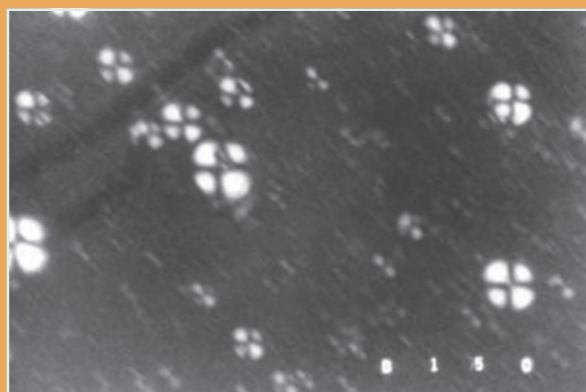


BIOSPHINGO

Excellent barrier and moisturizing function

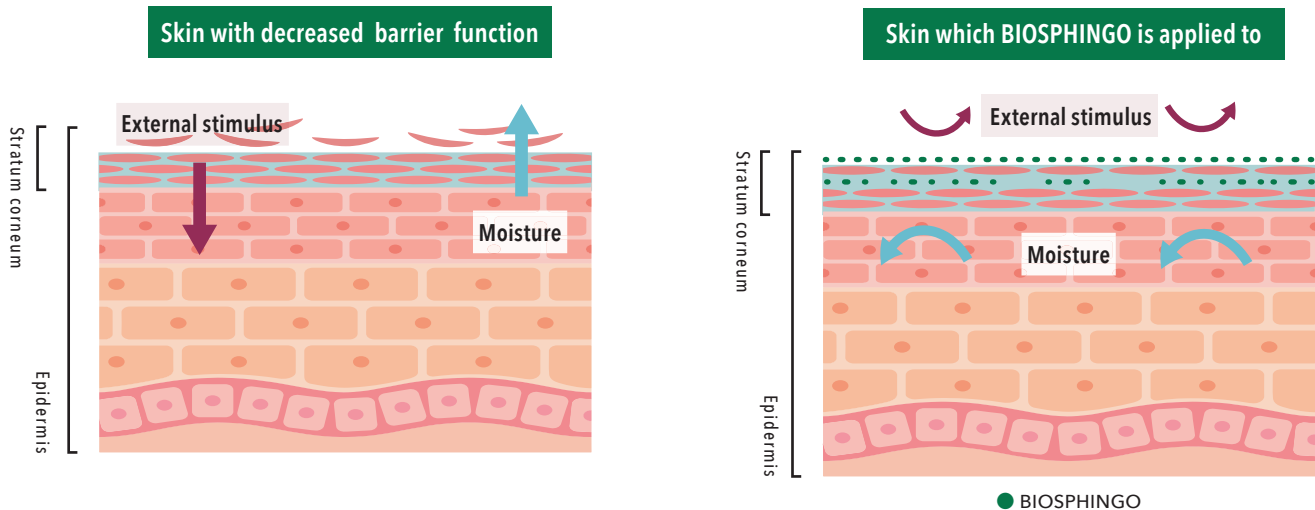
Moistening
Ceramide



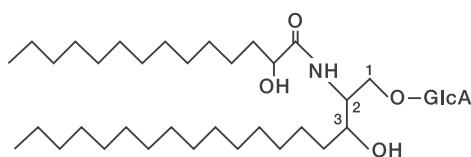
Lamellar structure by BIOSHINGO

- 1 Natural Glycosyl ceramide from cell membrane
- 2 Repairing damaged skin
- 3 Great solubility (disperse-ability) in water
- 4 BIOSPHINGO is HALAL Certified
Kikkoman's BIOSPHINGO has HALAL Certificate

Mechanism of Moistening by BIOSPHINGO

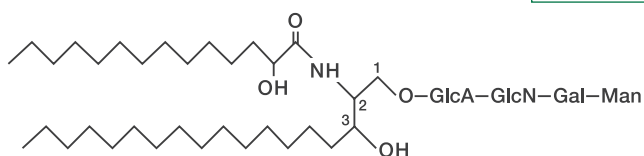


Ceramide is a main component which consists intercellular lipid existing in stratum corneum of skin and takes responsibility for the barrier function which keeps moisture of skin. **BIOSPINGO** is a moistening component to keep the moisture of skin as well as support barrier function of stratum corneum in skin because it contains high concentration of **glycosyl ceramide**.



GlcA: Glucuronic acid
GlcN: Glucosamine
Gal: Galactose
Man: Mannose

Tetra-glycosil type



BIOSPHINGO, a cosmetic ingredient from *Sphingomonas paucimobilis*, contains naturally occurred glycosphingolipids at high concentration and phospholipids which are known as a natural emulsifier.

BIOSPHINGO contains two types of Glycosphingolipid, mono-glycosil type and **tetra-glycosil** type.

