

Anti-aging, Skin rejuvenation

BIO-Placenta Pseudo-Placenta with synergic effects and safety
Contains five different growth factors (EGF, IGF-1, acidic FGF, basic FGF and VEGF),
Amino acid and vitamin. These growth factors are safely synthesized.

Why Placenta?

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



Fetus obtains all the nutrients and GF made by placenta. GF will stimulate the expansion of cells in the body system.

0~3 years old
Infants produce nutritional values and GF on their own.



10~13 years old
GF production decreases in body and growth rate starts to slow down.

More than 18 years old

GF production and the growth process decreases rapidly. Minimal amount is produced for metabolism.



GF decrease and absent of cell replacement leads to aging.

Aging is caused by loss of Growth Factors(GF)

BIO-Placenta VS Human Placenta

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

Synthesized Growth factors

Components are safely synthesized

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

	Human Placenta	Effect	BIO-Placenta
Growth Factor	EGF	Skin rejuvenation	EGF
	IGF-1	Anti-wrinkle	IGF-1
	acidic FGF	Anti-wrinkle	acidic FGF
	basic FGF	Elasticity enhance	basic FGF
	VEGF	Nutritional supplement	VEGF
	TGF- β	Anti-wrinkle	-
	The minority parts	-	-
Essential Factor	Vitamin	Cell vitalization	Vitamin : Vitamin B ₉
	Amino acids	Energy supplement	Amino acids : Acetyl Glutamine

Reference: Placental growth factors, B.V.Rama Sastry, Placental pharmacology, p120

Components of BIO-Placenta are similar to human placenta

Manufacturing Process of Growth factors

EGF DNA sequence

5' GTT ACC AGC GAC TCC GAA TGC CCG CTG AGC CAT GAC GGC
 3' CAA TTG TCG CTG AGG CTT ACG GGC GAC TCG GTA CTG CCG

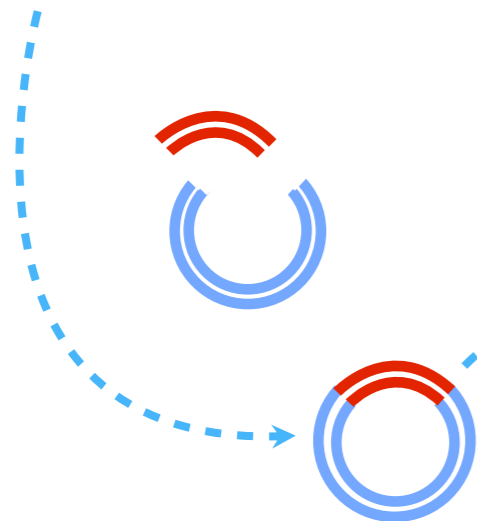
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 ATG ACG GAC GTG CTG CCG CAT ACG TAC ATG TAG CTT CGT

CTG GAC AAA TAC GCG TGC AAC TGT GTT GTT GGC TAC ATC
 GAC CTG TTT ATG CGC ACG TTG ACA CAA CAA CCG ATG TAG

GGC GAG CGC TGT CAG TAC CGT GAC CTT AAG TGG TGG GAA
 CCG CTC GCG ACA GTC ATG GCA CTG GAA TTC ACC ACC CTT

CTG CGC TGATAACCTGCA 3'
 GAC GCG ACTATTGG 5'

Synthesis of gene by PCR

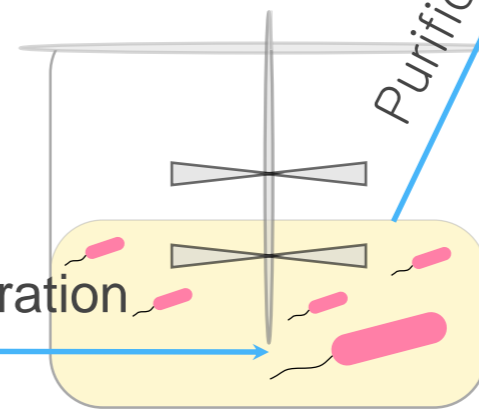


Injection

Recombinant E.coli

Proliferation

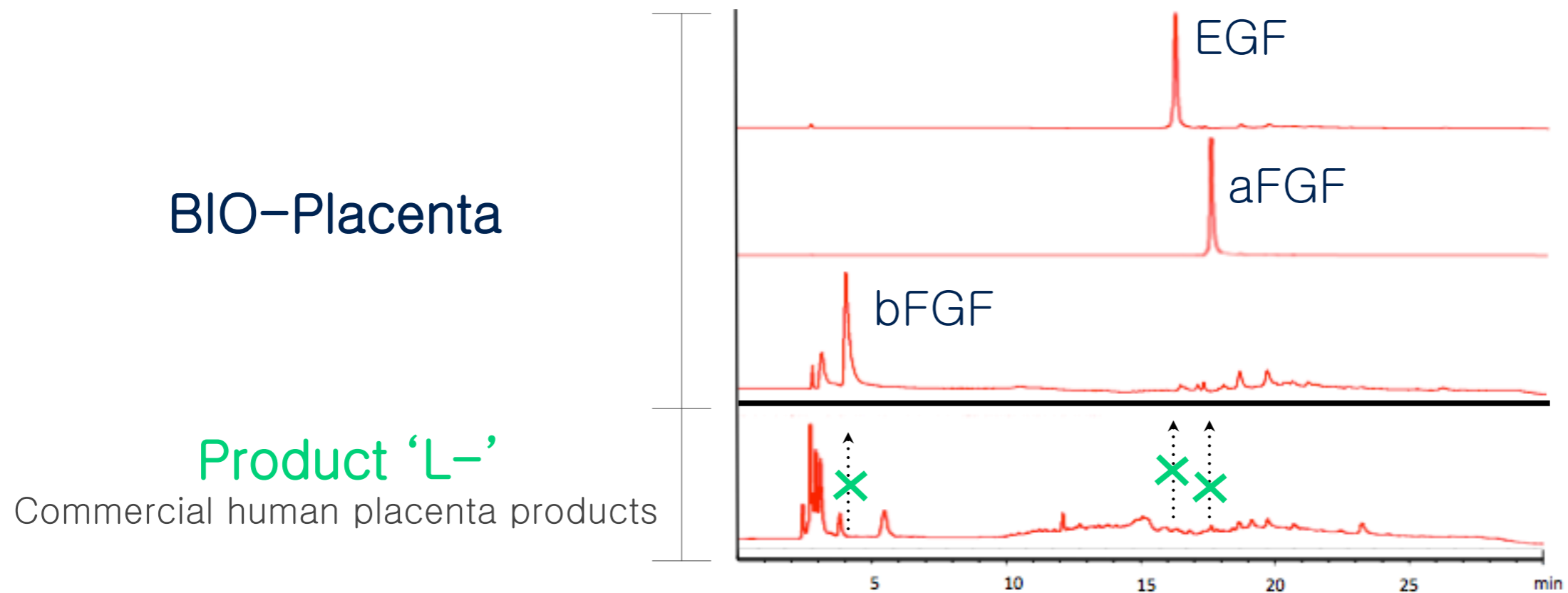
Fermentation



Growth factors

- EGF
- IGF-1
- Acidic FGF
- Basic FGF
- VEGF

Proven to contain Growth factors



Synergic Effect

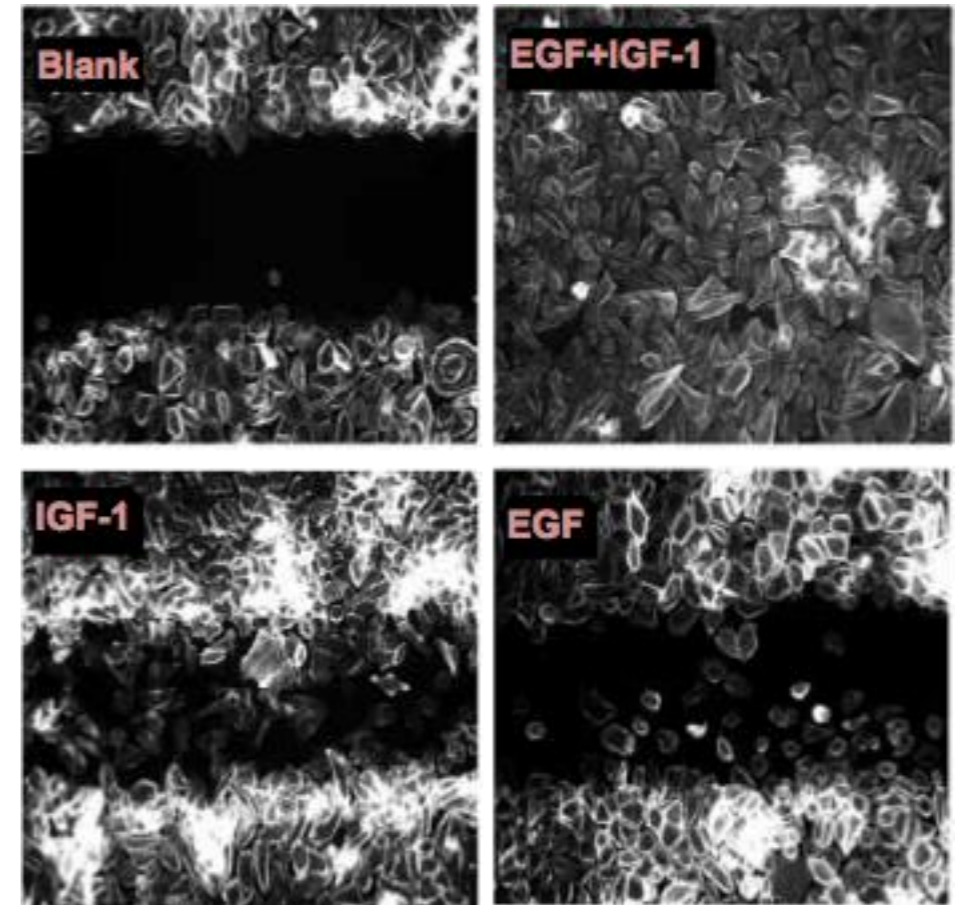
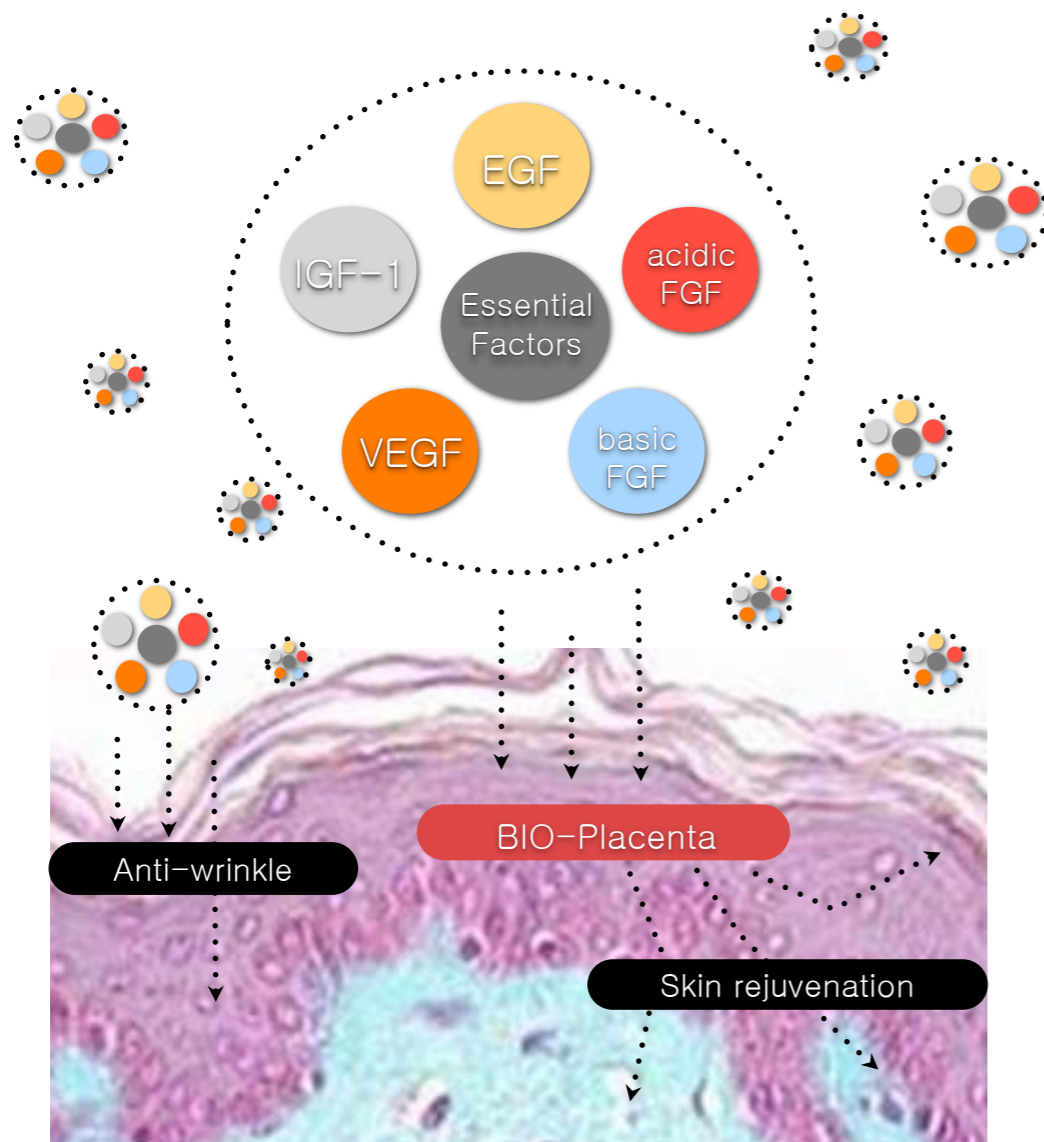


