

Personal Care Ingredients

List	INCI name	Function	Form	Point of Interest
Fermentoil Olive Argan Green tea seed	<ul style="list-style-type: none"> ■ Pseudozyma / Olive oil ferment extract ■ Pseudozyma / Argan oil ferment extract(Proposal) ■ Pseudozyma / Green tea seed oil ferment extract(Proposal) 	<ul style="list-style-type: none"> ■ Non-greasy Feeling ■ Improved Skin Absorption ■ Improved Emulsifying Compatibility ■ Nutritive 	Liquid	Fermentoil to give nutritional values and improved feeling, absorption and compatibility for usage through the microbial fermentation system
B ₉ -Vitapol	Butylene Glycol, 1,2-hexanediol, Bacillus/soybean/folic acid ferment extract , Sodium hyaluronate	<ul style="list-style-type: none"> ■ Anti-wrinkle ■ Anti-allergy ■ Anti-porphyrin ■ Resistance UV ■ Moisturizing 	Liquid	Vitamin B ₉ (Folic acid), Now you can apply on skin Reformulated form of folic acid through the structural changes by microbial fermentation system
BIO-Placenta	Lecithin, Butylene glycol, Glycerin, Polysorbate 20, Sodium ascorbyl phosphate, Bacillus/soybean/folic acid ferment extract , Acetyl glutamine , rh(sh)-oligopeptide-1 , rh(sh)-oligopeptide-2 , rh(sh)-polypeptide-1 , rh(sh)-polypeptide-9 , rh(sh)-polypeptide-11	<ul style="list-style-type: none"> ■ Anti-wrinkle ■ Skin rejuvenation ■ Elasticity enhance ■ Nutritional supplement ■ Cell vitalization 	Liquid	Pseudo-placenta with synergic effects and safety These growth factors are safely originated from microbial fermentation
Hydracell Q	Acetyl glutamine	<ul style="list-style-type: none"> ■ Anti-stress ■ Moisturizing ■ Biosynthesis of collagen ■ Cell activation ■ Cell growth stimulation 	Powder	Provides water into the cells through transport channel and prevents the skin from an oxidative stress
Sigmedia	Lecithin, Butylene glycol, Polysorbate 20, Sodium ascorbyl phosphate, Phytosphingosine phosphate	<ul style="list-style-type: none"> ■ Anti-aging ■ Anti-wrinkle ■ Skin rejuvenation ■ Cell vitalization 	Liquid	The liposome type of Phytosphingosine-1-Phosphate Similar structure to Sphingosine-1-Phosphate
EDE-cide plus	Octanediol, Ethylhexyl glycerin, Grapefruit seed extract, Artemisia princeps extract	<ul style="list-style-type: none"> ■ Nature friendly ■ Anti-bacterial ■ Paraben free 	Liquid	A drop of powerful and nature-friendly EDE-cide plus prevents bacterial growth



B₉-Vitapol

Anti-wrinkle, Anti-allergy

INCI

Butylene glycol, 1,2-Hexanediol, Bacillus/soybean/folic acid ferment extract, Sodium hyaluronate

B₉-Vitapol is reformulated form of folic acid through the structural changes by microbial fermentation system.

This technology is patented in Korea and pending in PCT

Properties

- Anti-wrinkle through cell growth stimulation
- Anti-allergy
- Anti-porphyrin
- Resistance against UV
- Moisturizing

Recommended dosages

- 3.0~5.0%



*Vitamin B₉(Folic acid),
NOW you can apply on skin*



Damy Chemical
BETTER CHOICE, BETTER LIFE

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B₉-Vitapol Anti-wrinkle, Anti-allergy

Fermentation?

TOP 5 Healthiest Food in the world

In 2006, the food magazine 'Health' selected world's top 5 foods. Among those 5 foods, 4 of the foods were fermented foods.



Kimchi(Korea)



Yogurt(Greece)



Lentil(India)



Natto(Japan)

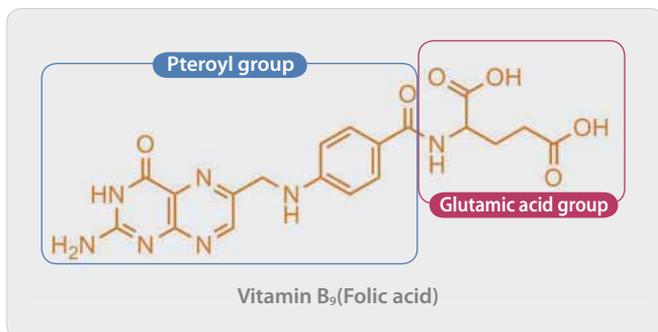
Effect of Fermentation on the Skin

- Naturally fermented sugar and fructose increase moisturizing effect.
- Boost of collagen from activation of glycine and amino acids.

