



## Imdermalab<sup>®</sup> 4D-White ( ALL-IN-ONE )

INCI: HYDROXYETHYLPIPERAZINE ETHANE SULFONIC ACID (and) Phalaenopsis Sogo Yukidian Flower Extract (and) NIACINAMIDE (and) NONAPEPTIDE-1

China INCI: 羟乙基哌嗪乙烷磺酸 (and) 蝴蝶兰 ( PHALAENOPSIS AMABILIS ) 提取物 (and) 烟酰胺 (and) 九肽-1

- **Functions: Brightening, Whitening, Spot Lightening, Anti-oxidant, Anti-aging.**

# ALL-IN-ON Solution

## Multi-Target Whitening Mechanism

1.

**INACTIVE**



• Decrease Tyrosinase Activity

2.

**DECREASE**



• Decrease Melanin Pigment

3.

**BLOCK**



• Block Melanin Delivery

4.

**SCAVENGE**



• Increase Skin Metabolism

**Nonapeptide-1**



Facultative pigmentation = TAN

Constitutive pigmentation

**HEPES**

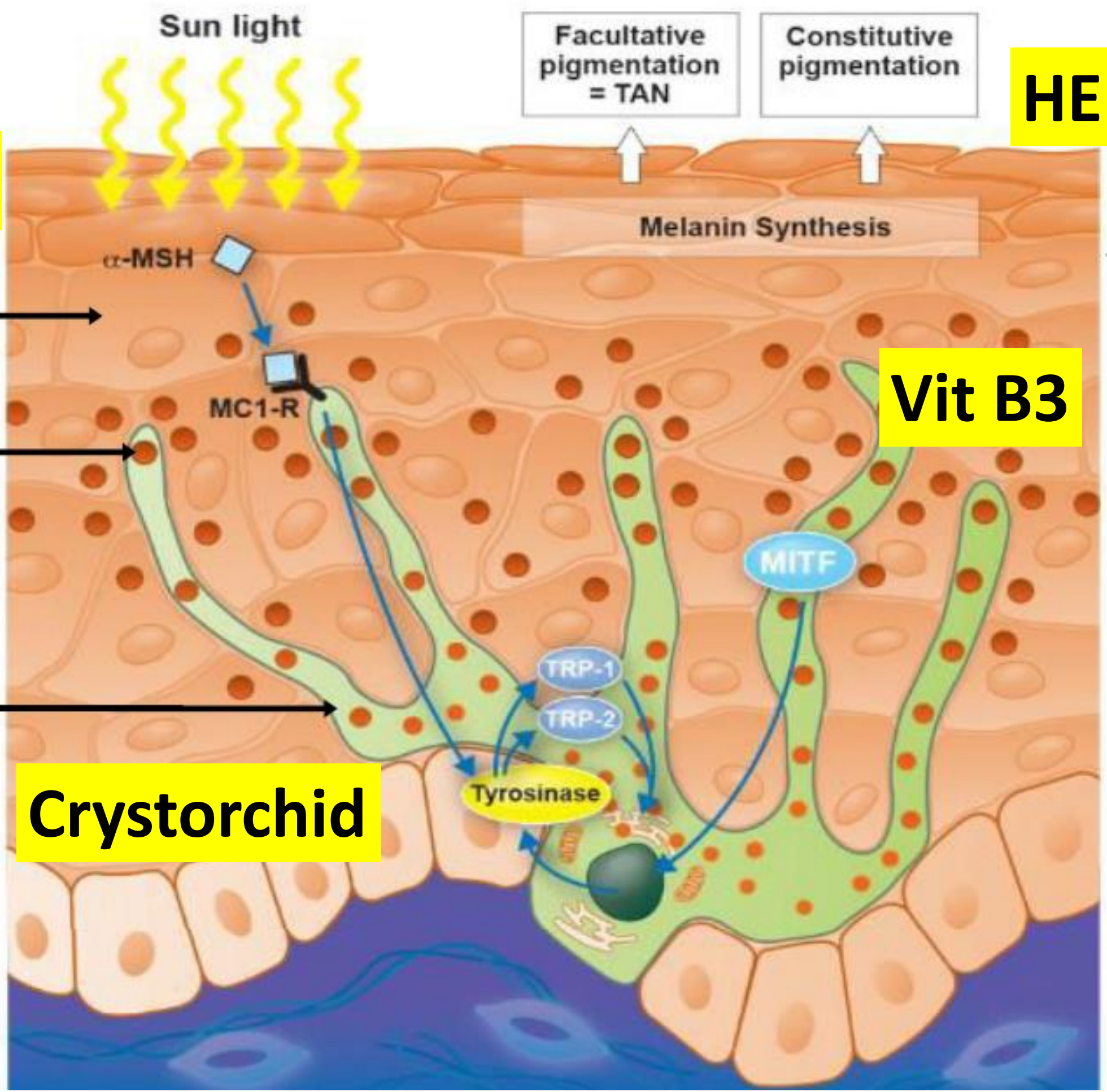
keratinocyte

melanosome

melanocyte

**Crystorchid**

**Vit B3**



SC

Epidermis

DEJ

Dermis



1.

