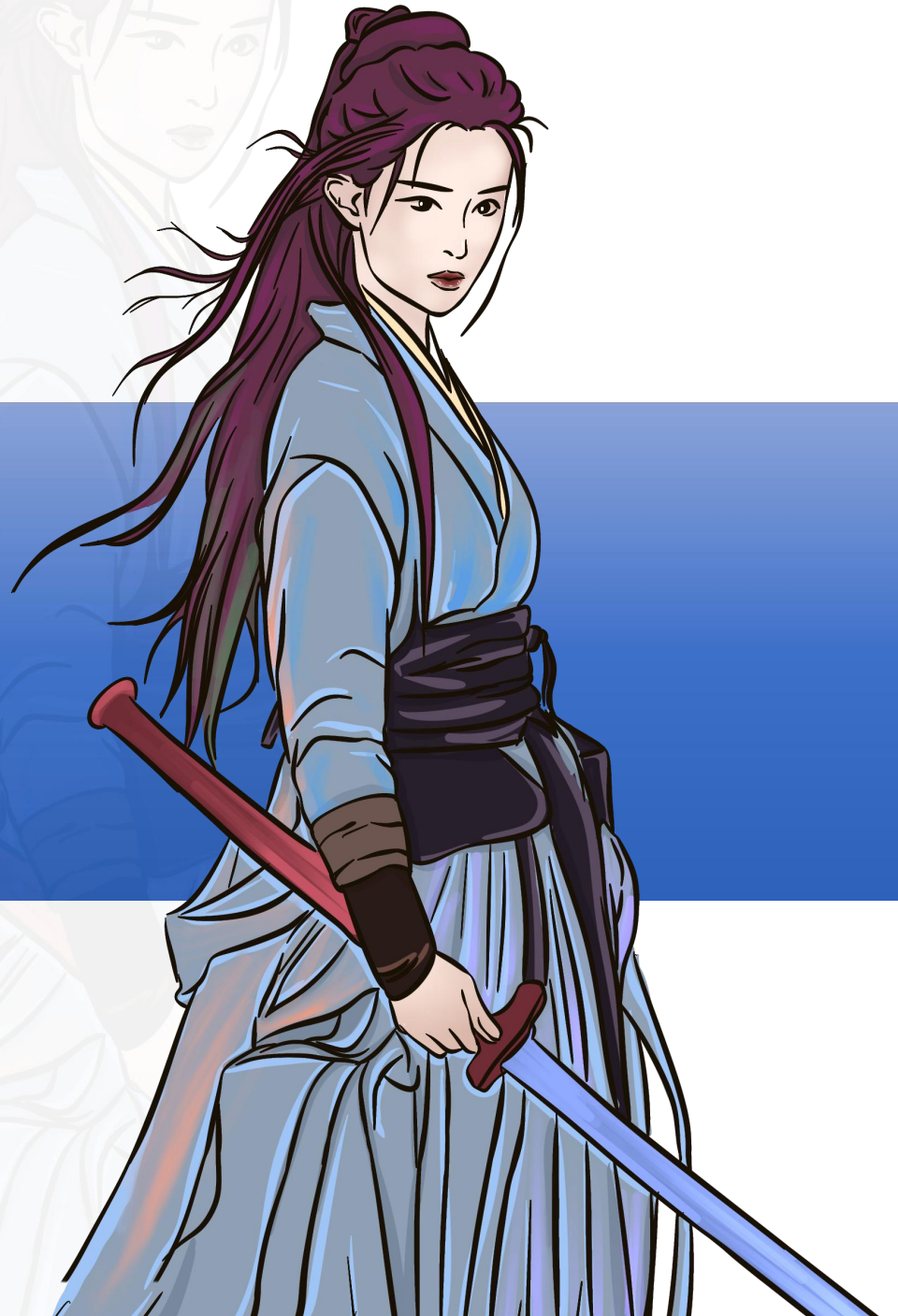
Anallerg® - Mulan

INCI: Tetrahydromagnolol

Multi-Pathway Inhibition of Melanin Production



CONTENT

01

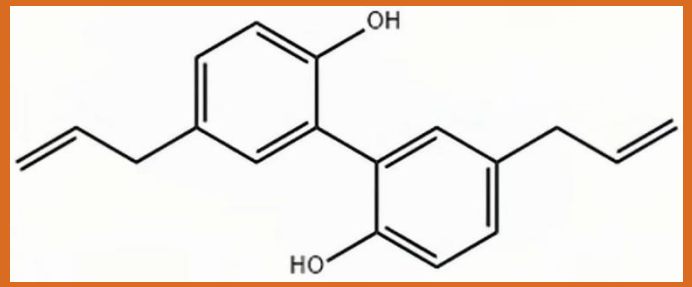
Background

Magnolol

Magnolol, also known as Houpuol, is one of the main active components extracted from the Magnolia plant family and an important effective ingredient in the traditional Chinese medicine Houpu.

Magnolol has been proven to have various benefits, including antioxidant, anti-inflammatory, antibacterial, anti-photoaging, skin brightening, and anti-caries effects.

