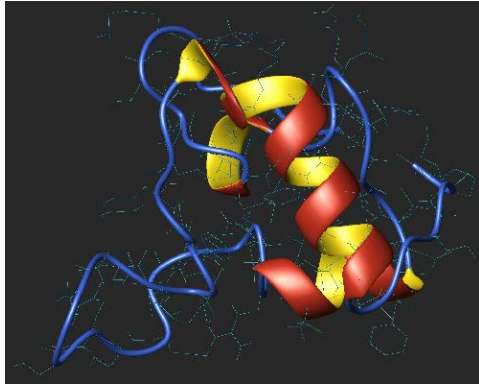


# CG-IGF-1 (Insulin-like Growth Factor 1)

INCI Name	Effect	Application
Human Oligopeptide-2	Anti-wrinkle / Hair growth / Fat Burning	Skin Care / Hair Care / Body Care

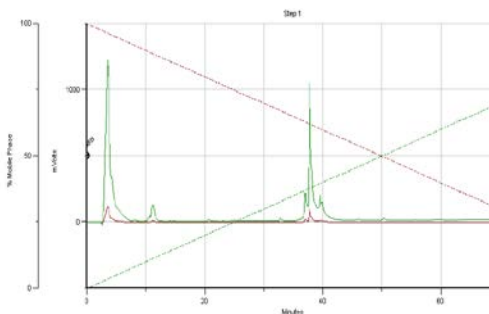


Tertiary structure of IGF-1

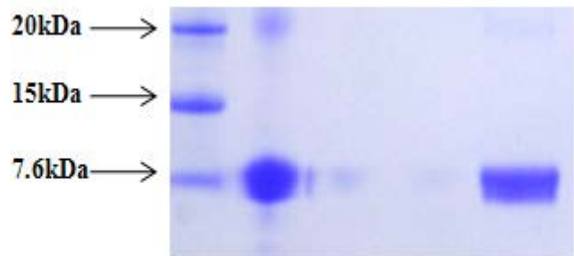
## Function

- Reduce and prevent lines and wrinkles by actively generating new skin cells
- Increase collagen and elastin levels and reduce blotchiness
- Refine texture glides effectively and slim your face and body with a fat burning effect
- Strengthen hair while stimulating hair follicles to produce strong hair shaft

## 물질 검증



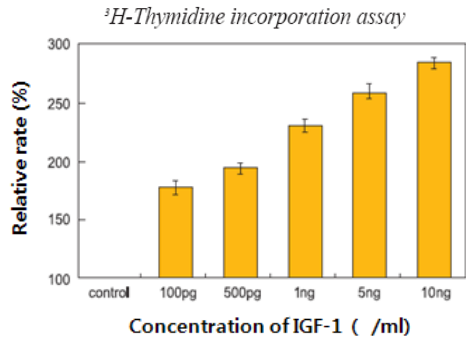
HPLC analysis



SDS-PAGE analysis

Trade Name	CG-IGF-1
Source	<i>E.coli</i>
Appearance	White Milky Solution
Purity	>95 ± 1% (SDS-PAGE)
Amino acid	70 a.a
Molecular Weight	7.6 kDa
pH	6.5 ± 1.00
Shape	Nanosome
Preservative	Phenoxyethanol 0.2%

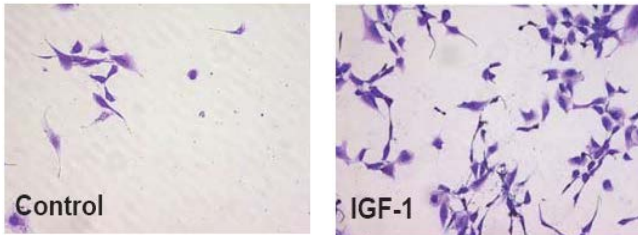
**IGF-1 modulates the skin rejuvenating by stimulation of cell proliferation.**