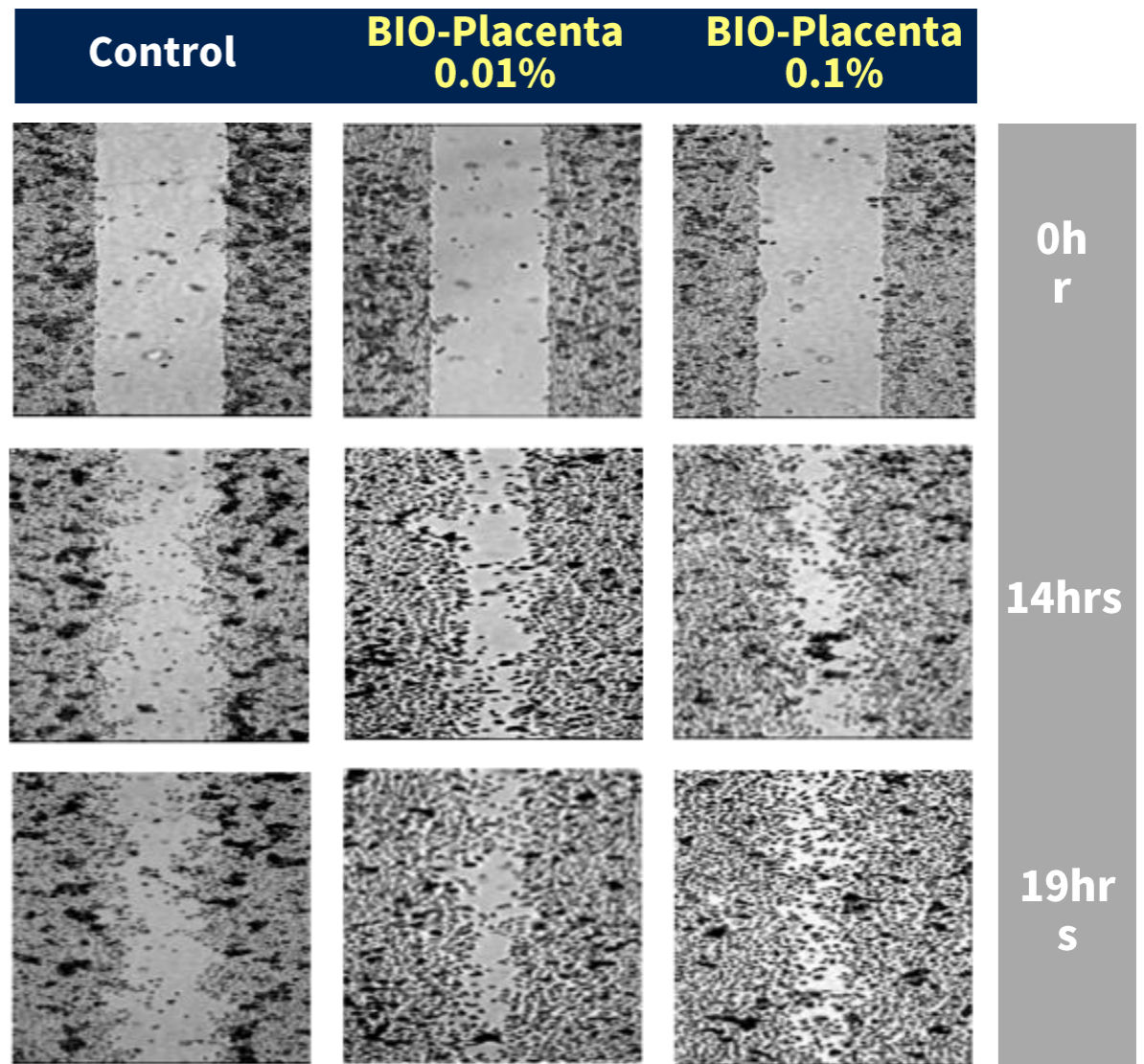
Fig. Effect of growth factor singling on wound epithelialization.

Ref; *Journal of Cell Science* 116, 3227-3248

Wound Healing Effect

Migration assay

Cell strain	Human epidermal Keratinocyte (C-001-5C, Cascade)
Detection method	Ibidi GmbH kit (Germany)

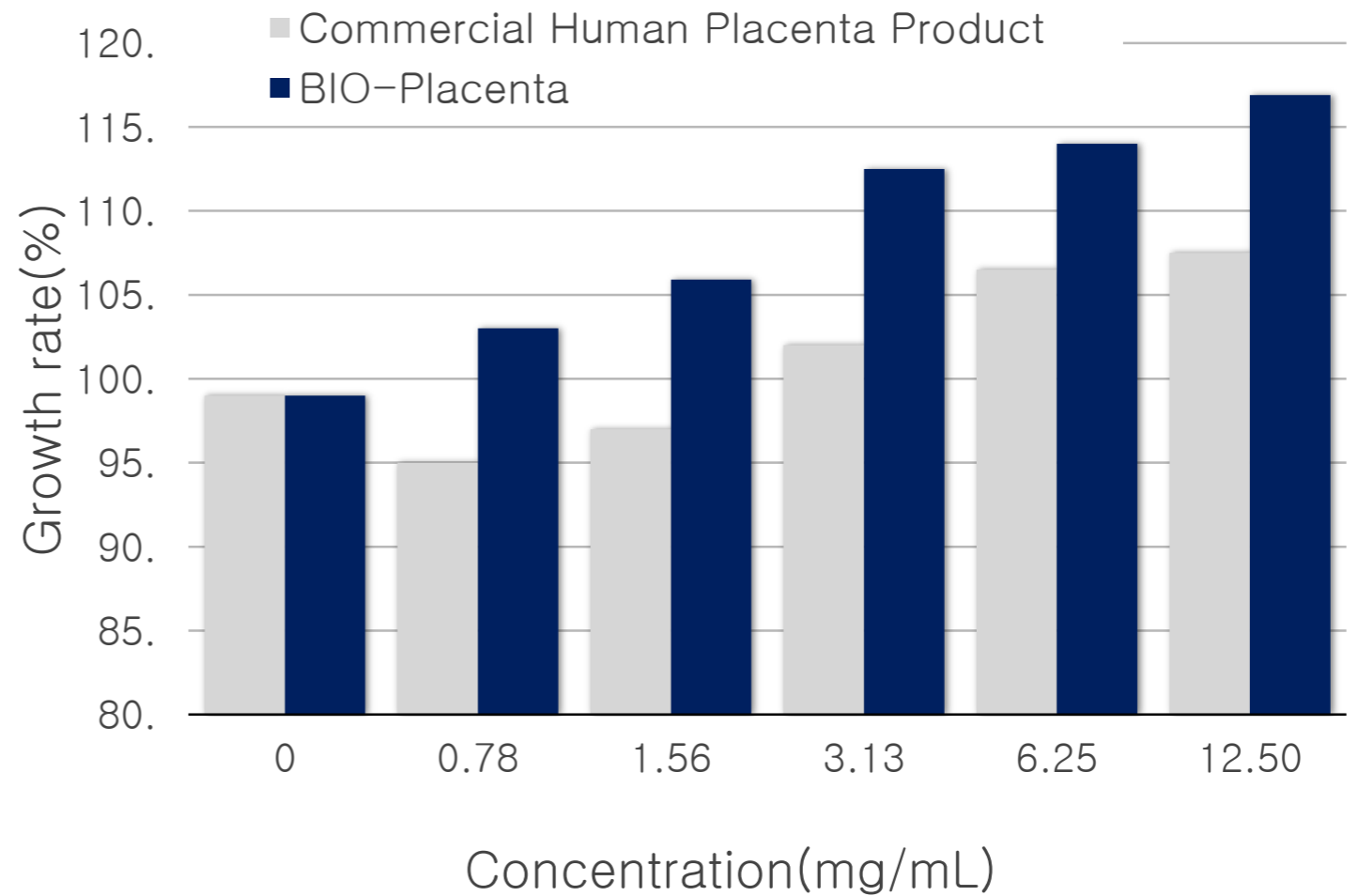


The migration ability of Keratinocyte is improved by using BIO-Placenta

Stimulation of Cell Growth

MTT assay

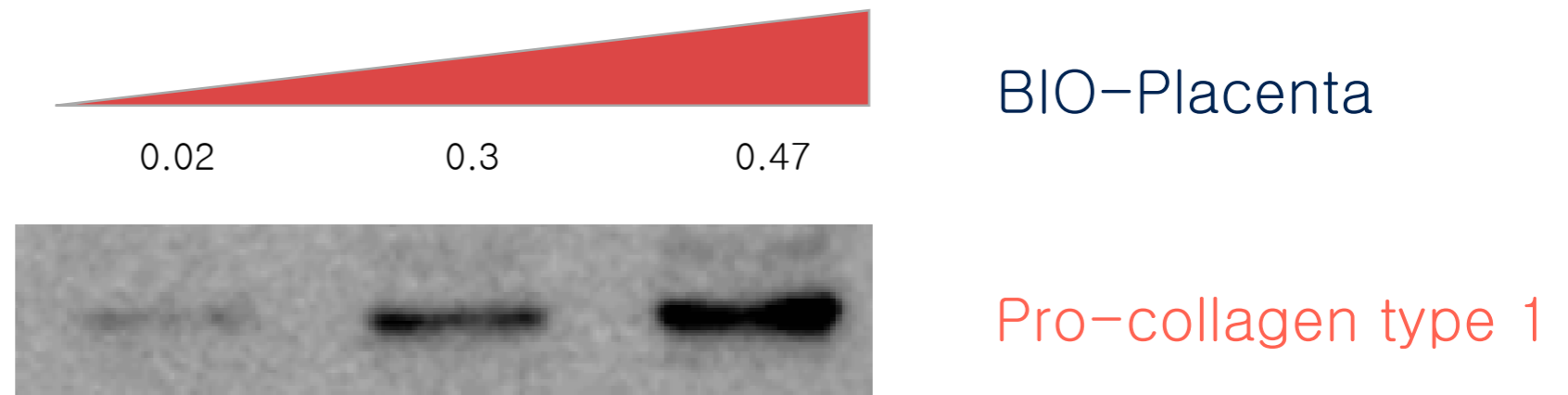
Cell strain	Human Derma Fibroblast neonatal (HDFn, LONZA)
Detection method	MTT assay (Sigma, US)



