Look Younger
Live Longer

Everything begins with inspiration from nature, and becomes perfected by science.

Secret ingredients finally revealed?

BIO-FD&C
Life Science for Happiness
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As a first-mover in plant science, our principal goal is to enhance quality of life and human health through plant science, and more importantly to ensure the future for plant.
Our Mission

Ensure the future for plant

Ensure human health

Enhance quality of life
Active Ingredients

**Plant stem cells**
Application of plant stem cell culture technology to develop and use plant stem cells as cosmetic active ingredients

**Peptides**
- **Neuropeptides**
  Peptides which control and maintain skin homeostasis
- **Phytopeptides**
  Peptides conjugated with phytochemicals which have various skin benefits

**Growth factors**
Application of plant stem cell culture technology to develop and use plant stem cells as cosmetic active ingredients

Intellectual Property
BIO-FD&C has registered a number of our active ingredients including plant cells and peptides in order to improve reliability of our products.

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<th>Categories</th>
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<tr>
<td>Plant cells</td>
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<td>Novel materials and methods</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>78</strong></td>
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</table>

**Patents**

**Korea Domestic**
- 78 registered
- 17 applied

**Overseas**
- 8 registered
  - USA, Japan, Europe, Singapore, Malaysia
- 7 applied (China, India, etc.)
BIO-FD&C’s business stands on the basis of R&D. For 12 years since the foundation of the company, our researchers have been working on the scientific data that can ensure the efficacy of our active ingredients. Our R&D performance has been reflected in the published papers.
R&D Facilities

- Lyophilization
- Live cell imaging
- Proteomic research
- Molecular works
- Plant cell culture and SMART-RC²
- Plant cell mass culture
R&D Facilities

Extraction/Mixer – 200L, 500L, 1ton
Extraction – 200L

Ultra homomixer – 300L
Molecular analysis: HPLC/UPLC/Nano-LC
Molecular analysis: Q-TRAP MS/MS
Molecular analysis: Q-TOF MS/MS

Anti-aging Research Institute

Research
- Efficacy evaluation test & Analysis
- Ingredient development
- Government research projects
- Publications

R&D Service
- Efficacy evaluation test
- Material analysis

R&D Cooperation
- Drug development
- Technology licensing In and Out
- Technology based MOU
Plant Cell

The wonderful thing about plant is that a part of plant can become a cell, a basic unit of life, and a single cell can become a fully-grown plant. This is why we can call it 'plant stem cell'.
Plant cell culture technology is referred to the total process of inducing, growing and maintaining of plant cells (plant callus), tissues or organs in the sterile artificial environment. We can generate an adult plant from a single plant cell by regulating growth regulators.

Callus can be produced from a single differentiated cell, and many callus cells are **totipotent**, being able to regenerate the whole plant body (Steward et al., 1958; Nagata and Takebe, 1971).
BIO-FD&C produces “plant cell culture extract” using plant callus which is induced and maintained by our own technology. There are many benefits compared to ordinary plant or herbal extracts.

**SMART-RC² Technology**

**Eco-friendly**
We don’t have to harm environment once plant callus is induced from small part of adult plant.

**Free from environmental condition**
Plant cells are cultured in a bioreactor where environmental condition is perfectly optimized for plant cell culture.

**Reproducibility**
Biomass of plant cell culture is highly reproducible.

**Enhanced phytochemical accumulation in plant cells**
We can get more valuable phytochemicals from than ordinary plant extract

**Safe**
Plant cell culture is free from animal virus, bacteria, and other contamination factors.

**GMO-free**
BIO-FD&C don’t use GMO plants for plant cell culture.

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**R&D Plan - PLANT CELL**

**1. Phytochemical Accumulation Technology**

NET (New Excellent Technology) : Plant cell culture technology in combination with radiofrequency device

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**SMART-RC² Technology**

SMART-RC²

Secondary
Metabolite
Accumulated
Radiofrequency Technology
Re-controlled Cell Culture