Magnolol & Tetrahydromagnolol



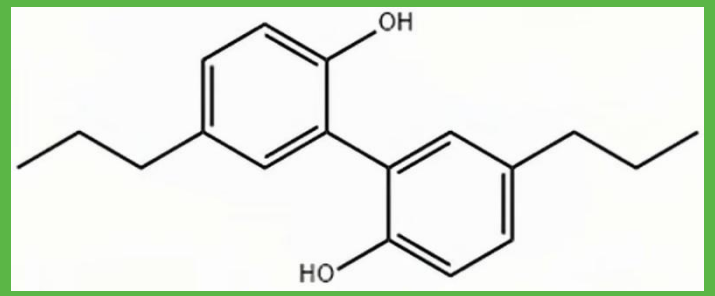
Magnolol

- Natural organic compounds extracted from the Magnolia plant family
- Main active components of the traditional Chinese medicine Houpu (Magnolia Bark)

Limitations:Unstable

Biological Enzyme

Catalyzed Reduction



Tetrahydromagnolol

2,2’-dihydroxy-5,5’-dipropyl-biphenyl (DDB)

- Main Metabolite of Magnolol

Advantages:Stable and Highly effective

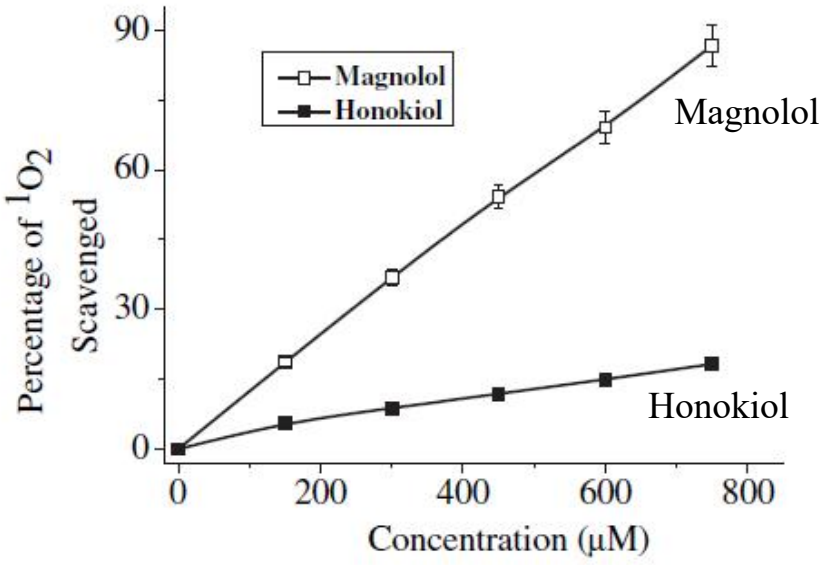
Traditional VS. Biological

Intense, high-risk, residual impurities VS. Gentle, green, low energy consumption

