

# Bifida Ferment Lysate

## ■ Bifida Ferment Lysate

1

**INCI Name**

Bifida Ferment Lysate

2

**Definition**Bifida Ferment Lysate is a lysate of the product obtained by the fermentation of *Bifida*.

3

**Chemical Classes**

Biotechnological Products

4

**Reported Function**

Skin-Conditioning Agent- Miscellaneous

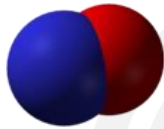
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**Ingredient Source**

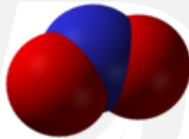
Bacteria, Fungi, or other Single Cell Organism

External harmful factors  
Environmental harmful substance

UV, NO<sub>x</sub> (Nitrogen oxide), SO<sub>x</sub> (Sulfur oxide), Fine dust ...



Nitric oxide, NO



Nitrogen dioxide, NO<sub>2</sub>



Sulfur monoxide



Sulfur dioxide

We need the prevention of skin damage  
against harmful substance

## ■ Bifida Ferment Lysate

- **INCI Name :** Bifida Ferment Lysate
- Bifida Ferment Lysate is a fermentation product of Bifidobacterium longum, a useful lactic acid bacterium in the intestines.
- **Area of Use**
  - Moisturizing Preparations
  - Eye Lotions
  - Night Skin Care Preparations
  - Face and Neck Preparations (Excluding Shaving Preparations)

Bifida Ferment Lysate for resting on tired skin.

Bifida Ferment Lysate

## ❑ Bifida Ferment Lysate

- Origin microorganism : *Bifidobacterium longum*

**Bifidobacterium** is a beneficial organism present in the digestive system and is closely related to our bodies.

There is a close relationship between human health and this bacterium, and it is said that if a person is stressed or gets sick, the bacterium is reduced.

Elastic and vibrant skin

Clear and transparent skin

Moist and shiny skin

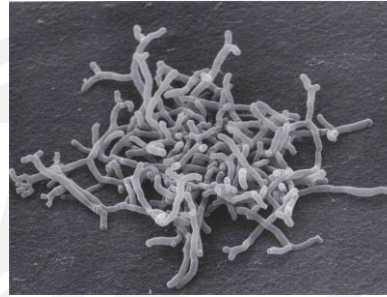
## ❑ Bifidobacterium longum ?

- Scientific classification

Kingdom : Bacteria  
Phylum : Firmicutes  
Class : Antinobacteria  
Order : Bifidobacteriales  
Family : Bifidobacteriaceae  
Genus : *Bifidovacterium*  
Species : *B. longum*

- Binomial name

*Bifidovacterium longum*  
Reuter



Source of the photo:  
<http://jpkc.njau.edu.cn/spwswx/ca nkao/ShowArticle.asp?ArticleID=314>  
Author of the description: KÖRINFO

*Bifidobacterium longum* is a species of Gram-positive anaerobic branched rod-shaped bacterium which can be found in the intestines of infant humans.

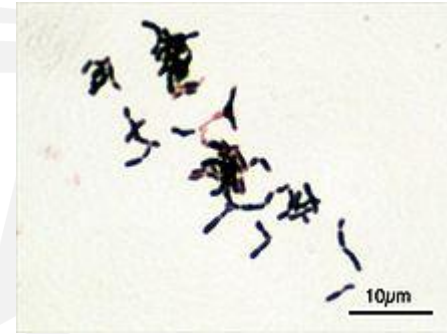
## ■ Bifidobacterium longum ?

### ▪ What is Bifida (*Bifidobacterium*)

Bifidobacterium is a genus of Gram-positive, non-motile, often branched anaerobic bacteria. They are ubiquitous, endosymbiotic inhabitants of the gastrointestinal tract, vagina and mouth (*B. dentium*) of mammals and other animals. Bifidobacteria are one of the major genera of bacteria that make up the colon flora in mammals. Some bifidobacteria are used as probiotics.