# INACTIVATE

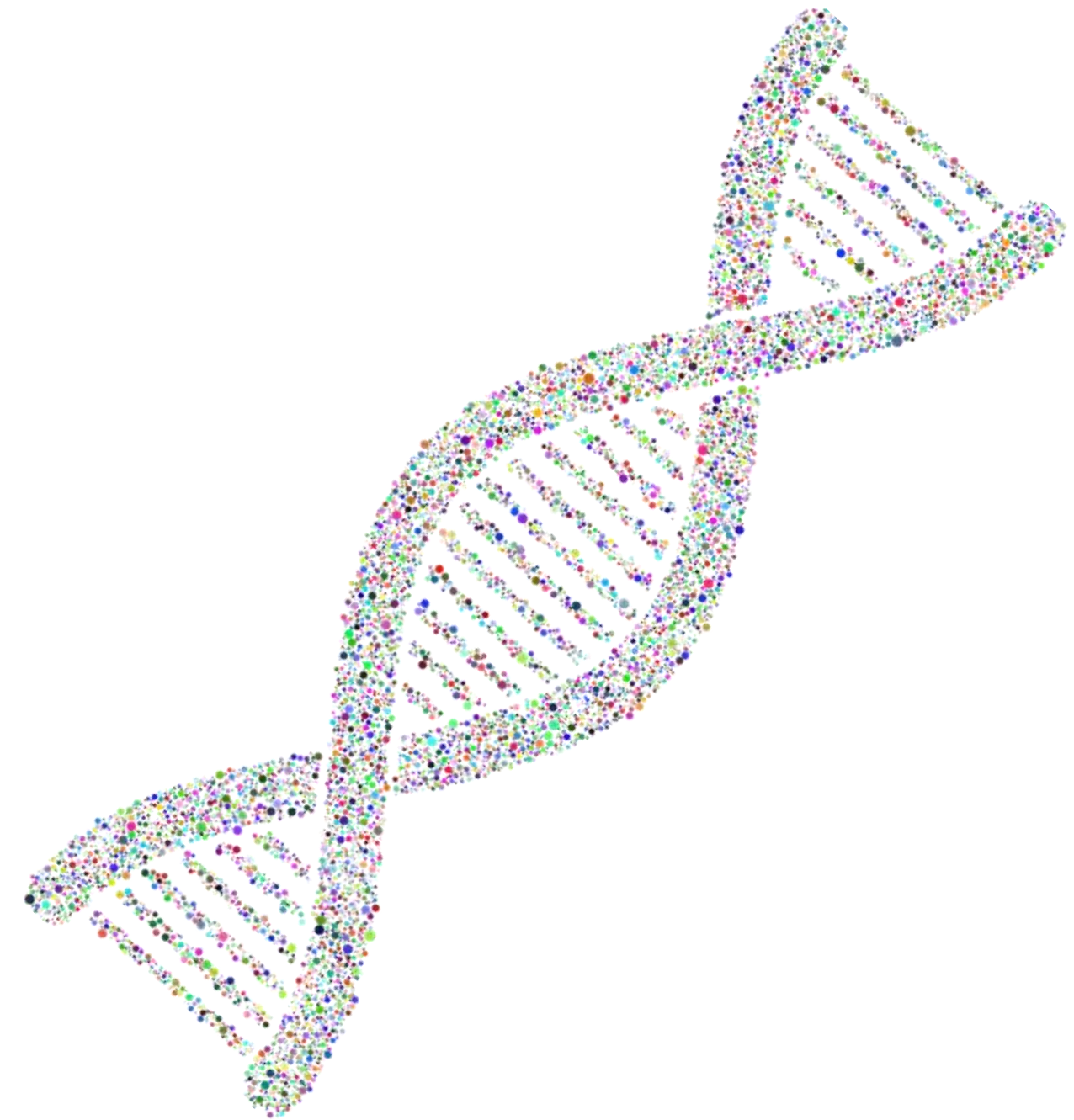


Decrease Tyrosinase activity

## NONAPEPTIDE - 1

Antagonism  $\alpha$ -MSH receptor: MC1-R.

Decrease the activity of tyrosinase.



# 2.

## DECREASE



## Decrease Melanin Pigment

### Imdermalab<sup>®</sup> Crystorchid

1g of freeze-dried = more than 200,000 of Phalaenopsis blooming flowers.

1460 days Well-Cultivated.

Contracted and fair trade with Award-Winning Orchid farmer

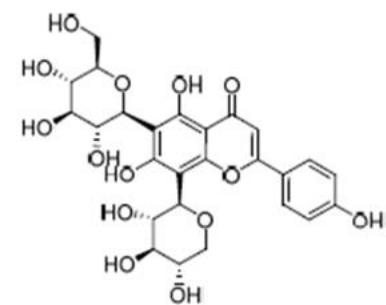
Tyrosinase Inhibit

Anti-Oxidant

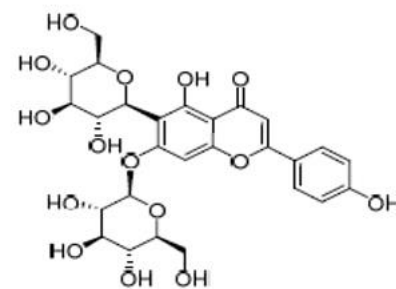


#### Key Components by NMR & LC-MS

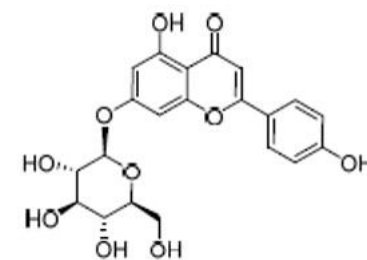
Apigenin-6-ribosido-7-glucoside,



Saponarin,



Apigenin-7-glucoside ,

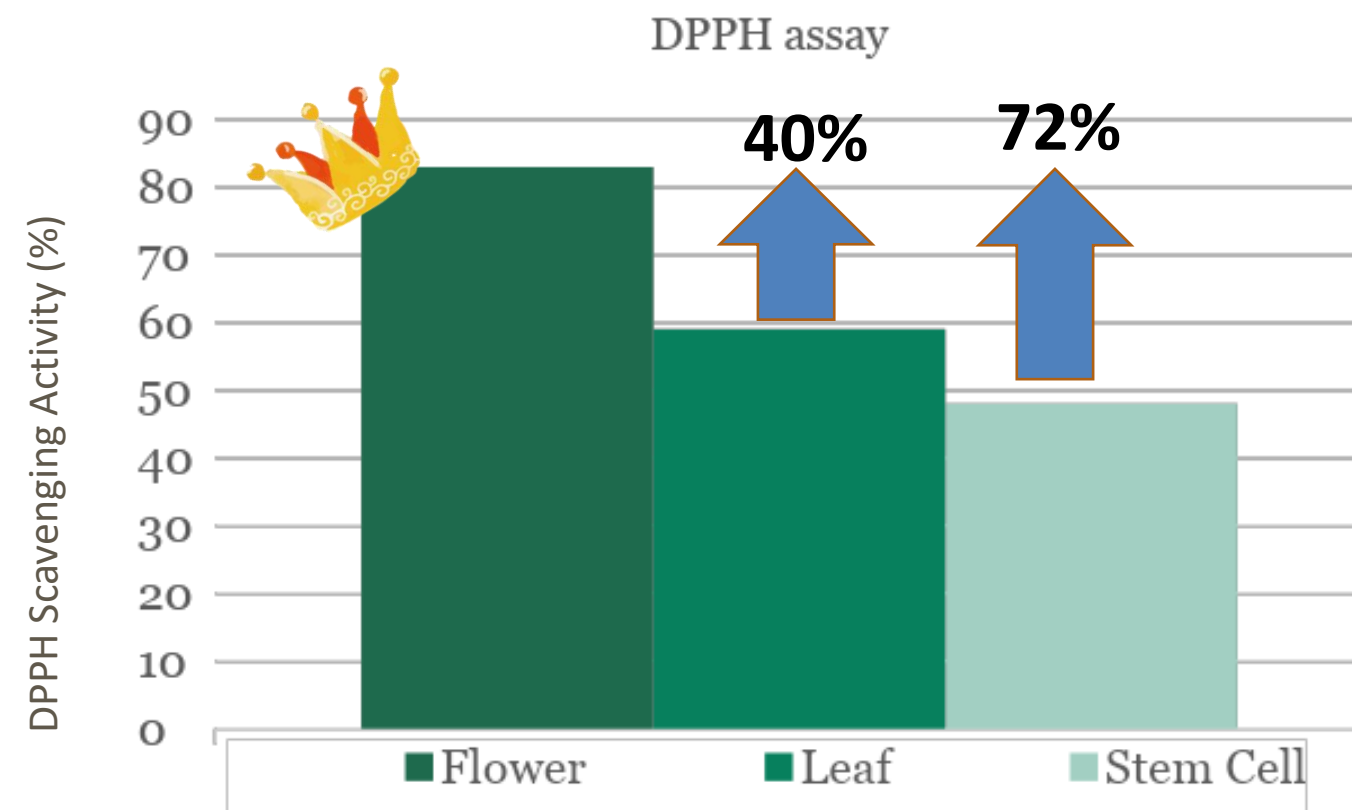
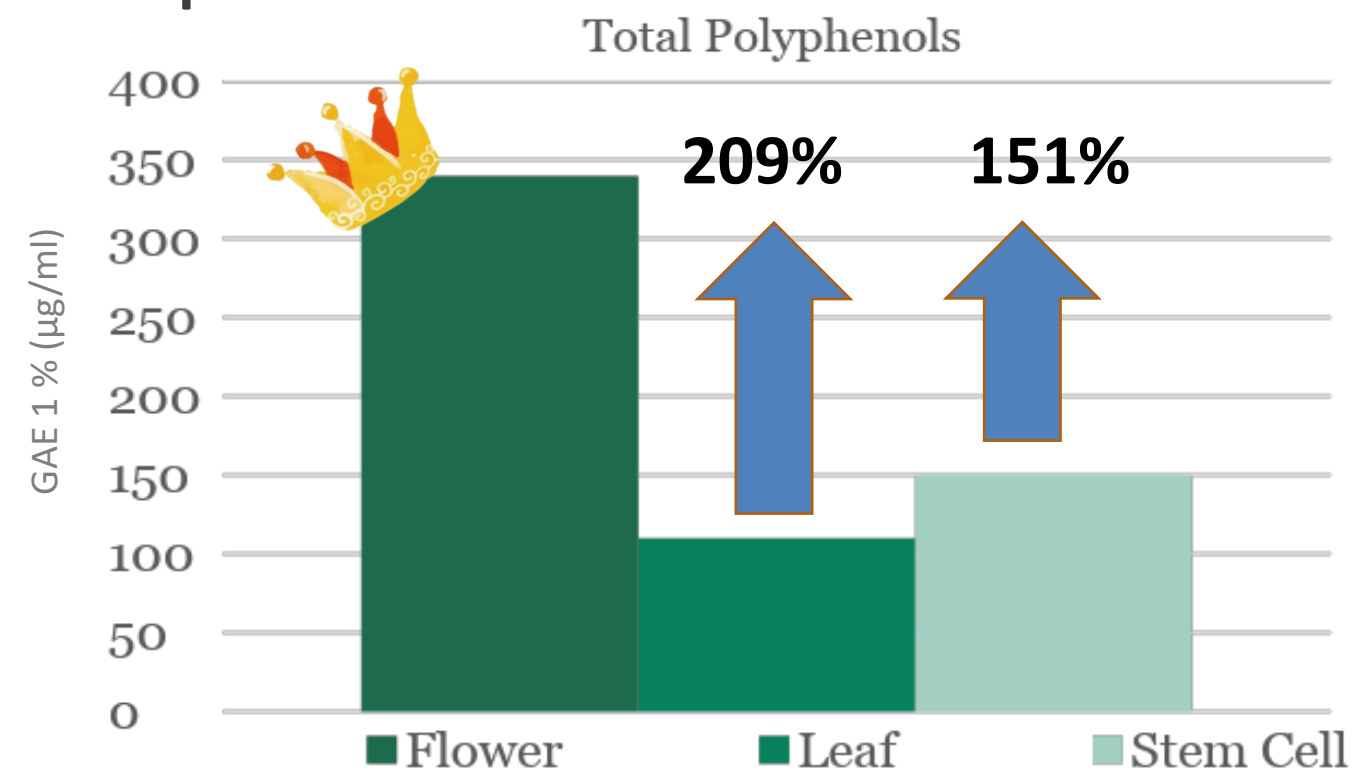