**Cell proliferation.**

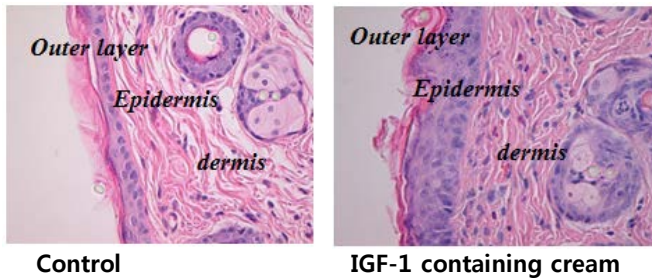
Cell growth assay with NIH3T3 fibroblast cell line after IGF-1 treatment for 72hrs. (ED<sub>50</sub> is around 80pg/ml)

**Cell morphology .**



Cell morphology changed after 72hr incubation with IGF-1 (10ng/ml) on NIH3T3 fibroblast cell line

**Skin histology with IGF-1.**

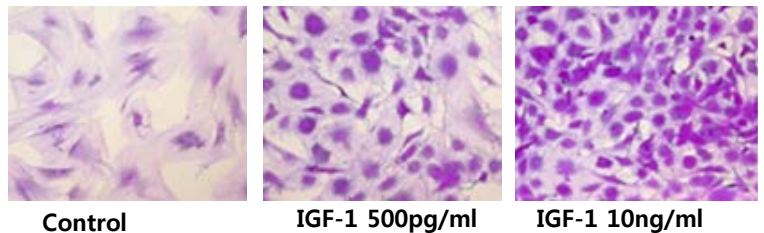
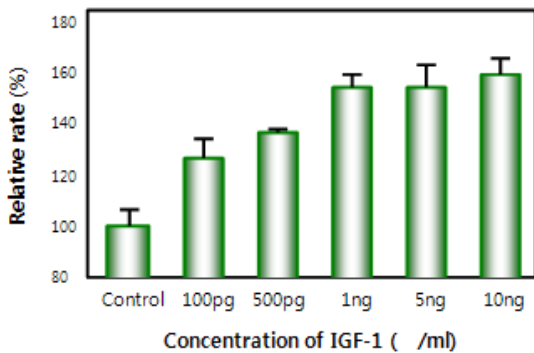


The microscopic image (X400) of skin section of histochemical staining for histology after 5days treatment with IGF-1 nanosome containing cream

**IGF-1 & Hair growth**

**Cell proliferation on hair cell by IGF-1**

**Cell morphology .**



Cell morphology changed after 72hr incubation with IGF-1 (500pg ~ 10ng/ml) on primary hair cells

Cell growth assay with primary hair cell after IGF-1 treatment for 72hrs.

# CG-VEGF (Vascular Endothelial Growth Factor)

INCI Name	Effect	Application
Human Oligopeptide-11	Hair Growth	Hair Care



Tertiary structure of VEGF

## Function

- Hair growth stimulation through the facilitation of nutrient feeding to hair follicle by the VEGF-induced angiogenesis

물질 검증

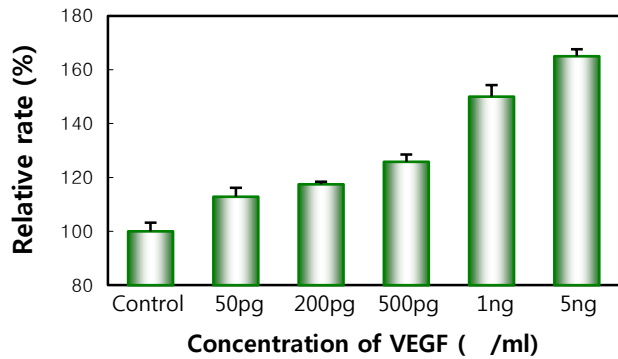
HPLC analysis

SDS-PAGE analysis

Trade Name	CG-VEGF
Source	<i>E.coli</i>
Appearance	White Milky Solution
Purity	>95 ± 1% (SDS-PAGE)
Amino acid	165 a.a
Molecular Weight	19.2 kDa
pH	6.5 ± 1.00
Shape	Nanosome
Preservative	Phenoxyethanol 0.2%

## VEGF & Angiogenesis & Hair growth

### Cell proliferation on primary hair cell by VEGF



Cell growth assay with primary hair cell after VEGF treatment for 72hrs.

