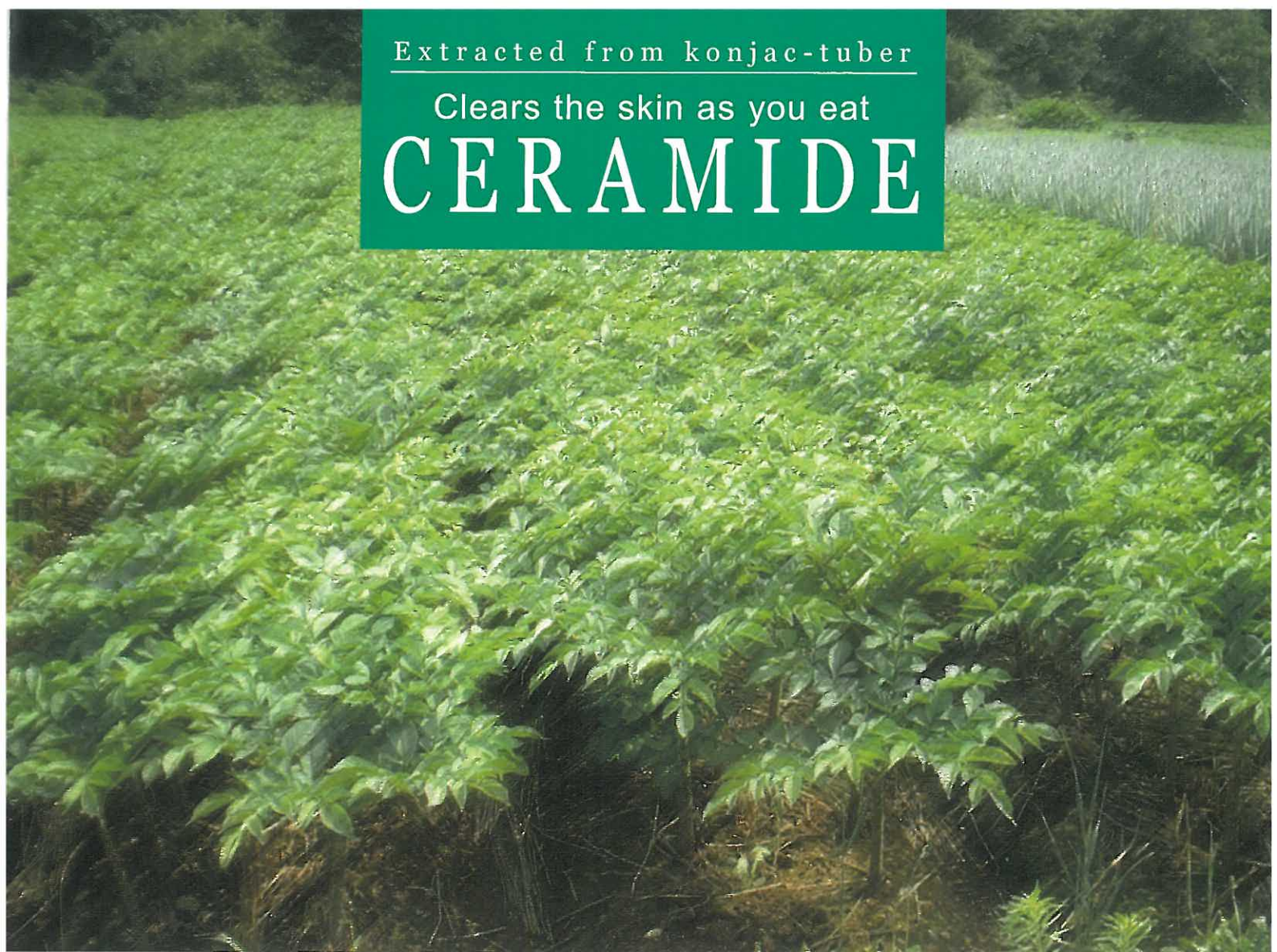


Extracted from konjac-tuber

Clears the skin as you eat

CERAMIDE

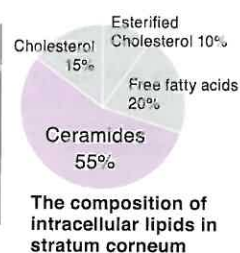
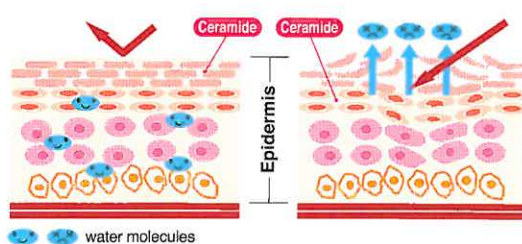


Konjac-Ceramide extracted from konjac-tuber Completely safe edible ceramide

Ceramide preserves the moisture in the skin. Skin loses softness when it dries out. The substance also controls melanin pigments. Unitika has been doing research into plant-derived ceramide for several years to find a lower cost source, finally coming upon Konjac-tuber, a plant that has been part of the Japanese diet for centuries. Konjac-tuber contains as much as 7-15 times more ceramide than other plants. Unitika has succeeded in developing a technique to efficiently extract ceramide, making it possible to offer the substance at a significantly lower cost. Safety has been established in scientific tests. Applications vary from cosmetics to beauty-related health foods, and can be made into tablets, snacks or beauty drinks. It's an edible ceramide. Other possible applications include clothing material and bath agents.

