

# RICE CERAMIDES - Liposoluble

## SKIN BARRIER - MOISTURIZING - ANTI-AGEING

CARE - HYGIENE

PROTECTION ACTIVE



*Oryza sativa*

Rice, *Oryza sativa*, is an annual herb belonging to the family Gramineae.

Rice is an annual plant with several jointed stems, 5 to 25 cm in length. The lower part and the roots float in the water, while the remainder of the plant is clear of the water. Rice is known to have originated in China or India, where the wild form grows in ditches and rivers. Rice was brought to Europe by the Arabs in the Middle Ages, to the Mediterranean basin via Syria. Today it is only cultivated on the plains of Lombardy, and to a lesser extent in Spain.

*Rice is unique among cultivated plants in its ability to thrive in land covered by water. It grows with its "feet in the water and head in the sun". There are 8 000 varieties of rice, mainly found in Asia.*

### COSMETIC PROPERTIES

The rice ceramides are a global **PROTECTION active**, thanks to following properties:

- ▶ Skin barrier function enhancement
- ▶ Regenerating
- ▶ Moisturizing
- ▶ Anti-ageing



### DID YOU KNOW ?

**Rice is the staple daily food of more than half the world's population.**

According to Chinese tradition, it was cultivated as far back as the reign of Shennong (2 800 BC).

Thanks to its rich content of sugars and proteins, rice has **excellent nutritional value**. Indeed, rice grains contain 90% starch, 7% gluten and other nitrogenous substances, 1% sugars and 0.8% fat.

Also, rice is considered as **the bringer of happiness**. In the West, for example, it is thrown over newlyweds as they leave the church. In India, it is used in the composition of amulets.

In China, a handful of rice is thrown to make it rain. Along with millet, maize, barley and sorghum, rice is one of the 5 sacred plants that the emperor himself planted during the Spring festival, in order to underline the importance of its cultivation.

## > TRADITIONAL AND MEDICINAL USES

In the past, **rice water was traditionally used in the form of "bran baths", having a lipid replenishing effect, and was therefore employed in the treatment and care of dry and irritated skin.** Finally, in antiquity, fashionable women and young girls were in the habit of chewing raw white grains of rice to obtain a **fair velvet complexion.**

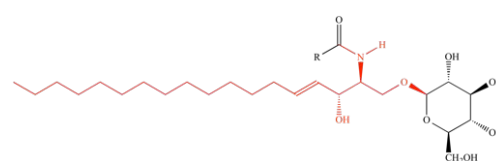
Very fine rice powder is traditionally used in poultices to **calm irritations and relieve inflammation** of the skin. It is also used as a face powder. Rice is also known to be effective in **rapid treatment of inflammations**, using compresses. It is recognized as **being soothing and nutritive.** Similarly, rice is traditionally applied for its **astringent properties.**



## COMPOSITION (according to bibliographic references)

Rice ceramides are obtained from the grains of *Oryza sativa*.

- **Caprylic/Capric triglycerides.**
- **Ceramides:** glucosphingolipids: mono-, di-, tri- and tetrahexosyl ceramides ou glycosyl ceramides like ceramide N-2'-hydroxylignoceroyl-4-hydroxysphinganine, for monoglycosylceramide I-O-p-glucosyl-N-2'-hydroxyarachidoyl-4,8-sphingadienine, for diglycosylceramide I-O-[p-mannosyl(1->4)-O-p-glu- cosyl]- and 1-O-[P-glucosyl(1->4)-O-p-glucosyl]-N-2'-hydroxylignoceroyl-4-hydroxy-8-sphin- genine, for triglycosylceramide I-O-[p-mannosyl(1->4)-O-p-mannosyl(1->4)-O-p-glucosyl]- and I-O-[P-glucosyl( 1->4)-O-p-mannosyl(1->4)-O-p-glucosyl]-N-2'-hydroxylignoceroyl-4-hydroxy-8-sphinganine, and for tetraglycosylceramide I-O-[p-mannosyl(1->4)-O-p-mannosyl (1->4)-O-p-mannosyl(1->4)-O-p-glucosyl]- and I-O-[P-glucosyl(1->4)-O-p-mannosyl(1->4)-O-P-mannosyl( 1->4)-O-p-glucosyl]-N-2'-hydroxylignoceroyl-4-hydroxy-8-sphinganine...
- **Lipids:** glycolipids, sphingosine...
- **Fatty acids:** palmitic, palmitoleic, stearic, oleic, linoleic, arachidic, gadoleic, behenic, lignoceric, cerotic acids...



## COSMETIC PROPERTIES

### ► The rice ceramides are a global PROTECTION ACTIVE:

The epidermis, the most external layer of the skin, is our first barrier against environmental damages. It is composed of four layers and contains many lipids such as phospholipids, sphingolipids, ceramides...

**More than 6 kinds of ceramides have been identified in human skin (Figure 1).** These ceramides are synthesized via several biological pathways in the epidermis. Then, they accumulate in the *Stratum corneum* as the main lipidic component: indeed, they constitute 40-60% of the total lipids (Figure 2).

In the skin and more precisely in the epidermis, ceramides play a main part in the formation of lamellar phases and in the maintenance of the barrier function.

It is important to note that **amount of ceramides in skin declines with age**. Also, the content is lower in *Stratum corneum* of patients with atopic dermatitis. Consequently, skin becomes xerotic and **dried**.

