

We make and share sustainable happiness.

NATURE, SCIENCE & LIFE



HISTORY

1995 -

Establishment

- 1995. 09 Established Bioland Co., Ltd.
- 1997. 10 Established biotechnology R&D center of Bioland

2001 -

Secured the base of active cosmeceuticals/ nutraceuticals business

- 2001. 01 Authorized for manufacturing APIs (Active Pharmaceutical Ingredients)
- 2001. 05 Listed on KOSDAQ
- 2004. 04 Acquired Amore pacific's biochemistry department and established Food R&D center

2005 -

Extension of new business and enhancement of R&D

- 2005. 01 Obtained tissue bank approval from KFDA (Korea Food and Drug Administration)
- 2005. 12 Constructed Ochang factory of bio medical products
- 2006. 01 Obtained GMP approval of Ochang factory for bio medical products
- 2006. 10 Established Shanghai R&D Center in China
- 2011. 11 Constructed Osong factory for active ingredients for cosmeceuticals and pharmaceuticals
- 2012. 05 Obtained BGMP approval of Osong factory for APIs
- 2012. 08 Obtained GMP approval of Ansan factory for health functional food ingredients

2013 -

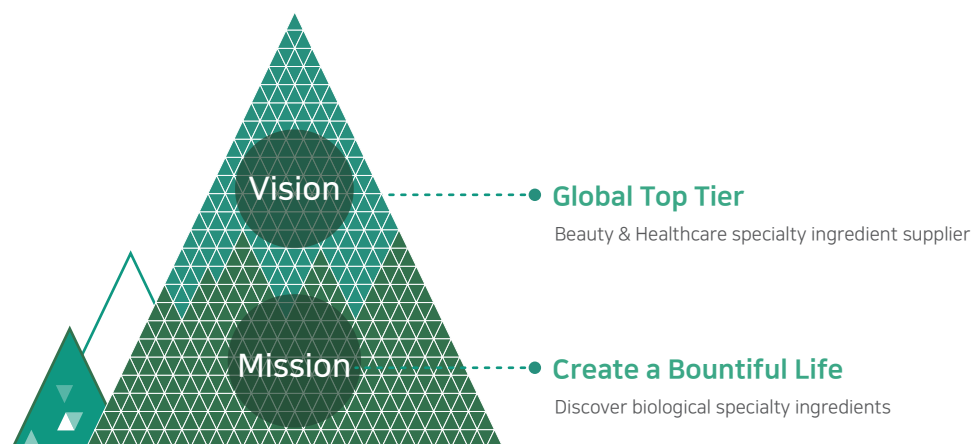
Global growth

- 2013. 12 Received \$10 million export award
- 2014. 06 Constructed Haimen factory in China
- 2014. 11 Acquired by SKC and incorporated in SK group
- 2016. 06 Constructed Jeju factory
- 2016. 07 Changed the company name to SK bioland
- 2018. 06 Constructed Haimen 2nd Factory (for Mask Packs)
- 2018. 07 EcoVadis "Silver" Grade Acquisition
- 2019. 10 EcoVadis "Silver" Grade Acquisition
- 2020. 10 Acquired by and Incorporated in Hyundai Department Store group
- 2020. 10 Changed the company name to HYUNDAI BIOLAND

MISSION & VISION

To advance as a global leader in the field of Beauty & Healthcare specialty ingredients

HYUNDAI BIOLAND will proceed with the growth of the existing business and launching of new business to expand its product range, extend its value chain and advance to be a global leader.



ADVANCED TECHNOLOGY

Processing Technology

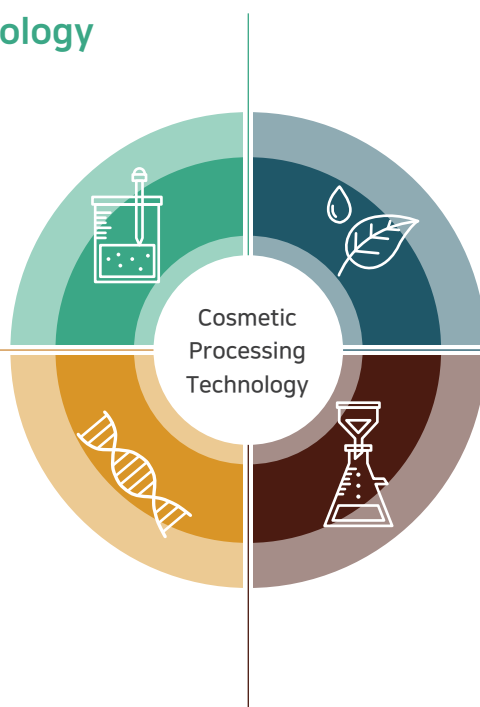
- Gel Technology
- Phytoglycan Technology
- Oriental Medicine Concoct
- Germination

Extraction

- Extraction / Leaching
- Ultra High Pressure Extraction
- Standardization
- Steam Distillation
- Pulsed Electric Field Tech.
- Ultrasonification Extraction
- Deep Eutectic Solvent

Conversion & Processing

- Chemical Transformation
- Bioconversion
- Fermentation
- Enzyme Processing
- Hydrolysis
- Usability



Separation & Purification

- Fraction
- Column Chromatography
- Deodorization
- Recrystallization
- Removal of Heavy Metal