BIO-Placenta is more effective than commercial human placenta product in stimulation of cell growth

Biosynthesis of Collagen

Cell strain	Human Derma Fibroblast neonatal (HDFn, LONZA)
Detection method	Western blot

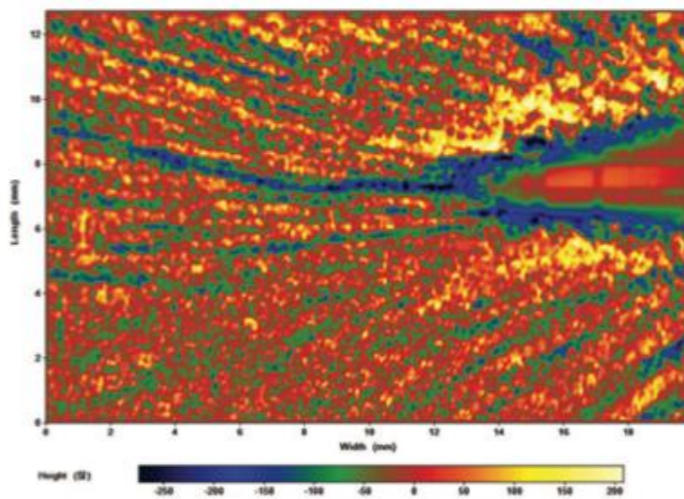


BIO-Placenta stimulates collagen biosynthesis of fibroblasts

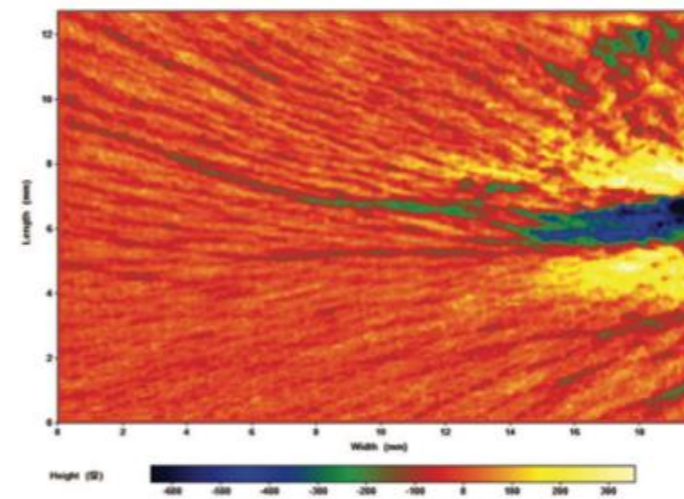
Subjects of experiment	12 female aged 43 to 50 (average age : 45.75)
Place of experiment	Constant temperature and humidity room (22±1°C, 45±5%)
Experimental period	4 weeks
Test area	Facial region including crow's feet
Test sample	BIO-Placenta Cream (BIO-Placenta : 3%)
Test material application	Spread suitable quantity on facial region including crow's feet
Evaluation method	<ol style="list-style-type: none">1. Evaluating wrinkle improvement through PRIMOS Lite and Robo Skin Analyzer2. Evaluating skin elasticity improvement through DermaLab elasticity probe and Robo Skin Analyzer3. Evaluating moisturizing improvement through DermaLab moisture probe4. Visual evaluating according to global photodamage5. Evaluation of abnormal response6. Survey
Statistic analysis methods	SPSS 17.0 for Windows
Test institute	Korea Institute for Skin and Clinical Sciences

Anti-wrinkle

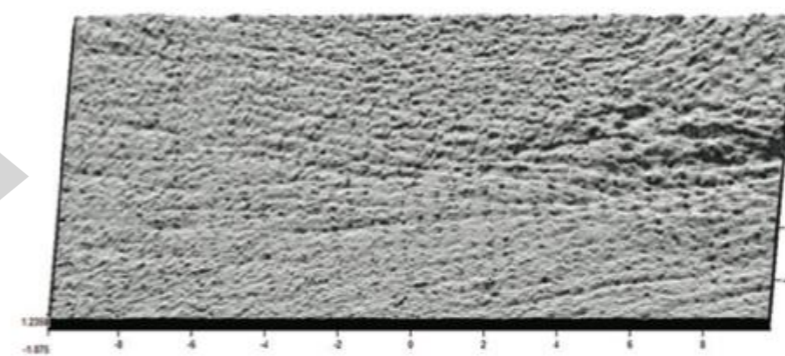
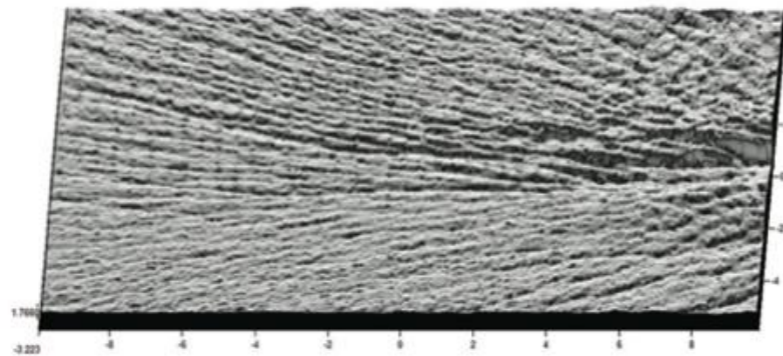
Test area	Crow's feet
Detection method	PRIMOS Lite 3D Face and Skin Scanner Analyzing System, GFMesstechnik



Before



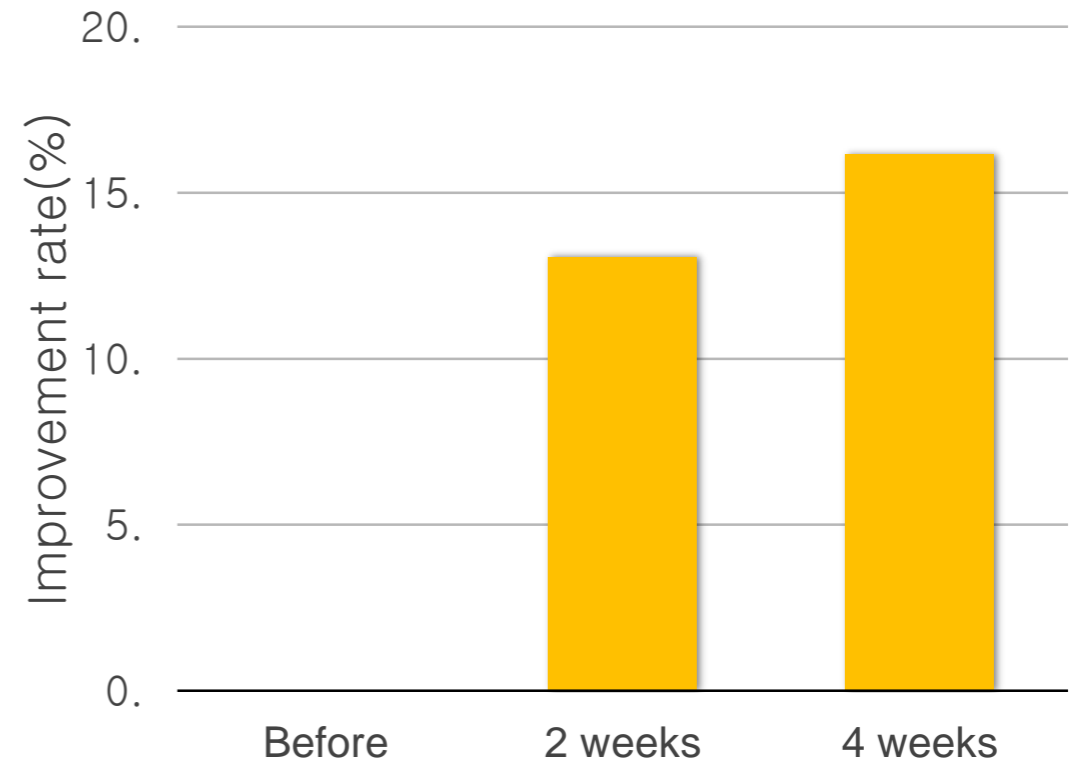
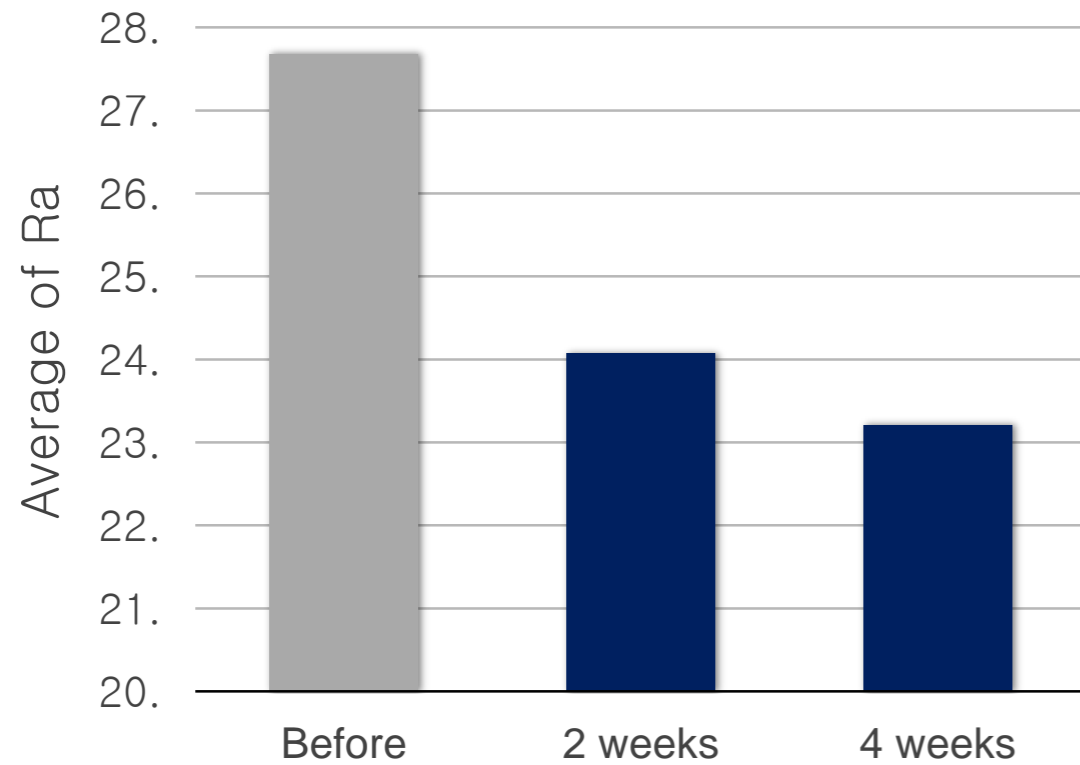
After



Reduces wrinkles by 13% in 2 weeks and 16% in 4 weeks on crow's feet

Anti-wrinkle

Test area	Crow's feet
Detection method	PRIMOS Lite 3D Face and Skin ScannerAnalyzing System, GFMesstechnik



* Ra : Average of all heights and depths to the reference plane

Reduces wrinkles by 13% in 2 weeks and 16% in 4 weeks on crow's feet

Anti-wrinkle

Test area	Below eyes
Detection method	Robo Skin Analyzer CS50, Inforward, Inc.