Fermented extracts rejuvenate, moisturize and activate cells on skin.

Limitations of Vitamin B₉

Formed of glutamic acid group and pteroyl group
Present as polyglutamate form of folate in nature

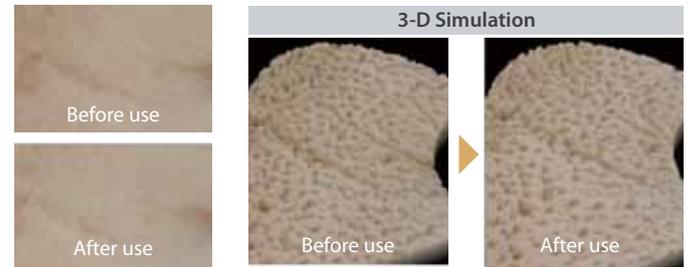


Limitations

- Sensitive to pH change
- Low solubility
- Hard to apply to various formulation in cosmetics because of pteroyl group.

Reduction of eye-wrinkle

- *in vivo* test, 10 volunteers
- Lotion containing 5% of B₉-Vitapol twice a day for 4 weeks
- Detection method: Facial Analysis System



Reduces wrinkles by 30% in 4 weeks with B₉-Vitapol

Anti-allergy

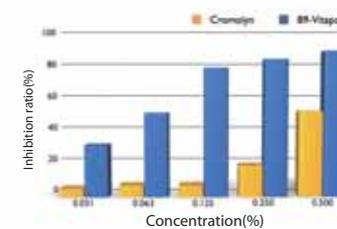
Reduction of releasing histamine from mast cell and leukocyte

Degranulation assay (*in vitro*)

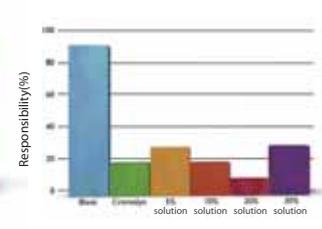


Observation of anti-histamine on human leukocyte

Inhibition assay of histamine release (*in vitro*)



Allergic response assay (*in vivo*)



Provides similar effect as Cromolyn on allergic reactions

Anti-porphyrin

- *in vivo* test, 10 volunteers
- Lotion containing 5% of B₉-Vitapol twice a day for 4 weeks
- Detection method: Facial Analysis System



Reduces porphyrin(pimple causing) by 83% with B₉-Vitapol

BIO-Placenta

Anti-aging, Skin rejuvenation

INCI

Lecithin, Butylene glycol, Glycerin, Polysorbate 20, Sodium ascorbyl phosphate, *Bacillus/soybean/folic acid ferment extract*, Acetyl glutamine, rh(sh)-oligopeptide-1, rh(sh)-oligopeptide-2, rh(sh)-polypeptide-1, rh(sh)-polypeptide-9, rh(sh)-polypeptide-11

BIO-Placenta is safely originated from microbial fermentation.

BIO-Placenta contains the five growth factors(EGF, IGF-1, acid FGF, basic FGF and VEGF), vitamins(Vitamin B₉) and amino acids(Acetyl glutamin).

BIO-Placenta is formed in resemblance to human placenta, for its effects and formation

Properties

- Anti-wrinkle
- Skin rejuvenation
- Elasticity enhance
- Nutritional supplement
- Cell vitalization

Recommended dosages

- 3.0%



Pseudo-placenta with synergic effects and safety



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BIO-Placenta

Aging is caused by loss of Growth Factors(GF)

Commonly known effects of dermatological efficacy of the placenta are **Anti-aging & Skin rejuvenation**

Reference: Placental growth factors, B.V.Rama Sastry, Placental pharmacology, p126~150

Summary of Advantages

BIO-Placenta VS Human Placenta

Components of BIO-Placenta are similar to Human Placenta which is based on 'Placental Pharmacology'.

Originated in Microbial Fermentation

Components are safely originated from microbial fermentation.

Proven to contain Growth Factors

The inclusion of growth factors can be found by HPLC analysis.