R&D CENTER NETWORK

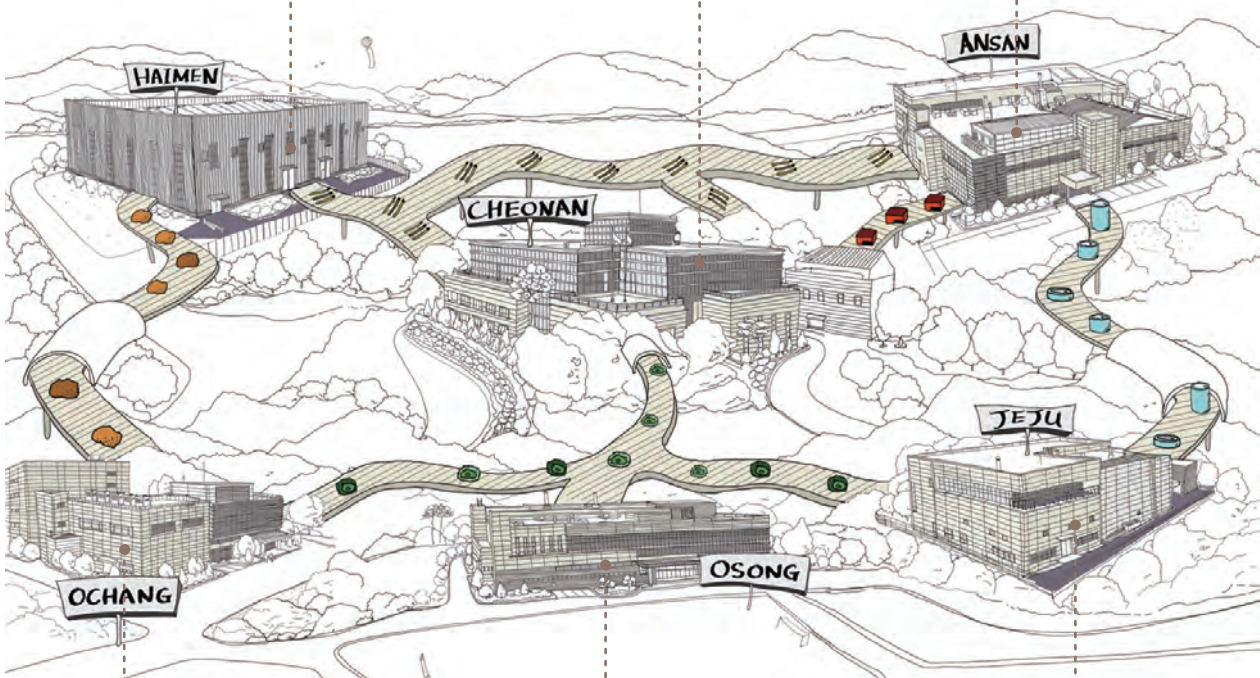
Haimen Factory (2014)

Active Ingredients for Cosmeceuticals based on TCM
Bio-Cellulose masks
ISO9001/ISO14001

Food Factory (2004)

Nutraceuticals
ISO9001/ISO14001 / GMP

Administration Office (1995)



Biomedical Engineering Factory (2006)

Tissue Engineered Medical Products
Bio-Cellulose masks
ISO9001 / ISO13458 / GMP

Biotechnology Factory (2001)

Cosmeceutical & Pharmaceuticals
ISO9001/ISO14001 / GMP / EFfCI : 2017

Marketing Department

Long-term Business planning
Development of Marketing plan
Promoting sales

Jeju Factory (2016)

Active Ingredients from Jeju
ISO9001/ISO14001

PRODUCT INFORMATION

NEW

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- DERMABIOTICS HDB1196 GN
- LAVA-DERMABIOTICS HDB1234 GN
- HA BEADS
- EUCOOLAN™
- EUCOOLAN™ GN

MAIN

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- PORTULACA EXTRACT
- PORTULACA EXTRACT GN
- RHODIOLA EXTRACT
- SOPHORA ROOT POWDER

PROMOTION

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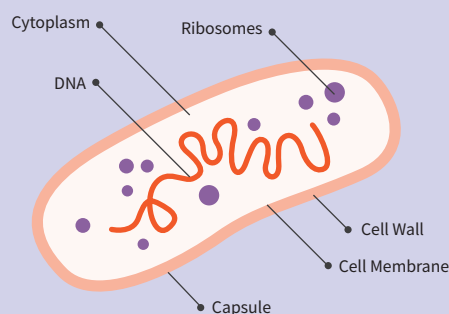
- DERMAP
- BIO-FRGE
- HOCOX (N)
- ULMUS EXTRACT PF

SKIN

This brochure is not intended for sales and neither this brochure nor any extract thereof shall be used in order to commercialize products to consumers. No drawing, photograph or other extract derived from this brochure shall be used by any person without our prior written approval. As well, no claim with respect to the ingredient referred to in this brochure shall be made by any person without our prior written approval, even though the claim is set forth in this brochure. The person using the ingredient referred to in this brochure in the formulation of finished products is solely responsible for ensuring that the use made of the ingredient, the finished products marketed to consumers, their packaging, labeling and advertising materials and the claims made with respect to the finished products and the ingredient comply with all applicable laws and regulation. We hereby disclaim any warranty of suitability of the ingredient referred to this brochure for any purpose. Any prospective user of the ingredient shall himself determine the suitability of the ingredient for his intended use and, as the case may be, obtain the required regulatory approvals for the commercialization of his finished products.

DERMABIOTICS HDB 1196 GN

DERMABIOTICS makes it available to have a high purity of probiotic active substances, excluding irritant materials. GRAS strain probiotics – post-fermented with Hyaluronic Acid- penetrate and care the skin from inside.