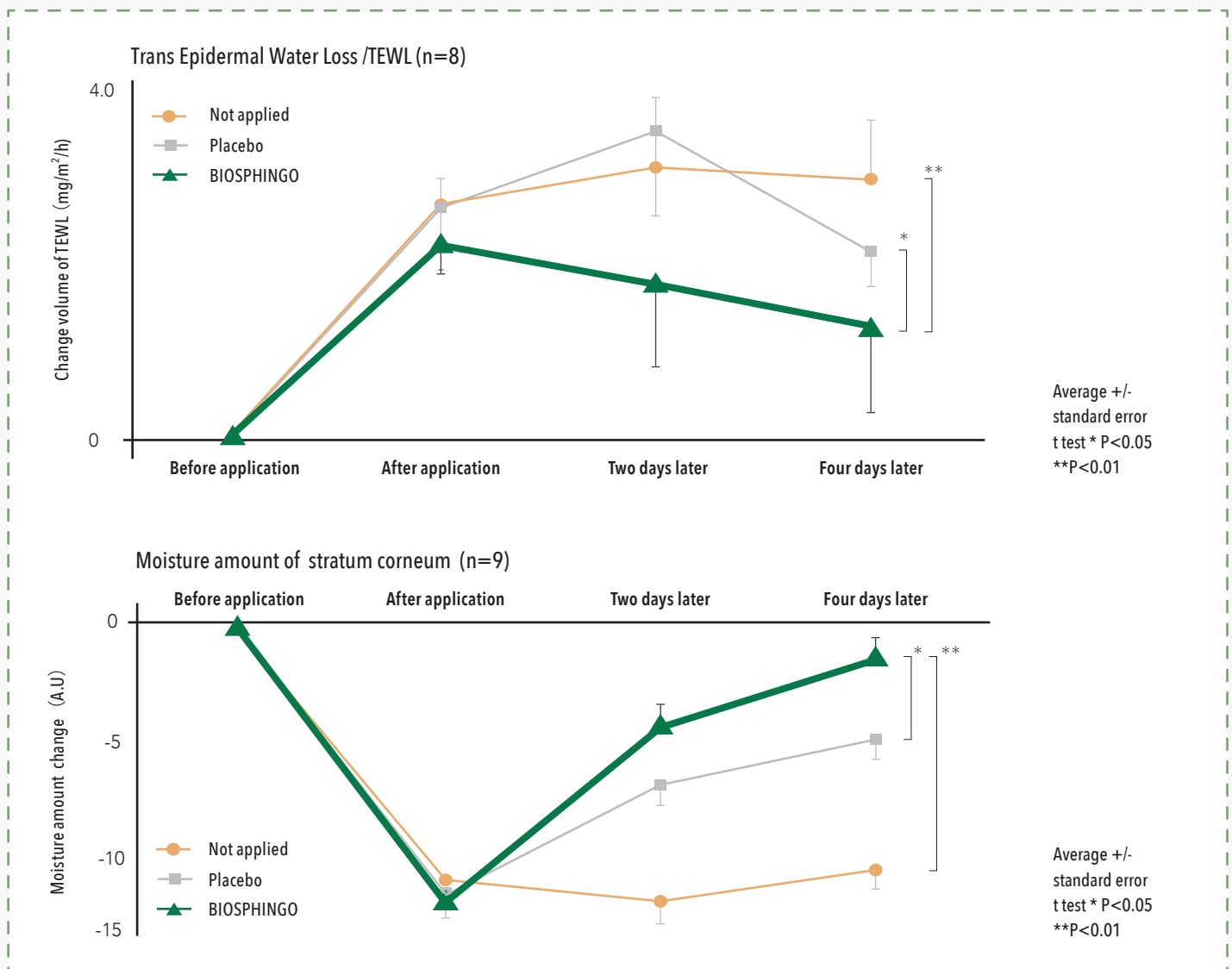
◀ Chemical structure of BIOSPHINGO

Feature of BIOSPHINGO

- 🌿 Natural lipid component from cell membrane
- 🌿 Improvement of damaged skin and skin moisturizing can be expected.
- 🌿 Effect on hair
(Nourish and keep lipid, prevent hair breakage, making flexible and smoother combing)
- 🌿 Excellent solubility and disperse-ability in water and compatible with the solvents which are often used for cosmetics
- 🌿 Can be used as the raw material for cosmetics and quasi-drugs.

Improvement of moisture retention and barrier function

Skin condition became improved by enhancing moisturizing ability and barrier function after **BIOSPHINGO** was applied to skin.



Test method

Apply 5% SDS (Sodium Dodecyl Sulfate) on to forearm and upper arm to make dry skin with lower barrier function.