Before the 1960s, Bifidobacterium species were collectively referred to as "Lactobacillus bifidus"

## Fermentation organism



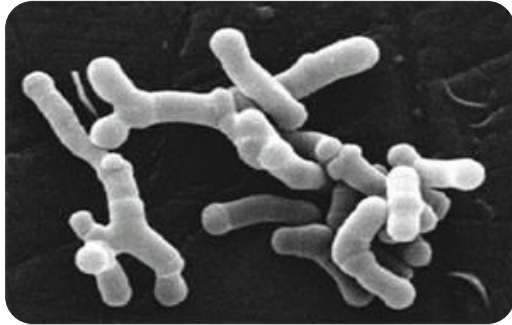
From Wikipedia

# *Bifidobacterium*

Bifidobacterium, Beneficial bacteria that exist in the digestive tract, is closely related to our body.

## ■ Bifidobacterium longum ?

- Use of Bifida (*Bifidobacterium*)



*Bifidobacterium longum*. Courtesy of Mark Schell, University of Georgia, Athens, GA

**Bifidobacteria** are **probiotics** that naturally colonize in the human gastrointestinal tract (GIT) and vagina.

They were first isolated over a hundred years ago from human feces.

***Bifidobacterium longum*** is one of most important inhabitants in the human body.

This bacterium is very helpful because it maintains a normal digestive tract, inhibits the growth of harmful bacteria, and also boosts the immune system.

Reinert, Birgit. "Friendly tenants in the human gut: The genome of *B. longum*". 2002. Genome News Network.



## ■ Bifidobacterium longum ?

### Research Team

Dr. John Kryon of the University of Cork in Ireland and researchers at McMaster University in Canada.

### Results

Report that indoor microorganisms are involved in mental health, such as behavior and mood of living things

### Contents of research

Rats that ate lactobacillus rhammnosus were less stressed and less depressed or anxious than the sterile mouse. In the brain of mice fed Lactobacillus rhamnosus, the mRNA of the gene that produces the neurotransmitter GABA was activated more. The fewer the GABA, the more depressed and constrictive symptoms appear.

In addition, mice fed with a mixture of microbes called Bifidobacterium longum, the symptoms of anxiety and depression improved. This is as a result related to the vagus nerve, the research team said, "This experiment confirms that intestinal microorganisms affect the brain through vagus nerves."

Reference : Mind-Altering Bugs by Greg Miller sciencemag, on 29 August 2011

## ■ Bifida Ferment related article

**Bifida Ferment Filtrate**, a new ingredient for reactive skin. *Experimental Dermatology* 2010; 19: e1-e8.

**Abstract:** Reactive skin is characterized by marked sensitivity to physical (heat, cold, wind) or chemical (topically applied products) stimuli and by the impairment of the skin barrier's ability to repair itself. Several lines of evidence suggest that beyond their capacity to positively influence the composition of intestinal microbiota, some probiotic bacteria can modulate the immune system both at local and systemic levels, thereby improving immune defense mechanisms and/or down-regulating immune disorders such as allergies and intestinal inflammation. Several recent human clinical trials clearly suggest that probiotic supplementation might be beneficial to the skin. Using a probiotic lysate, *Bifidobacterium longum* sp. extract (BL), we demonstrated first *in vitro*, and then in a clinical trial, that this non-replicating bacteria form applied to the skin was able to improve sensitive skin. The effect of BL were evaluated first on two different models. Using *ex vivo* human skin explant model we found a statistically significant improvement versus placebo in various parameters associated with inflammation such as a decrease in vasodilation, oedema, mast cell degranulation and TNF-alpha release. Moreover, using nerve cell cultures *in vitro*, we showed that after 6 h of incubation in culture medium (0.3–1%), the probiotic lysate significantly inhibited capsaicin-induced CGRP release by neurones. Then, a topical cream containing the active extract was tested in a randomized, double-blind, placebo-controlled trial. Sixty-six female volunteers with reactive skin were randomly given either the cream with the bacterial extract at 10% ( $n = 33$ ) or the control cream ( $n = 33$ ). The volunteers applied the cream to the face, arms and legs twice a day for two months.