Thus, **ceramides are a key factor for moisture level in epidermis and for an efficient barrier function**. In addition, a decrease in the ceramides amount can be **linked to wrinkles appearance**.

**Therefore, a sufficient quantity of ceramides is essential to balance skin homeostasis and so maintain healthy skin.**

Figure 1: Examples of ceramides in the *Stratum corneum* (according to Christie WW, 2015):

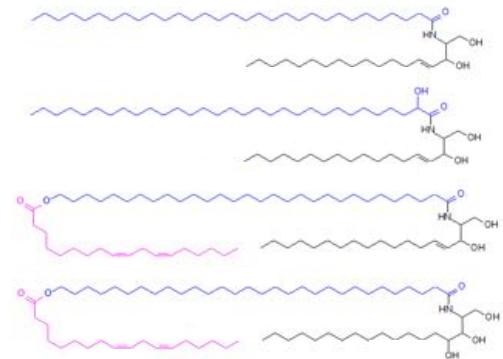
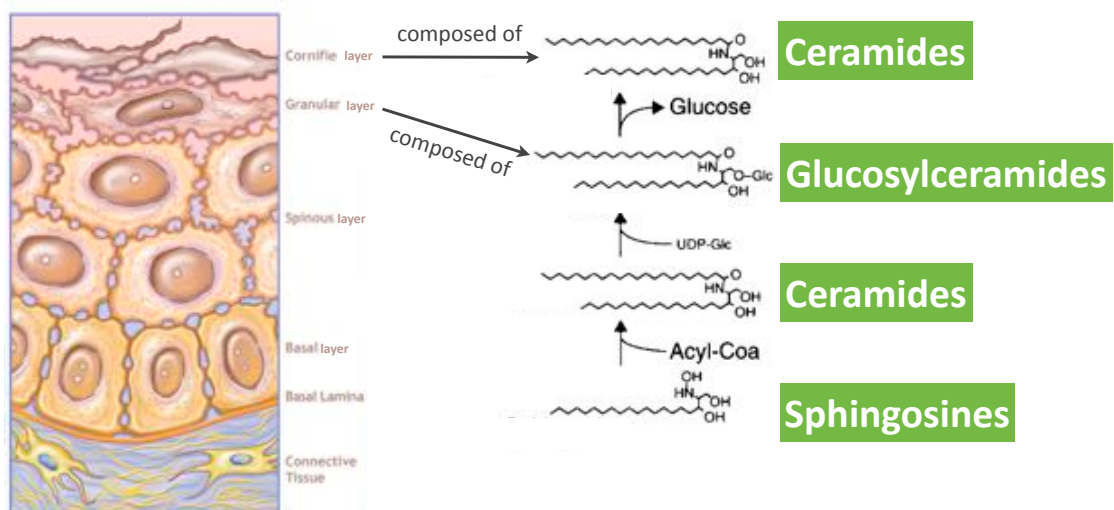


Figure 2: Ceramides biosynthesis in human skin (according to Hokkaido University, 2016):



**Rice (*Oryza sativa*) is more and more used in industries for unique and potent bioactive compounds.** Actually, rice bran and rice germ supply numbers of functional ingredients in medicines, food (as dietary supplement and food additives) and cosmetics.

One of the most interesting compounds in rice are its lipids and more particularly its ceramides.

Actually, **rice ceramides contain large amount of glucosphingolipids that have very similar chemical structure to ceramides being present in human skin.** These glucosphingolipids are formed of sphingoid bases, which are conjugated to fatty acids by amide binding and the terminal hydroxyl group is a molecule of glucose. More than 20 kinds of sphingolipids in rice and 4 types of ceramides (mono-, di-, tri- and tetrahexosyl ceramides ou glycosyl ceramides).

Thanks to lipidic structure, **rice ceramides can easily and strongly bind to human *stratum corneum*.** They can covalently link epidermis lipids and specifically ceramides since rice ceramides have analogous conformation.

This way, rice ceramides can **strengthen epidermis composition** and so **regenerate and restructure** its layers. Rice ceramides will thus **fortify and support intact and strong barrier function.**

Consequently, **permeability barrier is reduced and the TEWL (Trans-Epidermal Water Loss) too.** As a result, rice ceramides increase water content in epidermis: they possess an **excellent moisturizing power** to skin and thus are efficient to improve cutaneous moisture. Rice ceramides are so particularly recommended for **dry and atopic skins.**

Also, since altered cutaneous barrier is repaired, **small skin imperfections (like irritations, sores, lesions...) are diminished.**

Finally, rice ceramides by **renewing and rejuvenating skin layers will prevent premature wrinkling and formation of fine lines.**

Consequently, rice ceramides are capable to reinforce skin barrier function, increase moisture level in epidermis, decrease cutaneous blemishes and protect against premature ageing.

**> The rice ceramides are a complete PROTECTION active agent for skin and hair.**

## COSMETIC USES

The rice ceramides are a global **PROTECTION** active, thanks to following properties:

- ▶ **Skin barrier function enhancement**
- ▶ **Regenerating**
- ▶ **Moisturizing**
- ▶ **Anti-ageing**

Hence, rice ceramides are recommended for:

- ▶ **Sensitive and irritated skin care**
- ▶ **Moisturizing products**
- ▶ **Restructuring cosmetics**
- ▶ **Rejuvenating products**
- ▶ **Anti-wrinkles and anti-fine lines care**

INCI Name: Oryza Sativa (Rice) Bran Oil Extract

CAS N°: 68553-81-1

EINECS N°: 271-397-8



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