





Nippon Ceramide myoceram®

Functional food ingredients

The NIPPON Ceramide series has four different types. They can be used according to your purpose.

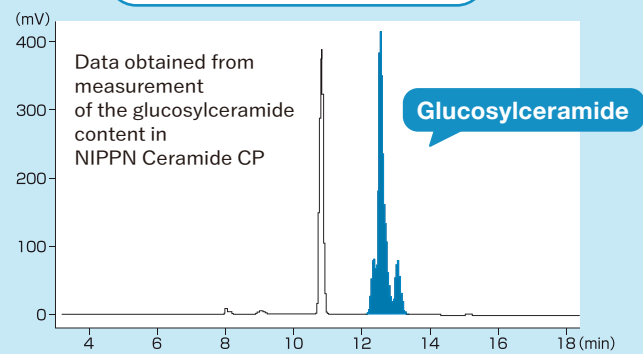
| Material | Rice germ | | Corn germ | |
|--------------------------|---|--|--|---|
| Abbreviation | NIPPON Ceramide RPS | NIPPON Ceramide RLG | NIPPON Ceramide RE | NIPPON Ceramide CP |
| |  |  |  |  |
| | This product is a white powder with high-level purity, a high glucosylceramide content and low moisture absorbency. | This product is a water-soluble and an emulsified liquid with a high content of finely refined glucosylceramide. | This product is a water-soluble emulsion for cosmetic products. | This product is characterized by finely refined glucosylceramide of a high quality and has a low price for great versatility. |
| Appearance | White powder | Light yellow liquid | | Light yellow to white powder |
| Glucosylceramide content | 6% or more | 3% or more | | |
| Heavy metals | ≤ 20 ppm (as Pb) | | | |
| Arsenic | ≤ 2 ppm (as As ₂ O ₃) | | | |
| Total Plate Count | ≤ 1×10 ³ cfu/g | | | |
| Coliforms | Negative | | | |
| Applications | Tablets, capsules, general food products | Beverages and jelly products | cosmetic | Tablets, capsules, general food products |
| Recommended dose per day | 10 mg ~ 30 mg | 20 mg ~ 60 mg | — | 20 mg ~ 60 mg |
| Packing | 100 g, 1 kg aluminum pouch bag | 1 kg polyethylene bottle | | 100 g, 1 kg aluminum pouch bags |

Content measurement is available.

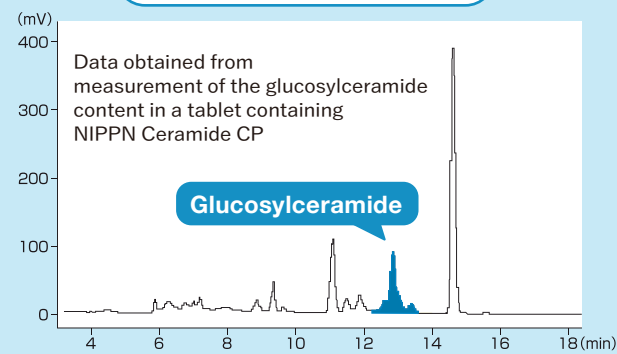
An analysis of the ceramide content is available not only at the stage of raw materials but also after food processing.

We conduct an analysis of accurate values for each NIPPON Ceramide product at the stage of raw materials and subsequent stages, to ensure that we supply you with only the highest quality products. We also undertake to accurately measure the content of glucosylceramide in food products manufactured by processing manufacturers. Please feel free to contact us to discuss your needs.

Measurement sample ①



Measurement sample ②



Analysis using high-performance liquid chromatography coupled to an evaporative light scattering detector (HPLC-ELSD)



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Ceramide

Functional food ingredients

myoceram®



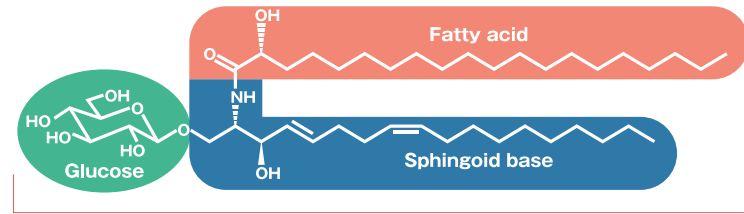
Corn-derived CP



Rice-derived RPS/RLG/RE

NIPPN Ceramide can be effectively used as a plant-derived functional food ingredient for a broad array of food products.