Skin sensitivity was assessed by stinging test (lactic acid) and skin barrier recovery was evaluated by measuring trans-epidermal water loss following barrier disruption induced by repeated tape-stripping at D1, D29 and D57. The results demonstrated that the volunteers who applied the cream with bacterial extract had a significant decrease in skin sensitivity at the end of the treatment. Moreover, the treatment led to increase skin resistance against physical and chemical aggression compared to the group of volunteers who applied the control cream. Notably, the number of strippings required to disrupt skin barrier function was significantly increased for volunteers treated with the active cream. Clinical and self-assessment scores revealed a significant decrease in skin dryness after 29 days for volunteers treated with the cream containing the 10% bacterial extract. Since *in vitro* studies demonstrated that, on one hand, isolate sensitive neurones release less CGRP under capsaicin stimulation in the presence of the bacterial extract and, on the other hand, increased skin resistance in volunteers applying the test cream, we speculate that this new ingredient may decrease skin sensitivity by reducing neurone reactivity and neurone accessibility. The results of this studies demonstrate that this specific bacterial extract has a beneficial effect on reactive skin. These findings suggest that new approaches, based on a bacteria lysate, could be developed for the treatment and/or prevention of symptoms related to reactive skin.

**Key words:** aging – *Bifidobacterium* – probiotics – sensitive skin – skin barrier resistance – xerosis

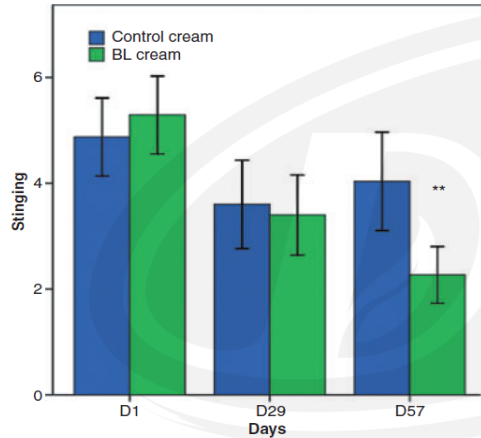
## ■ Bifida Ferment related article

The Protective Effect of Extracts of *Bifidobacterium longum* against Ultraviolet B in Human Dermal Fibroblasts.  
Korea Institute for Skin and Clinical Sciences 2012; 10(4): 887-891

**Abstract** *Bifidobacterium longum* (*B. longum*) is a species of gram-positive anaerobic bacterium which can be found in intestines of humans. *B. longum*, a potential probiotic used in the food industry, promotes the health of human intestinal tract by reduction of harmful gram-negative bacteria and toxic molecules. Also, *B. longum* has numerous biological effects, such as anti-cancer, activation of immune response and reduction of DNA damage. Ultraviolet (UV) irradiation has many adverse effects on skin, including inflammation, alteration in the extracellular matrix, cellular senescence and apoptosis. In this study, we investigated the protective effect of *B. longum* extracts against UVB-induced cellular damage in human dermal fibroblasts (HDFs). *B. longum* extracts at concentration 0.01 ~ 0.02% (w/v) did not affect cell viability in HDFs. When UVB-exposed HDFs were treated with *B. longum* extracts, cell viability was substantially enhanced in a dose-dependent manner. To investigate inhibitory effects against cellular senescence of *B. longum* extracts in HDFs, we performed SA- $\beta$ -gal staining. UVB-exposed HDFs with *B. longum* extracts were decreased SA- $\beta$ -gal positive cells approximately 40% at the concentration of 0.02% (w/v). Flow cytometry was used to determine changes of cell cycle in *B. longum* extracts treated-HDFs. UVB irradiation slightly increased the percentage of cell population in the sub-G1 phase. However, the proportion of cells in sub-G1 phase were decreased approximately 50% by treatment with *B. longum* extracts. These results suggest that *B. longum* extracts reduce UVB-induced cellular senescence and apoptosis in HDFs. Thus, *B. longum* extracts might be used as a potential agents for protection of UVB-induced skin cell damage.

