

Human Clinical Trial Completed

GlucanREAL®

Natural active water soluble beta-glucan



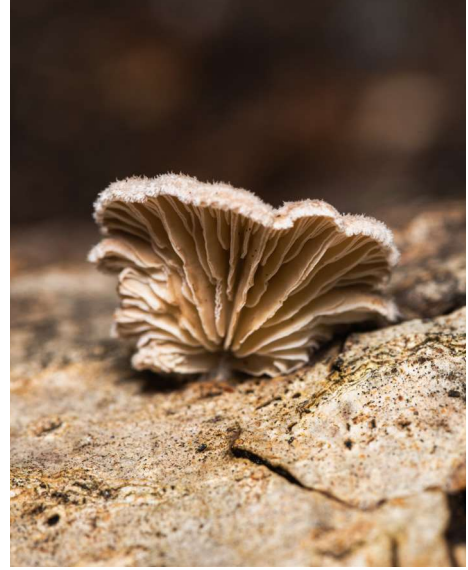
Anti-inflammatory



Skin moisturizing



Skin Soothing



GlucanREAL is an active water-soluble beta-glucan of β -1,6-branched- β -1,3-glucan by the fermentation of *Schizophyllum commune*'s mycelium.

GlucanREAL enhances the immune system of the skin, making it healthier and more energetic, and protects the skin from UV rays and harmful environments as it has anti-inflammatory and irritation relief effects.

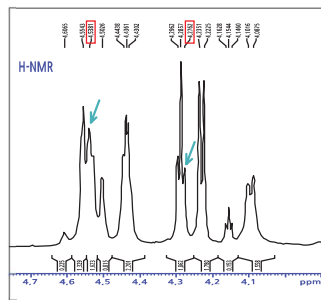
Substance Property

GlucanREAL

- 100% water-soluble possible for human absorption⁽¹⁾
- Triple helix structure for strong immune activity^(2,3)
- 1,3-1,6 β -D structure for maximizing efficacy⁽⁴⁾
- Active Beta-Glucan of natural fermentation

Meeting all conditions
for maximizing
efficacy and effectiveness

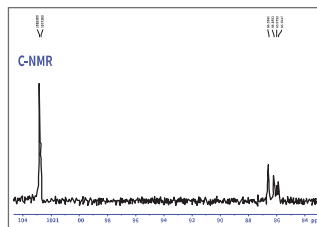
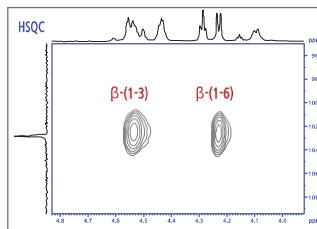
NMR Analysis : β -1,6-branched- β -1,3-Glucan



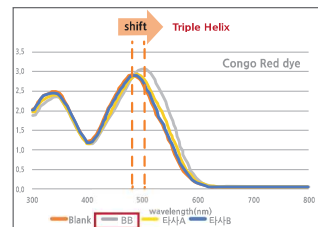
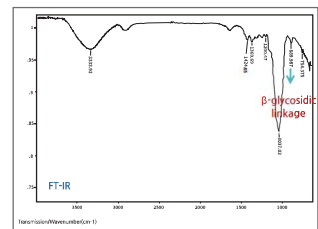
HNMR Major Signal

H-1 (1,3-glucan)	4.5381 (218757780)
H-1 (1,6-glucan)	4.2762 (72866954)
Ratio	0.333

USP monograph relative % of 1,6 = (A)/(A+B)*100 = 25%



β Structure / Triple Helix Structure



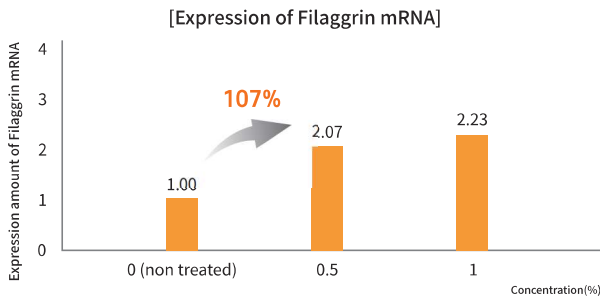
GlucanREAL Seperation and Manufacturing Methods

Source	Manufacturing Method	Purity	Features	Beta-Glucan Structure
Yeast (Beta-1,3/1,6-glucan)	Extraction from cell wall (Crushing, Enzyme and Chemical Treatment)	Mixture of protein and polysaccharide (Membrane-bound ingredient)	• Mainly using waste yeast from a liquor factory it is processed and treated • Typically low purity and absorption	Branched with long side chains
Oats/Barley (Beta-1,3/1,4-glucan)			• Low immune effect	Twisted Linear
Chaga / Lingzhi / Phellinus linteus / Shiitake (Beta-1,3/1,6-glucan)			• Low extraction yield • About 10g of beta-glucan extraction from 2 tons of chaga mushroom	Branched with single glucose units
<i>Schizophyllum commune</i> (Beta-1,3/1,6-glucan)	Active & Natural form extracellular secretion (No use of chemical solvents & alcohols)	Pure beta-glucan polysaccharide (Natural fermentation)	• Water-soluble beta-glucan • Perfect beta-glucan from secretion out of cell • Strong wound regeneration effect^(5,6)	Branched with single glucose units