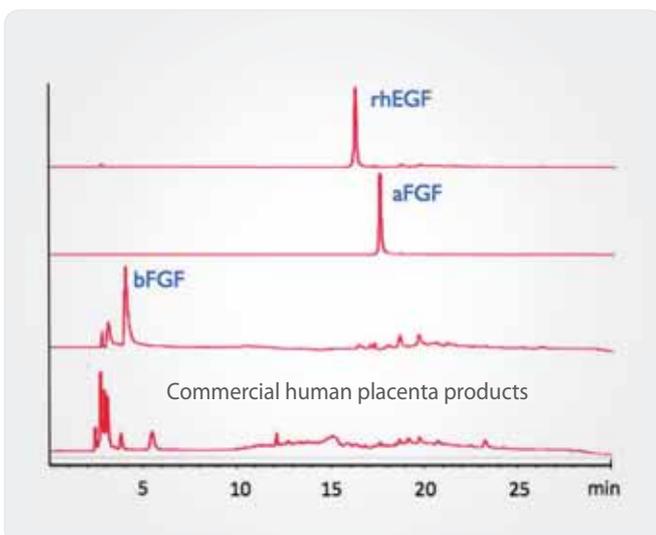
Synergic Effect

Combination of 5 growth factors and essential factors make synergic effect on skin.

Liposome Type

Maximizes stability and penetration.

Proven to contain Growth Factors

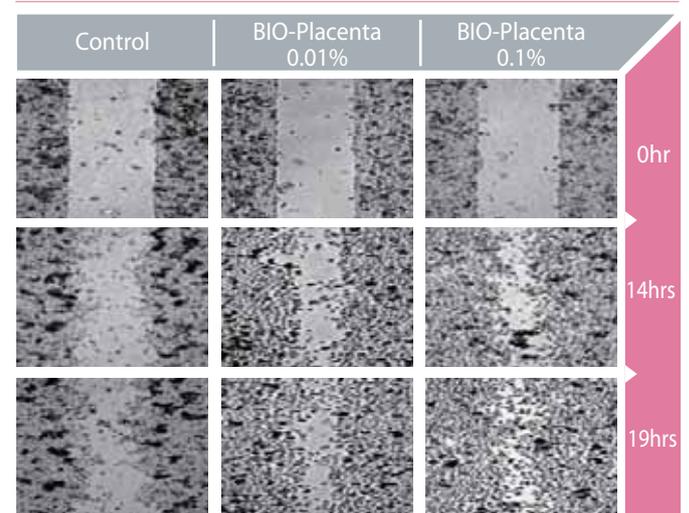


Different from commercial human placenta products, the inclusion of growth factors can be found by HPLC analysis.

Synergic Effect

Migration assay

Human Epidermal Keratinocyte



- Healthy and active epidermal cells function to supplement the skin nutrients.
- BIO-Placenta, activates cells more efficiently.

Combination of 5 growth factors and essential factors make synergic effect on skin.

Anti-wrinkle

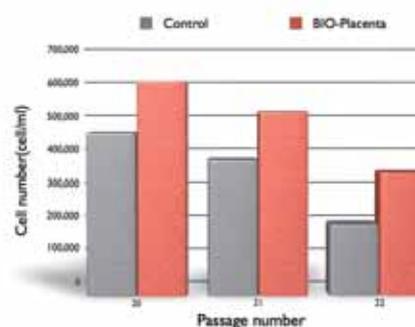
Reduction of eye-wrinkle



Reduces wrinkles by 30% in 4 weeks with BIO-Placenta

Anti-aging Effect

- Cell : Human Dermal Fibroblasts, Neonatal(LONZA Co. Ltd.)
- Detection method : Cell counting
- BIO-Placenta concentration : 0.1%



BIO-Placenta slows down the passage number(process of aging) while normal aged cells decrease its activation.

Hydracell Q

Cell hydration, Anti-stress

INCI

Acetyl glutamine

Hydracell Q provides water into the cells through transport channel and prevents the skin from an oxidative stress

Hydracell Q is reformulated to improve the stability

Properties

- Anti-stress effect on damaged skin cells from UV and pollution
- Biosynthesis of collagen on skin cells
- Cell activation
- Cell growth stimulation