Before



Wrinkles: 10 6

After



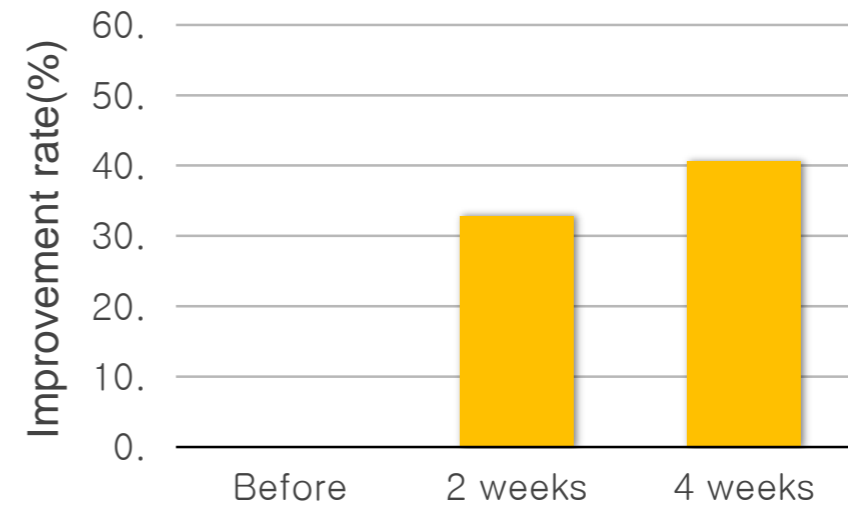
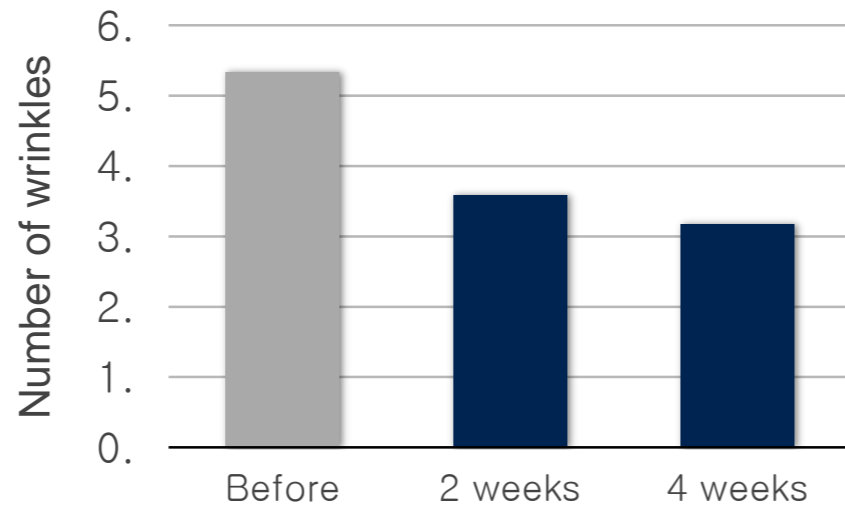
Wrinkles: 2 1

Reduces wrinkles by 38% in 2 weeks and 46% in 4 weeks on below eyes

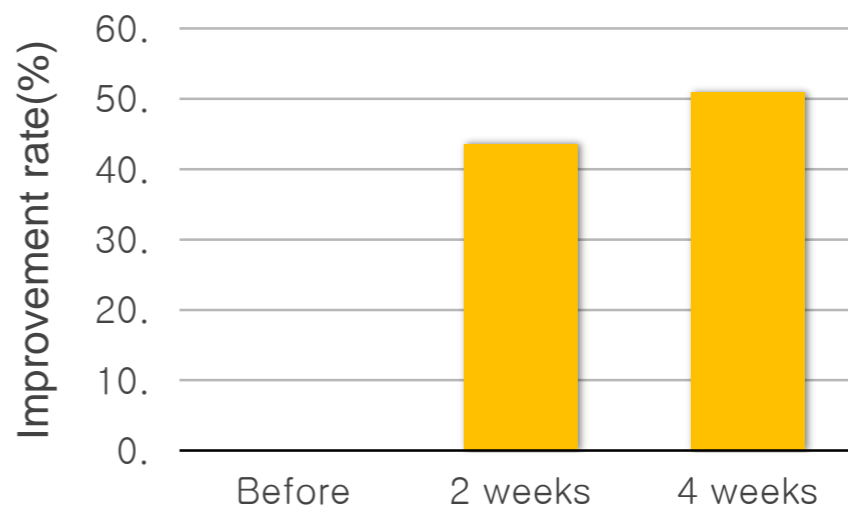
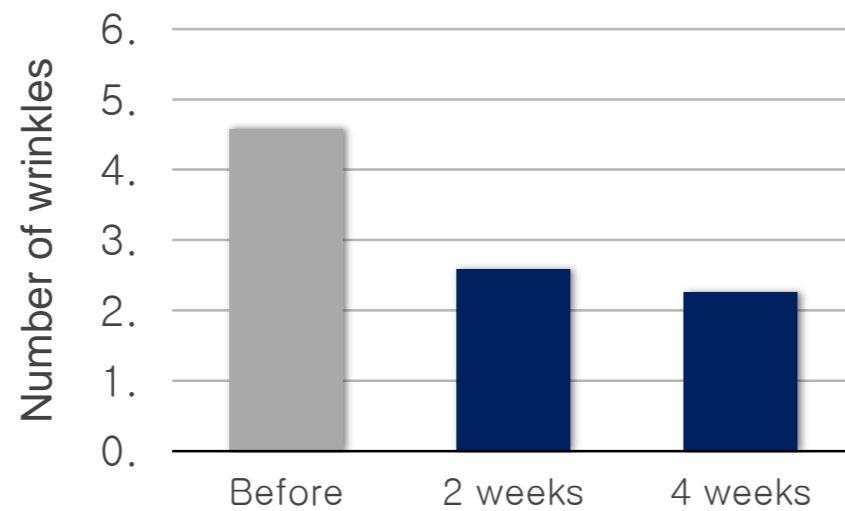
Anti-wrinkle

Test area	Below eyes
Detection method	Robo Skin Analyzer CS50, Inforward, Inc.

Left



Right

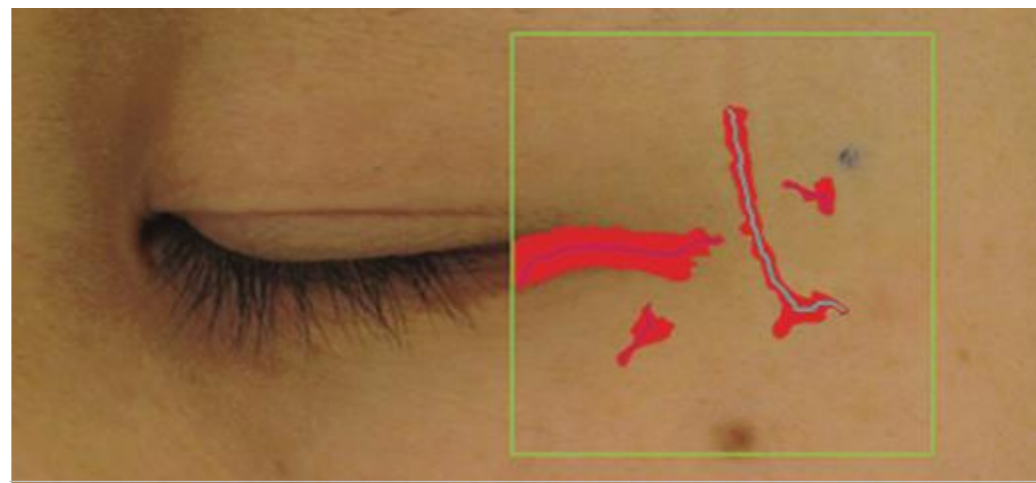


Reduces wrinkles by 38% in 2 weeks and 46% in 4 weeks on below eyes

Anti-wrinkle

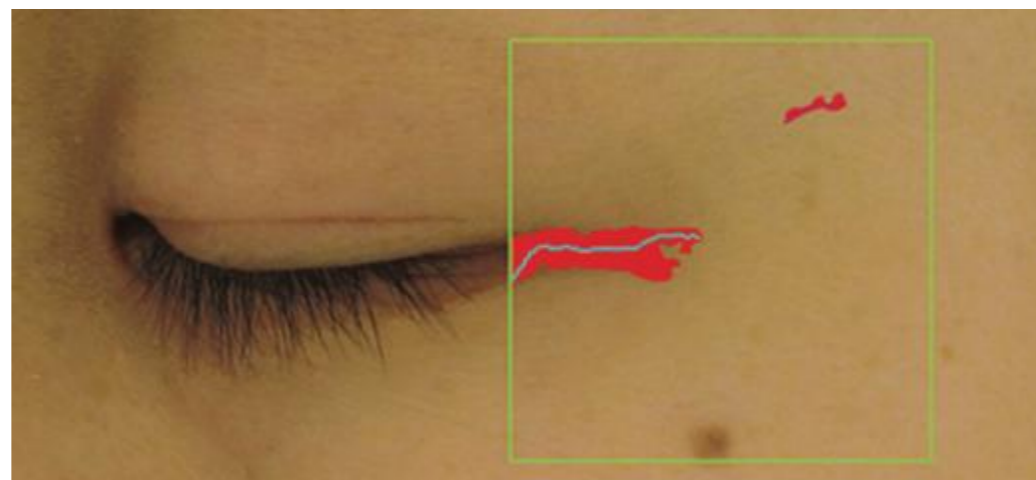
Test area	Crow's feet
Detection method	Robo Skin Analyzer CS50, Inforward, Inc.

Before



Total length of wrinkle: 47mm

After

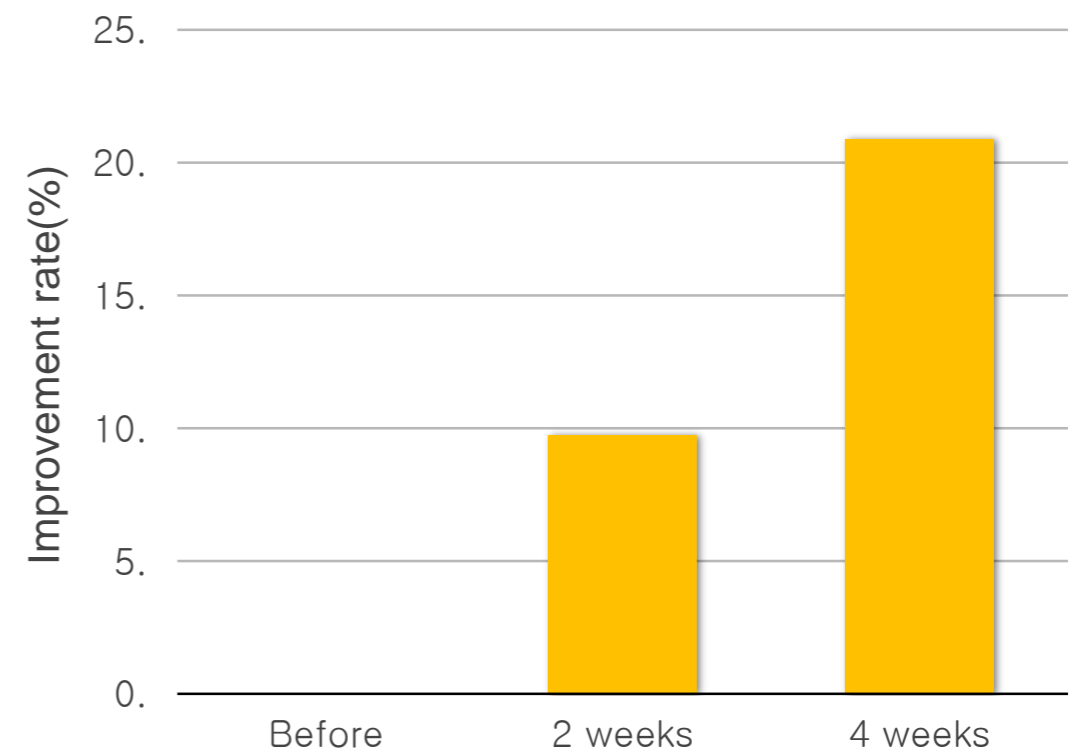
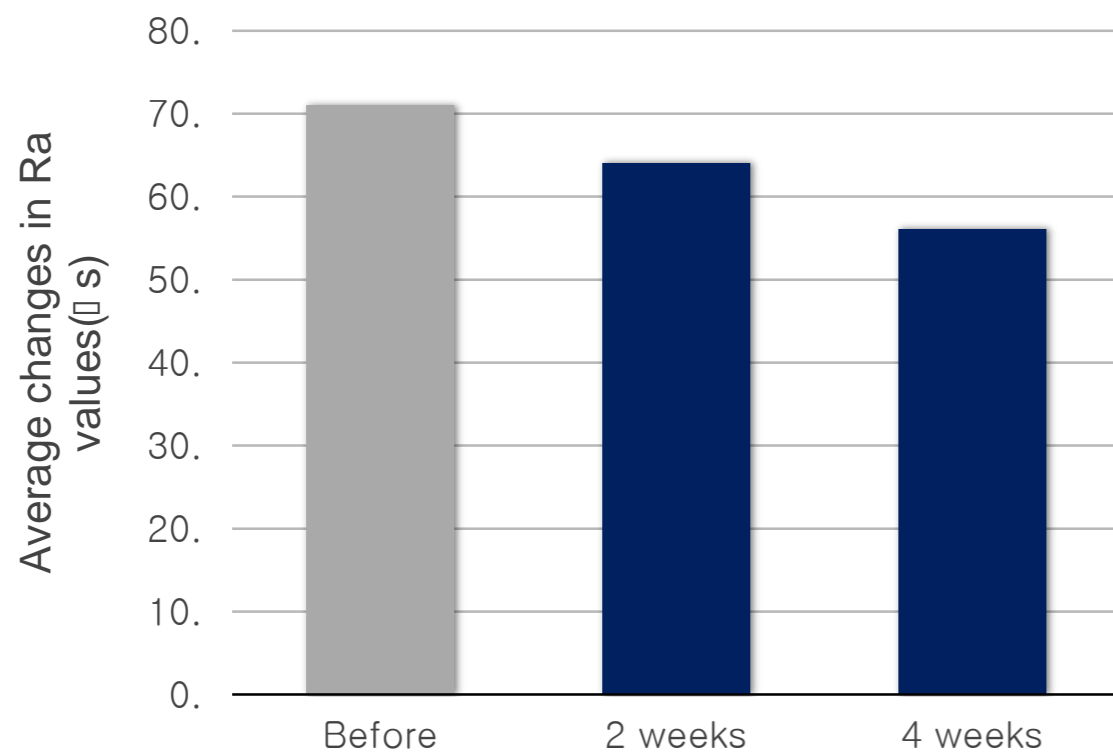


