

# IP-VC™

Advanced Esterified  
Vitamin C

## Potent ECM Revitalizer



## IP-VC™

### INCI Declaration

Tetrahexyldecyl Ascorbate

### Benefits

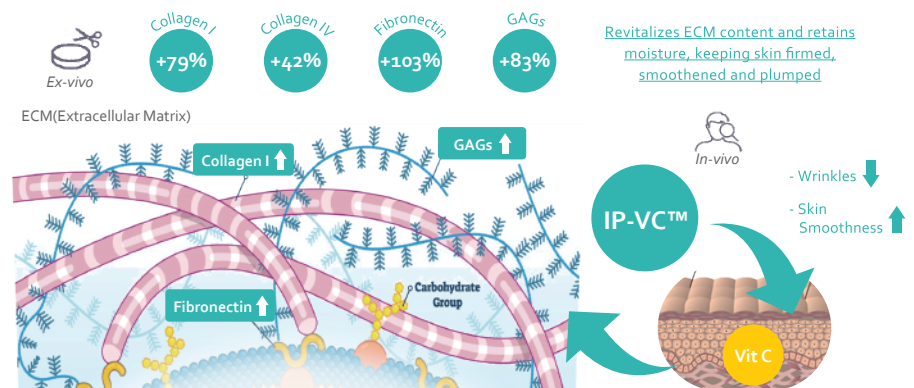
- Skin brightening
- Collagen boosting
- ECM revitalizing
- Restoring skin firmness
- Anti-wrinkle
- Skin rejuvenating
- Antioxidation
- DNA protection
- Free radical scavenging
- Excellent skin permeability
- Longer retention in skin
- UVB Protection

### Applications

- Skin rejuvenating products
- Anti-aging /  
Anti-wrinkle products
- Facial oil / Oil serum
- Freckle cream /  
Whitening serum
- Color cosmetics
- Sun protection

IP-VC™ is an advanced esterified Vitamin C derivative that provides superb anti-aging and anti-wrinkle effects, serving as a potent skin rejuvenating active that brightens skin, revitalizes ECM content and retains moisture by inhibiting the synthesis of melanin and boosting the synthesis of collagen, fibronectin and glycosaminoglycans, leaving skin soft, smooth, moisturized, supple, firmer and plumped.

### ECM Composition and Function



In the dermis layer of skin, ECM(extracellular matrix) carries 4 fundamental functions to maintain skin health, including: providing a supporting structure for skin elasticity, firmness and strength; helping with intercellular communication; segregating cells in the layer properly; promoting dynamic changes between cells including movement, growth, differentiation and etc.

The main components of the ECM include collagen, elastin, fibronectin, and basic media, which is mainly composed with glycosaminoglycans, glycoproteins and proteoglycans. Based on the *Ex-vivo* and *In-vivo* tests conducted, it is found that IP-VC™ can effectively stimulates the production of Collagen I, Collagen IV, Fibronectin, GAGs(Glycosaminoglycans) to reduce wrinkles and keep skin smoothed.

## Efficacy Study

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### ECM Revitalization

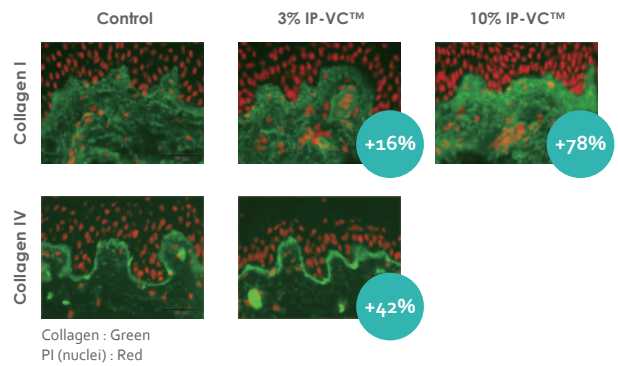
*Ex-vivo study*

A 11-day ex-vivo study was conducted by Bio-EC Laboratoire, using human abdominal skin tissue from a 51 years-old Caucasian woman. The levels of collagen I, collagen IV, fibronectin and glycoaminoglycans were investigated with applications of 3% and 10% IP-VC™.

#### Collagen Boosting Effect : Collagen I & IV Synthesis

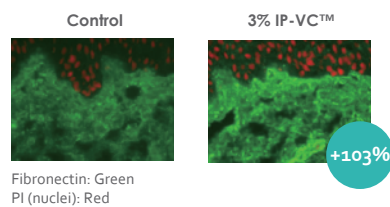
Type I collagen is the most abundant collagen of the human body. It forms large, eosinophilic fibers known as collagen fibers that provides supporting structure of dermis layer of skin. Based on the study results, it is found that 10% IP-VC™ is able to stimulate synthesis of collagen I up to 78%.

The main functions of type IV collagen are cell binding and network-forming. It exists in Dermal-epidermal junction(DEJ) to support its structure. According to the study, 3% IP-VC™ is able to stimulate synthesis of collagen IV up to 42%.