Reduce Melanin Pigment

## Total Polyphenols & Free Radicals Scavenging ability

### Antioxidant activity of bloom part

- Indermalab<sup>®</sup> Crystorchid extracted from fresh blooming flower of Phalaenopsis Sogo Yukidian and completed extraction process within 14 days after harvest.
- The experiment results shown, fresh flower part has richer content of total polyphenols 3 times more than leaf part ; the ability of free radicals scavenging is about 40% more higher than the leaf and the stem cell part.

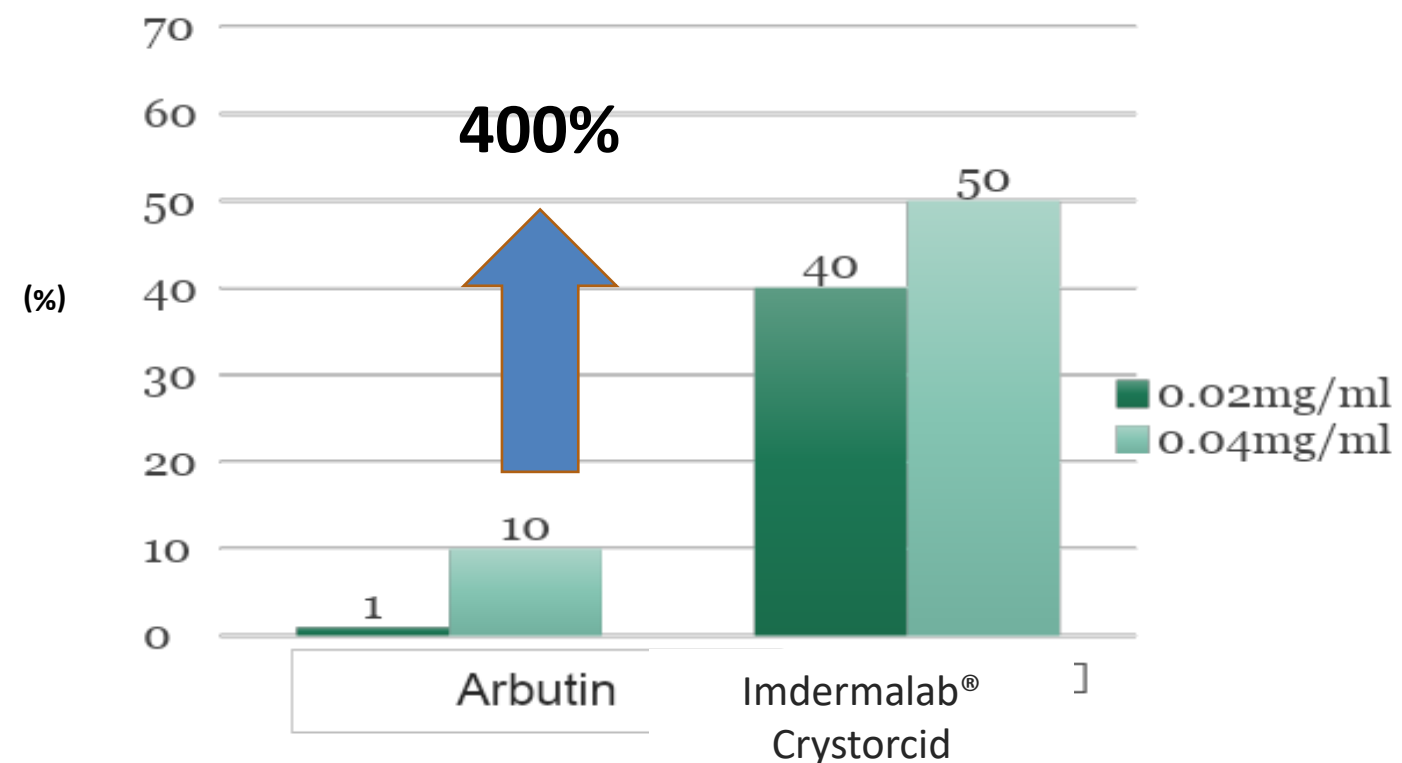


# Imdermalab<sup>®</sup> Crystorchid

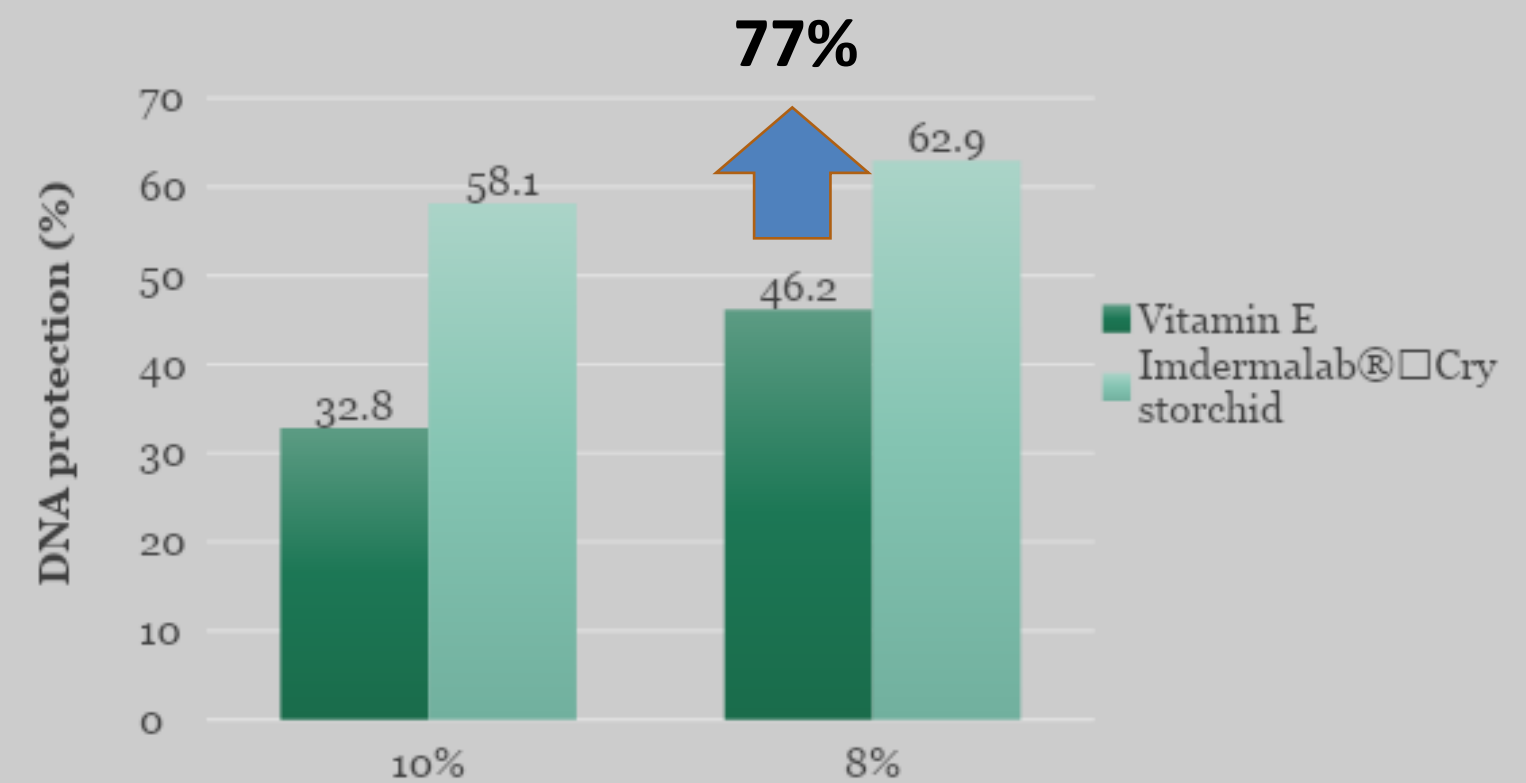
In-Vitro

- As the result of Tyrosinase Inhibition Test with IC<sub>50</sub> shown, The inhibitory effect of Imdermalab<sup>®</sup> Crystorchid on tyrosinase activity is **4 times** higher than that of arbutin.