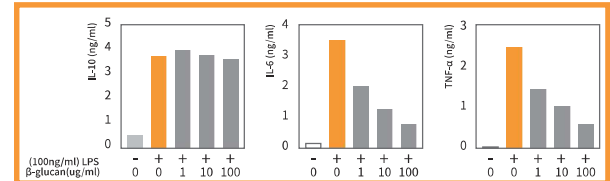
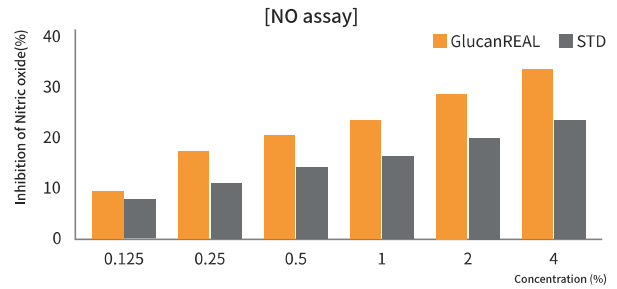
In vitro Test

① Skin barrier improvement



Concentration (%)	1 st test	2 nd test	Average (±Standard deviation)
0 (non treated)	1.00	1.00	1.00±0.00
0.5	1.97	2.16	2.07±0.16
1	2.20	2.25	2.23±0.04

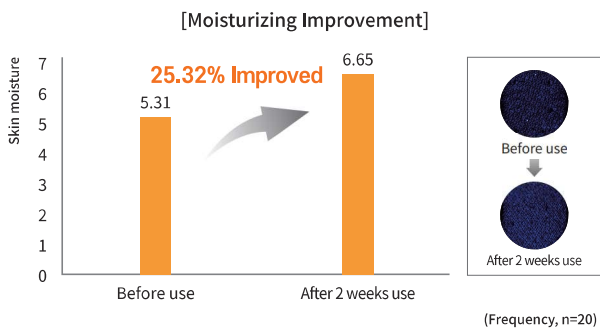
② Skin immune control



Anti-bacterial barrier retention, Strengthening of the skin barrier function through Filaggrin mRNA increase, Anti-inflammatory

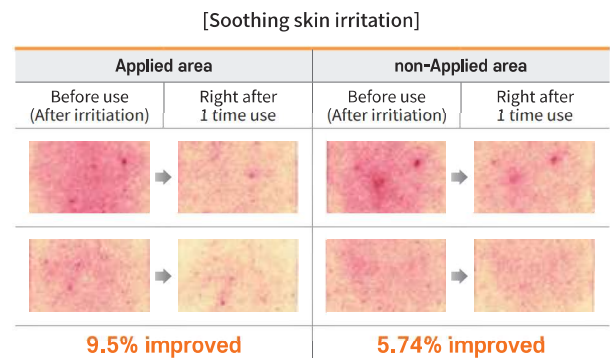
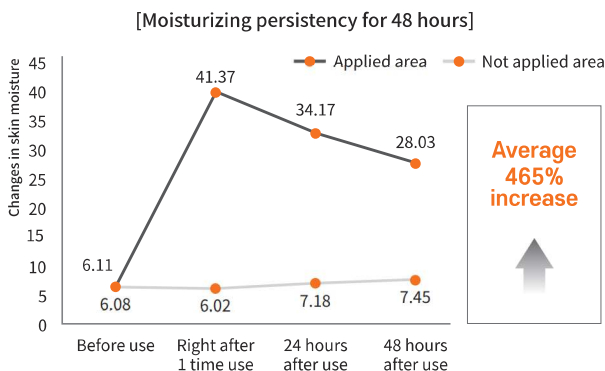
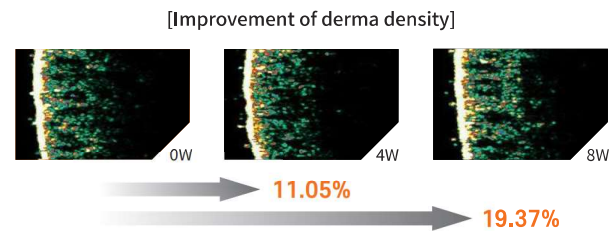
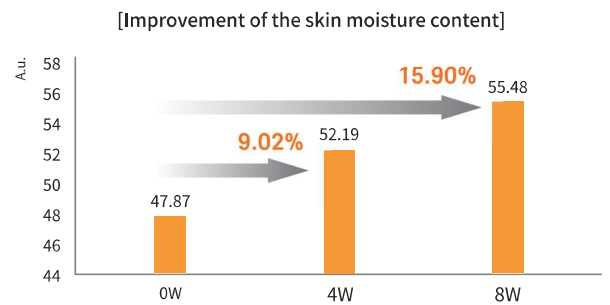
Human Clinical Trial

① Relieving itching and moisturizing persistency



Question	Before use	After use
Extent of itching	3.80	0.60
Frequency of itching	3.85	0.40
Extent of itching during sleeping	3.05	0.20
Extent of itching at the worst time	3.65	0.50
Extent of itching with the least	2.50	0.45

② Improvement effect of the skin



(1) Applied Scientific Reports 1(2) 2014, <http://dx.doi.org/10.7243/2054-9903-1-2>

(2) Nutrients, 13(11) 3960, 2021. <https://doi.org/10.3390/nu13113960>

(3) Carbohydrate Research 329: 587-596. 2000

(4) 'Development & commercialization of Functional Food to Improve intestinal Function using Beta Glucan Derived from Schizophyllum commune' Research Report by ministry of Agriculture and Forestry (2020)

(5) Appl Biol Chem 62:20, 2019. <https://doi.org/10.1186/s13765-019-0428-2>

(6) Molecules 23(4), 806- 2018, doi:10.3390/molecules23040806