- ✓ **INCI NAME**
GLYCERINE / LACTOBACILLUS FERMENT
LYSATE / SODIUM HYALURONATE
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : RSPO Compliant
- ✓ **ISO16128** : Natural index > 0.99, Natural Origin index 1.0



COSMOS
APPROVED



PRODUCT DESCRIPTION

Hyundai Bioland has created a Probiotic Skin Care Solution with active components of probiotics bacteria cells that are essential to cell growth.

DERMABIOTICS is only made up of cytosol of GRAS probiotic bacteria cells, which features no cell walls, low molecular weights and post-fermenting process with Hyaluronic Acid to concentrate and enrich its active ingredient 20% high.

With this, Hyundai Bioland maximizes the skin penetration of active ingredients and minimizes the irritant substances usually present in probiotic lysate which can bring up immune response.

Hyundai Bioland has its own probiotic cell bank to manage the strain cells by efficacy, aiming to set up skin microbiome.

SUGGESTED APPLICATIONS

- ✓ **Skin rebalancing ampoule**
- ✓ **Skin microbiome serum/ cream**
- ✓ **Skin barrier restoring night mask**

EFFICACY SUMMARIZATION

ANTI-WRINKLE

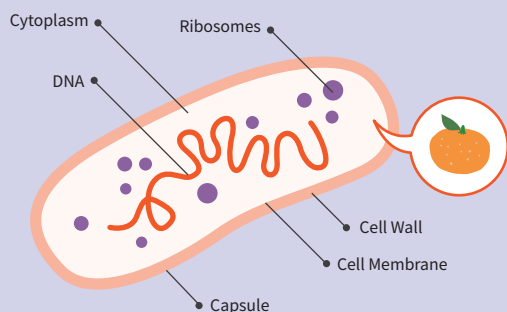
- Contributes to reduce collagen degradation induced by UVA stress (in-vitro)
- Is associated with the modulation of mRNA expression related to collagen synthesis (in-vitro)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-3%
APPEARANCE	Light yellow liquid
PH LEVEL	5.0 - 6.5
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	3T3 NRU (In-vitro, OECD 432) STE (In-vitro, OECD 491) Human patch test

LAVA-DERMABIOTICS HDB 1234 GN

LAVA-DERMABIOTICS – the probiotics isolated from the plants of Jeju Island in Korea- makes the synergistic effect after post-fermentation with Jeju Lava Sea Water rich in minerals.



- ✓ **INCI NAME**
GLYCERINE / LACTOBACILLUS FERMENT LYSATE
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : RSPO Compliant
- ✓ **ISO16128** : Natural (origin) index 1.0



COSMOS
APPROVED



PRODUCT DESCRIPTION

LAVA-DERMABIOTICS is a probiotic skin solution made with the probiotic bacteria cells isolated from the plants of Jeju Island in Korea.

Based on the same technical platform of DERMABIOTICS, it features a different post-fermentation process that makes use of the minerals in Jeju Lava Sea Water.

The probiotic strains for LAVA-DERMABIOTICS are registered at NCBI and cultivated with Lava Sea Water which is rich in natural minerals. This is designed to give a synergistic effect for skin care, as the minerals enrich and increase the probiotic active substance 35% more.

EFFICACY SUMMARIZATION

SKIN BARRIER

- Stimulates the gene expressions of intercellular tight junction protein on keratinocyte (in-vitro)
- Contributes to activating the gene expressions of ceramide synthesis-related enzyme on keratinocyte (in-vitro)

SKIN LIGHTENING

- Alleviates melanogenesis in melanoma cells treated with α -MSH (in-vitro)
- Suppresses the activities of melanogenesis enzymes in melanocytes treated with α -MSH (in-vitro)
- Inhibits the transport of melanosome to melanocyte dendrites and keratinocyte (in-vitro)

TECHNICAL INFORMATION

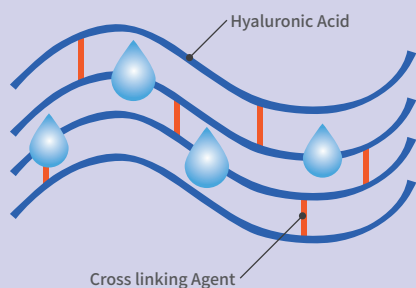
RECOMMENDED LEVEL	2-5%
APPEARANCE	Light yellow liquid
PH LEVEL	5.0 - 6.5
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	3T3 NRU (In-vitro, OECD 432) STE (In-vitro, OECD 491) Human patch test

SUGGESTED APPLICATIONS

- ✓ Skin rebalancing ampoule
- ✓ Skin microbiome serum/ cream
- ✓ Skin barrier restoring night mask

HA BEADS

*Be environmentally conscious, save the oceans.
Natural bio-degradable exfoliator made with Hyaluronic Acid.*



- ✓ **INCI NAME**
WATER / PEG-9 DIGLYCIDYL ETHER/SODIUM
HYALURONATE CROSSPOLYMER / 1,2-HEXAENDIOL
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural index 0.94, Natural origin index > 0.97



Cruelty free



PRODUCT DESCRIPTION

As a colony of transparent, small and gentle granules in 500-1500µm composed of cross-linked hyaluronic acid, it is expected to be an innovative biodegradable microplastic alternative in facial scrub and cleansing market.

Biodegradation test (OECD 301F) classifies it to be readily biodegradable as it takes only 8 days to be degraded 60%, and shows more than 90% of degradation in 20 days.

