Konjac Ceramide

For Beauty and Moisture Retention

Plant ceramide extracted from konjac tubers.

DAICEL's plant ceramide is extracted from Konjac tubers.
Of all the plant sources, Konjac tuber is known to have the highest level of the ceramide.
Ceramide is also abundant in the powder byproduct that is usually disposed of as a waste after refining the Konjac tuber.
Daicel's breakthrough technology has made it possible to extract the plant ceramide from this waste byproduct.

Ceramide protects the moisture of the stratum corneum(※)

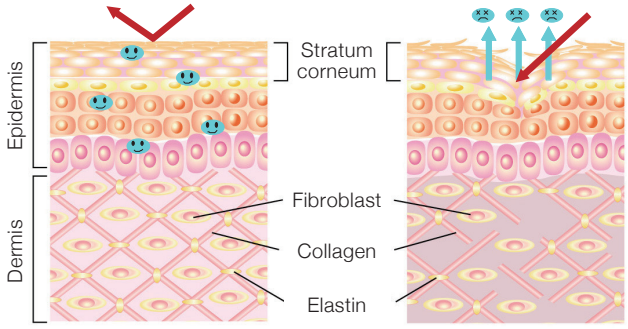
The skin covers the entire body and has a number of functions, including protection from external stimuli, homeostasis of the internal environment and the sensory perception of pain and temperature.
The skin is made up of three layers: the epidermis, the dermis and the subcutaneous tissue.
A well-balanced skin is able to repel external irritants and prevent the evaporation of moisture from the body.
Poorly conditioned skin is unable to repel external irritants, allowing them to penetrate deep into the skin, causing irritation, itching and dryness as moisture evaporates from the inside.
The key to the skin's barrier function is intercellular lipids, Whose main component is ceramide.

Skin with high barrier function

Pollen, dust, bacteria, etc. cannot enter inside

Skin with low barrier function

Pollen, dust, bacteria, etc. enter inside



: Moisture

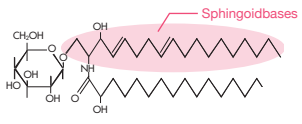
Causes of skin ageing

Disturbed turnover, increased melanin, generation of reactive oxygen and coarseness, dryness, stains, wrinkles, etc.

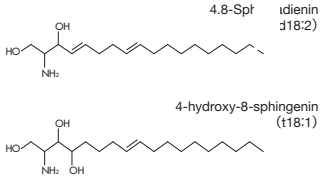
Promotes the production of ceramides(※)

Konjac ceramide contains high levels of sphingoid bases. It is reported that sphingoid bases activate ceramide synthesis genes and promote the production of ceramide in the epidermis.

■Glucosyl ceramide



■Sphingoid bases contain in Konjac ceramide

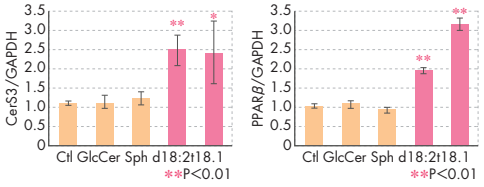


■Konjac ceramide Composition of sphingoid bases

Sphingoid bases	Position of the double bond	Percentage
t18:0	—	1.4
t18:1	C8-C9	40.2
d18:0	C8-C9	3.8
d18:1	C4-C5	0.6
d18:2	C4-C5,C8-C9	54.0

The sphingoid base of konjac ceramide activated two types of genes.

■[Activation of ceramide synthesis enzyme (CerS) by sphingoid]

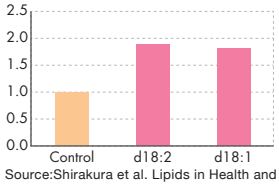


〈Test method〉
The gene cluster related to the de novo synthesis of ceramide was quantified using the real-time PCR assay.

Source:Shirakura et al. Lipids in Health and Disease 2012. 11:108

The sphingoid base of konjac ceramide increased the amount of ceramide synthesized.

■Content of human ceramide III in skin tissue



〈Test method〉
A sphingoid base derived from konjac ceramide was added to a 3Dmodel of human skin and the ceramide content of the tissue was separated by TLC and the intensity of the spots compared.

Source:Shirakura et al. Lipids in Health and Disease 2012. 11:108

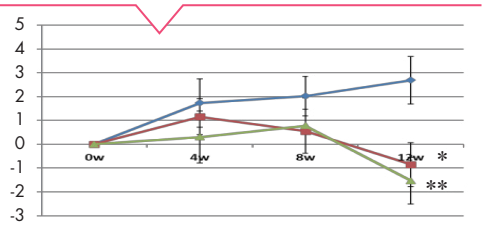
Moisturizing effect improved all over the body even at a low dose(※)

It has been confirmed in the randomized double-blind placebo-control parallel-group study that the oral intake of Konjac ceramide at a relatively low dose improves the moisturization of skin.