Total length of wrinkle: 21mm

Reduces wrinkles by 10% in 2 weeks and 21% in 4 weeks on crow's feet

Anti-wrinkle

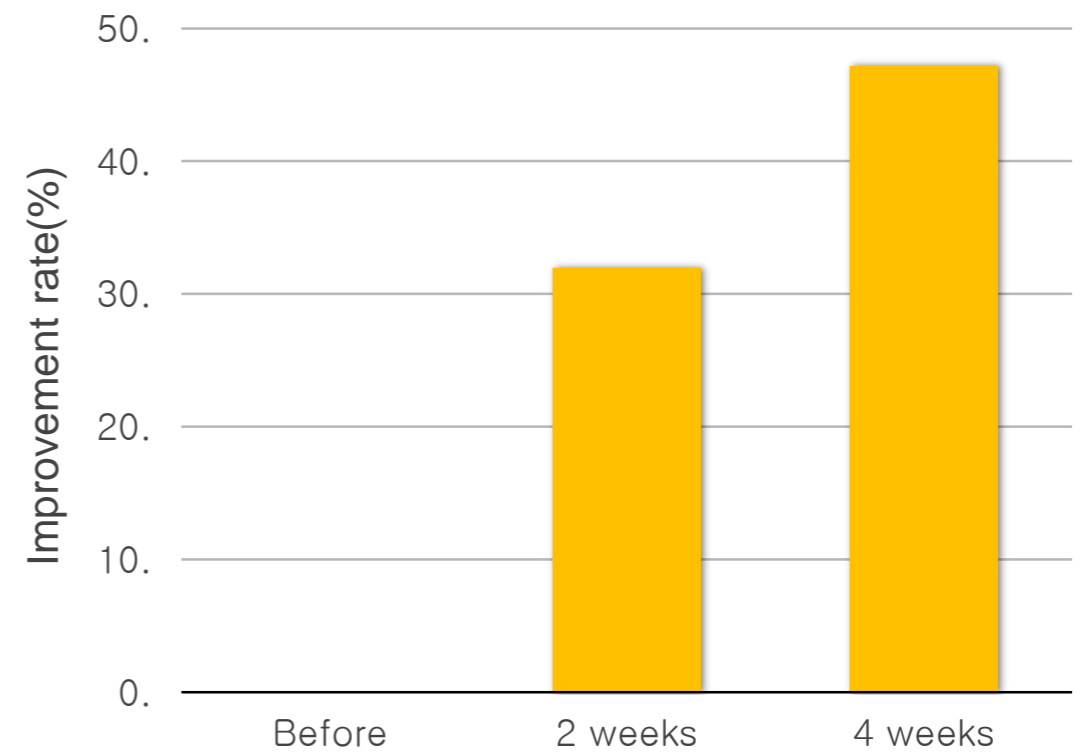
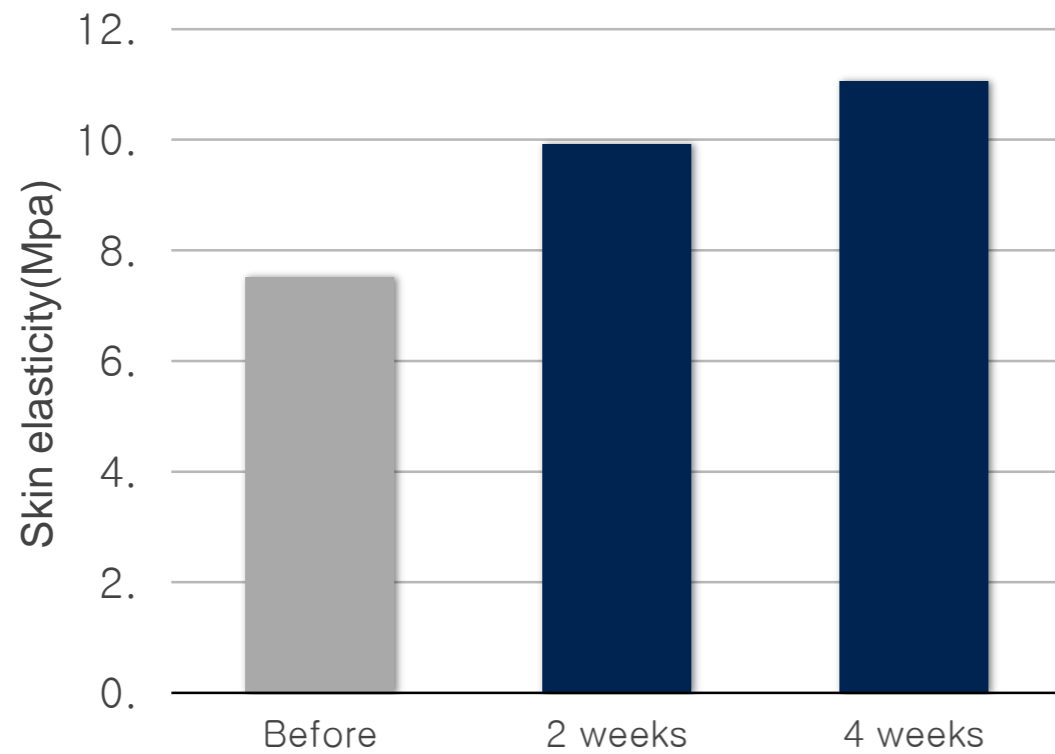
Test area	Crow's feet
Detection method	Robo Skin Analyzer CS50, Inforward, Inc.



Reduces wrinkles by 10% in 2 weeks and 21% in 4 weeks on crow's feet

Skin-elasticity

Test area	Facial area
Detection method	DermaLab elasticity probe, Cortex Technology, Inc.

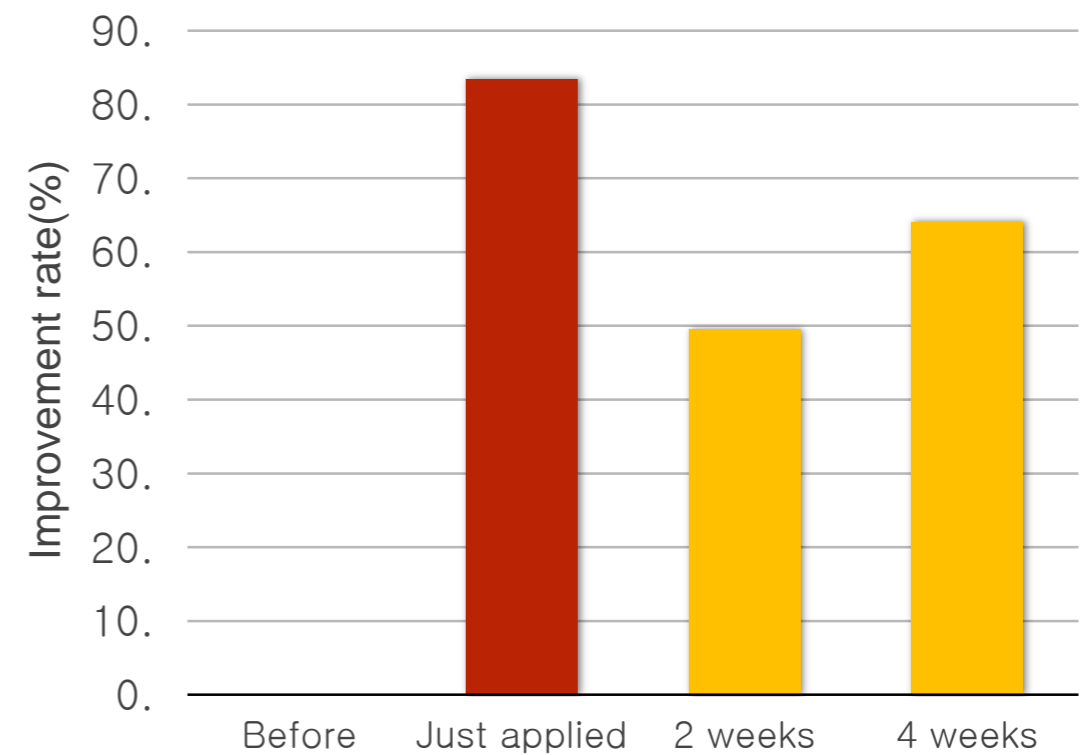
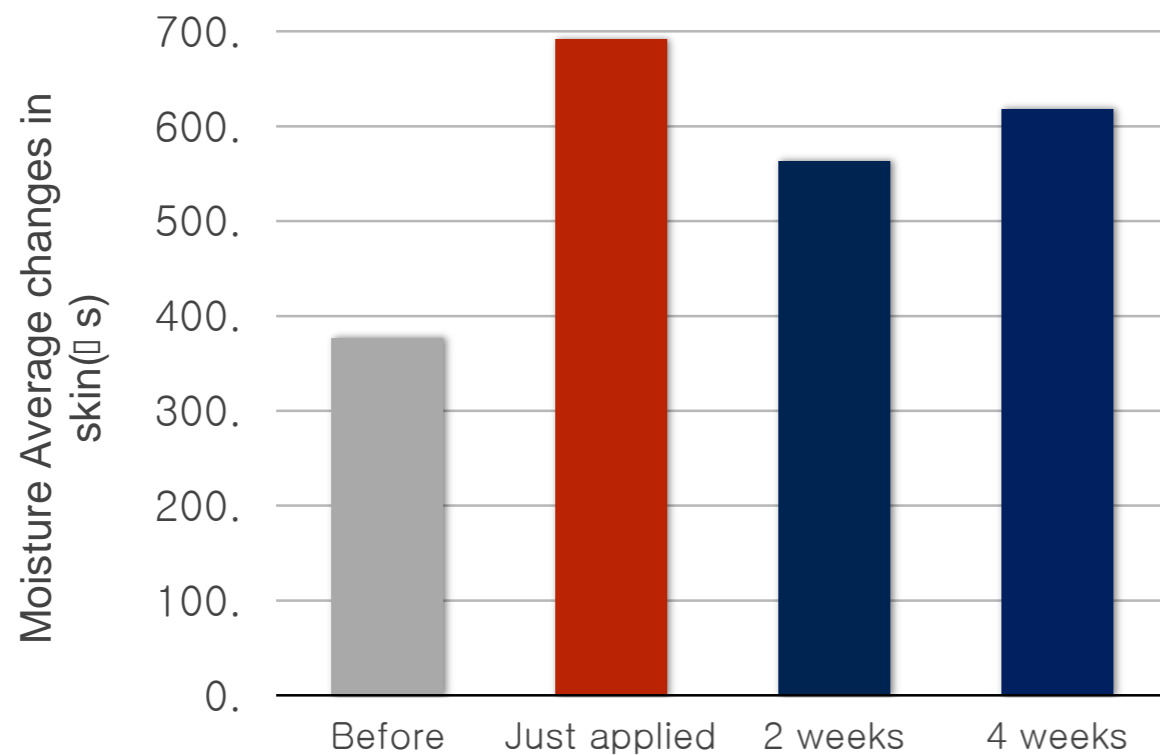


Mpa=Mega pascal, N=12

Skin elasticity has been improved by 32% in 2 weeks and 47% in 4 weeks

Moisturizing

Test area	Facial area
Detection method	DermaLab moisture probe, Cortex Technology, Inc.