---

**Patent: SMART-RC²**

**USA (2016)**
Manufacturing process of
Edelweiss Callus Culture Extract

01. Seed sterilization and germination

02. Plant callus induction

03. Suspension culture in flasks
04. Cell culture in bioreactors

05. Large scale culture, harvest and lyophilization

06. Extraction and analysis

“Induction - Screening - Culture - Harvest - Extraction”
Takes 6 to 12 months for development and optimization (for customized plant stem cells)
Edelweiss Callus Stem Cell Extract

Edelweiss Callus Stem Cell Extract is made by inducing plant cells from Edelweiss flower which can flourish even in barren alpine regions and then by accumulating bioactive components using SMART-RC² (NET Certification) plant cell culture technology. It promotes moisturizing, soothing, and reducing wrinkles. Anti-aging effect has been verified by clinical tests.

Marketing Point

- Sustainable and eco-friendly culture technology without destroying nature
- Marketing with the expression of ‘NET technology applied’ available
- Several million plant cells concept available (Calculation of plant cell number is possible.)
- Swiss origin

Efficacy

- Anti-aging effect
- Wrinkle improvement
- Improvement of skin elasticity
- Skin moisturizing effect
- Anti-inflammatory effect

Clinical Test

- 10% increase in skin thickness
- Improvement of periorbital wrinkle
- Improvement of skin elasticity
- Improvement of dermal density
- Facial lifting

Conducted by Ellead Co., Ltd.

Patent

- Anti-inflammation and Anti-aging composition for skin external application comprising Leontopodium alpinum Cell Culture Extract and Methods for preparing the Same (KR, 10-1740097)
Plant cell culturing process

1. Seed germination under a sterilized condition for callus induction of Edelweiss
2. Callus induction from a leaf of Edelweiss
3. Selection of cell lines while culturing the Edelweiss callus
4. 20L-bioreactor culture and application of SMART-RC² technology
5. Large culture (0.1~2 ton)
6. Extraction from dried Edelweiss callus

Improvement of periorbital wrinkles

- Periorbital wrinkles (around eye area) were improved after using a product containing Edelweiss Callus Stem Cell Extract for 2 weeks and 4 weeks.

Facial lifting

- Facial lifting was observed after using a product containing Edelweiss Callus Stem Cell for 2 weeks and 4 weeks.

Improvement of dermal density

- Dermal density was improved after using a product containing Edelweiss Callus Stem Cell Extract for 2 weeks and 4 weeks.
Rose Callus Stem Cell Extract

Rose Callus Stem Cell Extract is made by inducing plant cells from rose petals and by accumulating bioactive components using SMART-RC² (NET Certification) plant cell culture technology. It promotes skin moisturizing, soothing, and whitening. Anti-aging effect has been verified by clinical tests.

Marketing Point

- Sustainable and eco-friendly culture technology without destroying nature
- Several million plant cells concept available (Calculation of plant cell number is possible.)
- Marketing with the expression of ‘NET technology applied’ available

Efficacy

- Anti-aging effect
- Wrinkle improvement
- Improvement of skin elasticity
- Skin moisturizing effect
- Anti-inflammatory effect

Clinical Test

- Improvement of skin brightness on 80% of subjects
- 7% increase in skin elasticity
- Facial lifting effect on 63% of subjects
- Safety assessment by primary irritant patch-test

Conducted by Ellead Co., Ltd.

Improvement of skin brightness

- Skin brightness was improved after using a product containing Rose Callus Stem Cell Extract for 2 weeks and 4 weeks.

Fig. 5. The results of L* value

At baseline

After 2 weeks

After 4 weeks

The test product

The control product
Grape Callus Stem Cell Extract

Grape Callus Stem Cell Extract is extracted from plant cells induced from grapes which are full of anti-oxidants. It promotes skin moisturizing and firming. Anti-aging effect has been verified by clinical tests.

Marketing Point
- Sustainable and eco-friendly culture technology without destroying nature
- Several million plant cells concept available (Calculation of plant cell number is possible.)

Efficacy
- Wrinkle improvement
- Improvement of skin elasticity
- Skin moisturizing

Clinical Test
- 15.6% improvement in periorbital wrinkle
- 10.24% improvement in dermal density

Conducted by KC Skin Research Center Co., Ltd.