Apply Placebo and **BIOSPHINGO** solution to skin twice a day and repeat for 4 days.



Measure moisture on startum corneum and trans epidermal water loss (TEWL).



BIOSPHINGO is HALAL Certified.

Kikkoman's BIOSPHINGO has HALAL Certificate

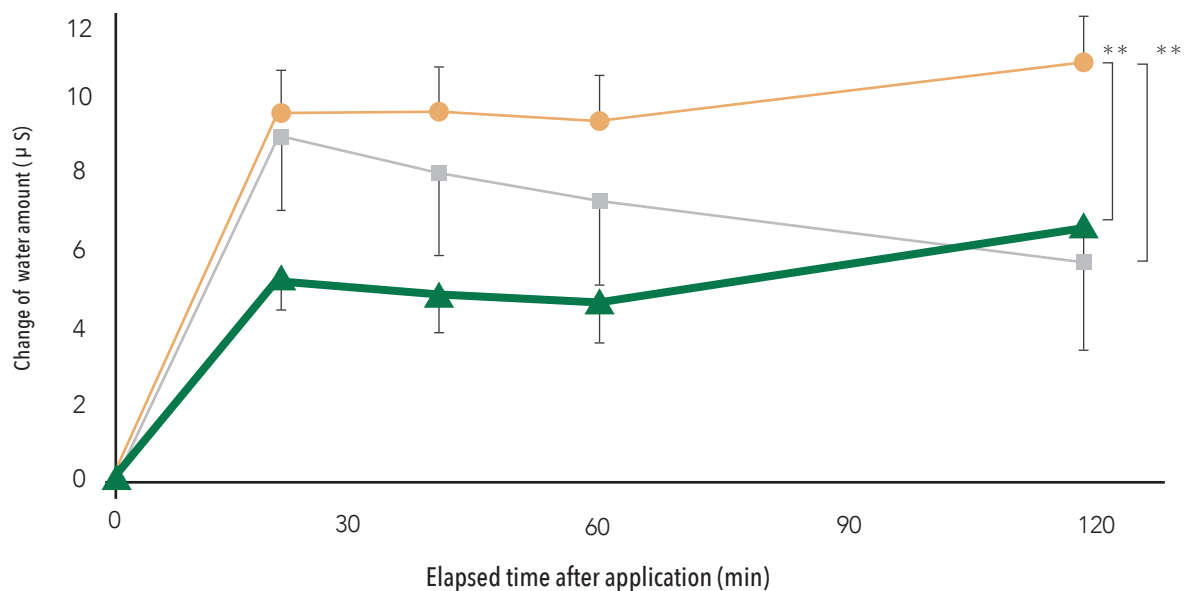
Improvement of moisture retention and barrier function

Skin of control group became whitish due to drying and showed peeled stratum corneum, while a skin applied with **BIOSPHINGO** was improved (applied for 4 days, twice a day)



Longer duration of sodium hyaluronate's moisturizing effect by BIOSPHINGO

Water holding property of sodium hyaluronate can be synergistically maintained for long time by a combination use with **BIOSPHINGO**.



Test method

Measure moisture amount of startum corneum on inside of the forearm



Applied each of prepared test solution → Measure moisture amount in startum corneum as time goes by

—●— 0.3% Sodium Hyaluronate + 0.1% BIOSPHINGO
—■— 0.3% Sodium Hyaluronate
—▲— 0.3% BIOSPHINGO

Average +/- SE t test ** P<0.01

Easier to comb

Test method

Bleach hair (A to D, A : not bleached)



Apply sample solution to hair

A, B : No application

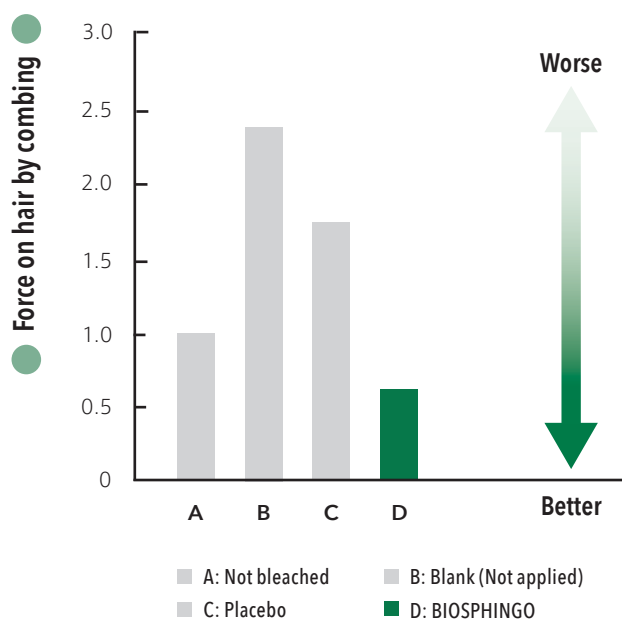
C: BG water solution (Placebo)

D: 0.2% BIOSPHINGO / BG water solution



Measure hair's load when it is combed.