While exfoliating, cross-linked hyaluronate granules provide skin moisturization.

EFFICACY SUMMARIZATION

SKIN EXFOLIANT

- Contributes to reducing dead skin cells after scrubbing (Charm view, clinical trial)

SKIN MOSITURIZING

- Increases the hydration level of the skin epidermal layer (Corneometer, clinical trial)

SUGGESTED APPLICATIONS

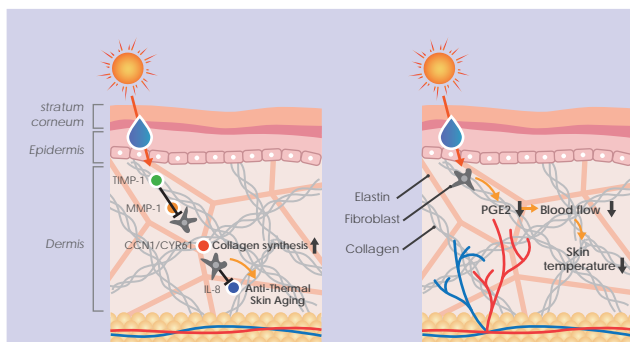
- ✓ Gentle scrub gel for sensitive skin
- ✓ Ultra mild moisturizing exfoliator

TECHNICAL INFORMATION

RECOMMENDED LEVEL	Varies with formulation
APPEARANCE	Transparent amorphous particle community
PARTICLE SIZE	500-1,500 µm
PH LEVEL	5.0 - 8.0
COMPATABILITY	Water soluble
STABLE UP TO	40°C

EUCOOLAN™

Keep your skin cool from thermal aging.



- ✓ **INCI NAME**
WATER / BUTYLENE GLYCOL / EUCOMMIA
ULMOIDES BARK EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.7



PRODUCT DESCRIPTION

Eucoolan is a new innovative ingredient that enables a new active claim for people who enjoy outdoor activities and are more exposed to changing climate.

When it comes to solar aging, the relation of sun exposure and skin damage has long been discussed with a focus on photo-aging by UV, but thermal aging by the heat has been unnoted.

Based on the investigation on the contribution of the heat to skin aging, Hyundai Bioland has developed a natural botanical ingredient, using the barks of Eucommia Ulmoides trees -- a large deciduous tree originated in China, Japan and Korea. It prevents the skin's thermal aging from progressing further and keeps the skin temperature in balance.

SUGGESTED APPLICATIONS

- ✓ **Daily skin temperature balancing cream**
- ✓ **Skin care products for in-between seasons**
- ✓ **UV filtering Sunblocks**
- ✓ **Sun protective spray**

EFFICACY SUMMARIZATION

SKIN THERMAL REGULATORY EFFECT

- Contributes to alleviation of skin surface temperature and blood flow increased in response to heat treatment (Clinical trial)
- Suppresses the increased production rates of fever-mediating PGE2, Heat Shock Protein 70 and MMP1 gene on heat-stressed artificial human skin model (in-Vitro)

ANTI-PHOTO SKIN AGING

- Helps to inhibit upregulation of TRPV4 mRNA expressions after exposure of human fibroblast to UVB (in-Vitro)

SKIN ELASTICITY

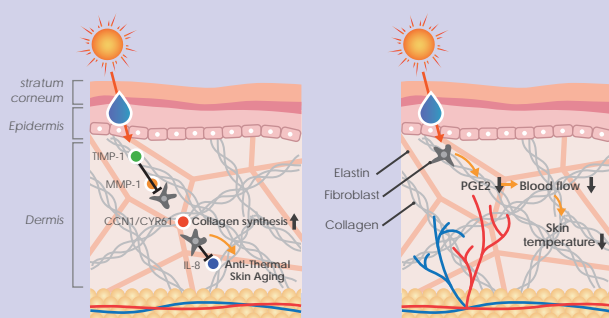
- Increases the downregulated levels of elastic fibers, a major microfibril component and collagen type 1 gene by the heat (in-vitro)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Yellow brown ~ dark brown liquid
PH LEVEL	4.0-6.0
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	- Mutagenicity - Ocular Irritation - Skin Irritation - Skin sensitization

EUCOOLAN™ GN

Keep your skin cool from thermal aging.



- ✓ **INCI NAME**
GLYCERIN / WATER / EUCOMMIA ULMOIDES BARK EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : RSPO Compliant
- ✓ **ISO16128** : Natural (origin) index 1.0



COSMOS
APPROVED



Cruelty free



16128



PLANT ORIGIN



PRODUCT DESCRIPTION

Eucoolan GN is a glycerin version of Eucoolan, and a COSMOS-approved ingredient. Eucoolan is a new innovative ingredient that enables a new active claim for people who enjoy outdoor activities and are more exposed to changing climate.

When it comes to solar aging, the relation of sun exposure and skin damage has long been discussed with a focus on photo-aging by UV, but thermal aging by the heat has been unnoted.

Based on the investigation on the contribution of the heat to skin aging, Hyundai Bioland has developed a natural botanical ingredient, using the barks of Eucommia Ulmoides trees -- a large deciduous tree originated in China, Japan and Korea. It prevents the skin's thermal aging from progressing further and keeps the skin temperature in balance.