- Ultraviolet (UV) radiation can induce the production of hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>). The combination of UV and H<sub>2</sub>O<sub>2</sub> will produce hydroxyl radical (OH<sup>-</sup>) and cause DNA damage or breakage. It was confirmed that Imdermalab<sup>®</sup> Crystorchid has DNA protection effect, which is **77%** better than Vitamin E.

### Tyrosinase Inhibition Assay



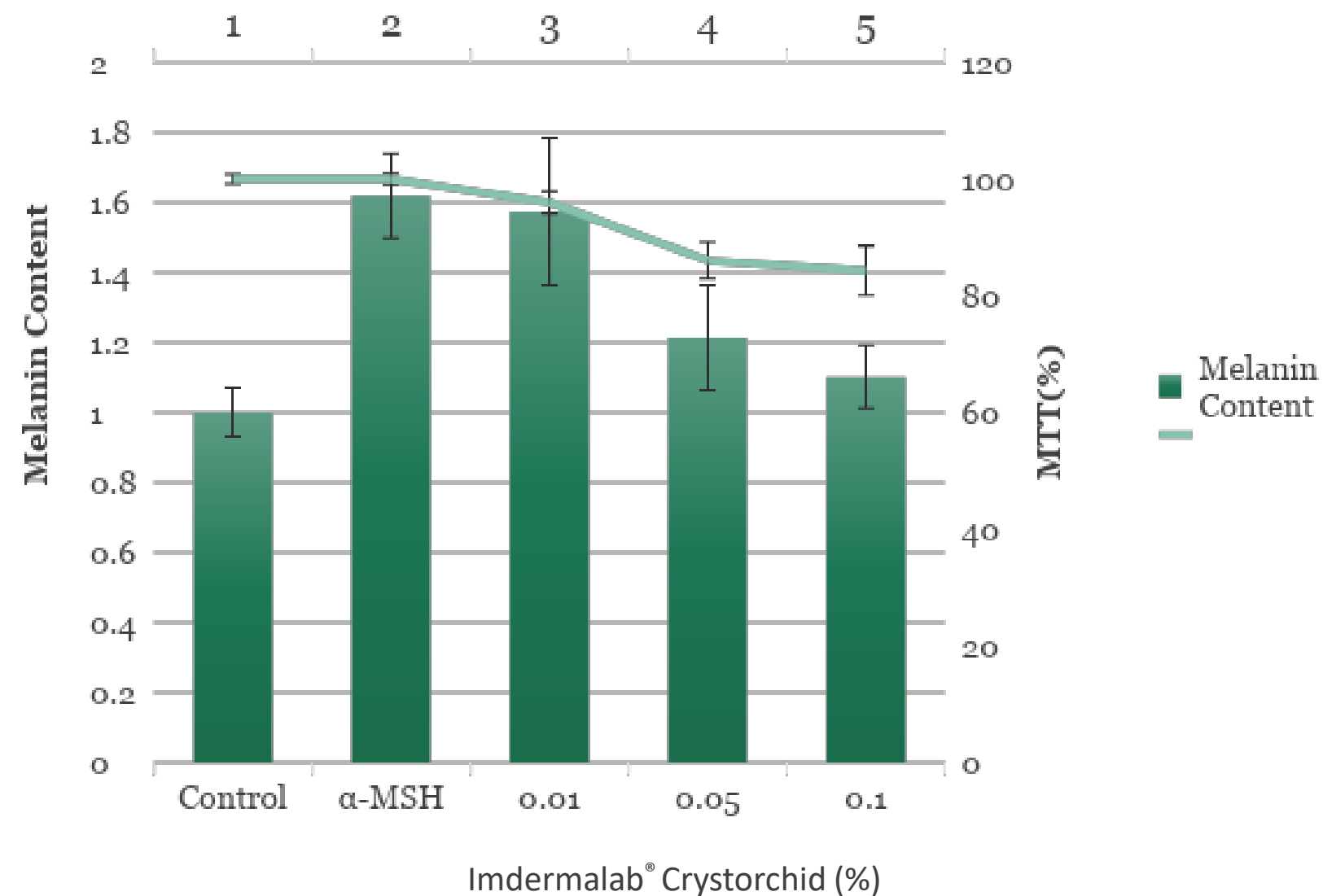
### DNA Protection Assay



## Inhibition of $\alpha$ -MSH Induced Melanin Assay

# Great Inhibitory Effects on Melanin Production

As shown in Fig., Indermalab<sup>®</sup> Crystorchid at concentrations with 0.01%、0.05% and 0.1% significantly inhibited melanin production induced by  $\alpha$ -MSH and there is a dose-dependent relationship. **With 0.1% of Indermalab<sup>®</sup> Crystorchid, the melanin production inhibition rate can reach to 84% effectively.** It is also proved that the Indermalab<sup>®</sup> Crystorchid can efficiently inhibit developing of **Melanin in Melanocyte** (picture on right below) by our test.