(When a force of test group A, which was unbleached with no application was calculated as 1.0 by ratio.)



Keep water repellent and prevent hair breakage

Test method

Apply sample solution to hair.

A, B: No application

C: BG water solution (Placebo)

D: 0.2% BIOSPHINGO in BG solution

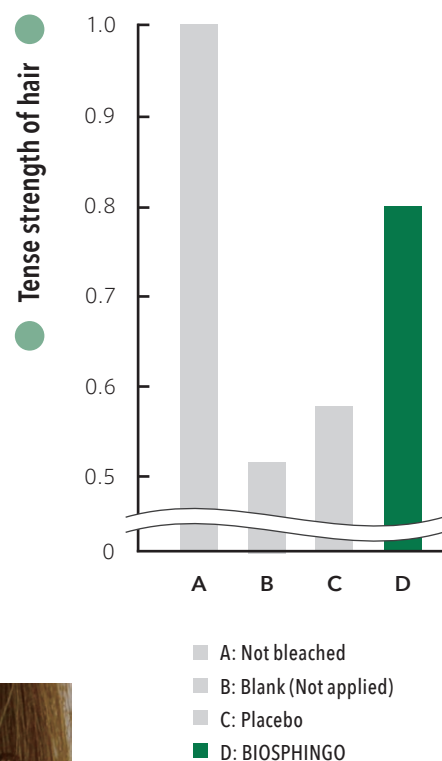


Bleach hair group B to D (not for A)

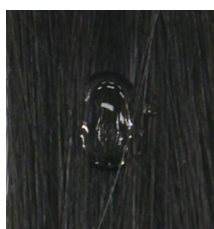


Measure a tense strength of hair and compare

(When a strength of test group A, which was unbleached with no application was calculated as 1.0 by ratio.)



● Drop a water on hair to observe its water repellent



A Not bleached



B Blank (Not applied)







C Placebo



D BIOSPHINGO

Solubility (disperseability)

BIOSPHINGO, which is a glycosyl ceramide, consisted of not only mono but also tetra glycosyl type that is very unique, contains phospholipids which are naturally occurred emulsifiers. This structure allows **BIOSPHINGO** to be dissolved (or dispersed) uniformly into water without using surfactant. It also can be dissolved in glycerin and 1,2-pentanediol (or pentylene glycol) which are often used in cosmetics.

Water	1,2-Pentanediol	Glycerin	1,3-Butylene glycol
It can be uniformly dispersed up to BIOSPHINGO concentration of 10% without any surfactants, by adding it to stirred water.	It is easily dispersed. It can be completely dissolved and become transparent by adding to stirred solvent and warming up at 70°C. (Recommendation: BIOSPHINGO concentration is not more than 10%.)	After BIOSPHINGO is dispersed into water, the solution was added with glycerin. By warming up this solution at 70 °C, the BIOSPHINGO can be dissolved. (Recommended volume rate : When BIOSPHINGO water solution is calculated to be 1 portion, a volume of glycerin recommended to be added is 9 portion.)	After BIOSPHINGO is dispersed into water, the solution was added with 1,3 butylene glycol. By warming up this solution at 70°C, the BIOSPHINGO can be dissolved. (Recommended volume rate : When BIOSPHINGO water solution is calculated to be 1 portion, a volume of 1,3 butylene glycol recommended to be added is 0.5 portion.)
			

Pictures : concentration of BIOSPHINGO in all picture is 1%

Product Information

Packaging size

Aluminum bag
100g × 1, 1kg × 1

Expiry date

1 year from
manufacturing date

Quality Specification

Parameter	Spec. range
Appearance	Yellowish white powder
IR spectrum	Exhibits absorbance at about 3,400cm ⁻¹ , 2,930cm ⁻¹ , 1,740cm ⁻¹ , 1,650cm ⁻¹ , 1,540cm ⁻¹
Anthrone reaction	Blue to Green color develops
Heavy metals	Max. 20ppm
Arsenic	Max. 2ppm
Acid value	Max. 40
Iodine value	20-40
Loss on drying	Max. 5.0%
Residue on ignition	Max. 10.0%
Assay	40-70% (As glycosphingolipids)
Total bacteria count	Max. 100 cfu/g

Labelling

Labelling name for Quasi-drug (for Japanese market)

Labelling	Ingredient Code
Glycosphingolipids	999999

Labelling name for cosmetic

Labelling	Ingredient No.	INCI Name
Glycosphingolipids	556553	Glycosphingolipids

Kikkoman Biochemifa Company

<http://biochemifa.kikkoman.co.jp/e>

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