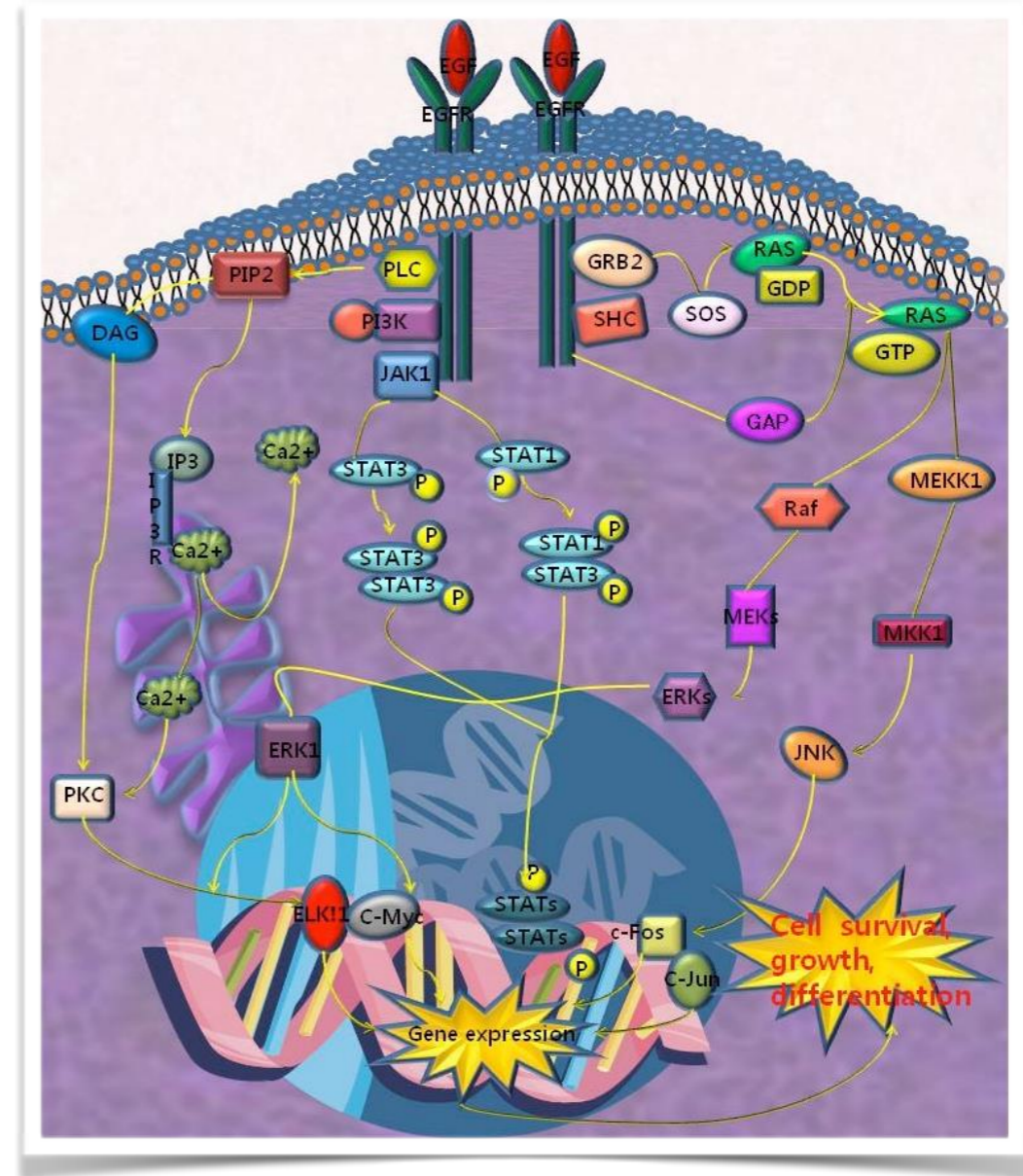
µs= micro siemens, µs=1/10⁶Ω, N=12

Skin moisturizing has been improved by 83% just after applying, 50% in 2 weeks and 64% in 4 weeks

EGF

Epidermal Growth Factor

- ✓ Mitogenic effect of cells
- ✓ Wound healing effect by epithelialization
- ✓ Growth, differentiation and migration of cells
- ✓ Wrinkle care
- ✓ Activation of hyaluronan synthase 2 in human epidermal keratinocyte



IGF-1

Insulin-like Growth Factor-1

- ✓ Effect of IGF-1 restoration on phospholipid profile in skin
- ✓ Angiogenic effect
- ✓ Induction of synergic effect of EGF on wound healing and growth stimulation of fibroblast cell
- ✓ IGF-1 increases the synthesis of hyaluronan and chondroitin sulfate proteoglycan by tissue fibroblast

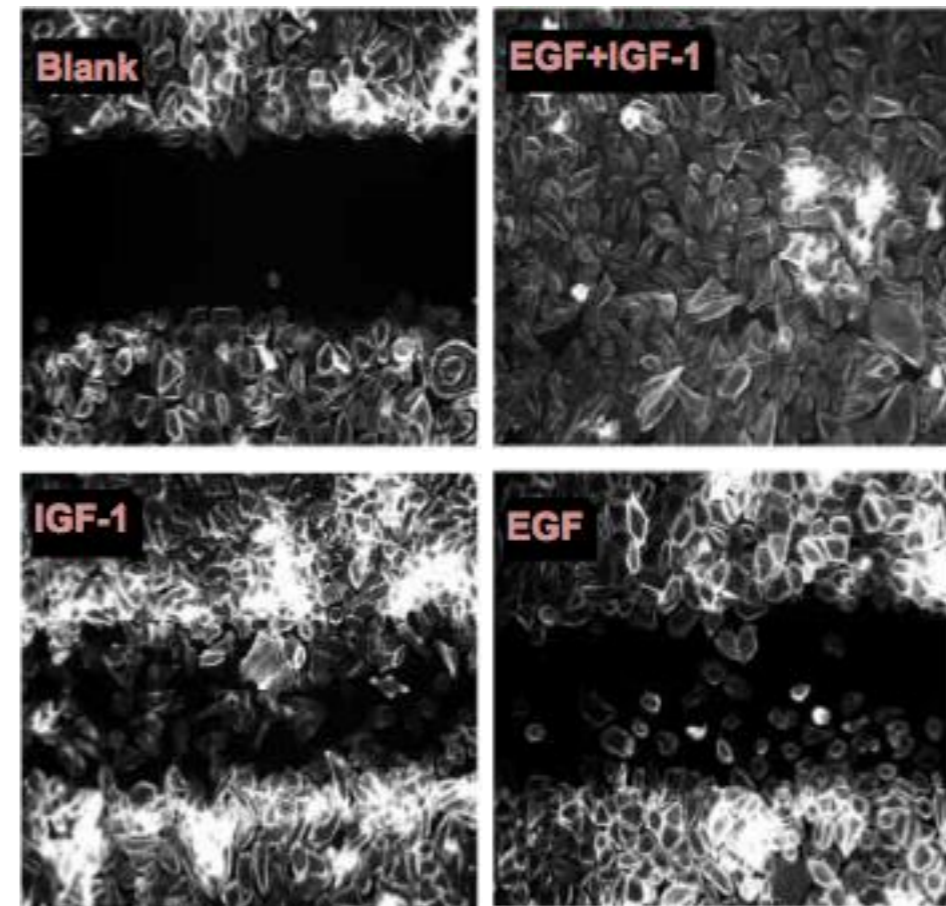


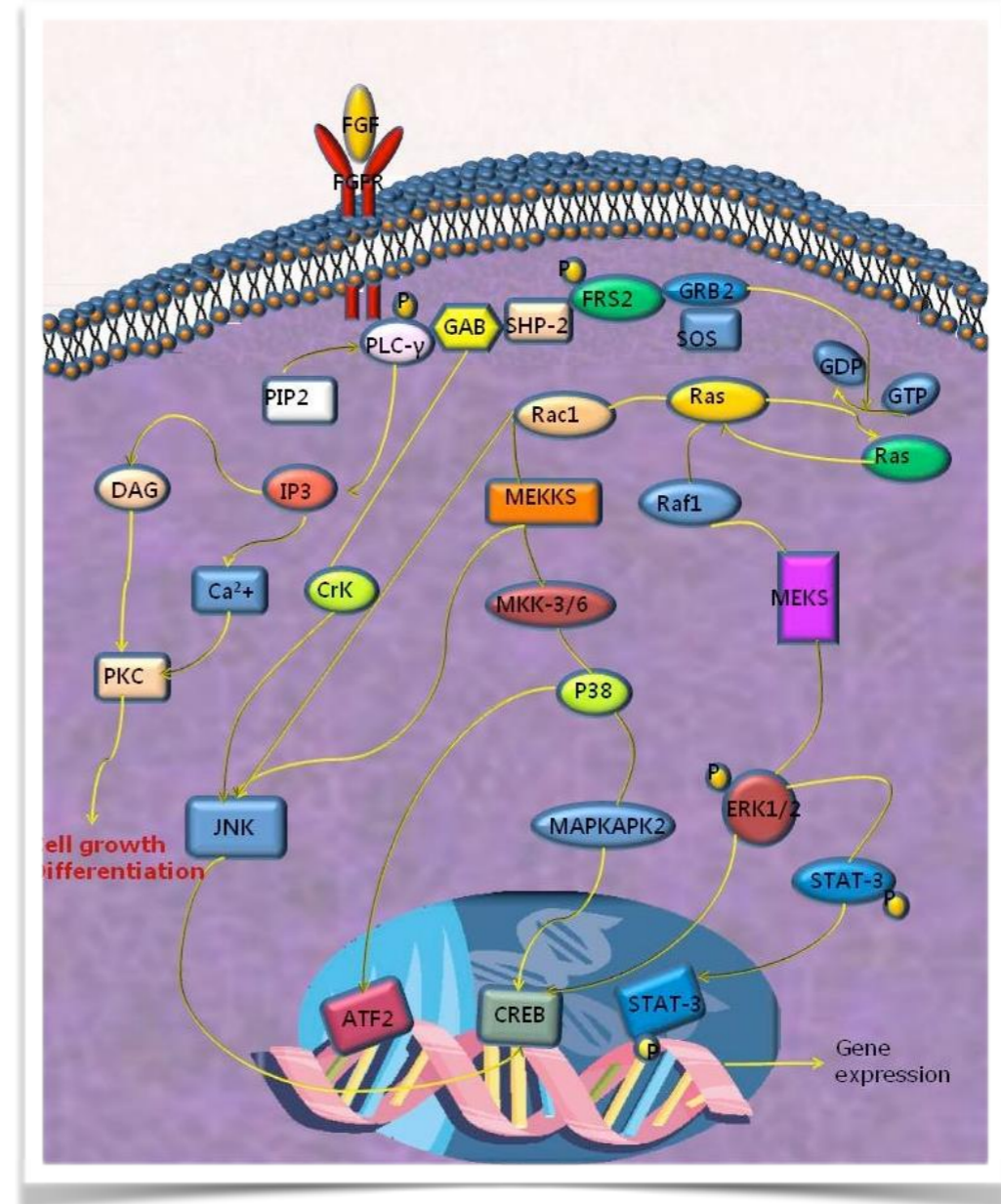
Fig. Effect of growth factor signalling on wound epithelialization.