Improvement of periorbital wrinkles
- Periorbital wrinkles (around eye area) were improved after using a product containing Grape Callus Stem Cell Extract for 2 weeks and 4 weeks.

Improvement of dermal density
- Dermal density was improved after using a product containing Grape Callus Stem Cell Extract for 2 weeks and 4 weeks.
Green Tea Callus Stem Cell Extract is extracted from plant cells induced from green tea leaves, which are known to be a typical healthy food due to its various efficacy such as antioxidant and anti-inflammatory effects. It promotes skin brightening, soothing, and moisturizing. Sebum control effect has been verified by clinical tests.

**Marketing Point**
- Sustainable and eco-friendly culture technology without destroying nature
- Several million plant cells concept available (Calculation of plant cell number is possible.)

**Efficacy**
- Sebum control
- Skin moisturizing
- Skin brightening
- Anti-inflammatory effect

**Clinical Test**
- 25% decrease in skin sebum
- Skin sebum reduction on 85% of subjects
- Safety assessment by primary irritant patch-test

Conducted by Ellead Co., Ltd.

**Sebum control**
- Skin sebum was improved after using a product containing Green Tea Callus Stem Cell Extract for 2 weeks and 4 weeks.
Rice Callus Stem Cell Extract

Rice Callus Stem Cell Extract is extracted from plant cells induced from rice which are known to be full of vitamins and strong anti-oxidants. Skin whitening and moisturizing effects have been verified by molecular experiments and clinical tests.

Marketing Point

- Sustainable and eco-friendly culture technology without destroying nature
- Several million plant cells concept available (Calculation of plant cell number is possible.)

Efficacy

- Skin brightening
- Skin moisturizing
- Anti-oxidation

Clinical Test

- 15.6% dark circle improvement (Reduction of melanin around the eye area)
- Skin brightening
- Safety assessment by primary irritant patch-test

Patent

- Skin Composition for External Application Containing Oryza Sativa Callus and Preparing the Same (KR, 10-1107871)

Conducted by Ellead Co., Ltd.

Improvement of dark circles

- Dark circles around the eyes were improved after using a product containing Rice Callus Stem Cell Extract for 2 weeks and 4 weeks.

Improvement of skin brightness

- Skin brightness was improved after using a product containing Rice Callus Stem Cell Extract for 2 weeks and 4 weeks.
Lotus Stem Cell Extract

A noble flower, Lotus looks so clean and pure against the background of the dirty pond and has been studied for edible and medicinal use due to its various effects. Lotus Stem Cell Extract is extracted from plant cells induced from Lotus petals. It promotes skin moisturizing and soothing. Skin brightening effect has been verified by molecular experiments.

Marketing Point

- Sustainable and eco-friendly culture technology without destroying nature
- Several million plant cells concept available (Calculation of plant cell number is possible.)

Efficacy

- Skin moisturizing
- Skin brightening
- Anti-inflammatory effect

Clinical Test

- Safety assessment by Human Repeated Insult Patch Test

Conducted by Ellead Co., Ltd.

Patent

- Composition for Skin External Application Comprising Extract of Nelumbo Nucifera Callus (KR, 10-1143717)

Plant cell culturing process

1. Preparation of Lotus seeds
2. Seed germination under a sterilized condition for callus induction of Lotus
3. Callus induction from Lotus
4. Induced Lotus callus
5. Repetitive callus culture on plates
6. Callus culture in liquid media
7. Large culture (0.1~2 ton)
8. Extraction from freeze-dried Lotus callus
Seoritae Phytoplacenta Culture Extract

Seoritae, known as black soybeans has a great deal of anti-aging materials compared with other kinds of beans. It has a large amount of isoflavone, which carries out similar actions to estrogen, and various vitamins such as riboflavin (vitamin B2), tiamine (vitamin B1), and niacin. Seoritae Phytoplacenta Culture Extract is extracted from plant cells induced from Seoritae placenta. It keeps skin nourished and protected from external stress.