Recommended dosages

- 1.0~2.0%



*Water your skin
cells like drinking aqua*



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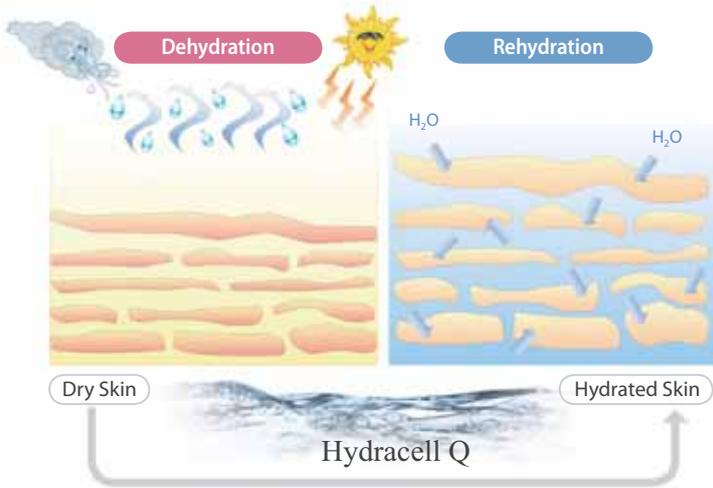
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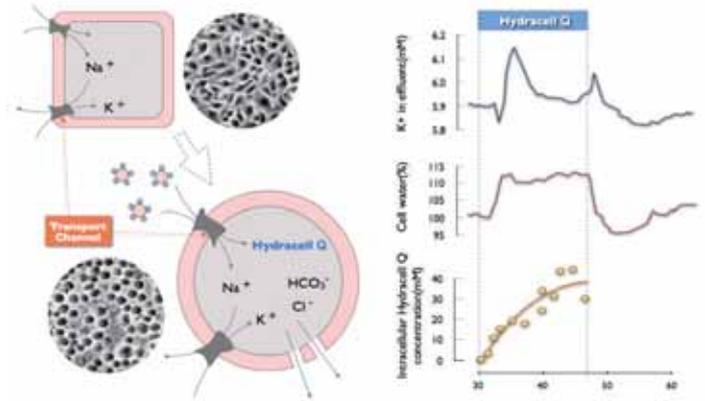
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Hydracell Q Cell hydration, Anti-stress

New Solution

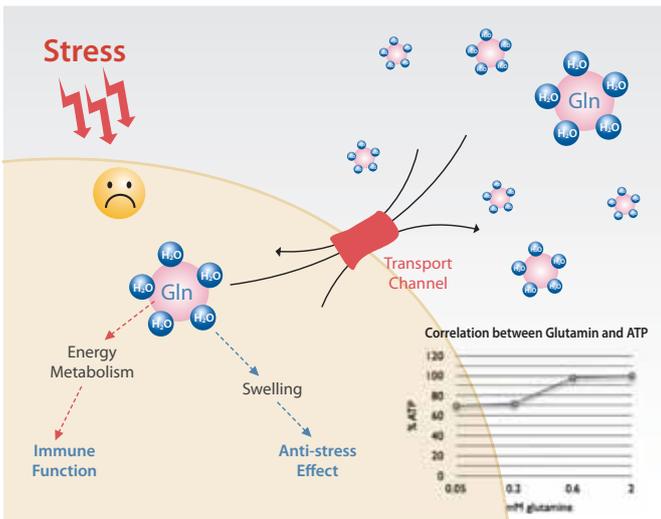


Cell Swelling Mechanism



When cells shrink, Hydracell Q enters the cells through transport channel and increases the level of K^+

Mechanism & Function of Glutamin



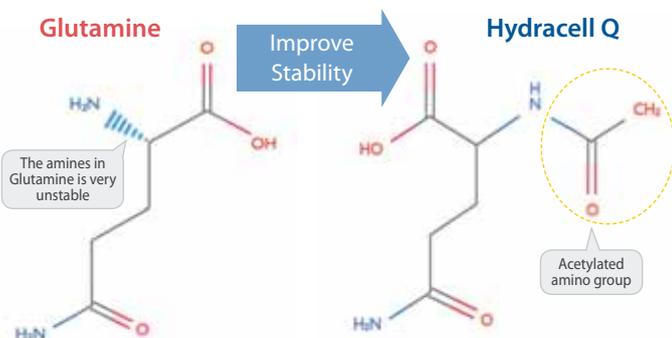
Moisturizing Effect

- *in vivo* test, 10 volunteers
- Lotion containing 5% of Hydracell Q twice a day for 4 weeks
- Detection method: Microscope observation(X200), after washing