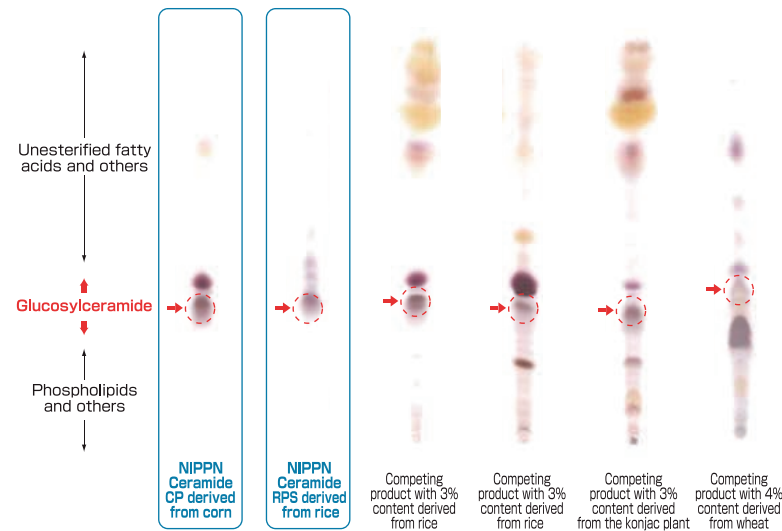
Ceramide is an intercellular lipid that inhibits moisture evaporation from the outermost layer of the skin surface and acts as a barrier to bacteria, viruses or allergenic substances. It is essential for the maintenance of elasticity and moisture of the skin. We present four different type's NIPPN Ceramide. It is produced by extracting and refining vegetal glucosylceramide made from rice and corn. This product paves the way for improving the functional value of a range of processed food products. We hope that this product created with our technical superiority will be fully taken advantage of to promote people's health and beauty.



The structural formula of glucosylceramide

NIPPN Ceramide boasts a marked purity of glucosylceramide and very high-level quality. It can therefore be used without anxiety.

Glucosylceramide is found at limited levels in raw materials. For example, barely one kilogram of refined glucosylceramide is produced from ten metric tons of corn. Nippon Corporation adopts an advanced technology to fully extract glucosylceramide from the material and refine it into a high-purity product. The diagram on the right shows a thin-layer chromatographic (TLC) analysis of ceramide products. It demonstrates that NIPPN Ceramide has a higher content of glucosylceramide than competing products and that it has excellent purity. Unesterified fatty acids and other impurities may cause the oxidization of products or increase moisture absorbency, making difficult to use products. NIPPN Ceramide is a product that is superior in terms of its ease of use and reliability, with minimal problematic substances.



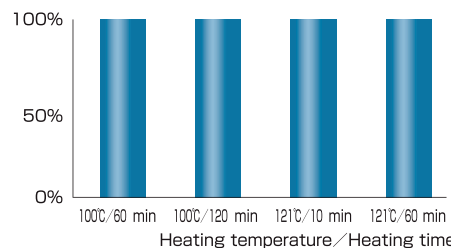
Resistant to heat and excellent pH stability, NIPPN Ceramide can be processed into a wide spectrum of food products.

A major feature of NIPPN Ceramide lies in its ease of processing based on its resistance to heat and high-level stability under a wide range of pH conditions. With no taste or smell, it can add functional value to many different food products including liquid- processed products like beverages and yoghurt, candies and cookie, and precooked savory food.

NIPPN Ceramide (Water Soluble) boasts high stability against heat. It is suitable products involving sterilization and other heat treatments in processing, and for other food products requiring heating such as retort-packed products.