Control 에 비해 180% 의 proliferation rate 이 올라가는 것을 확인 할 수 있었고 hair growth 에 영향할 것이라 생각 되어 진다.

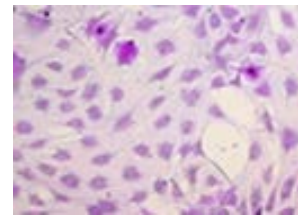
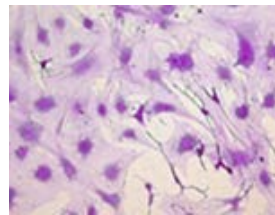
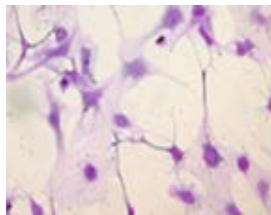
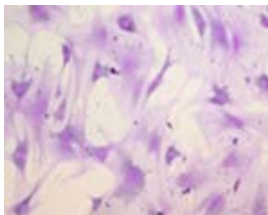
### Cell morphology on primary hair cell.

Control

VEGF 50pg/ml

VEGF 500pg/ml

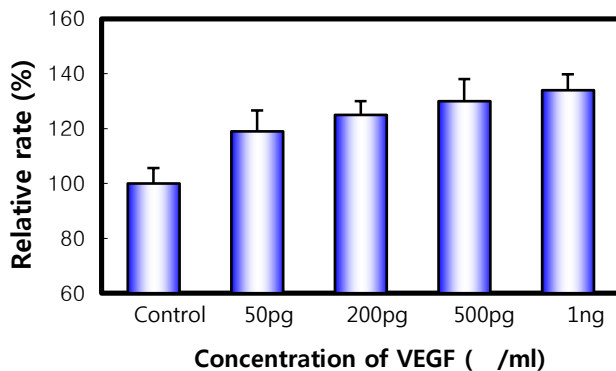
VEGF 5ng/ml



Cell morphology changed after 72hr incubation with VEGF (50pg ~ 5ng/ml) on primary hair cells

## VEGF & Angiogenesis

### Cell proliferation on human vein endothelial cell line (HUVEC)



Cell growth assay with human vein endothelial cell line after VEGF treatment for 72hrs.

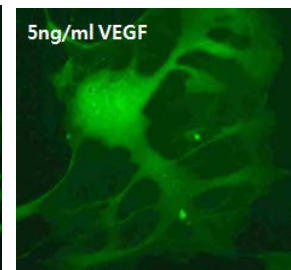
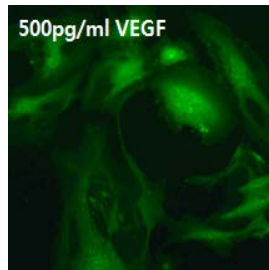
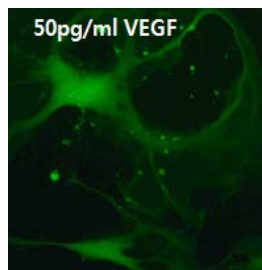
### Cell morphology on human vein endothelial cell line (HUVEC)

Control -untreatment

50pg/ml VEGF

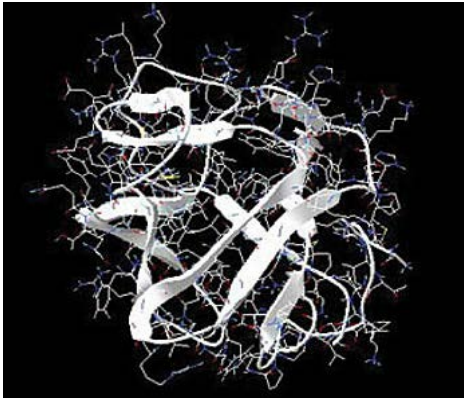
500pg/ml VEGF

5ng/ml VEGF



# CG-bFGF (basic Fibroblast Growth Factor)

INCI Name	Effect	Application
Human Oligopeptide-3	Anti-aging / Anti-wrinkle / Hair Growth	Skin Care / Hair Care / Body Care