Hydracell Q provides sufficient amount of hydration to keep healthy skin

Application to Cosmetics



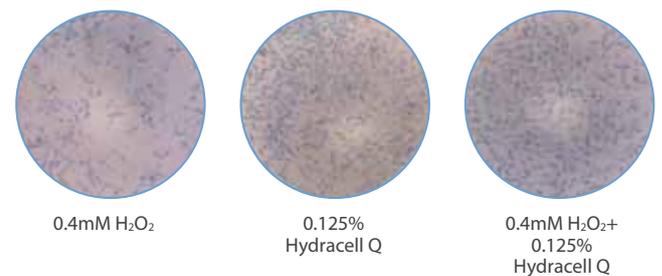
Improved stability has made it available for use in liquid products

Reference: Snowden, M.K. et al, *Journal of Food Science* 67: 384-389(2002)
Marti, M.B. et al, *Journal of Agricultural Food Chemistry*, 48(12), 6003-6010(2000)

Anti-stress effect

Funtions on human skin

- Method : Cell viability assay after 24hr with 0.4mM H_2O_2 treatment
- Cell strain : Human Dermal Fibroblast Neonatal(HDFN, LONZA) Assay
- Method : NR assay & Trypan Blue staining



Hydracell Q prevents from damage caused by oxidative stress through cell swelling

Sigmaedia

Anti-aging, Anti-wrinkle

INCI

Lecithin, Butylene glycol, Glycerin, Polysorbate 20, Sodium ascorbyl phosphate, **Phytosphingosine phosphate**

Sigmaedia is the liposome type of **Phytosphingosine-1-Phosphate(PhS-1-P)**.

Sigmaedia has similar structure to **Sphingosine-1-Phosphate(S-1-P)** which affects cellular functions: signal transduction for anti-aging and anti-wrinkle

Sigmaedia is an innovative substance that shows the effects on skin as S-1-P

Sigmaedia is very powerful signaling agent for anti-aging

Properties

- Anti-aging
- Anti-wrinkle
- Skin rejuvenation
- Cell vitalization

Recommended dosages

- 3.0%



Awakening your skin cells through signals



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S-1-P as Signaling Agent

Functions

- Proliferation by mitogenic stimulation
- Differentiation of keratinocyte
- Survival from oxidative damage
- Wound healing from releasing S-1-P

New Solution



Limitations of **S-1-P**

- Gets reduced as we age

Apply to cosmetic as raw material

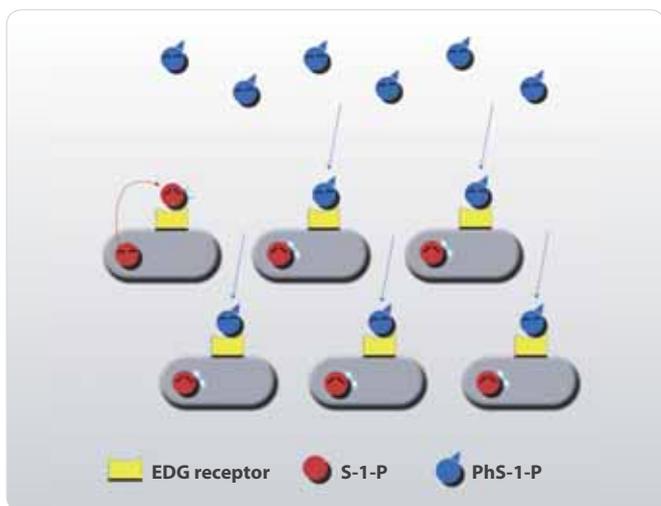
- Very high in cost
- Low solubility
- Low stability

Advantage of **PhS-1-P**

- Replacement of S-1-P
- Similar structure as S-1-P

Apply to cosmetic as raw material

- Act as a cell signaling agent for anti-aging
- More stable and soluble than S-1-P
- Safe substance for application



According to our research, Damy has developed an analogue molecule of S-1-P that are similar in structure and function

In vivo Assay of anti-wrinkle

- 10 volunteers
- Lotion containing 3.0% of Sigmedia twice a day for 4 weeks



Reduces fine and deep wrinkles in 4 weeks with Sigmedia

Anti-senescence Assay

	Control		Sigmedia		
	X 10	X 100	X 10	X 100	
					P19
					P20
					P21
					P22

When Sigmedia is applied, cells show healthier condition regardless of the passage number(aging) of the cell

Migration Assay

	Control	Sigmedia 0.01ppm	Sigmedia 0.1ppm	Sigmedia 1ppm	
					0hr
					14hrs
					21hrs

Sigmedia increases the migration of keratinocyte which gives wound healing, anti-wrinkle and rejuvenating effects