SUGGESTED APPLICATIONS

- ✓ **Daily skin temperature balancing cream**
- ✓ **Skin care products for in-between season**
- ✓ **UV filtering Sunblocks**
- ✓ **Sun protective spray**

EFFICACY SUMMARIZATION

SKIN THERMAL REGULATORY EFFECT

- Contributes to alleviation of skin surface temperature and blood flow increased in response to heat treatment (Clinical trial)
- Suppresses the increased production rates of fever-mediating PGE2, Heat Shock Protein 70 and MMP1 gene on heat-stressed artificial human skin model (in-Vitro)

ANTI-PHOTO SKIN AGING

- Helps to inhibit upregulation of TRPV4 mRNA expressions after exposure of human fibroblast to UVB (in-Vitro)

SKIN ELASTICITY

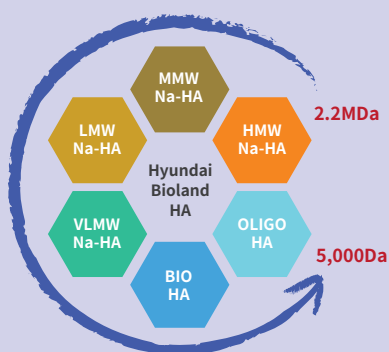
- Increases the downregulated levels of elastic fibers, a major microfibril component and collagen type 1 gene by the heat (in-vitro)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Yellow brown ~ dark brown liquid
PH LEVEL	3.5-6.0
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	- Phototoxicity - Ocular irritation

HYALURONIC ACID

Ultimate for skin.



- ✓ **INCI NAME**
SODIUM HYALURONATE
HYALURONIC ACID
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural origin index 1.0



COSMOS
APPROVED



PRODUCT DESCRIPTION

Hyaluronate - a constituent of all living organisms- is widely distributed in the skin of the body. As the amount of Hyaluronate production has decreased since the age of 25, it has been regarded to be a major cause of skin wrinkle formation.

For the past decade, Hyundai Bioland has been a reliable supplier of hylauronate with various grades of molecular weights in the global market as the largest Korean manufacturer. Hyalruonate is made through microbial fermentation using the bacteria strain from barley. COSMOS-approved.

PRODUCT GRADES

SODIUM HYALURONATE

GRADE	MOLECULAR WEIGHT
BIO-SODIUM HYALURONATE HMW	1.8 – 2.5 MDa
BIO-SODIUM HYALURONATE MMW	1.3 – 1.8 MDa
BIO-SODIUM HYALURONATE LMW	0.5 – 1.3 MDa
BIO-SODIUM HYALURONATE VLMW	0.15 – 0.6 MDa

HYALURONIC ACID

GRADE	MOLECULAR WEIGHT
HYALURONIC ACID	10 – 200 kDa
OLIGO-HA	3.0 – 10.1 kDa

SUGGESTED APPLICATIONS

- ✓ **Water bomb cream**
- ✓ **Skin hydrating foundation**
- ✓ **Moisturizing cream for eye contour**
- ✓ **Lip stick/ Lip moisture balm**
- ✓ **Hand/Toe care products**

TECHNICAL INFORMATION

RECOMMENDED LEVEL	Sodium	0.01-0.30%
	Acid	0.05-0.30%
APPEARANCE	Sodium	White powder
	Acid	White - light yellow powder
HYALURONATE	Sodium	93-100 %
	Acid	88-100%
COMPATABILITY	Water soluble	

PF SC-GLUCAN

Purified beta-glucan extracted from cultivated mycelium liquid of a mushroom 'Schizophyllum commune'.



- ✓ **INCI NAME**
WATER / GLYCERIN / PROPANEDIOL / PHENOXYETHANOL / BETA GLUCAN / ETHYLHEXYL-GLYCERIN
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Phenoxyethanol
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.99



PRODUCT DESCRIPTION

Beta glucan is a polysaccharide which can be obtained from many food sources such as oats, barley, mushrooms and yeasts. Mushroom-derived Beta-glucan has been used in Asia for centuries for health purposes. Recently, independent studies have proved the therapeutic properties of mushroom Beta-glucan that it supports human immune function and stimulates tumor necrosis factor.

SC-GLUCAN is a purified beta glucan obtained from liquid cultivated mycelium of mushroom species 'schizophyllum commune'. SC-GLUCAN is a highly water-soluble polymer 'b-1,6-branched-b-1,3-glucan'.

It is generally known that the glucan with β -(1,3) linkages has much more potent macrophage stimulating activity than any other linkage type.

EFFICACY SUMMARIZATION

ANTI-POLLUTION

- Cytoprotective activity against heavy metals, such as Arsenic Trioxide, Potassium dichromate and Cadmium chloride (MTT assay, In-vitro)

IMMUNOMODULATION

- Helps to control secretion of various typical immunostimulating genes such as TNF- α and interleukins induced by dectin-1 (RT-PCR on Human monocyte, In-vitro)

ANTI-AGING

- Expected to anti-aging efficacy by filling dermal layer
- Proven by showing an excellent effect on dermal fibroblast cell proliferation (MTT assay on Human fibroblast, In-vitro)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-10%
APPEARANCE	Colorless ~ light yellow liquid
PH LEVEL	6.2-8.2
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	<ul style="list-style-type: none">- Acute oral toxicity- Acute dermal toxicity- Ocular Irritation- Skin Irritation- Skin sensitization- Human patch test

SUGGESTED APPLICATIONS

- ✓ Mild moisturizer for city people
- ✓ Cream to build strong skin barrier
- ✓ Anti-aging
- ✓ Body care
- ✓ Night care

PORTULACA EXTRACT

An extract of *Portulaca Oleracea* developed for sensitive and troubled skin.