3.

## BLOCK



Block Melanin Delivery

Vit B3, Niacinamide

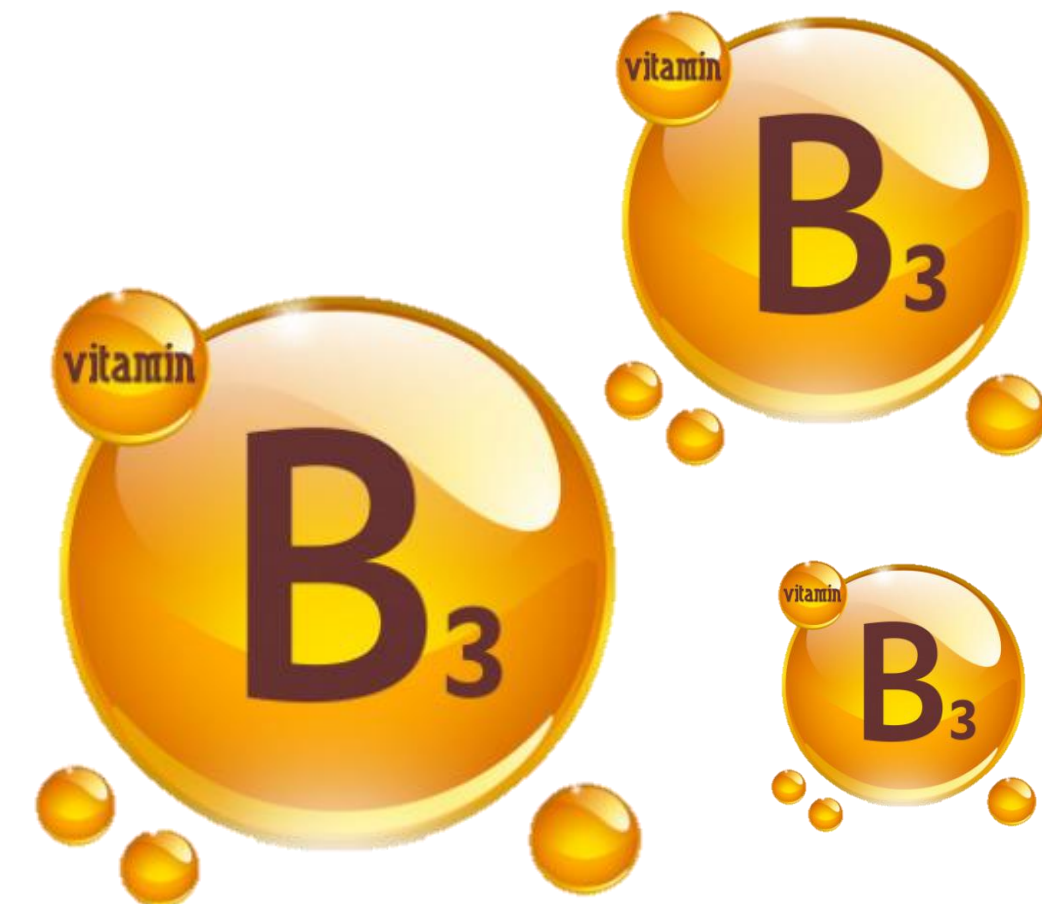
Block the delivery of melanin pigment.

Oil control

Anti-Wrinkle

Strengthen the barrier function.

Soothing



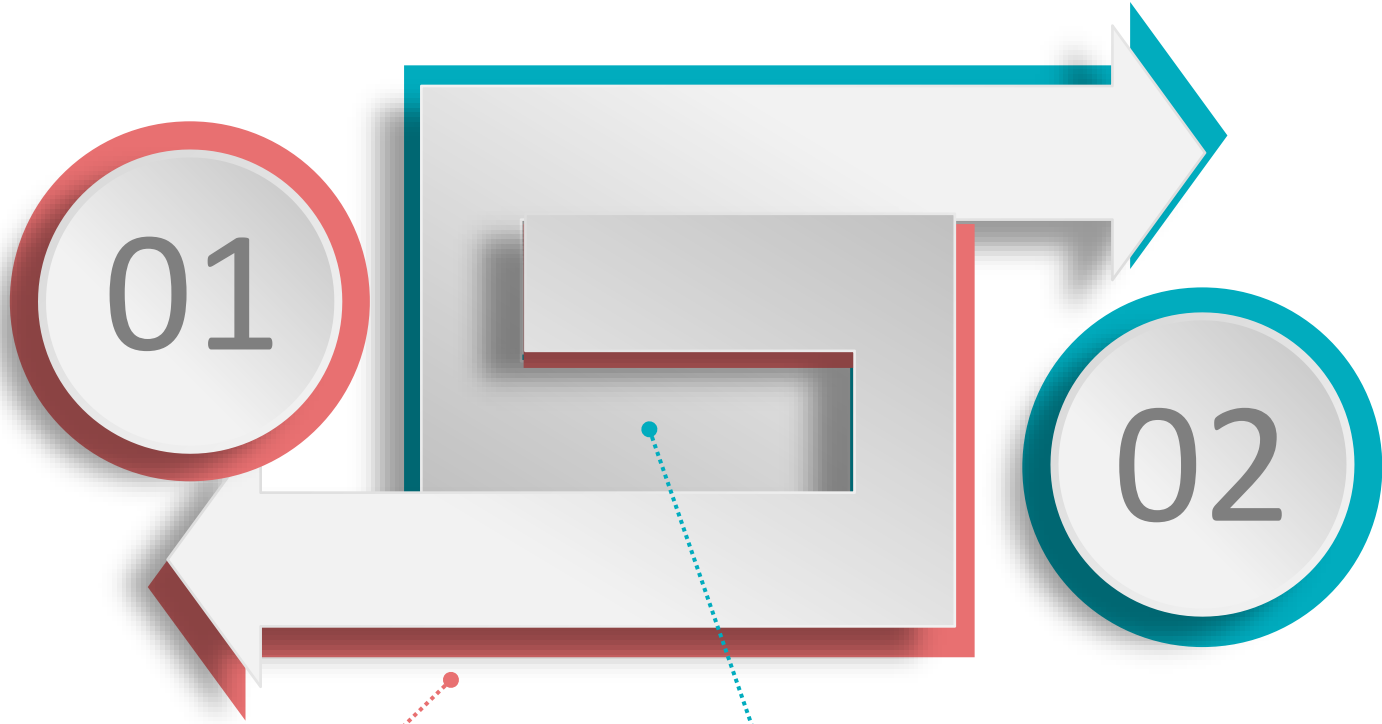
4.