EDE-cide plus

Nature friendly, Paraben free

INCI

Octanediol, Ethylhexyl glycerin,
Grapefruit seed extract, Artemisia
princeps extract

Unique blend of Artemisia
princeps & Grapefruit seed extracts for
anti-bacterial activity

A drop of powerful and
natural EDE-cide plus prevents
bacterial growth

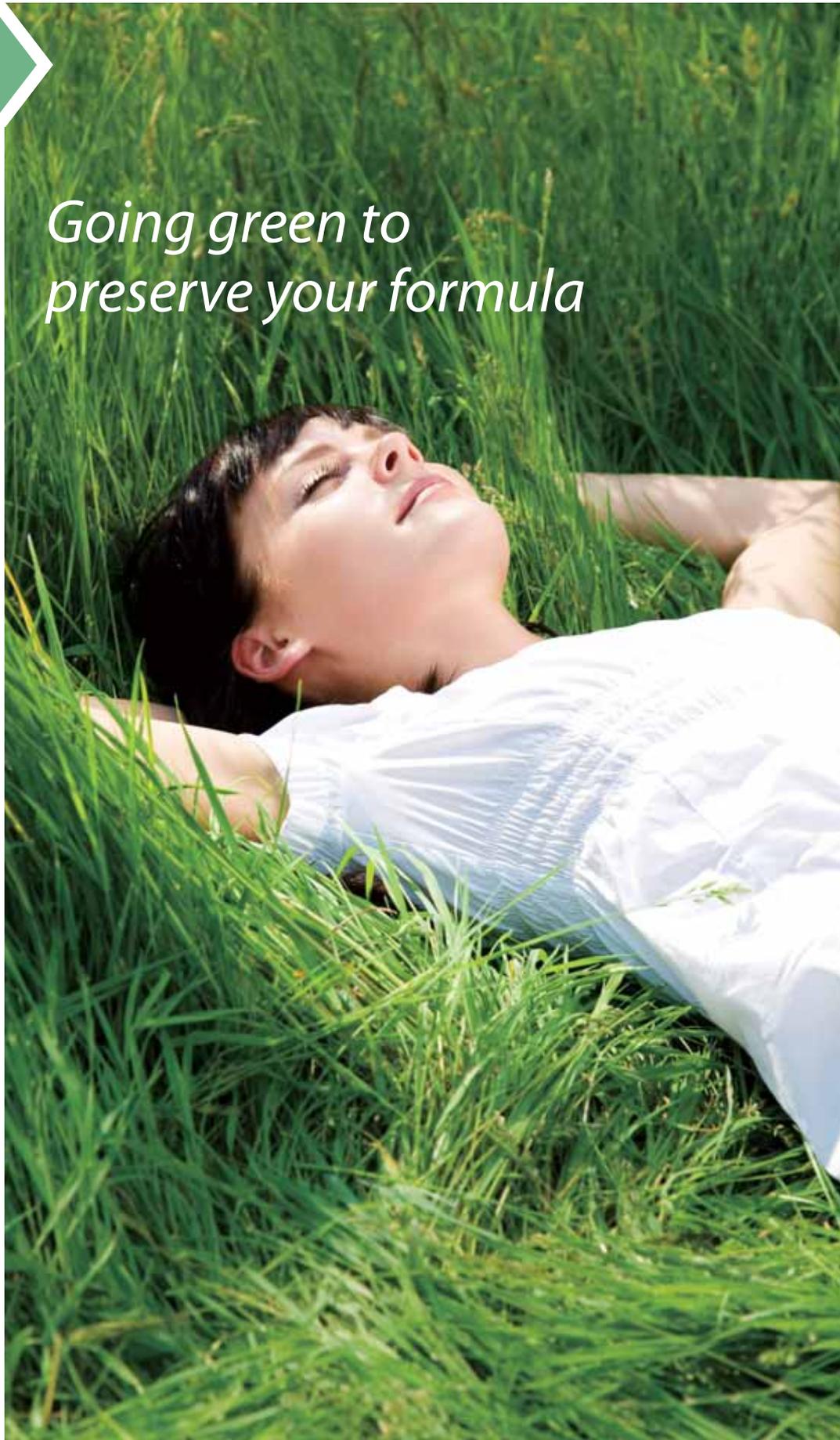
EDE-cide plus is

- Safe and nature friendly
- Effective in anti-bacterial activity
- Paraben free

Recommended dosages

- Skin softener, Toner, Essence : 0.4%
- Lotion, Cream, Emulsion : 0.6%

*Going green to
preserve your formula*



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EDE-cide plus Nature friendly, Paraben free