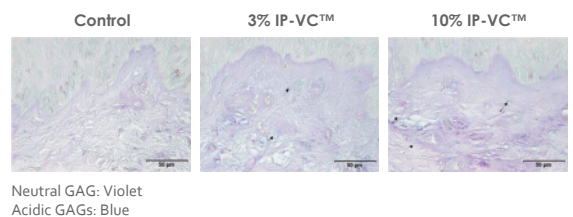
#### Fibronectin Boosting Effect : Fibronectin Synthesis

Fibronectin strengthens the connection between fibers and tissues in the ECM leading to firmer skin appearance. According to the study results, it is found that 3% IP-VC™ is able to stimulate synthesis of fibronectin up to 103% as soon as Day 5.



#### GAGs Boosting Effect : Glycosaminoglycans Synthesis

Glycosaminoglycans(GAGs) attract and keep moisture in dermis layer of skin. From the study results, 3% IP-VC™ can stimulate neutral GAGs and acidic GAGs up to 40% and 78% respectively, and 10% IP-VC™ can stimulate neutral GAGs and acidic GAGs up to 55% and 83% respectively.



## Efficacy Study

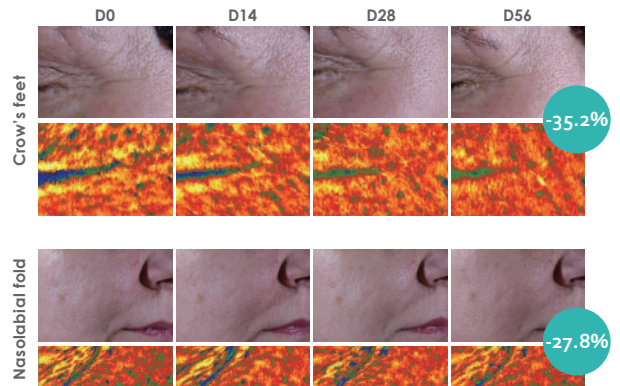
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### Anti-wrinkle and smoothing effect

#### *In-vivo study*

A 56-day in-vivo study was conducted by Eurofins DermScan, recruiting 30 Caucasian female age between 40-65 as volunteers. The anti-wrinkle and smoothing effect at areas of crow's feet, underneath eyes and nasolabial fold were observed with applications of 3% IP-VC™.

Based on the study result, 3% IP-VC™ can significantly reduce wrinkles and smoothen skin in all 3 areas, and 100% volunteers confirmed that application of 3% IP-VC™ can leave their skin soft, smooth, moisturized, supple, firmer and plumped.

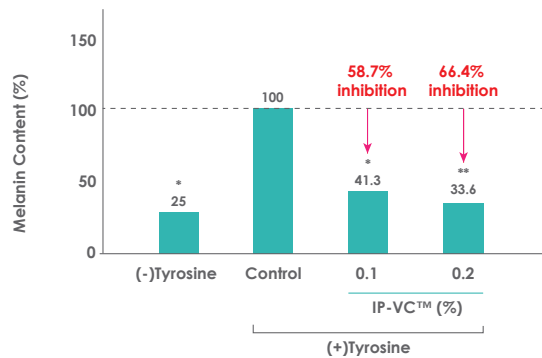


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### Whitening

#### Inhibition of melanin synthesis

As IP-VC™ can be effectively converted to Vitamin C in skin with much higher stability and excellent percutaneous absorption, thus possessing multiple skincare properties identical to Vitamin C including whitening. According to the study, IP-VC™ can effectively inhibit the production of melanin up to 66.4% at the level of 0.2%, and it also shows a tendency to be dose dependent.

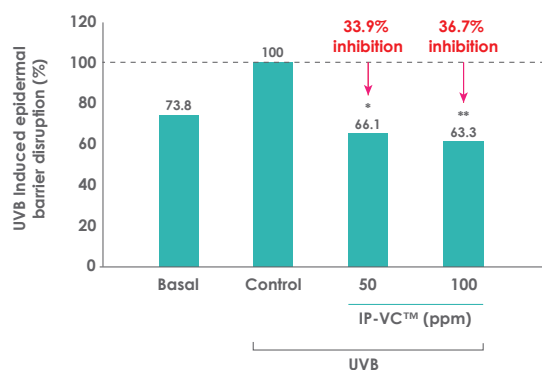


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### UVB Protection

#### Inhibition of UVB induced epidermal barrier disruption

Photoaging is one of the causes for skin aging, and UVB directly damages the DNA of outermost layer of skin. To study the UVB protection effect of IP-VC™, Dextran assay was conducted. Based on the study result, it is found that IP-VC™ is able to inhibit UVB induced damage up to 36.7%.



# IP-VC™

ECM Revitalizer

## Claim Ideas for IP-VC™

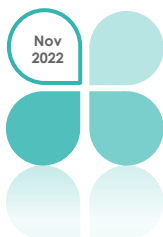
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## Marketing Benefits

- Esterified Vitamin C
- Potent anti-aging active
- Non-irritant, non-mutagenic, and non-toxic
- REACH Compliant, China approved and Halal approved



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