- ✓ **INCI NAME**
WATER / BUTYLENE GLYCOL / PORTULACA OLERACEA EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.70



PRODUCT DESCRIPTION

Portulaca Oleracea is a nutritious edible plant widely distributed around the world. The plant is famous in Korean traditional medicine to treat skin wounds caused by insects or snake bites.

The plant is a great source of omega-3 fatty acids, polysaccharides, amino acids, vitamins A/C/E and antioxidant compounds such as glutathione. Due to its nutritional properties, modern studies have found *portulaca oleracea* has great potential as an anti-aging and anti-inflammatory ingredient.

Recently *Portulaca* extract is used for cosmetic preparation because of its efficacy on soothing sensitive skin.

SUGGESTED APPLICATIONS

- ✓ Sensitive skin care
- ✓ Skin soothing agent
- ✓ Cosmetics to reduce skin redness
- ✓ General skin care in summer season
- ✓ Toiletries

EFFICACY SUMMARIZATION

SKIN BARRIER PROTECTION & RECOVERY

- Prevents skin irritation caused by Sodium Dodecyl Sulfate
- Recovers skin barrier damaged by Sodium Dodecyl Sulfate (In-vivo)

ANTI-INFLAMMATION & ANTI-IRRITATION

- Reduces irritation of skin stimulated by Sodium Lauryl Sulfate (Human patch test)
- Inhibits the release of IL-1 α induced by Sodium Lauryl Sulfate (Tested on human artificial skin)

ANTI-PHOTOTOXICITY

- Prevents cell damage and inhibits the release of IL-1 α induced by UVA (MTT assay, In-vitro)

CELL PROTECTION AGAINST UV

- Contributes to protect mitochondria damage and to prevent cell damage caused UV rays (JC-1staining)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Colorless ~ light yellow liquid
PH LEVEL	4.0-6.0
DRY RESIDUE	0.2-0.6%
STABLE UP TO	40°C
SAFETY DATA	<div>- Acute oral toxicity</div> <div>- Genotoxicity</div> <div>- Mutagenicity</div> <div>- Ocular Irritation</div> <div>- Skin Irritation</div> <div>- Skin sensitization</div> <div>- Human patch test</div>

PORTULACA EXTRACT GN

An extract of *Portulaca Oleracea* developed for sensitive and troubled skin.



- ✓ **INCI NAME**
GLYCERIN/ WATER / PORTULACA OLERACEA EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : RSPO compliant
- ✓ **ISO16128** : Natural (origin) index 1.0



PRODUCT DESCRIPTION

Portulaca Extract GN is a glycerin version of Portulaca Extract, and ECOCERT-approved ingredient. Portulaca Oleracea is a nutritious edible plant widely distributed around the world. The plant is famous in Korean traditional medicine to treat skin wounds caused by insects or snake bites.

The plant is a great source of omega-3 fatty acids, polysaccharides, amino acids, vitamins A/C/E and antioxidant compounds such as glutathione. Due to its nutritional properties, modern studies have found portulaca oleracea has great potential as an anti-aging and anti-inflammatory ingredient.

Recently Portulaca extract is used for cosmetic preparation because of its efficacy on soothing sensitive skin.

SUGGESTED APPLICATIONS

- ✓ Sensitive skin care
- ✓ Skin soothing agent
- ✓ Cosmetics to reduce skin redness
- ✓ General skin care in summer season
- ✓ Toiletries

EFFICACY SUMMARIZATION

SKIN BARRIER PROTECTION & RECOVERY

- Prevents skin irritation caused by Sodium Dodecyl Sulfate
- Recovers skin barrier damaged by Sodium Dodecyl Sulfate (In-vivo)

ANTI-INFLAMMATION & ANTI-IRRITATION

- Reduces irritation of skin stimulated by Sodium Lauryl Sulfate (Human patch test)
- Inhibits the release of IL-1 α induced by Sodium Lauryl Sulfate (Tested on human artificial skin)

ANTI-PHOTOTOXICITY

- Prevents cell damage and inhibits the release of IL-1 α induced by UVA (MTT assay, In-vitro)

CELL PROTECTION AGAINST UV

- Contributes to protect mitochondria damage and to prevent cell damage caused UV rays (JC-1staining)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Colorless ~ light yellow liquid
PH LEVEL	4.0-6.0
DRY RESIDUE	0.2-0.6%
STABLE UP TO	40°C

RHODIOLA EXTRACT

RHODIOLA EXTRACT opens the door to the new science of neurogenic inflammation and comforts impaired skin damaged by various stress factors.



- ✓ **INCI NAME**
CYCLODEXTRIN / RHODIOLA ROSEA ROOT EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.25



PRODUCT DESCRIPTION

Adaptogen is a metabolic regulator which increases the ability of an organism to adapt to environmental factors, and to avoid from such factors.

Rhodiola rosea is a plant in the Crassulaceae family that grows in cold regions of the world, and has long been known to have an adaptogenic effect that increases body's resistance to stress in non-specific ways.

Hyundai Bioland developed active ingredient, RHODIOLA EXTRACT, from Rhodiola rosea, and makes the active ingredient water soluble to be applicable to various applications.

EFFICACY SUMMARIZATION

ANTI-INFLAMMATION

- Inhibition of neurogenic inflammation by reducing the release of Histamine in mast cells and Substance P in sensory neurons (in-vitro)

REPAIRS SKIN BARRIER

- Regenerating damaged skin barrier and calming down an erythema (in-vivo)

SUGGESTED APPLICATIONS

- ✓ Night repair serum
- ✓ Daily facial care

TECHNICAL INFORMATION

RECOMMENDED LEVEL	0.05 – 0.5%
APPEARANCE	Pale brown powder
ROSAVIN CONTENT	5.0 – 7.5mg/g
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	-

SOPHORA ROOT POWDER

SOPHORA ROOT POWDER is an active ingredient for hair growth promotion and hair loss protection.