Powerful Anti-biotic Effect Composition

EDE-cide plus is made by hydrophilic & lipophilic process to increase safety and effects

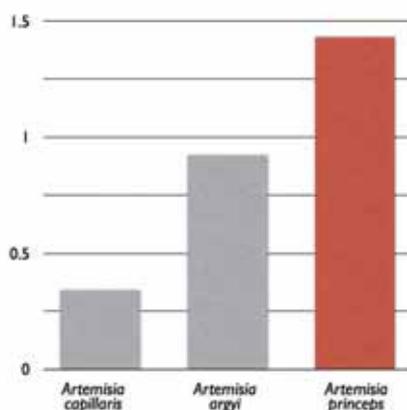


The facts and usage of Artemisia princeps were recorded in medical history of ancestors



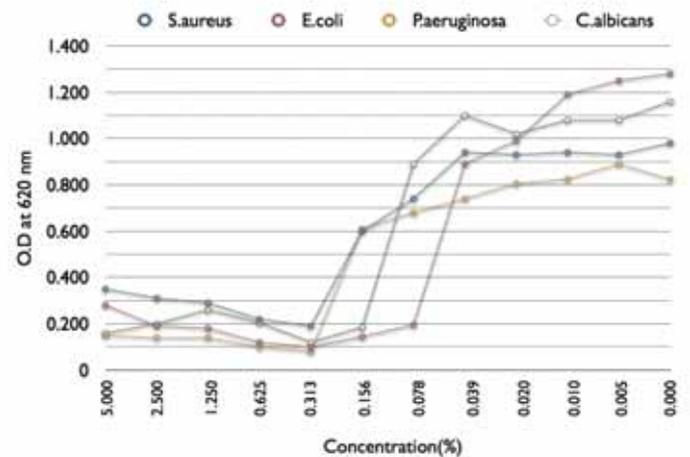
The essential oil of Korean Artemisia has high anti-bacterial activities

Essential oil value



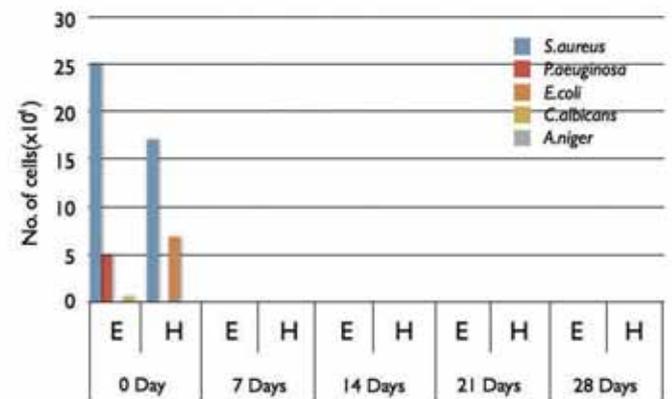
Among 3 well known Korean Artemisia plants, Artemisia princeps have the highest essential oil value

MIC (Minimum Inhibitory Concentration) test



The growth of micro-organisms is inhibited above the concentration of 0.3%

Challenge Test Anti-microbial Effectiveness Test



- E : EDE-cide plus 0.6%
- H : 1,2-Hexanediol 2%

The ability of preservative is determined by comparing the number of reduced bacteria for 28 days.

Summary in evaluating the cutaneous tolerance of test product

Actual Study Dates	August 31, 2010 ~ September 3, 2010
Test Product	EDE-cide plus
Subjects	Healthy 30 females
Age	27~53(41 as average)

Result from the certified organization, ELLEAD Co. Ltd.

EDE-cide plus is proven for safety in accumulated patch test

Fermentoil Olive, Argan, Green tea seed

The Quality of Plant Oil

INCI

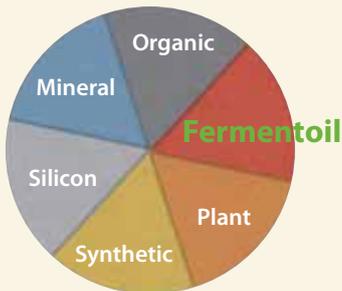
- Pseudozyma / Olive oil ferment extract
- Pseudozyma / Argan oil ferment extract(Pending)
- Pseudozyma / Green tea seed oil ferment extract(Pending)

Fermentoil gives nutritional values and improved feeling, absorption and compatibility for usage through the microbial fermentation system

Damy will continue on developing different types of Fermentoil

Properties

- Non-greasy Feeling
- Improved Skin Absorption
- Improved Emulsifying Compatibility
- Nutritive



After continuous research, Damy has developed treated plant oil through unique fermentation technology



New generation of plant oil to improve your cosmetics



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Fermentoil Series

The Quality of Plant Oil

Fermentation?