Marketing Point
- Phytoplacenta (plant placenta)
- plants also have placenta!
- Sustainable and eco-friendly culture technology without destroying nature
- Several million plant cells concept available (Calculation of plant cell number is possible.)

Efficacy
- Improvement of skin barrier function
- Anti-inflammatory effect

Clinical Test
- Safety assessment by Human Repeated Insult Patch Test
- Conducted by P&K Skin Research Center Co., Ltd.

Patent
- Composition for Skin External Application Comprising Culture Extract of Soy Bean Placenta (KR, 10-1467033)
- Anti-aging and Anti-inflammatory and Anti-oxidant Cosmetic Composition including Beans Placenta Cell Cultures Extracts (KR, 10-1502687)
Ohter Plant Cells

Plant Cell

Trade Name: PhytoCalli-GMC
INCI Name: Glycine Max (Soybean) Callus Culture Extract
한글성분명: 콩캘러스배양추출물

Trade Name: Clock Stem Cell
INCI Name: Passiflora Alata Callus Extract
한글성분명: 풍스템패션플라워캘러스추출물

Trade Name: Centella-CXT
INCI Name: Centella Asiatica Callus Extract
한글성분명: 병풀캘러스추출물

Trade Name: Red Mangrove Marine Algae Callus Extract
INCI Name: Rhizophora Mangle Callus Culture Extract
한글성분명: 레드맹그로브캘러스배양추출물

Trade Name: Dendrobium Callus Extract
INCI Name: Dendrobium Moniliforme Callus Culture Extract
한글성분명: 석곡캘러스배양추출물

Trade Name: PhytoCalli-CJC
INCI Name: Camellia Japonica Callus Extract
한글성분명: 동백나무캘러스추출물

Trade Name: Hollyhock Callus Extract
INCI Name: Althaea Rosa Callus Culture Extract
한글성분명: 접시꽃캘러스배양추출물

Trade Name: Narcissus Tazetta–CX
INCI Name: Narcissus Tazetta Callus Extract
한글성분명: 수선화캘러스추출물

Trade Name: Orchid Callus Stem Cell Extract
INCI Name: Neofinetia Falcata Callus Culture Extract
한글성분명: 꽃양캘러스배양추출물
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<th>Trade Name</th>
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<th>Benefits</th>
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<tr>
<td>Ginkgo Callus Extract</td>
<td>Ginkgo Biloba Callus Culture Extract</td>
<td>Skin moisturizing, Skin brightening, Anti-oxidation, Anti-inflammation</td>
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<td>Echinacea Callus Extract</td>
<td>Echinacea Purpurea Callus Culture Extract</td>
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<td>Carrot Callus Stem Cell Extract</td>
<td>Daucus Carota (Carrot) Callus Culture Extract</td>
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<td>Russian Ginseng Callus Extract</td>
<td>Acanthopanax Senticosus Callus Culture Extract</td>
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<td>Morning Glory Callus Stem Cell</td>
<td>Ipomoea Hederacea Callus Culture Extract</td>
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<td>FE-Lilium Candidum-C</td>
<td>Saccharomyces/Lilium Candidum Callus Extract Ferment</td>
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<td>Fennel Callus Extract</td>
<td>Foeniculum Vulgare Callus Culture Extract</td>
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<td>St. John’s Wort Callus Stem Cell Extract</td>
<td>Hypericum Perforatum Callus Culture Extract</td>
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<td>ZMS1</td>
<td>Zostera Marina Callus Extract</td>
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Other Plant Cells