- ✓ **INCI NAME**
SOPHORA ANGUSTIFOLIA ROOT EXTRACT /
HYDROXYPROPYL CYCLODEXTRIN
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : RSPO Compliant
- ✓ **ISO16128** : Natural (origin) index 0.50



PRODUCT DESCRIPTION

Sophora roots are the roots of sophora angustifolia, a hardy deciduous shrub native to China, Japan and Korea. It is a green plant with 80-90cm height growing at the sunny places.

Sophora roots have been used for centuries for Traditional Chinese Medicine(TCM) to treat eczema and pruritus.

Hyundai Bioland developed SOPHORA ROOT POWDER with sophora roots containing various types of alkaloids and flavonoids, and d-matrine, d-oxyamatrine and kurarinone are known for the main active ingredients which have been reported to be associated with hair growth, anti-aging and anti-inflammatory effect.

EFFICACY SUMMARIZATION

HAIR GROWTH & STRENGTHEN HAIR BULB

- Up-regulates the gene expressions of hair growth factors on hair matrix cell (in-vitro)
- Strengthens the gene expressions of hair bulb strength-related factors on dermal papilla (in-vitro)

ANTI-HAIR LOSS

- Inhibits hair loss factors caused by stress, androgen and pollution (in-vitro)

HAIR GROWTH PROMOTION & HAIR LOSS PROTECTION

- Clinical test for hair growth promotion and hair loss protection (in-vivo)

SUGGESTED APPLICATIONS

- ✓ Hair shampoo
- ✓ Hair treatment
- ✓ Anti-hair loss booster

TECHNICAL INFORMATION

RECOMMENDED LEVEL	0.04-0.1%
APPEARANCE	Yellow brown powder
LOSS ON DRYING	Not more than 5%
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	-

DERMAP

New anti-inflammatory Artemisia leaf extract with a novel active marker than conventional one.



- ✓ **INCI NAME**
WATER / BUTYLENE GLYCOL / ARTEMISIA PRINCEPS LEAF EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.7



PRODUCT DESCRIPTION

Artemisia Princeps, also called Korean/Japanese wormwood or mugwort, is a medicinal herb cultivated in East Asia, and is widely used in cuisine as well as traditional medicine for treatment of inflammation, diarrhea, bacterial infection, circulatory disorders, bleeding, etc.

DERMAP has Isosecotanapartholide (ISTP) as the active ingredient, out of the major active flavonoid compounds such as eupatilin, jaceosidin and apigenin, present in Artemisia Princeps Leaves.

The efficacy studies on DERMAP indicate it has an inhibitory effect against the novel cytokine-signaling pathway associated with pruritus and inflammation in atopic skin. DERMAP is a recommendable solution to relieve the itch and inflammation which is a major symptom of chronic skin disorders such as atopy.

SUGGESTED APPLICATIONS

- ✓ **Daily lotion for sensitive skin**
- ✓ **Soothing cream for all ages**
- ✓ **Gentle cleanser**
- ✓ **Spot treatment serum**
- ✓ **Skin relief toner**

EFFICACY SUMMARIZATION

ANTI-ALLERGY

- Contributes to inhibiting degranulation of beta-hexosaminidase on mouse mast cell treated with allergy-inducing PMACI (in-Vitro)

ANTI-INFLAMMATION

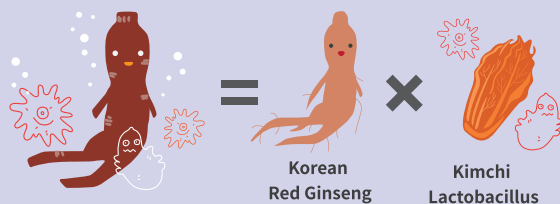
- Associated with downregulation of the activities of inflammatory cytokines and iNOS on mouse macrophage treated with Lipopolysaccharide (in-Vitro)
- Decreases the expressions of proteins of atopic dermatitis-related cytokines on keratinocyte treated with TNF- α /IFN- γ (in-Vitro)
- Contribute to relieving the level of stinging on the face treated (Clinical trial)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Light yellow liquid
PH LEVEL	3.5-5.5
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	- Mutagenicity - Ocular Irritation - Skin Irritation - Phototoxicity

BIO-FRGE

Maximization of biological activity of ginsenosides in Korean Red Ginsengs by fermentation with Kimchi probiotics.



- ✓ **INCI NAME**
WATER / GLYCERIN / LACTOBACILLUS/PANAX
GINSENG ROOT EXTRACT FERMENT FILTRATE /
CAPRYLYL GLYCOL / 1,2-HEXANEDIOL
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : RSPO Compliant
- ✓ **ISO16128** : Natural (origin) index > 0.99



PRODUCT DESCRIPTION

BIO-FRGE is the extract of Korean red ginseng fermented with probiotics which are present in kimchi - a Korean traditional dish.

Korean red ginseng is generally made by consecutive steaming and drying process of the fresh ginseng in a Korean traditional method, and ginseng has been used as an adaptogen because of the ginsenosides-the saponins characteristic to ginseng. However, a large number of natural ginsenosides in ginseng have low absorption in body, so the heat treatment and the fermentation process helps to increase the content of the rare ginsenosides which have more pharmacological benefits.