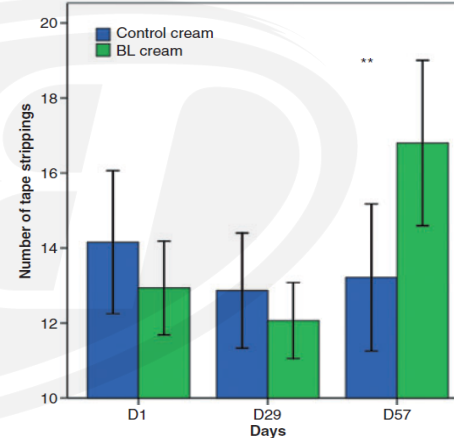
## Effect of Bifida Ferment Lysate

### Skin sensitivity decrease effect



**Figure 3.** Influence of test cream on skin sensitivity to lactic acid: The graphic display mean values with their 95% confidence interval, \*\* statistically significant different at  $p < 0.01$ .

### Skin barrier-enhancing effect



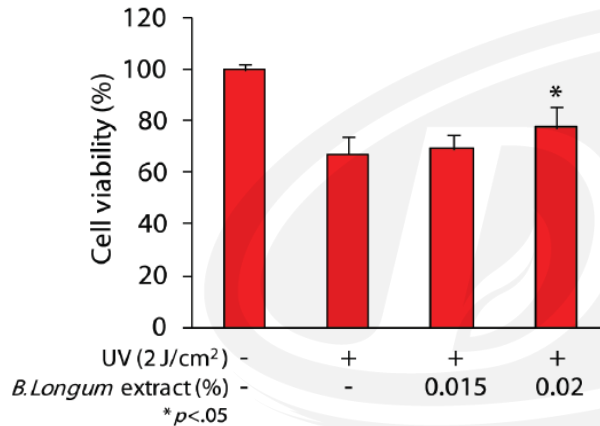
**Figure 4.** Influence of test cream containing *B. longum* lysate on skin barrier: The graphic display mean values with their 95% confidence interval, \*\* statistically significant different at  $p < 0.01$ .

[Reference]

Audrey Gueniche et al. Bifidobacterium longum lysate, a new ingredient for reactive skin. Experimental Dermatology 2010; 19: e1-e8.

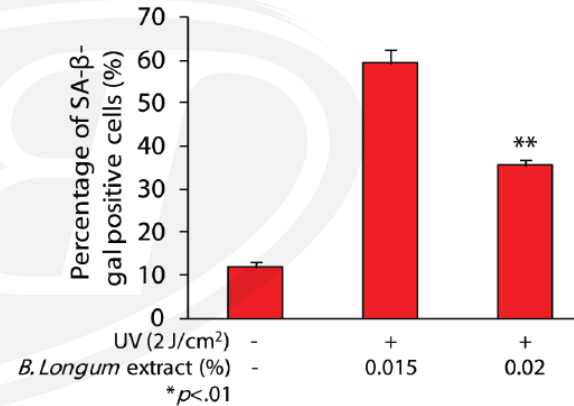
## Effect of Bifida Ferment Lysate

### UVB Protection effect



**Figure 2.** UVB protection effects of *B. longum* extracts in HDFs.

### Anti- aging effect



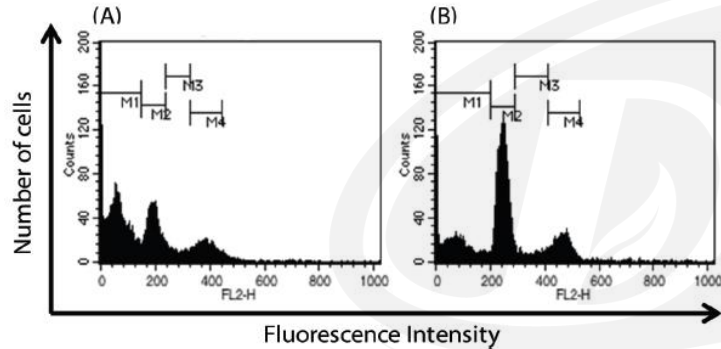
**Figure 3.** The effect of *B. longum* extracts on senescence in UVB-exposed HDFs.