: Phytoplacenta / Adventitious Root

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<td>INCI Name</td>
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<td>Magnolia-P</td>
<td>Phytoplacenta Extract</td>
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<td>Prunus Mume</td>
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<td>粉状成分名</td>
<td>喜馬拉雅梅親植層細胞提取物</td>
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<td>Lotus Phytoplacenta Cell</td>
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<tr>
<td>INCI Name</td>
<td>Rosa Ambassador, Rosa Peace</td>
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<td>粉状成分名</td>
<td>玫瑰公主,玫瑰和平親植層細胞提取物</td>
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<td>PhytoCalli-CJC</td>
<td>Phytoplacenta Extract</td>
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<tr>
<td>INCI Name</td>
<td>Prunus Serrulata</td>
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<td>粉状成分名</td>
<td>海橡親植層細胞提取物</td>
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<td>Phytoplacenta Extract</td>
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<td>INCI Name</td>
<td>Glycine Max (Soybean)</td>
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<td>粉状成分名</td>
<td>豆親植層細胞提取物</td>
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<td>PhytoCalli-CJC</td>
<td>Phytoplacenta Extract</td>
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<tr>
<td>INCI Name</td>
<td>Secale Cereal (Rye)</td>
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<td>粉状成分名</td>
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<td>INCI Name</td>
<td>Acanthopanax Koreanum</td>
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<td>粉状成分名</td>
<td>南北韓結果親植層細胞提取物</td>
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Skin moisturizing  
Skin brightening  
Wrinkle improvement  
Anti-oxidation
Our brain constantly communicates with the skin, which is mediated by neuropeptides. We have also created phytopeptides by conjugating phytochemicals with neuropeptides.
When we are in a state of extreme excitement, our brain produces special materials called 'Neuropeptides'. Hard exercise like marathon, overwhelming joy and happiness, strong sexual excitement, or extreme tension before skydiving can trigger this signal to the brain. Once the brain receives the signal it secretes neuropeptides, through which it communicates with many parts of our body. When it comes to the skin, neuropeptides help skin retexturizing through tissue regeneration and wound healing process.

Brain-Skin Communication
- Wound Healing
- Tissue
- Anti-pain
- Skin retexturizing

Wound healing assay

A  Skin cells cultured in mono-layer
B  Scratch (wound) formed
C  Right after scratch formation
D  18 hours after scratch formation
In vitro wound healing assay
Enkephalin enhanced motility of skin cells (keratinocytes)

The Role of Neuropeptides in Skin Wound Healing

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¹Anti-aging Research institute of BIO-FD&C CO.Ltd, Incheon, Republic of Korea
²Departments of Pharmacology and Global Medical Science, Wonju College of Medicine, Yonsei University, Wonju, Republic of Korea
³Institute of Lifestyle Medicine and Nuclear Receptor Research Consortium, Wonju College of Medicine, Yonsei University Wonju, Republic of Korea

Abstract

The skin offers a well suited and clinically relevant model for studying communication between peripheral and central nervous system (CNS), due to its close connection with the brain. A variety of molecules such as neuropeptides, neurohormones, and neurotrophins and their specific receptors are and the skin. The skin acts as a protective barrier against mechanical and chemical damages; therefore, cutaneous innervation ples a critical role in modulating the wound healing process which functions in an orderly and timely manner to rebuild the skin’s integrity and homeostasis. Furthermore, all these neuromediators are involved during all phases of the wound healing process. Neuropeptides circulate between the brain and peripheral tissues and functions as neurotransmitters, neuromodulators, and neurohormones. Neuropeptides Have immunoregulatory roles and exhibit mitogenic property, which influence the function of various types of skin cells during the wound healing process.
Phytopeptide

MULTIPLE FUNCTIONAL PEPTIDE
Conjugation of phytochemicals and functional peptides; BIO-FD&C’s unique peptides

Phytochemicals are very effective in removing free radicals (ROS; Reactive Oxygen Species), which is harmful to the cell activities. However, they have not been able to be widely applied to cosmetic products due to their low stability.

BIO-FD&C has designed ‘Phytopeptides’ for their stable use in cosmetics by conjugating phytochemicals and functional peptides, thereby improving both stability and anti-aging effects.

