



TREHALOSE 100

Nature's Protector for Skin and Hair

Strengthens barrier function

Natural energizer that retains moisture

Protects from dry stress

TREHALOSE 100

A naturally derived moisturizer that protects skin from the stress of drying due to external aggressors

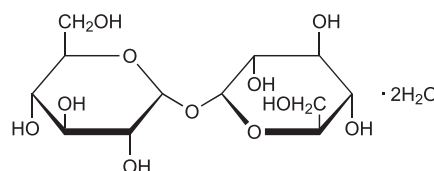
Trehalose is a naturally occurring disaccharide present in a wide variety of plants and microorganisms. The special properties of trehalose enable these organisms to survive in the harshest climates, including drought and freezing temperatures. Trehalose can replace water during drying or freezing, and spare the organism from irreversible damage.

Trehalose is a non-reducing disaccharide consisting of two glucose molecules bound by an α,α -1,1 glycosidic linkage. It has greater moisture retention properties than other disaccharides, and maintains moisture of the stratum corneum through its moisture retention properties. Trehalose strengthens the barrier function of the skin by promoting lamellar structure formation of intercellular lipids. These effects have been confirmed even in a dry environment. Trehalose helps to maintain healthy skin by protecting the skin from drying.

- Preserves skin moisture
- Inhibits transepidermal water loss
- Reduces itching due to dryness
- Suppresses odor of raw ingredients
- Does not interfere with formula texture

Structural formula of Trehalose dihydrate

Trehalose is a non-reducing disaccharide, stable to heat and a wide range of pH scales.



Resurrection plant

The resurrection plant—*Selaginella lepidophylla*—has trehalose in its tissues. Trehalose protects the plant by replacing water when it is dehydrated, allowing it to revive when the plant absorbs water.



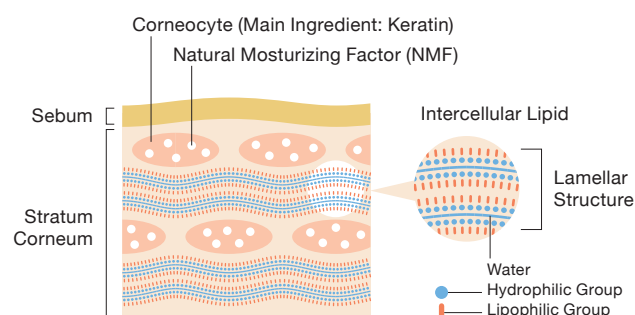
Dehydrated



8 hours after hydration

Contribution of stratum corneum (SC) in skin moisture retention

The stratum corneum is the outermost layer of the skin with 0.02mm thickness. Healthy skin contains approximately 20-30% moisture, which protects the skin from dryness and external stressors. The water content of the skin is maintained by sebum, natural moisturizing factor (NMF), keratin, and intercellular lipid among the cells.

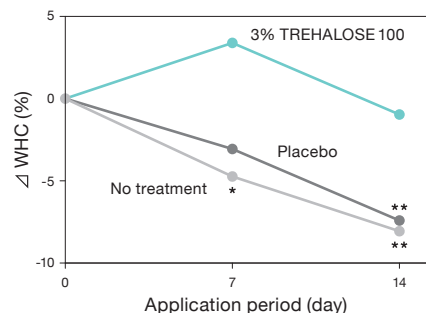


BENEFIT 1

Maintains water holding capacity of dry skin

TREHALOSE 100 maintains the water holding capacity (WHC) of dry skin, whereas placebo showed no effect.

VARIATION OF WHC FROM INITIAL VALUE



Toner with 3% TREHALOSE 100 or placebo was applied on the inner forearms of 21 females with dry skin twice a day for 14 days. A water sorption-desorption test was performed on day 0, 7, and 14: Water was applied on the application area and the non-application area. Immediately after wiping, the SC water content (SWC) was measured every 30 seconds. WHC was calculated as described below.

vs. Day 0, *: $p < 0.05$, **: $p < 0.01$

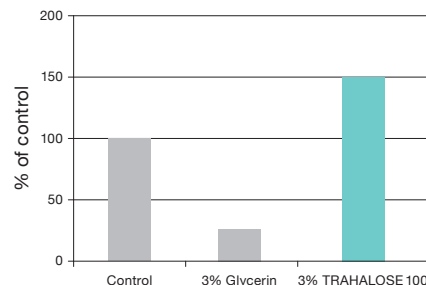
WHC = (Average SWC from 30 sec to 180 sec)/(SWC at immediately after wiping) × 100

BENEFIT 2

Retains moisture under dry conditions

TREHALOSE 100 increases the amount of retained water in keratin.

RESIDUAL WATER CONTENT



3% TREHALOSE 100 solution, 3% Glycerin solution, or water (control) were added to keratin powder. These samples were vacuum dried at room temperature for 16 hours. Water was added and mixed well. The samples were stored in a desiccator at 22.4% RH for 24 hours, then weighed to calculate residual moisture content in comparison to the control (100%).

BENEFIT 3

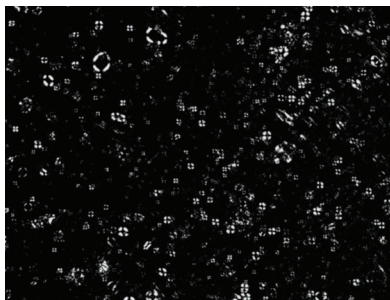
Promotes lamellar structure formation

TREHALOSE 100 promotes formation of lamellar structure in SC intercellular lipid model.

POLARIZED MICROSCOPIC IMAGE OF LAMELLAR STRUCTURE



Control



3% TREHALOSE 100

Phase A (ceramide, cholesterol sulfate and water) and phase B (stearic acid and cholesterol) were prepared respectively, blended together, and sonicated. 3% TREHALOSE 100 solution or water was added to the mixture, mixed, and sonicated to create an intercellular lipid model. Lamellar structures were detected using a polarized microscopy (shown as white dots in the photos).

APPLICATIONS

Skin Care

Body Care

Hair Care

Oral Care

PRODUCT FORMS

Lotions, Toners, Milk Lotions, Creams, Gels, Serums/Essences, Body Shampoos, Soap Bars, Shampoos, Conditioners, Mouthwashes, Toothpastes

SUGGESTED USAGE LEVEL

| | |
|-----------|----------|
| Skin Care | 1.0–5.0% |
| Body Care | 1.0–5.0% |
| Hair Care | 1.0–5.0% |
| Oral Care | 0.1–5.0% |

INFORMATION

INCI NAME

Trehalose

DESCRIPTION

Whitish crystalline powder and odorless

STORAGE

Store at room temperature. Avoid direct sunlight, and high temperature and humidity.

EXPIRATION

Three (3) years from the production date

PACKAGE

Kraft paper bag (net 20kg),
Carton box (net 12 kg; 2 kg x 6 PE bags)

SAFETY

Data acquired



Raw material verified by
ECOCERT GREENLIFE,
conform to the
COSMOS Standard

TREHALOSE 100 is certified as Halal

Contact Us

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Please visit our website for further information.



Nagase Viita has received EcoVadis Platinum rating in sustainability for two consecutive years. EcoVadis is an independent institution that assesses sustainability of over 150,000 supplier companies operating in more than 185 countries across more than 250 industries. Platinum is the highest possible rating given by EcoVadis, awarded to companies whose overall score rank in the top 1% of all eligible companies.

Trehalose 100 is manufactured by Nagase Viita Co., Ltd. in Japan

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