Ref; Journal of Cell Science 116, 3227-3248

FGF

Fibroblast Growth Factor

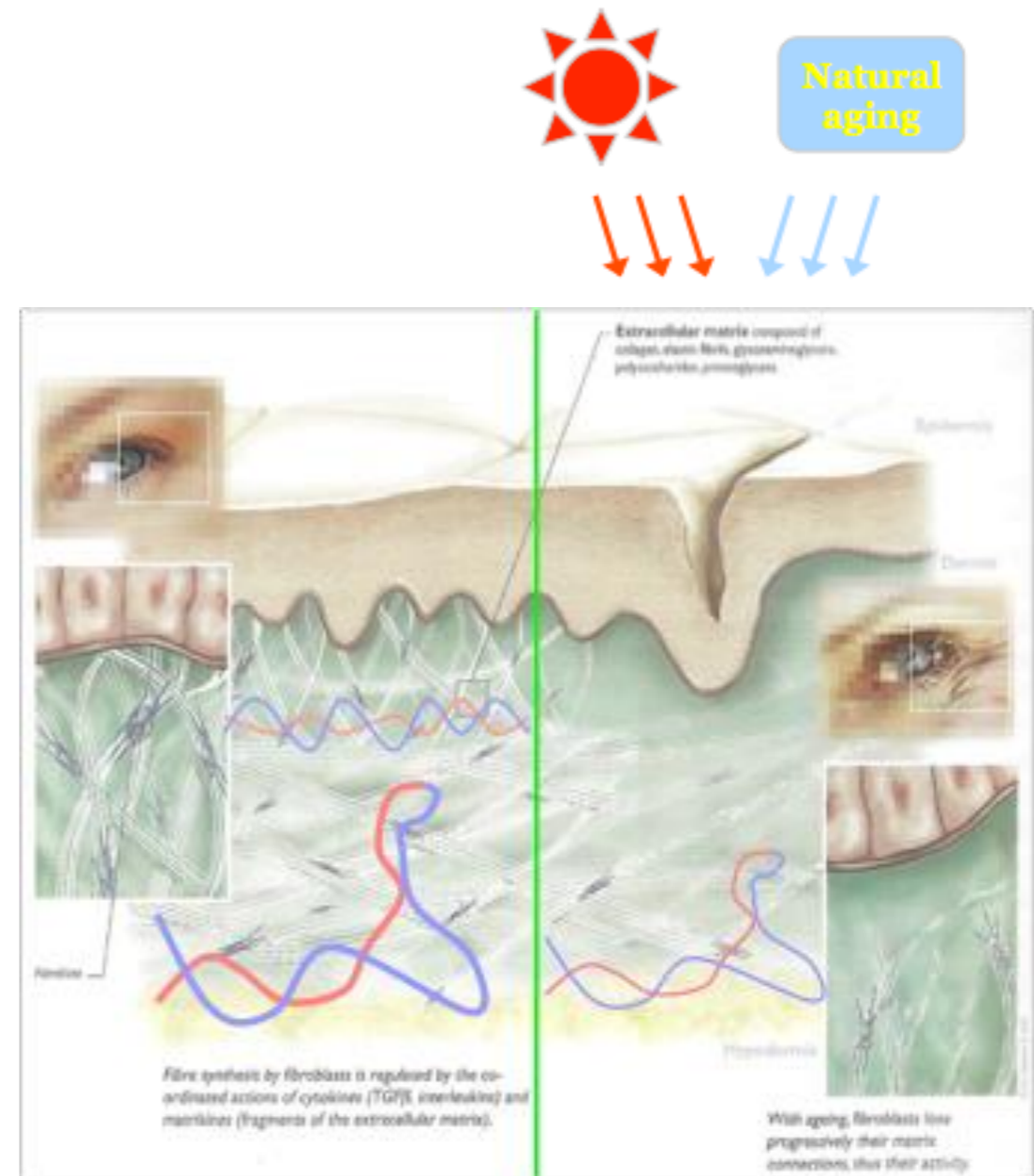
- ✓ Growth and mitogenesis stimulation of fibroblast cells
- ✓ Stimulation of skin regeneration
- ✓ Stimulation of Collagen and Elastin synthesis in fibroblast cells
- ✓ Wound healing effect basic FGF(FGF-2) activates hyaluronan synthesis with IGF-1 in human epidermal fibroblast



VEGF

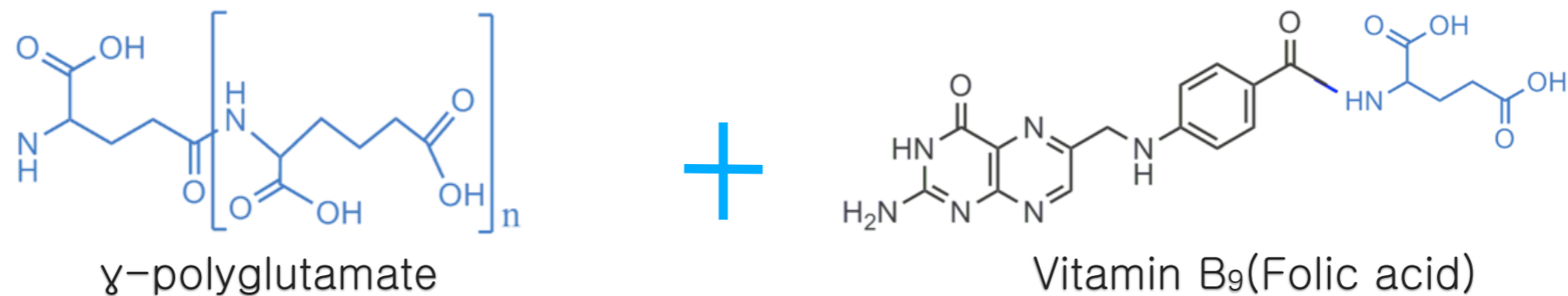
Vascular Endothelial Growth Factor

- ✓ Management of capillary vessels
- ✓ Induction of nutrient supplements to fibroblast cells
- ✓ Growth and migration of cells
- ✓ Wound healing effect

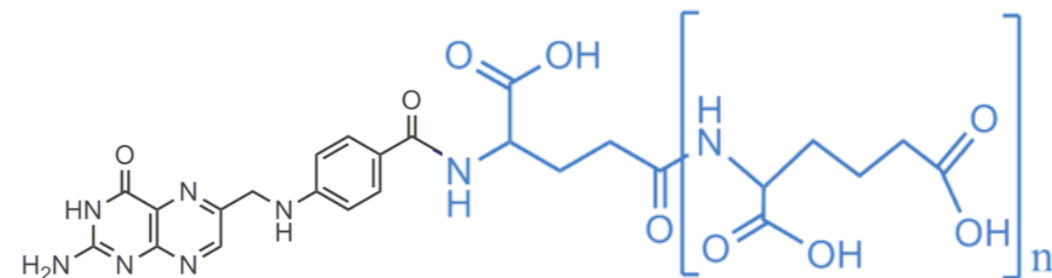


Vitamin B9-Vitapol

- The formation of B₉-Vitapol is made through structural changes of folic acid into the natural form of polyglutamate.
- It is produced to improve the negative characteristics (pH sensitivity and low solubility) of folic acid through Korean traditional fermentation technology.



New fermentation technology based on Korean traditional fermentation



Amino acid

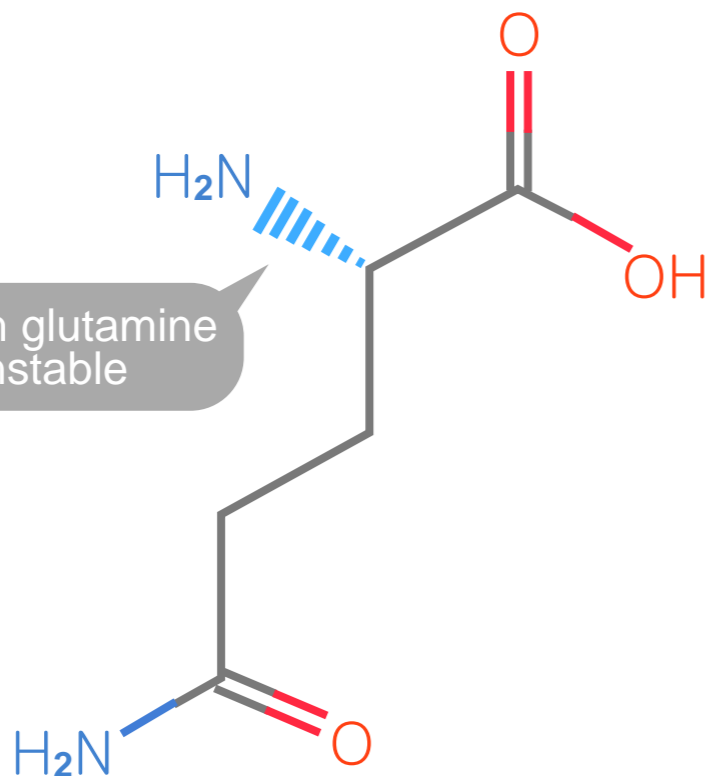
Acetyl Glutamine

- Acetylated Glutamine, which is reformulated to improve the stability.

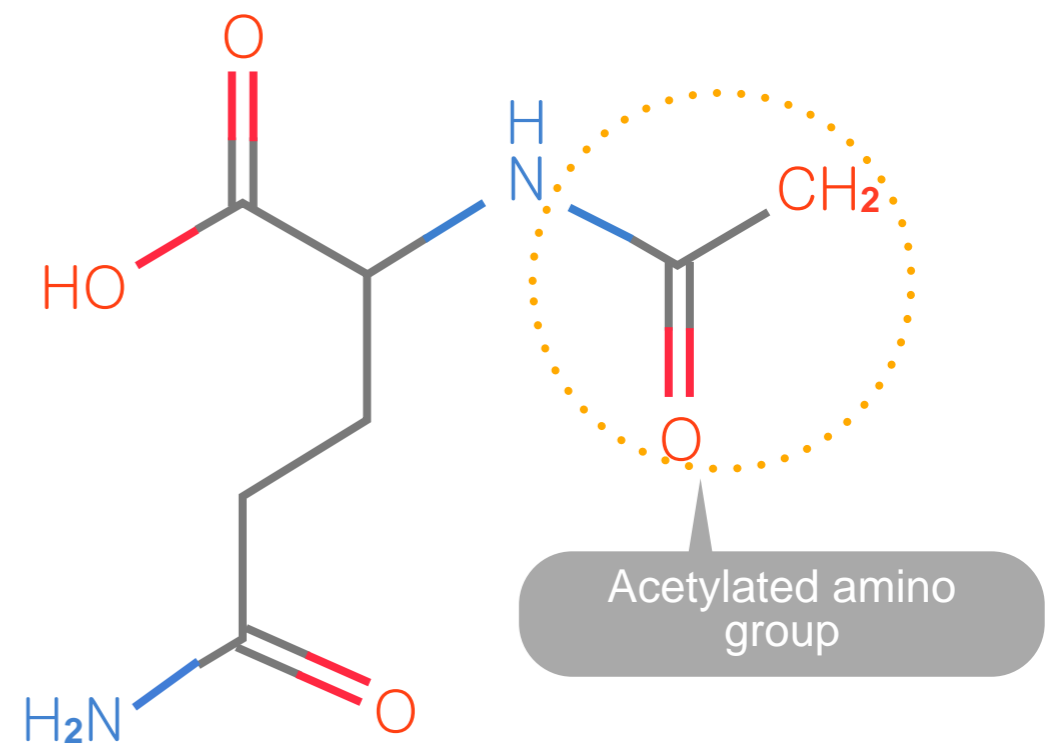
Glutamine

Improve
Stability

Acetylated Glutamine



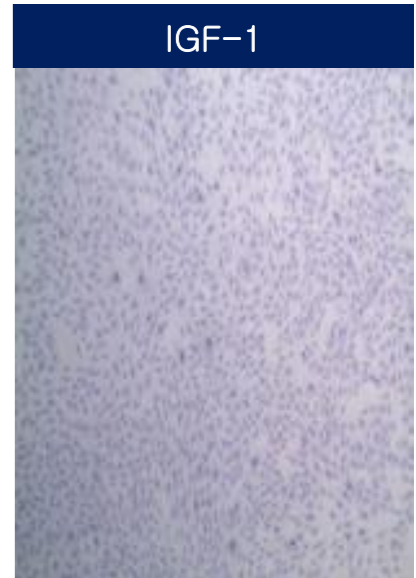
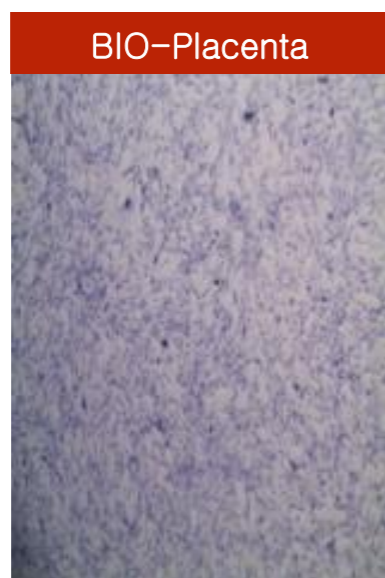
The amines in glutamine is very unstable