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<tr>
<th>Functional Peptide</th>
<th>Phytochemical</th>
<th>Phytopeptide</th>
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<tbody>
<tr>
<td><strong>Pros</strong></td>
<td><strong>Pros</strong></td>
<td><strong>Pros</strong></td>
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<tr>
<td>Improving skin elasticity</td>
<td>Anti-inflammation effect</td>
<td>Improving skin elasticity</td>
</tr>
<tr>
<td>High skin compatibility</td>
<td>Strong antioxidant effect</td>
<td>High skin compatibility</td>
</tr>
<tr>
<td><strong>Cons</strong></td>
<td><strong>Cons</strong></td>
<td><strong>Cons</strong></td>
</tr>
<tr>
<td>No antioxidant activity</td>
<td>Low stability</td>
<td>Enhanced stability</td>
</tr>
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</table>

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Neoendorphin

Neoendorphin is a neuropeptide composed of 10 amino acids and acts on Kappa Opioid Receptor (KOR). It has wound healing and anti-inflammatory effects.

Marketing Point

- Endorphin, the happiness hormone
- Brain-skin communication: Neuropeptide receptors are found not only in the brain, but in the skin too!

Efficacy

- Wrinkle improvement
- Promotion of cell migration

Clinical Test

- Improvement of periorbital wrinkles
- Safety assessment by Human Repeated Insult Patch Test

Conducted by KC Skin Research Center Co., Ltd.

Wrinkle improvement

Periorbital wrinkles (around the eye area) were improved after using a serum containing Neoendorphin for 4 weeks and 8 weeks.
Leu-Enkephalin acts specifically on Delta Opioid Receptor (DOR), one of the neuropeptide receptors and it plays a part in maintaining skin homeostasis and skin regeneration.

Marketing Point
- SCI research paper publication
- Brain-skin communication: Neuropeptide receptors are found not only in the brain, but in the skin too!

Efficacy
- Promotion of cell migration (Wound healing assay)
- Treatment of Erk1/2 inhibitor down-regulates the wound healing effect of Enkephalin.
- Enkephalin activates wound healing process through Erk1/2 signaling pathway.

Paper

Peptides, 2016 Feb;76:57-64

a. Initial wound induction (time = 0)  b. Vehicle treatment  
c. EGF (100 ng/ml)  d. EGF + Erk1/2 inhibitor  e. L-ENK  
f. L-ENK + Erk1/2 inhibitor
NP7

NP7 is a phytopeptide created by conjugating a neuropeptide and caffeic acid with strong antioxidant and anti-inflammatory effects. It is specially designed to enhance the stability of phytochemical (caffeic acid) and diversify the anti-aging effects of peptide.

Marketing Point

- Phytopeptide: a novel combination of phytochemicals and neuropeptides
- Brain-skin communication: Neuropeptide receptors
- Improvement of the stability of caffeic acid, a phytochemical originated from coffee

Efficacy

- Improvement of atopic dermatitis
- Anti-inflammatory effect

Clinical Test

- Improvement of skin blood circulation
- Anti-oxidation
- Improvement of skin blood circulation
- Safety assessment by primary irritant patch-test

Conducted by KC Skin Research Center Co., Ltd.

Patent

- 4-Hydroxycinnamoyl Peptide Derivatives and Cosmetic Composition Comprising the Same (KR, 10-1095252)
Symvastin is a phytopeptide created by conjugating glutathione-like peptide and two molecules of gallic acids with strong antioxidant and anti-inflammatory effects. It has excellent anti-oxidant, anti-inflammatory effects and helps improve skin pigmentation by inhibiting melanin synthesis.

**Marketing Point**
- Phytopeptide: a novel combination of phytochemicals and neuropeptides
- Glutathione + 2 Gallic acid molecules
- Improvement of the stability of gallic acid, a phytochemical originated from green tea

**Efficacy**
- Skin brightening
- Anti-oxidation

**Clinical Test**
- Improvement of dark circles
- Skin brightening

Conducted by Ellead Co., Ltd.

**Patent**
- Peptide Derivatives and Cosmetic Composition Comprising the Same (KR, 10-1138312 / US, 8,455,548 B2 / JP, 5125284)

**Dark circle improvement**
- Melanin index was reduced by more than 8.5% after using a serum containing Symvastin for 2 weeks and 4 weeks.
Galloyl Exorphin

Galloyl Exorphin is a phytopeptide created by conjugating exorphin, a plant-derived neuropeptide, and gallic acid with strong antioxidant and anti-inflammatory effects. It is an excellent anti-aging material for improving fine lines and anti-oxidation.