TOP 5 Healthiest Food in the world

In 2006, the food magazine 'Health' selected world's top 5 foods. Among those 5 foods, 4 of the foods were fermented foods.



Kimchi(Korea)



Yogurt(Greece)



Lentil(India)



Natto(Japan)

Effect of Fermentation on the Skin

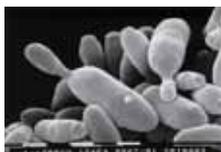
- Naturally fermented sugar and fructose increase moisturizing effect.
- Boost of collagen from activation of glycine and amino acids.

Fermented extracts rejuvenate, moisturize and activate cells on skin.

Damy's Fermentation Technology

Fermented materials are usually followed by strong odor, so it was not applicable in cosmetics

Pseudozyma sp. SY-16[KCTC 8950P]



- Odorless in aerobic condition
- Changes the substance in plant oil by producing enzymes
- Produces various types of polysaccharides and lipids



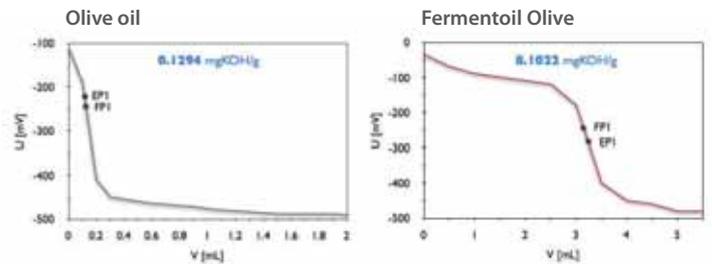
- KRIBB had researched to produce bio-organisms that can clean the waste oil in the ocean
- Used in coastal area(Tae-an, Korea) to decompose the oil leakage in 2009

Patent pending in corporation with Damy and Korea Research Institute of Bioscience & Biotechnology



Analysis of Free Fatty Acid

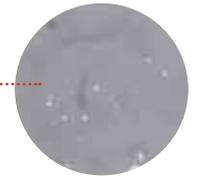
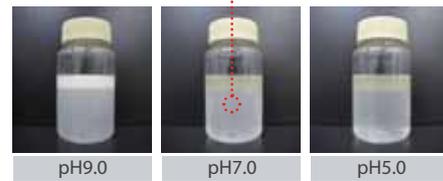
- The amount of fatty acids left in the form of compound as triglyceride
- Detection method: Metrohm Titrato



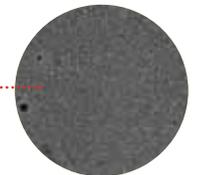
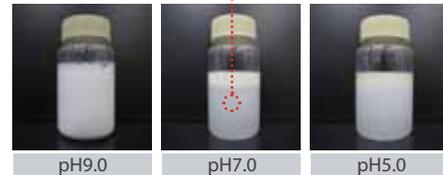
- Comparing to the result before fermentation, the amount of free fatty acid increased by more than 60 times
- The increased amount of free fatty acids improves the skin absorption which will result in better application

Improved Emulsifying Capacity

Olive oil

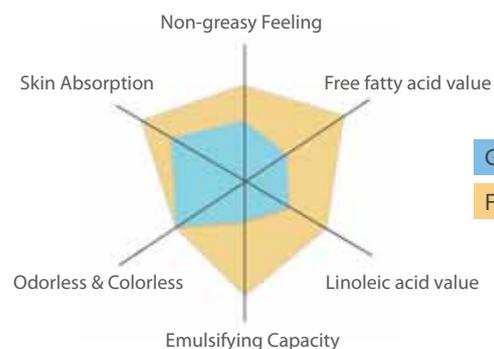


Fermentoil Olive



- Emulsifying capacity of Fermentoil Olive shows 6 times higher than normal olive oil in pH5.0
- High emulsification of Fermentoil Olive occurs in a wide range of pH comparing to other olive oil

Summary of Improvement



General Plant Oil

Fermentoil

General plant oil has been improved in quality and compatibility through Damy's fermentation technology