Comparable values were observed in the measurement of the glucosylceramide residual ratio after heating a five percent water solution of NIPPN Ceramide at 100°C and 121°C.

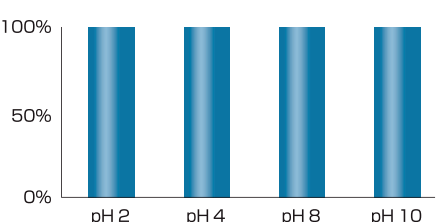
Test of heat-dependent stability of NIPPN Ceramide RLG water solution



NIPPN Ceramide (Water Soluble) boasts a high level stability against pH changes. It can be equally used in processed foods with an acidic or alkaline tendency.

Measurement of the glucosylceramide residual ratio in water solutions with 5% NIPPN Ceramide at different pH levels resulted in equivalent values. A similar measurement of the residual ratio revealed no change in content after storing these solutions for four weeks at 37°C.

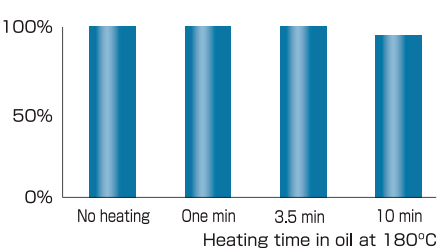
Test of pH-dependent stability of water solution of NIPPN Ceramide RLG



NIPPN Ceramide (Powder) is highly stable against heat. It can be used for fried food and other food requiring heating.

Little change in value between before and after heating was observed in the measurement of the glucosylceramide residual ratio after heating NIPPN Ceramide in oil at 180°C.

Test of heat-dependent stability of NIPPN Ceramide CP



NIPPN Ceramide serves to limit the amount of moisture loss from the skin and increase the moisture content of the stratum corneum.

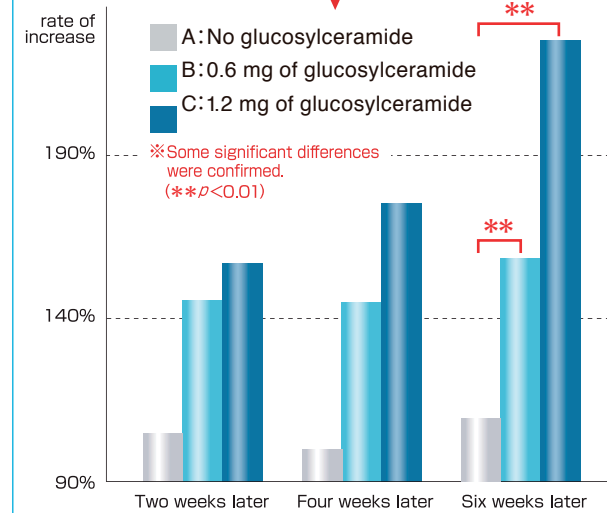
Derived either from rice or corn, NIPPN Ceramide has been confirmed to exhibit a skin-moisturizing effect.

Test 1

Trend of the moisture content in the stratum corneum after oral intake of NIPPN Ceramide RPS (rice-derived).
(Subjects: 30 able-bodied persons / values measured at the calf and growth ratio from the initial level)

Thirty healthy subjects were divided into three groups of ten – Groups B, C, and A. Each subject in Group B orally ingested two capsules per day of a mixture of 10 milligrams of NIPPN Ceramide RPS, containing 0.6 milligrams of glucosylceramide, and salad oil. Each subject in Group C orally ingested two capsules per day of a mixture of 20 milligrams of NIPPN Ceramide RPS, containing 1.2 milligrams of glucosylceramide, and salad oil. Each subject in Group A orally ingested two capsules of salad oil alone per day. Under these conditions, the trend of the moisture content in the stratum corneum was measured.

The test showed that the moisture content in the stratum corneum is higher according to the content of NIPPN Ceramide ingested by subjects.