Marketing Point

- Phytopeptide: a novel combination of phytochemicals and neuropeptides
- Plant-derived peptide + Gallic acid (phytochemical)
- Improvement of the stability of gallic acid, a phytochemical originated from green tea

Efficacy

- Wrinkle improvement
- Promotion of pro-collagen synthesis
- Anti-inflammatory effect
- Anti-oxidation

Clinical Test

- Improvement of periorbital wrinkles
- Safety assessment by Human Repeated Insult Patch Test Conducted by P&K Skin Research Center Co., Ltd.

Wrinkle improvement

- Periorbital wrinkles (around eye area) were improved after using a product containing Galloyl Exorphin for 4 weeks and 8 weeks.

Patent

- Neuropeptide derivatives and Composition for Skin External Application Comprising the Same (KR, 10-1410589)
Phytopeptide-1

Phytopeptide-1 is a phytopeptide created by conjugating a peptide from a part of the collagen sequence and caffeic acid with strong antioxidant and anti-inflammatory effects. It is specially designed to enhance the stability and water solubility of phytochemical (caffeic acid) and diversify the anti-aging effects of peptide. This peptide is an excellent material for skin soothing and anti-inflammation.

Marketing Point

- Phytopeptide: a novel combination of phytochemicals and neuropeptides
- Improvement of the stability of caffeic acid, a phytochemical originated from coffee

Efficacy

- Wrinkle improvement
- Promotion of pro-collagen synthesis
- Anti-inflammatory effect
- Anti-oxidation
- Sebum improvement

Clinical Test

- Sebum improvement
  Conducted by Ellead Co., Ltd.

Sebum improvement

- Skin sebum was improved after using a product containing Phytopeptide-1 for 2 weeks and 4 weeks.
Vitamin Peptide

Vitamin Peptide is a phytopeptide created by conjugating a peptide from a part of the collagen sequence and niacin (vitamin B3). It is specially designed to enhance the stability of phytochemical (niacin) and diversify the anti-aging effects of peptide. This peptide is expected to have both skin brightening and anti-wrinkle effects.

Marketing Point

- Phytopeptide: a novel combination of phytochemicals and neuropeptides
- Improvement of the stability of niacin (vitamin B3)

Efficacy

- Skin brightening
- Wrinkle improvement
- Skin moisturizing

Clinical Test

- Sebum improvement
- Skin brightening
- Facial lifting
- Improvement of skin elasticity

Conducted by Ellead Co., Ltd.

Facial lifting

Facial lifting was observed after using a product containing Vitamin Peptide for 2 weeks and 4 weeks.
Herbal Extract

Nature is where our inspiration comes from. We find natural plant resources with various anti-aging effects or with interesting stories.
Greenol is an extract complex of lavender, bergamot, peppermint, camomille and rosemary. It helps soothe and protect skin and scalp. Its cleaning efficacy on fine dust (PM10-like substance) has been verified by clinical tests.

**Marketing Point**

- Extracts of 6 kinds of herbs for skin and scalp protection
- Patented

**Efficacy**

- Skin brightening
- Skin hydration
- Cleansing effect on fine dust

**Patent**

- Anti-oxidant Herb Cosmetic Composition Containing Ravendor, Horsemint, Freesia, Peppermint, Camomile and Rosemary for Protecting Skin and Hair skin and Method for Preparing the Same (KR, 10-0820010)

**Cleansing effect on fine dust**

- The fine dust (PM10-like substance) dramatically decreased 10 minutes after cleansing with the product containing GREENOL. The product did not show any symptoms of adverse skin reaction.

**Clinical Test**

- Cleansing effect on PM10-like substance
  Conducted by Ellead Co., Ltd.
Tannin Complex

Tannin complex is an extract complex of persimmon leaf, green tea leaf, grape, Chinese pepper, and many other plants containing plenty of tannins. The dual effects of tannins and antioxidants help improve sebum and protect skin, which has been verified by clinical tests.