# SCAVENGE



Increase Skin Metabolism

**H E P E S**  
HYDROXYETHYLPIPERAZINE ETHANE SULFONIC ACID



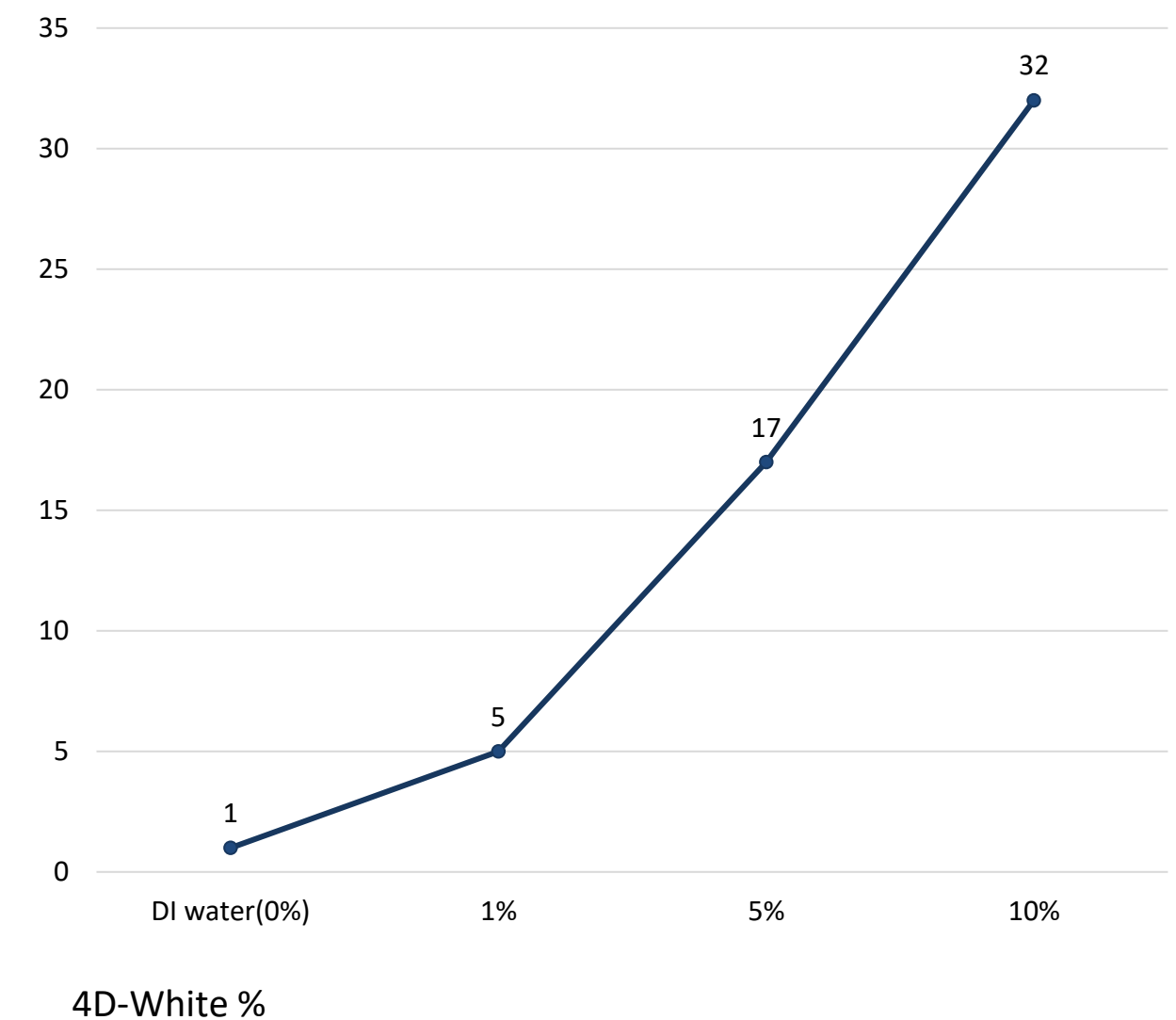
Increase the activity of protease.  
To increase skin metabolism.

pH buffer solution  
Stable the formulation

# Imdermalab<sup>®</sup> 4D-White : Stability Test



	D.I. water	4D-White 1% solution	4D-White 5% solution	4D-White 10% solution
Lactic acid solution (8.8%, pH: 1.6)	1(g)	5(g)	17(g)	32(g)
pH value below 3.5	n.a.	4 g/ml	16 g/ml	31 g/ml



# Imdermalab<sup>®</sup> 4D-White

In-Vivo

b y P r o v i d e n c e U n i v e r s i t y

Purpose:

To evaluate the spot lightening effect of serum with 5% Imdermalab<sup>®</sup> 4D-White

Study Condition:

Sex: Male or female

Subject: with 20 Asian race of age 25-50 years old

Usage: twice daily application on whole face.

Test Time: Once a week. 5 times.



