C), away from light, in the original container. After opening and for long-term storage: at +4°C, in the original tightly-closed container. |