Acetylated amino group

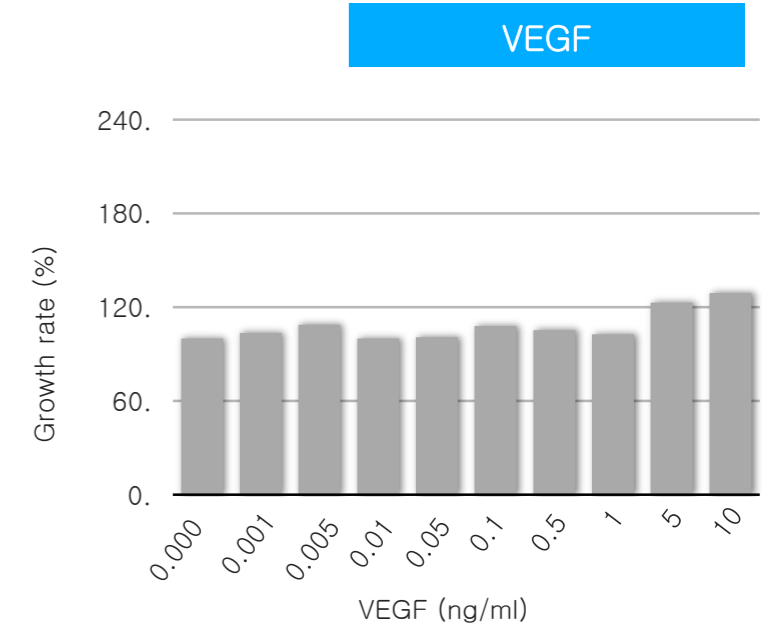
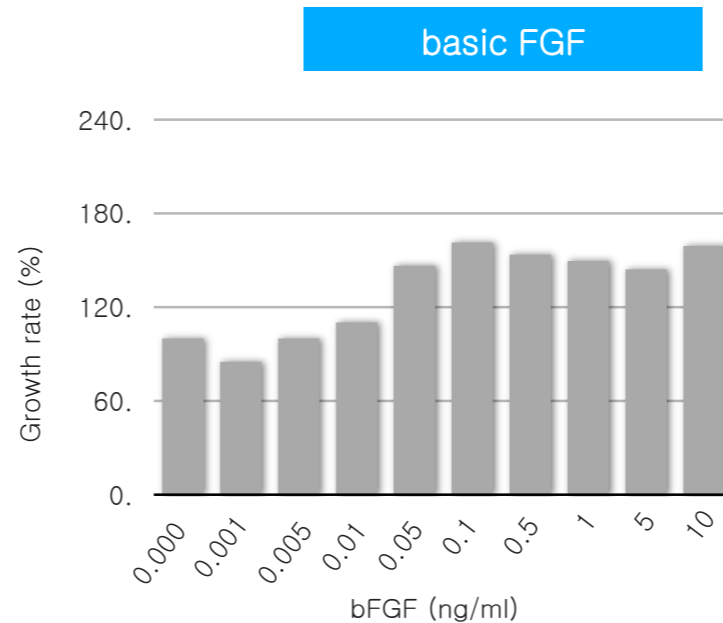
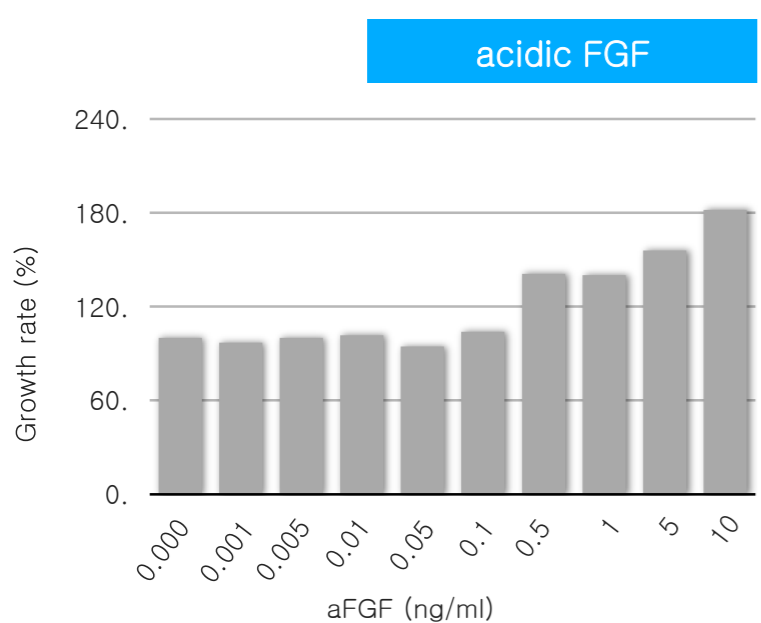
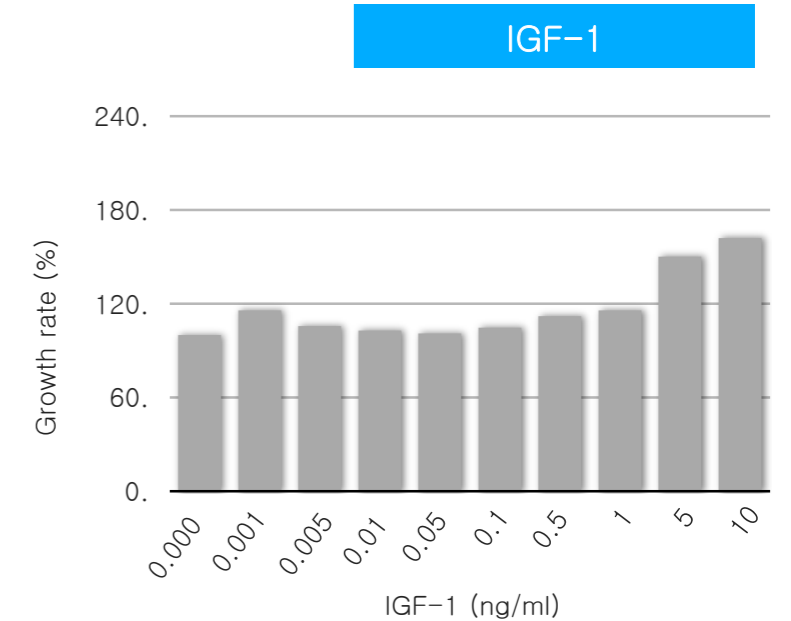
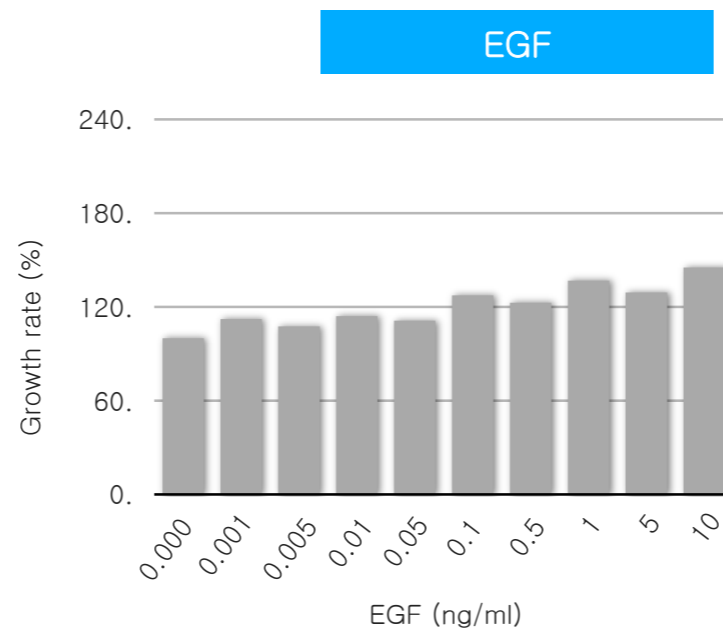
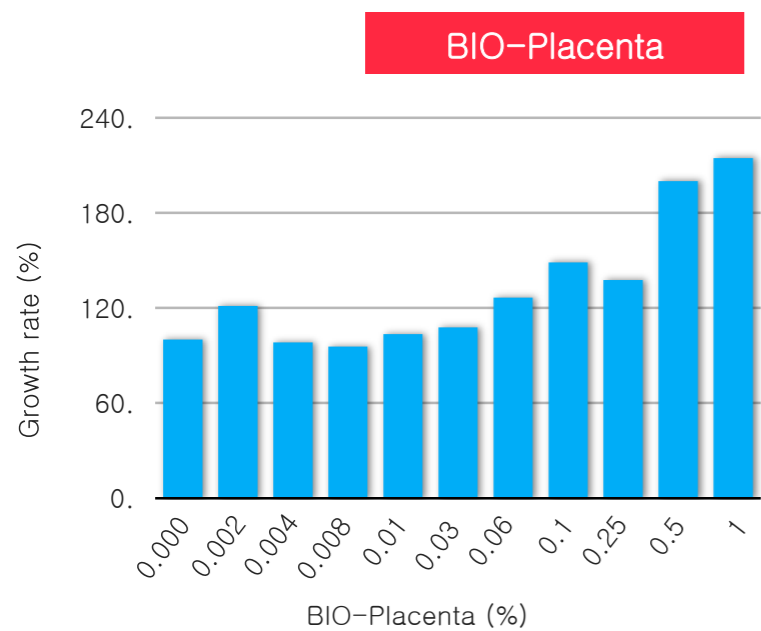
Biological Activity

Cell strain	Human Derma Fibroblast neonatal (HDFn, LONZA)
Detection method	MTT assay (Sigma, US)



Biological Activity

Cell strain	Human Derma Fibroblast neonatal (HDFn, LONZA)
Detection method	MTT assay (Sigma, US)



INCI	Water, Lecithin, Acetyl glutamine, sh-Oligopeptide-1, sh-Oligopeptide-2, sh-Polypeptide-1, sh-Polypeptide-9, sh-Polypeptide-11, Bacillus/folic acid ferment filtrate extract, Sodium hyaluronate, Capryly glycol, Butylene glycol, 1,2-Hexanediol
Definition	Five different growth factors(EGF, IGF-1, acidic FGF, basic FGF and VEGF), amino acid and vitamin give synergic anti-wrinkle effect.
Physical characteristics	Liquid form of liposome
Benefits & Uses	<ul style="list-style-type: none"> ✓ Anti-wrinkle ✓ Skin rejuvenation ✓ Elasticity enhancement ✓ Moisturizing ✓ Cell vitalization
Application	Skin, Body and Hair care
Recommended dosages	3.0 %