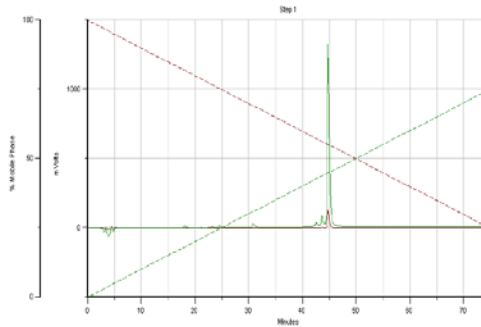


Tertiary structure of bFGF

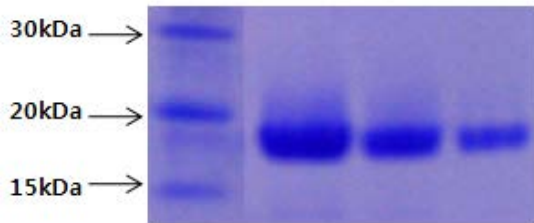
## Function

- Reduce and prevent lines and wrinkles by actively generating new skin cells
- Involve in normal skin growth, healing and wound repair
- Strengthen skin elasticity by inducing the synthesis of collagen and elastin
- Help blood circulation in the scalp and revitalizing hair follicles

## 물질 검증



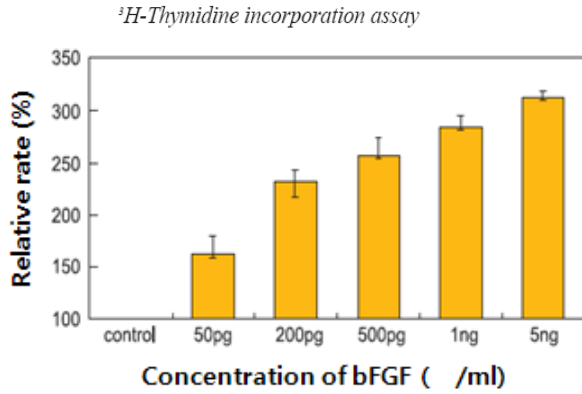
HPLC analysis



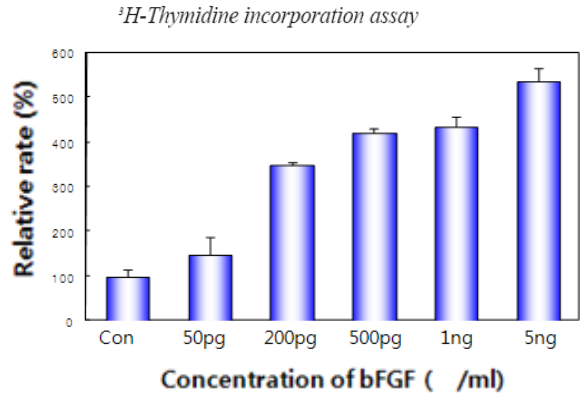
SDS-PAGE analysis

Trade Name	CG-bFGF
Source	<i>E.coli</i>
Appearance	White Milky Solution
Purity	>95 ± 1% (SDS-PAGE)
Amino acid	155 a.a
Molecular Weight	17.3 kDa
pH	6.5 ± 1.00
Shape	Nanosome
Preservative	Phenoxyethanol 0.2%