Ceramide

Ceramides are main components of intracellular lipids in human skin layers, especially in stratum corneum (horney layer) and stratum granulosum (granular layer), both of which include ceramides at 40-60%. Ceramides inhibit vaporization and freezing of water by constructing hydrogen bond networks with water molecules. Therefore, ceramides play an important role taking charge of barrier functions of stratum corneum. Quite a few studies have shown that ceramides decrease with aging, and remarkably decrease in skin suffering dryness, roughness, atopic dermatitis (AD), and senile xerosis.



UNITIKA
We Realize It!

Extracted from konjac-tuber

CLEARs the skin as you eat CERAMIDE

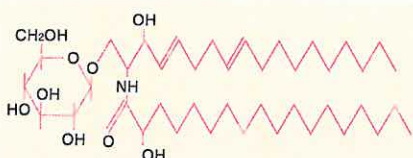
The characteristics and advantages of "Konjac-Ceramide"

"Konjac-Ceramide," which is an extract from Konjac (*Amorphophallus konjac* K. Koch), is an edible beauty-care product richly containing Glucosylceramide, a Glycosphingolipid.

Being natural products from Konjac, "Konjac-Ceramide" is a highly safe food, and continuous intake will gain high performance.

As Konjac-Ceramide take on varied appearances, its usage is suitable to any kind of food.

Structure of "Konjac-Ceramide"



Safety data of "Konjac-Ceramide"

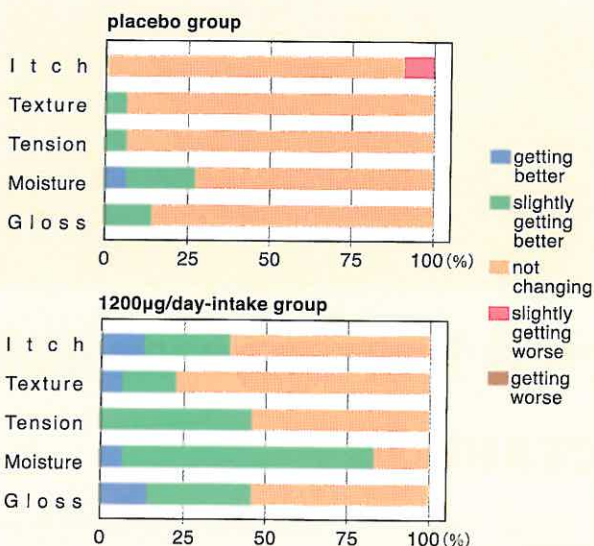
Acute toxicity : (Konjac tuber extract) LD50 minimum 5,000mg/kg (mouse)

Subacute toxicity : (Konjac tuber extract powder) negative 1,000mg/kg (rat,28days)

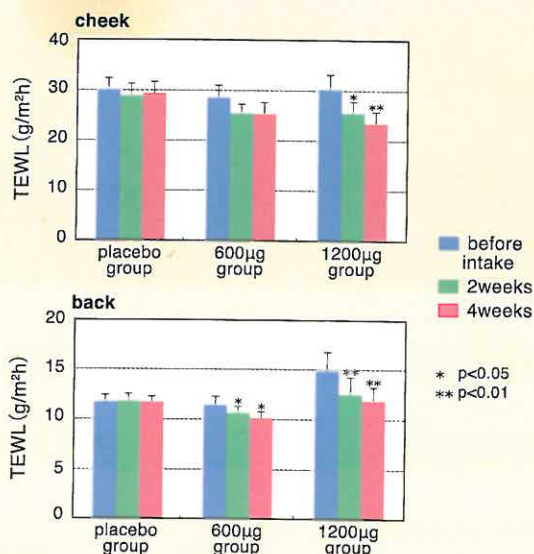
Mutagenicity : (Konjac tuber extract) negative

Residual agricultural pesticides : Adapt to "Positive List System for Agricultural Chemical Residues in Foods"(In Japan)

Results of questionnaire after 4 weeks intake of "Konjac-Ceramide"



The changes in trans-epidermal water loss (TEWL) through 4 weeks intake of "Konjac-Ceramide"



Products standards of "Konjac-Ceramide"

Glucosylceramides: minimum 3% (powder type), 0.4% (emulsion type)

Water contents: maximum 5% (powder type)

Heavy metals: maximum 10 ppm (as Pb)

Arsenic: maximum 1 ppm (as As₂O₃)

Standard plate count: maximum 3,000 cfu/g

Moulds and Yeasts: maximum 1,000 cfu/g

Coliforms: not detectable

Examples of displaying "Konjac-Ceramide" as materials of food products

"Konjac tuber extract (including ceramides)"

Supply

Powder types: 100 g, 1 kg
Emulsion types: 1 kg, 9 kg

Storage

Powder types: Store at room temperature (keep in cool and away from light)
Emulsion types: Store in a refrigerator (2°C-10°C)

References about ceramides

Elian Lati, FRAGRANCE JOURNAL, 23 (1), 81 (1995).
A. H. Merrill Jr. et al., FASEB Journal, 3A, 469 (1989).
Eva-Maria Schmelz et al., J of T. Horikawa et al., Hifu (in Jap)

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