# Imdermalab<sup>®</sup> 4D-White

In-Vivo

**B r i g h t e n i n g**



NF333

**M e l a n i n**



**S p o t L i g h t e n i n g**



## Brightening

After 1 weak

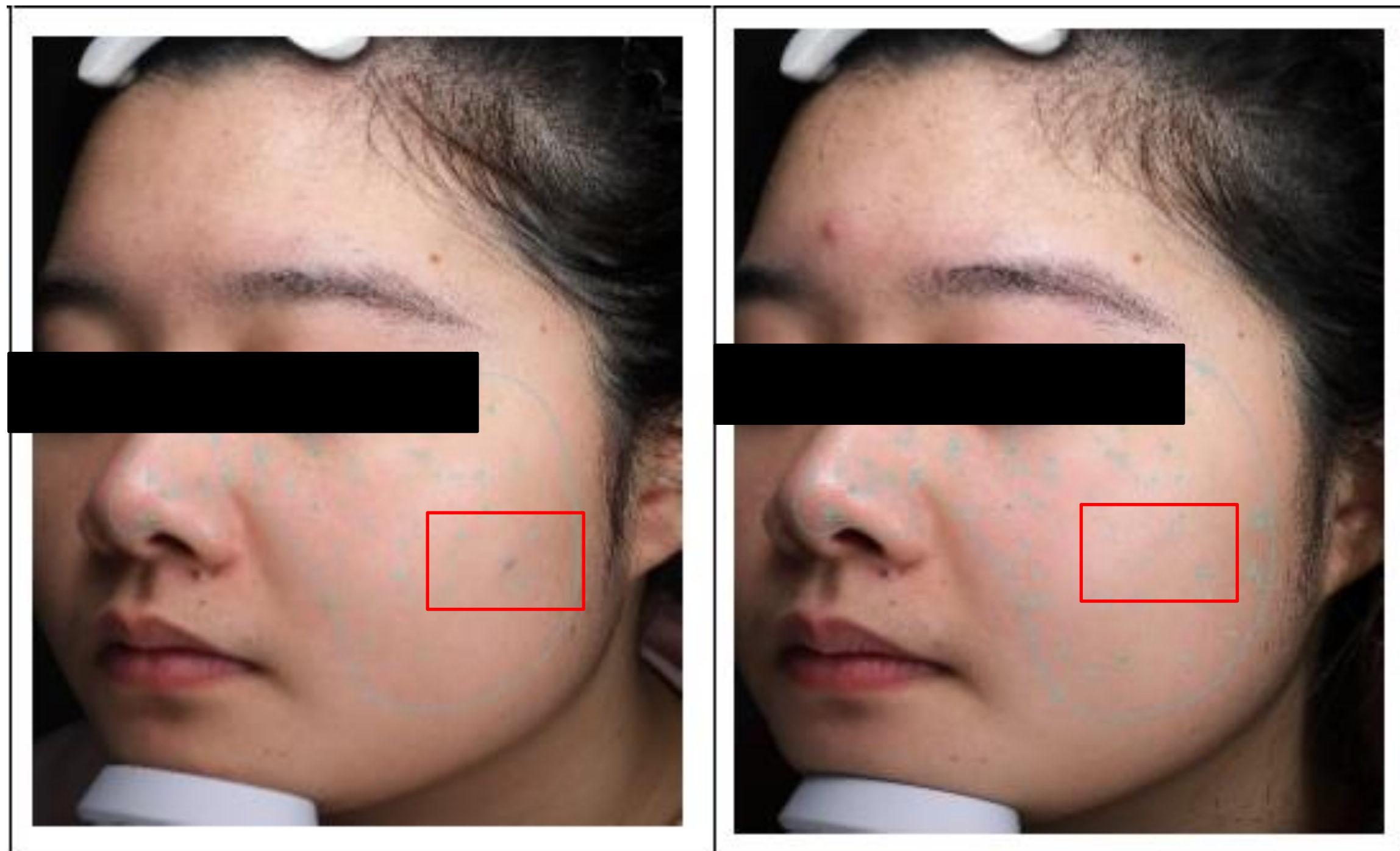
**+1.92%**

After 4 weak

**+5.19%**

The highest improve

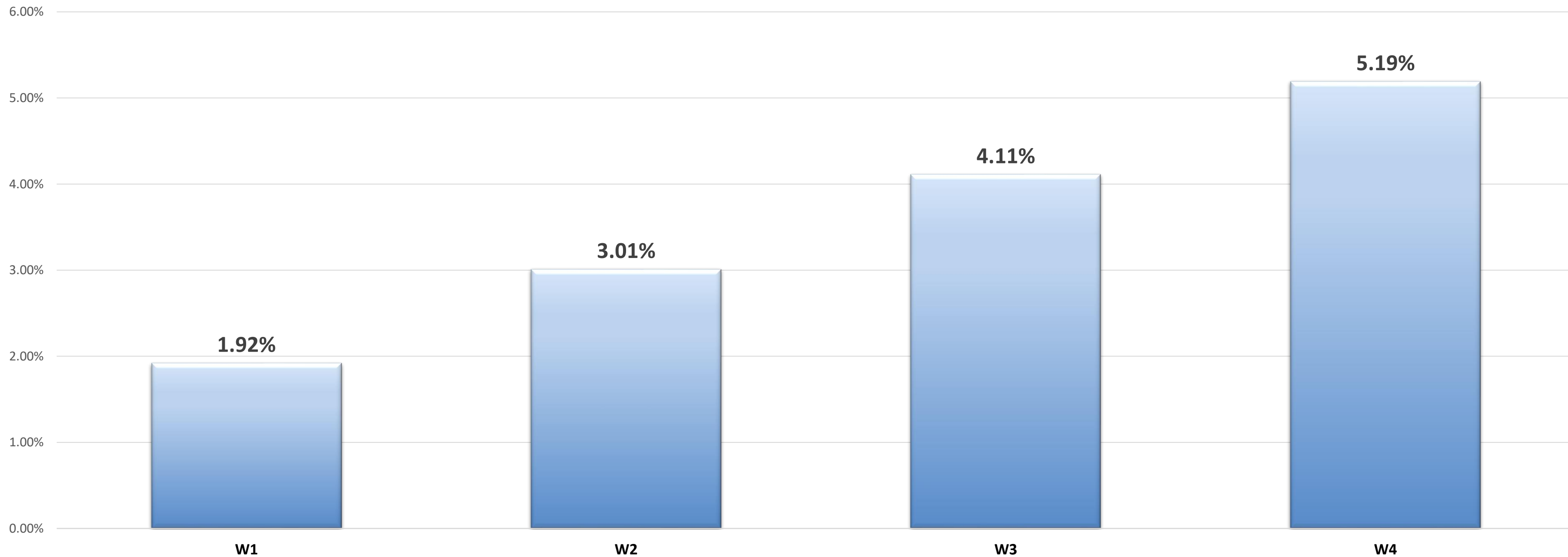
**+9.59 %**



**Imdermalab<sup>®</sup> 4D-White**

In-Vivo

# Brightening



## Melanin Content

After 1 weak

**-7.71%**

After 2 weak

**-14.45%**

After 4 weak

**-24.42%**

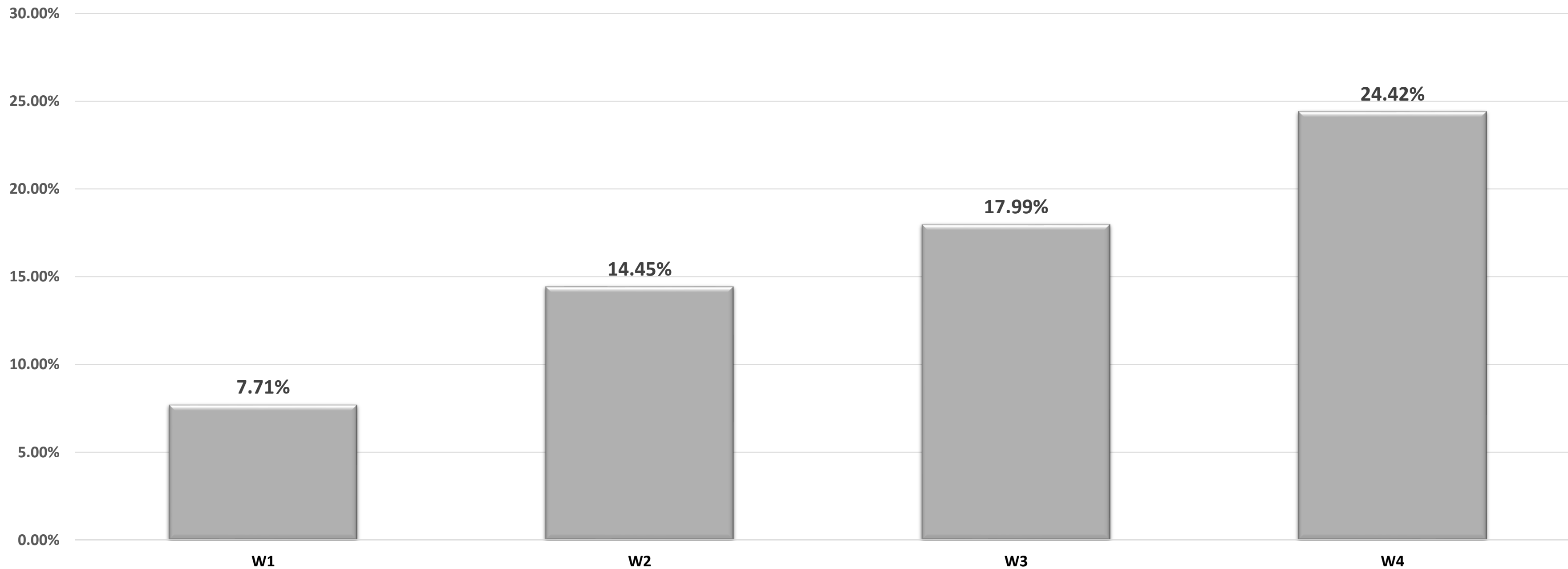




**Imdermalab<sup>®</sup> 4D-White**

In-Vivo

## Melanin Content



## Area of Spot

After 1 weak