Changes in water loss on skin in the right cheek

0.6 mg group: significant improvement (P<0.05) in 12 weeks
1.2 mg group: significant improvement (P<0.01) in 12 weeks

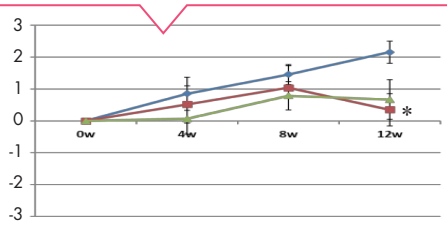
Right cheek



Changes in water loss on skin in the right elbow

0.6 mg group: significant improvement (P<0.05) in 12 weeks
1.2 mg group: no statistic improvement was observed

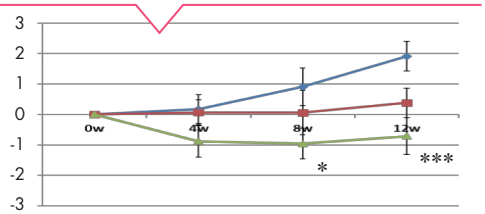
Right elbow



Changes in water loss on skin in the upper back

0.6 mg group: improving trend in 12 weeks
1.2 mg group: significant improvement (P<0.05) in 8 weeks
and (P<0.001) in 12 weeks

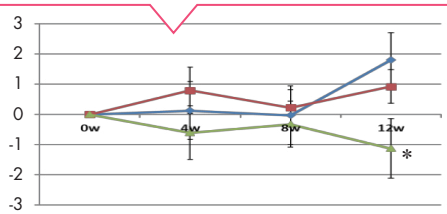
Upper back



Changes in water loss on skin in the back of the right foot

0.6 mg group: no statistic improvement was observed
1.2 mg group: significant improvement (P<0.05) in 12 weeks

Right foot back



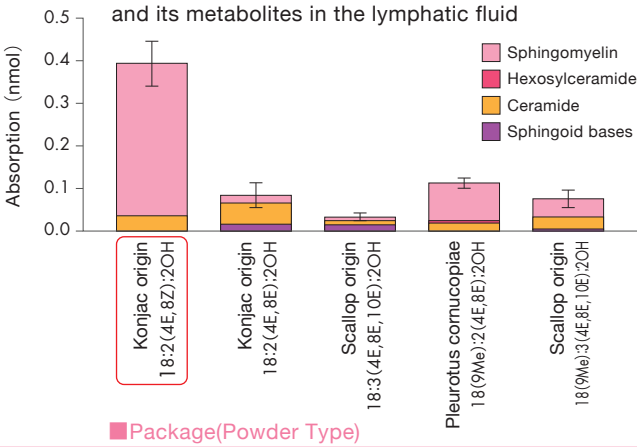
Placebo 0.6 mg eating group 1.2 mg eating group ＊: p<0.05 ＊＊: p<0.01 ＊＊＊: p<0.001 Mean ± Standard error

Source: Mukai, Katsuyuki, Hiromasa Shirai, Takashi Oikeda, Yasushi Masuda, and Masami Saito. Studies for Improvement in Skin Conditions Including Moisturization through Intake of Foods Containing Konjac Ceramide - Randomized Double-Blind Placebo-Control Parallel-Group Study. Jpn. Pharmacology & Therapeutics vol.46 no.5 2018 p.781-799

Absorption rate of sphingoid bases(※)

Using sphingoid bases, one from konjac, one from tamarind and two from scallop, the intestinal absorption was tested using a rat model.
The sphingoid bases and their metabolites, which make up konjac ceramide, were absorbed in the highest concentration.

■Cumulative concentration of each sphingoid base and its metabolites in the lymphatic fluid



(※) These statements have not been evaluated by the US Food and Drug Administration. This products is not intended to diagnose, treat, cure or prevent any disease.

■SPEC Information (Powder Type)

Appearance	Pale yellow powder with characteristic odor	Heavy meteals	NMT 10ppm
		Arsenic	NMT 1ppm
Glucosyl ceramides	NLT 3.0%	Standard plate counts	NMT 3×10³ cfu/g
		Moulds and Yeasts	NMT 1×10³ cfu/g
Loss on drying	NMT 5.0%	Coliforms	Negative

■Package(Powder Type)

100g, 1kg ,3kg Almunium Bag
(Please store in a cool, dark place)

■SPEC Information (Emulsion Type)

Appearance	Deep orange liquid with characteristic odor	Heavy meteals	NMT 10ppm
		Arsenic	NMT 1ppm
Glucosyl ceramides	NLT 0.4 w/w%	Standard plate counts	NMT 3×10³ cfu/g
		Moulds and Yeasts	NMT 1×10³ cfu/g
		Coliforms	Negative

■Package(Emulsion type)

1kg Bottle, 9kg Can
(Please store at below 10 degrees Celsius)

■NDIInformation NDI Notification No. 849 Filing Date: 9/18/2014 FDA Response Date: 1/22/2015

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