Marketing Point
- 8 different plant extracts for pore tightening and sebum control
- Clinically tested
- Patented

Efficacy
- Sebum control
- Pore minimizing

Clinical Test
- Pore tightening
- Sebum improvement

Conducted by Ellead Co., Ltd.

Sebum control
- Skin sebum was improved after using an essence containing Tannin Complex for 4 weeks.

Pore tightening
- Pore tightening was observed after using a product containing Tannin Complex for 4 weeks.
Other Herbal Extracts

**Resmelin**
Resmelin contains 3 different natural extracts with anti-aging effects and has been patented for its skin brightening effects. It helps improve skin radiance as well as protects skin from external stress.

**Efficacy**
Skin whitening, Anti-oxidation

**INCI Name**
Water, Butylene Glycol, Thuja Orientalis leaf Extract, Zanthoxylum Schinifolium Leaf Extract, Polygonum Cuspidatum Root Extract, 1,2-Hexanediol, Ethylhexylglycerin

* Korea Patent No. 10-1024168

**Blue Complex**
Blue Complex contains extracts of 6 different blue herbs. It protects skin by maintaining skin well-hydrated for a long time.

**Efficacy**
Skin whitening, Anti-oxidation

**INCI Name**
Water, Butylene Glycol, Lavandula Angustifolia (Lavender) Flower Water, Salvia Sclarea (Clary) Extract, Hyacinthus Orientalis (Hyacinth) Extract, Chamomilla Recutita (Matricaria) Flower/Leaf Extract, Borago Officinalis Extract, Centaurea Cyanus Flower Extract, 1,2-Hexanediol, Ethylhexylglycerin

* Korea Patent No. 10-1119337

**Yukmjihwangle**
Yukmjihwang is an extract complex of 6 kinds of Korean traditional herbs, designed based on Donguibogam (Korean traditional medical book, one of the cultural heritage items in UNESCO’s Memory of the World Register). It protects scalp and hair by anti-hair loss and hair growth effects.

**Efficacy**
Anti-hair loss

**INCI Name**
Water, Butylene Glycol, Rehmannia Glutinosa Root Extract, Cornus Officinalis Fruit Extract, Dioscorea Japonica Root Extract, Alisma Orientale Tuber Extract, Poria cocos Sclerotium Extract, Paeonia Suffruticosa Root Extract, 1,2-Hexanediol, Ethylhexylglycerin

* Korea Patent No. 10-0780180

**Moplex**
Moplex is an extract complex with 9 different Korean traditional herbs. It protects scalp and hair by keeping scalp clean and healthy.

**Efficacy**
Hair protection, Anti-oxidation

**INCI Name**
Water, Butylene Glycol, Portulaca Oleracea Extract, Polygonum Multiflorum Root Extract, Angelica gigas Root Extract, Asarum sieboldi Root Extract, Sophora Angustifolia Root Extract, Thuja Orientalis Leaf Extract, Lycium Chinense Fruit Extract, Ginkgo Biloba Leaf Extract, Carthamus Tinctorius (Safflower) Flower Extract, 1,2-Hexanediol, Ethylhexylglycerin

* Korea Patent No. 10-0890464

**INFLAX**
INFLAX is an extract complex of 4 kinds of Korean traditional herbs. It helps skin soothing and protects skin from the external stress by its strong antioxidant effects.

**Efficacy**
Skin soothing

**INCI Name**
Water, Butylene Glycol, Glycyrrhiza Glabra (Licorice) Root Extract, Diospyros Kaki Leaf Extract, Morus Alba Bark Extract, Opuntia coccinellifera Fruit Extract, 1,2-Hexanediol Ethylhexylglycerin

* Korea Patent No. 10-1606634

**Marinox**
Marinox is an extract of microalgae with Mycosporine-like Amino Acids (MAAs), which protects skin from UV stress and improves skin elasticity through wound healing process.

**Efficacy**
UV protection, Wound healing

**INCI Name**
Water, Algae Extract (or Chlamydomonas Hedley Extract), 1,2-Hexanediol Ethylhexylglycerin

* Korea Patent No. 10-1606634
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