**bFGF modulates the skin rejuvenating by stimulation of cell proliferation.**

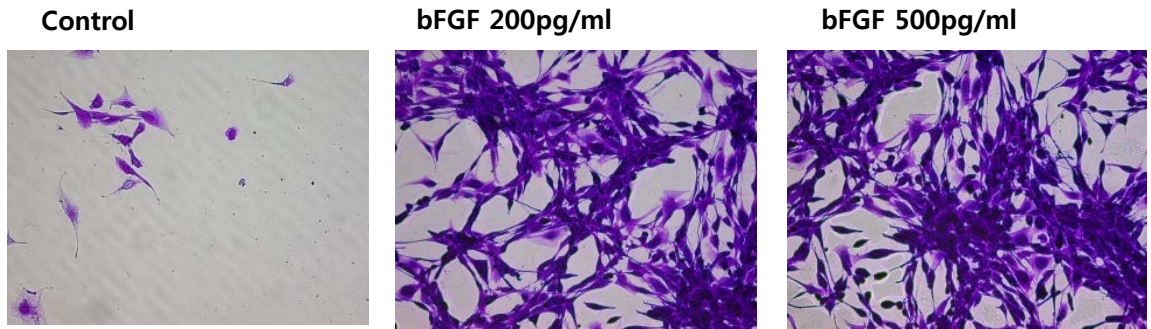


**Cell growth assay with HacaT keratinocyte cell line after bFGF treatment for 72hrs. (ED<sub>50</sub> is around 50pg/ml)**



**Cell growth assay with NIH3T3 fibroblast cell line after bFGF treatment for 72hrs. (ED<sub>50</sub> is around 50pg/ml)**

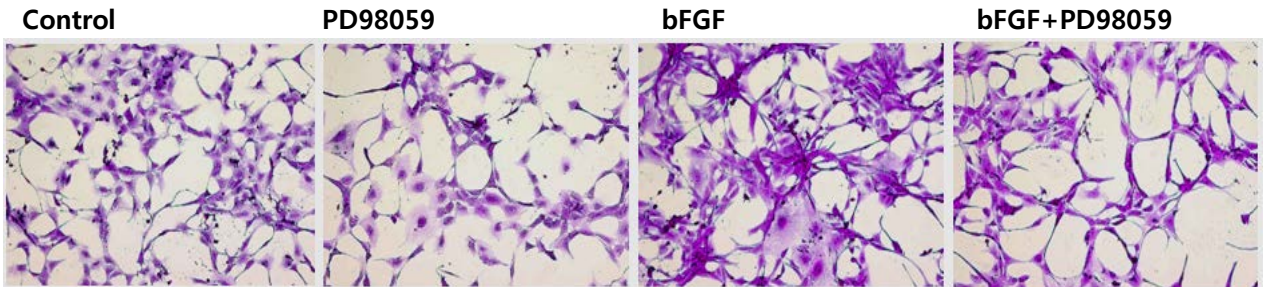
**Cell morphology test with NIH3T3.**



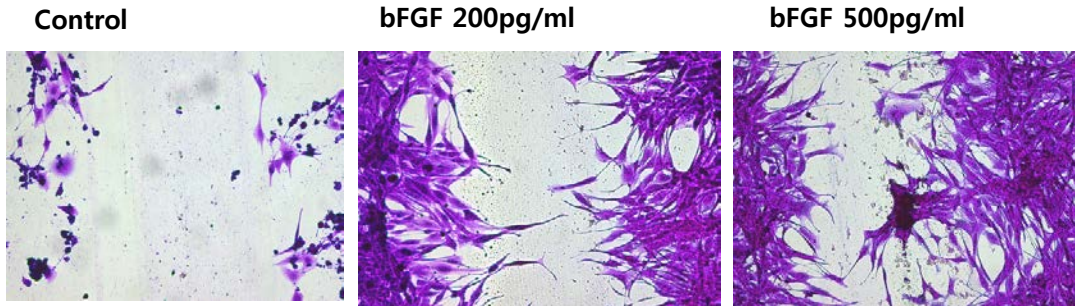
**Cell morphology changed after 72hr incubation with bFGF in the condition of serum free medium**