**-5.91%**

After 2 weak

**-10.17%**

The highest improve

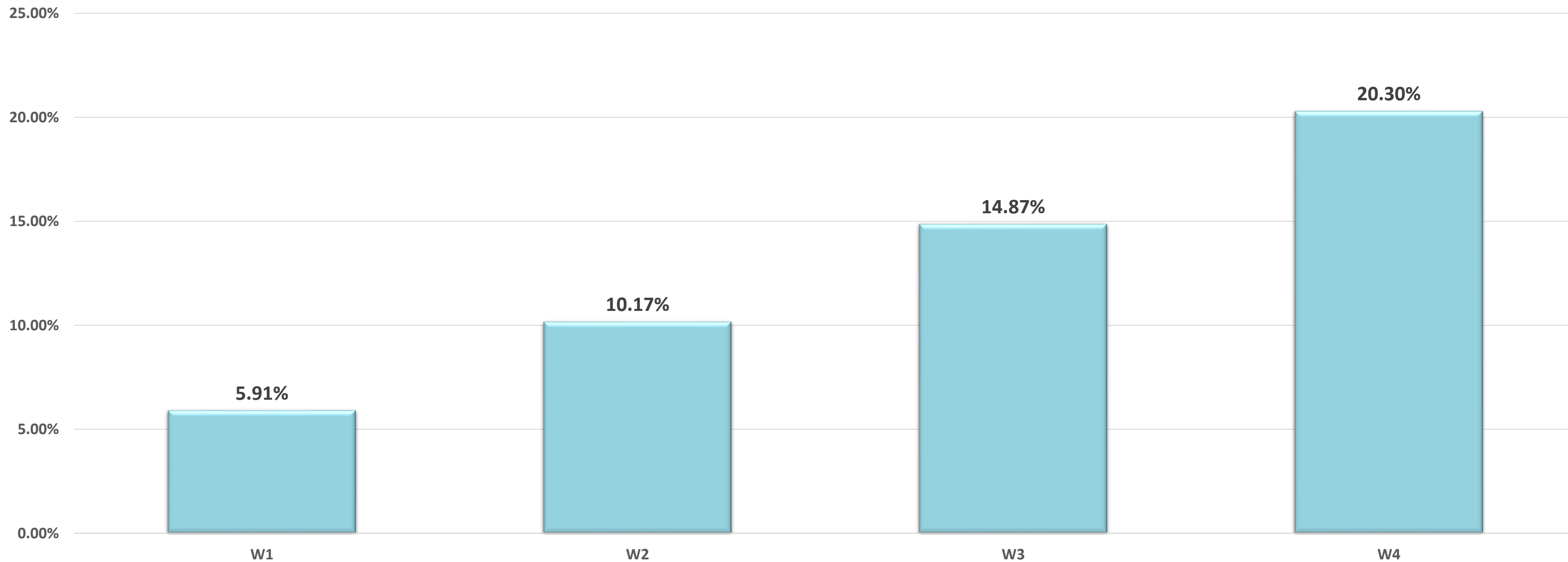
**-46.33 %**



**Imdermalab<sup>®</sup> 4D-White**

In-Vivo

## Area of Spot



## Number of Spot

After 2 weeks

**-12.23%**

After 4 weeks

**-22.60%**

The highest improve

**-52.52%**

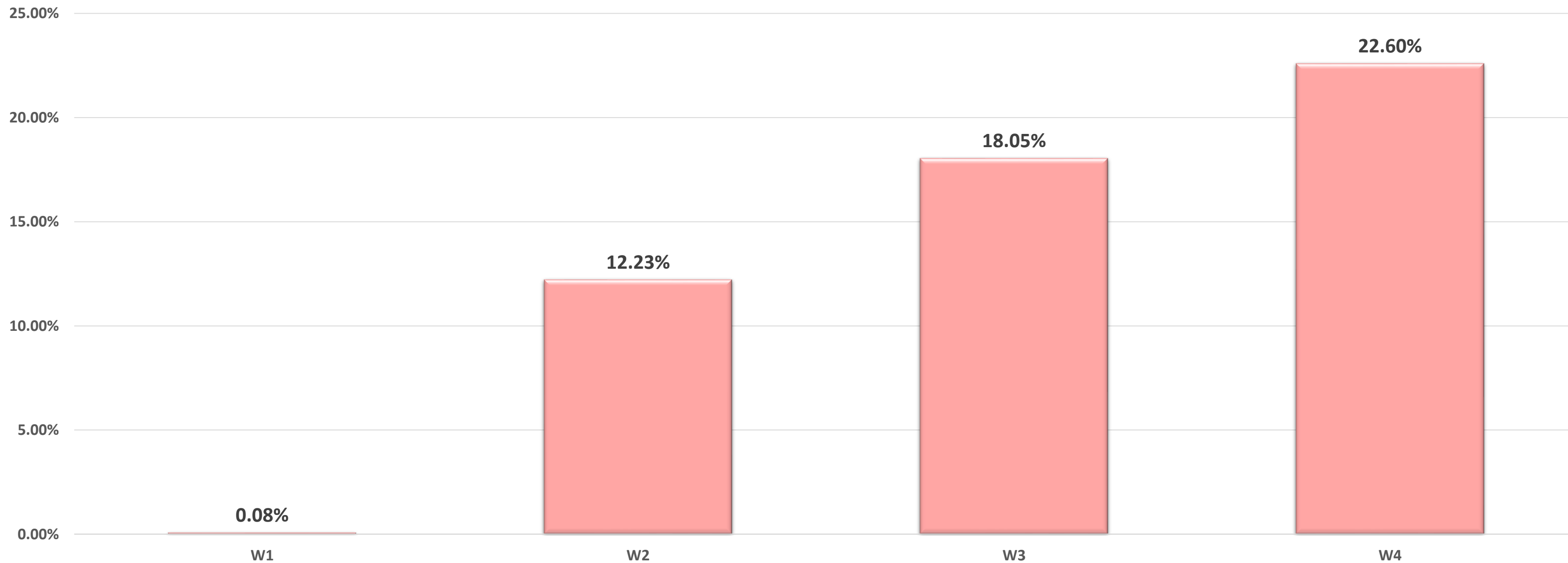


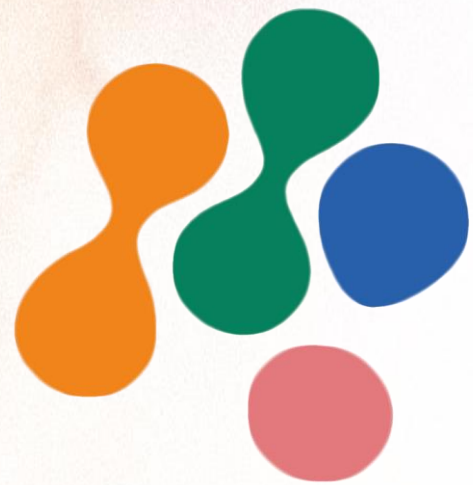


# Imdermalab<sup>®</sup> 4D-White

In-Vivo

## Number of Spot





**ImDerma**  
LABORATORIES

BioScience Integrated Platform

We offer one-stop solution from  
customized ingredient development to industry  
application.

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