[Reference]

Yeongmin Yoon et al. The Protective Effect of Extracts of Bifidobacterium longum against Ultraviolet B in Human Dermal Fibroblasts. Kor. J. Aesthet. Cosmetol., Vol. 10, No. 4, 887-897, 2012

## Effect of Bifida Ferment Lysate

### Apoptosis inhibition effect



**Figure 4.** The effect of *B. longum* extracts on cell cycle in UVB-exposed HDFs.

(A) HDFs treated with UVB for 24 h, (B) HDFs co-treated with UVB and *B. longum* extracts for 24h

### Cytoprotective effect

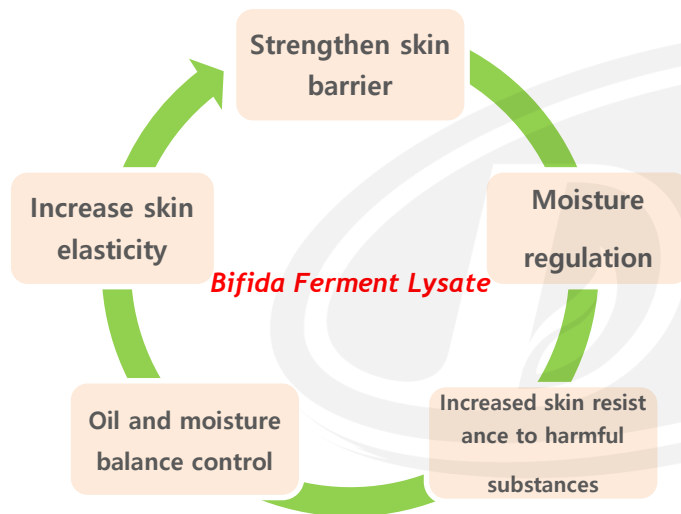
**Table 1.** The effect of *B. longum* extracts on cell cycle in UVB-exposed HDFs

Cell cycle	HDFs treated with 2 J/cm <sup>2</sup> of UVB (%)	HDFs co-treated with 2 J/cm <sup>2</sup> of UVB and 0.02% of <i>B. longum</i> extracts (%)
sub-G1	52.55	25.56
G0/G1	27.48	53.31
S	6.69	6.64
G2/M	13.28	14.49

[Reference]

Yeongmin Yoon et al. The Protective Effect of Extracts of Bifidobacterium longum against Ultraviolet B in Human Dermal Fibroblasts. Kor. J. Aesthet. Cosmetol., Vol. 10, No. 4, 887-897, 2012

## Effect of Bifida Ferment Lysate



Bifida Ferment Lysate helps maintain and support skin's natural microflora and absorbs skin-damaging UV radiation

Bifida Ferment Lysate is a product of filtration of fermented products of bifidus bacteria and can help to recover skin damaged by harmful substances. The use of Bifida Ferment Lysate can be expected to strengthen barriers to skin, increase elasticity of skin, and change to lively skin.

Effect of Bifida Ferment Lysate

## EXT-BIFIDA FERMENT LYSATE

1	Skin barrier-enhancing effect
2	Anti-oxidation effect
3	UV Protection effect
4	Cytoprotective effect
5	Nitric oxide(NO) scavenging ability
6	Skin inflammation effect



# Thank you

천 연 신 소 재 개 발 을 위 한 끝 없 는 연 구 , ( 주 ) 단 정 바 이 오 가 함 께 합 니 다 .