Likewise, BIO-FRGE enables to improve the body's absorption and bio-availability of the ginsenosides through microbial fermentation, as it converts the chemical composition of natural ginsenosides (Rb1, Rb3) to be more biologically-active ginsenosides (Rg3, Rk1).

EFFICACY SUMMARIZATION

ANTI-AGING

- Involved in activation of the gene expressions of SIRTU-1, the cellular regulator of aging process on human fibroblast (in-Vitro)
- Contributed to inhibiting the gene expressions of iNOS & COX-2 induced by LPS (in-Vitro)

ANTI-GLYCATION

- Suppresses UVA-induced RAGE gene expressions on human fibroblast (in-Vitro)

ANTI-POLLUTION

- Associated with inhibiting Benzopyrene-induced AhR & CYP1A1 gene expressions on HacaT (in-Vitro)

SKIN RHYTHM OPTIMIZATION

- Activates the gene expressions of Bmal-1 -skin homeostasis and integrity controller – on human keratinocyte (in-vitro)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	0.1-5.0%
APPEARANCE	Dark brown liquid
PH LEVEL	3.0-6.0
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	- Phototoxicity - Ocular Irritation - Skin sensitization - Human patch test

SUGGESTED APPLICATIONS

- ✓ Prestige anti-aging cream
- ✓ Prestige age-defying eye cream
- ✓ Heritage skin care solution for natural aging

HOCOX (N)

Natural botanical detergency & foaming booster with anti-bacterial function.



- ✓ **INCI NAME**
WATER / BUTYLENE GLYCOL / HOUTTUYNIA
CORDATA EXTRACT
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Preservative Free
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 1.0



PRODUCT DESCRIPTION

Houttuynia cordata, also called fishwort or fish mint, is the herb that has an unusual fishy smell. As the medicinal herb in Asia, it was also used to treat SARS during its outbreak in 2002, and used as antibiotics at Japanese army.

HOCOX - houttuynia cordata extract - is the natural botanical foaming & detergency booster that has the additional functions such as anti-microbe, anti-acne, anti-sebum and anti-inflammation.

Houttuynia cordata used in Hocox is being sourced from agricultural community located in Korea which is known for dairy farming with fresh air and clean water. The crop is harvested by respective local farmers through the contract farming which helps us to provide the sustainable market and value chain to local farmers.

SUGGESTED APPLICATIONS

- ✓ **Natural foaming facial cleanser**
- ✓ **Hand sanitizer**
- ✓ **Cleansing foam oil**
- ✓ **Body soap**

EFFICACY SUMMARIZATION

ANTI-BACTERIAL/ ANTI-ACNE

- Suppresses the number of P.acne and C.albicans (in-Vitro)
- Inhibits the gene expression of TLR2 on human sebocyte cell treated with LPS (in-Vitro)

ANTI-INFLAMMATION

- Contributes to inhibiting the gene expressions of SDS-induced IL-6 & IL-1 α on human keratinocyte (in-Vitro)

DETERGENCY & FOAMING BOOSTER (CLINICAL)

- Comparative experiment on foaming stability with other foam boosters and stabilizers

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Brown liquid
PH LEVEL	4.0-6.5
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	<ul style="list-style-type: none"> - Mutagenicity - Ocular Irritation - Skin Irritation - Skin sensitization

ULMUS EXTRACT PF

ULMUS EXTRACT PF is a natural polysaccharide extracted from *Ulmus Davidiana* Root with excellent anti-aging, moisturizing and anti-inflammatory effects.



- ✓ **INCI NAME**
WATER / BUTYLENE GLYCOL / ULMUS DAVIDIANA
ROOT EXTRACT / PHENOXYETHANOL
- ✓ **CHINA COMPLIANT**
- ✓ **PRESERVATIVE SYSTEM** : Phenoxyethanol
- ✓ **PALM** : Free
- ✓ **ISO16128** : Natural (origin) index 0.97



PRODUCT DESCRIPTION

ULMUS EXTRACT PF is extracted from the roots of *Ulmus Davidiana* which is a small deciduous tree widely distributed across China, Japan and Korea.

In China and Korea, *Ulmus Davidiana* has been used as a traditional oriental medicine for the treatment of difficulty in urination, skin inflammation, etc.

Hyundai Bioland developed ULMUS EXTRACT PF based on its traditional usages and identified main components such as Glucose, Rhamnose and Galactose which make ULMUS EXTRACT PF a great skin moisturizer.

EFFICACY SUMMARIZATION

ANTI-AGING

- Inhibits the activity of hyaluronidase - the enzyme that degrades hyaluronic acid (in-vitro)

MOISTURIZING

- Decreases the amount of water vapor evaporating from the skin surface (TEWL, in-vivo)

ANTI-INFLAMMATION

- Inhibits the activities of IL-1 α , PEG2, IL-6 and IL-8 on human fibroblast cell (in-vitro)

TECHNICAL INFORMATION

RECOMMENDED LEVEL	1-5%
APPEARANCE	Yellow viscous liquid
PH LEVEL	5.0-7.0
COMPATABILITY	Water soluble
STABLE UP TO	40°C
SAFETY DATA	<ul style="list-style-type: none">- Acute oral toxicity- Skin irritation- Skin sensitization- Eye irritation- AMES- Chromosome aberration <p>*Animal Tests was conducted before it was banned, 2009</p>

SUGGESTED APPLICATIONS

- ✓ **Facial moisturizing serum**
- ✓ **Eye cream**
- ✓ **Body cream**

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