**Cell proliferation of bFGF on NIH3T3 Fibroblast cell by ERK signaling pathway**

**PD98059 : specific ERK inhibitor**



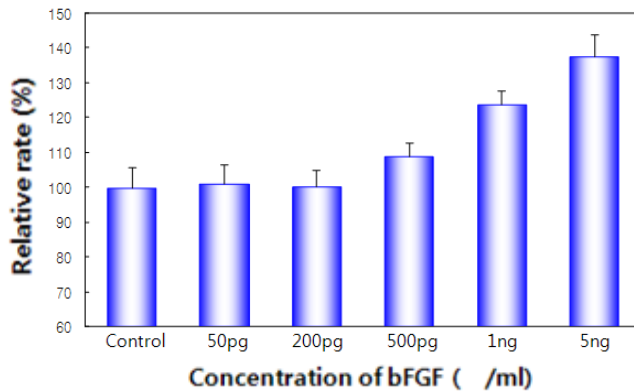
## Cell migration assay



NIH3T3 cell 을 이용하여 bFGF 의 Cell migration 을 관찰하였다. bFGF 를 5일 동안 처리 하여 Cell migration 을 관찰 한 결과 control 에 비해 NIH3T3 cell migration 이 급격하게 일어나는 것을 확인 할 수 있었다.

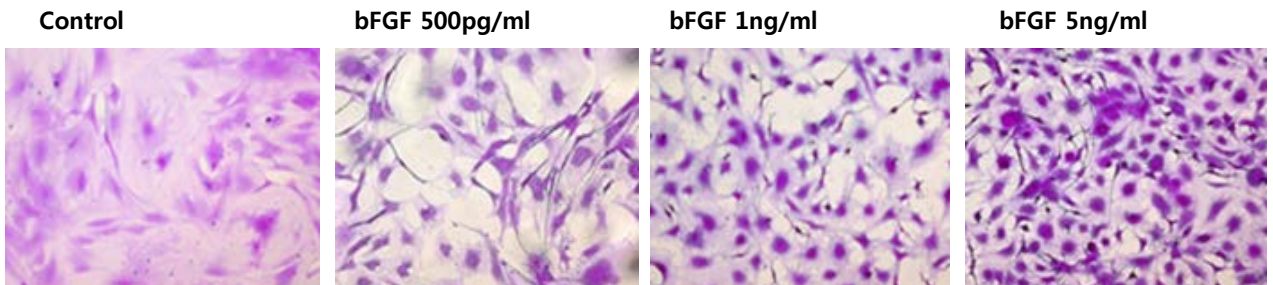
## bFGF & Hair growth

### Cell proliferation on primary hair cell by bFGF



Cell growth assay with primary hair cell after bFGF treatment for 72hrs.

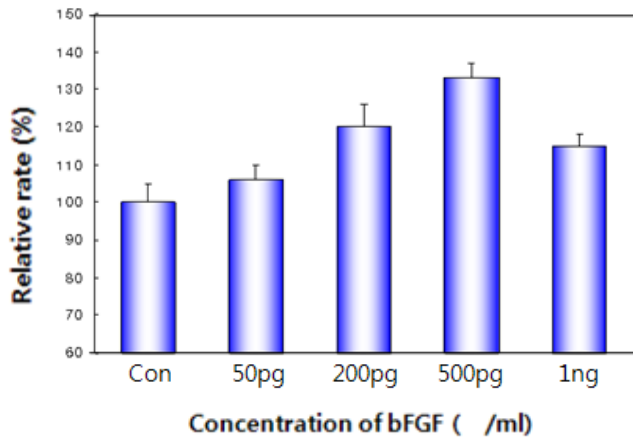
### Cell morphology on primary hair cell.



Cell morphology changed after 72hr incubation with bFGF (500pg ~ 5ng/ml) on primary hair cells

## bFGF & angiogenesis & hair growth

### Cell proliferation on human vein endothelial cell line (HUVEC) by bFGF



Cell growth assay with human vein endothelial cell line after bFGF treatment for 72hrs.

### Cell morphology on human vein endothelial cell line (HUVEC) by bFGF