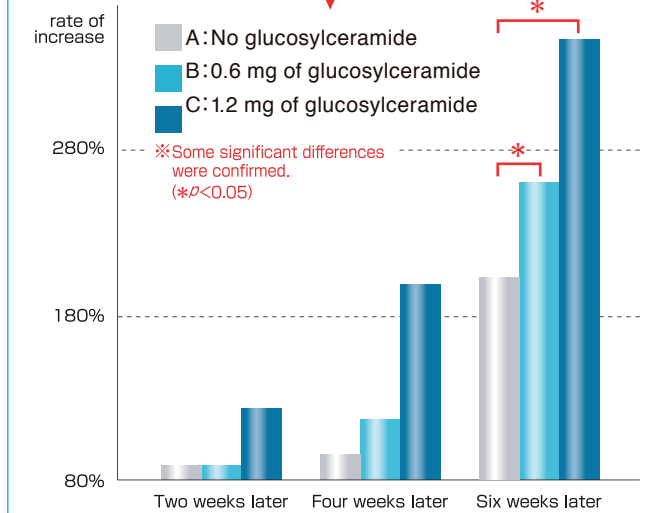


Test 3

Trend of the moisture content in the stratum corneum after oral intake of NIPPN Ceramide CP (corn-derived).
(Subjects: 23 able-bodied persons / values measured at medial side of the forearm and growth ratio from the initial level)

Twenty-three healthy subjects were divided into three groups of seven or eight: Groups B, C, and A. Each subject in Group B orally ingested two capsules per day of a mixture of 20 milligrams of NIPPN Ceramide CP, containing 0.6 milligrams of glucosylceramide, and salad oil. Each subject in Group C orally ingested two capsules per day of a mixture of 40 milligrams of NIPPN Ceramide CP, containing 1.2 milligrams of glucosylceramide, and salad oil. Each subject in Group A orally ingested two capsules of salad oil alone per day. Under these conditions, the trend of the moisture content in the stratum corneum was measured.

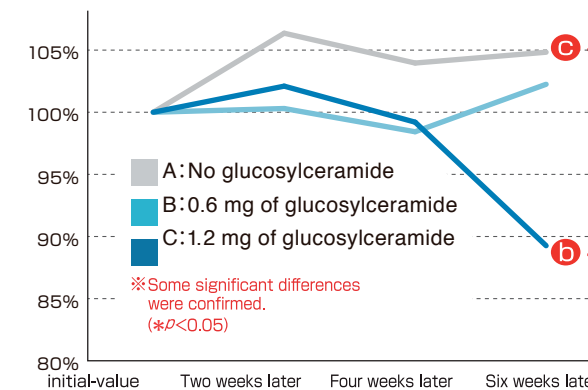
The test showed that the moisture content in the stratum corneum is higher according to the content of NIPPN Ceramide ingested by subjects.



Test 2

Trend in dermal moisture loss after oral intake of NIPPN Ceramide RPS (rice derived).
(Subjects: 30 able-bodied persons / values measured at medial side of the forearm and growth ratio from the initial level)

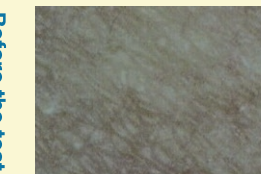
It has been confirmed that the oral intake of NIPPN Ceramide led to a reduction in moisture loss from the surface of the skin, which is an indicator of chapped skin or the barrier function.



Observation of the change in skin conditions confirmed the effect.

The skin of Subject A, who ingested NIPPN Ceramide RPS (rice-derived)

Before the test



The pattern of the crista cutis and sulcus cutis on the skin surface is damaged as a result of drying.

After the test



The uneven pattern regains evenness and a gloss appears on the surface of the skin.

The skin of Subject B, who ingested NIPPN Ceramide CP (corn-derived)



The pattern of the crista cutis and sulcus cutis on the skin surface is damaged as a result of drying.



The uneven pattern regains evenness and a gloss appears on the skin surface.