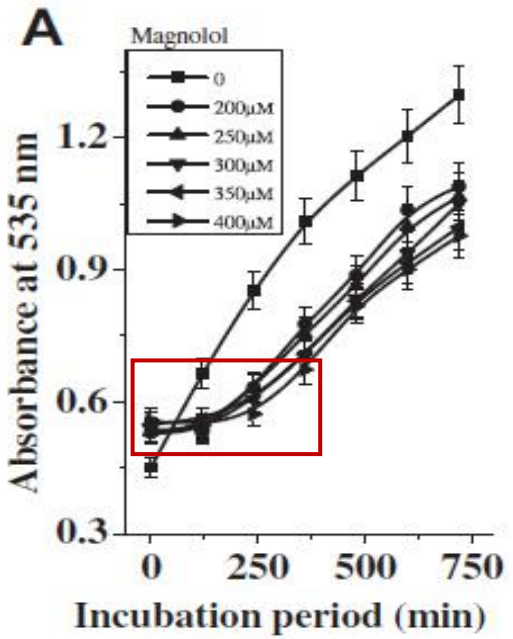
02

Mechanism & Efficacy

Magnolol – Antioxidant



Magnolol eliminates $^1O_2$ in a dose-dependent manner, demonstrating higher efficiency compared to **honokiol**.

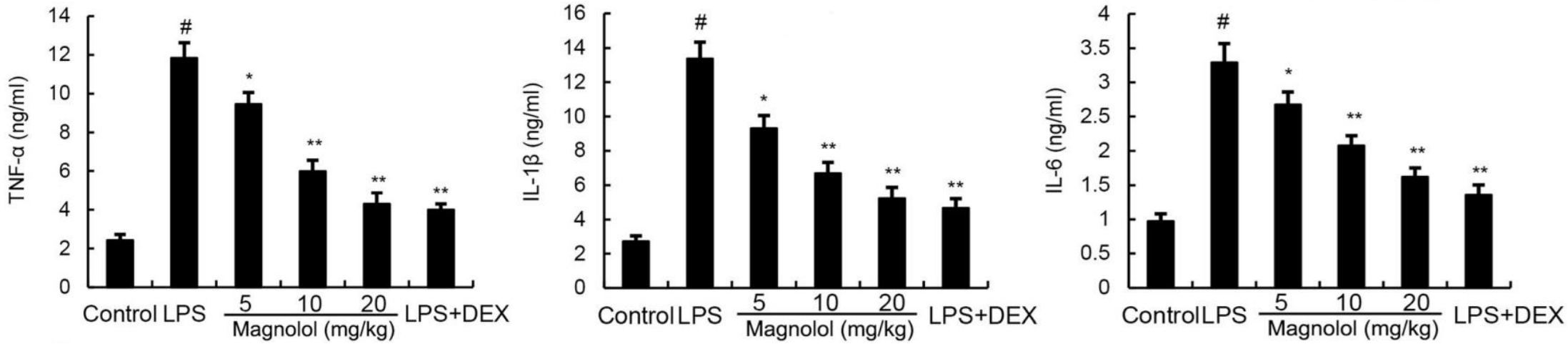


The addition of **magnolol** slows down the increase in carbonyl substances.

Magnolol effectively scavenges ROS and can inhibit DNA oxidation over time

Zhao C, et al. Biochimie 93.10 (2011): 1755-60.

Magnolol – Anti-inflammatory

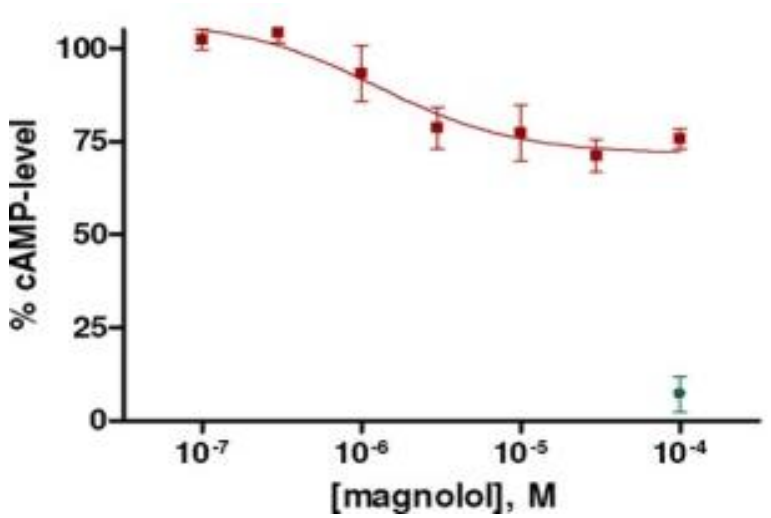


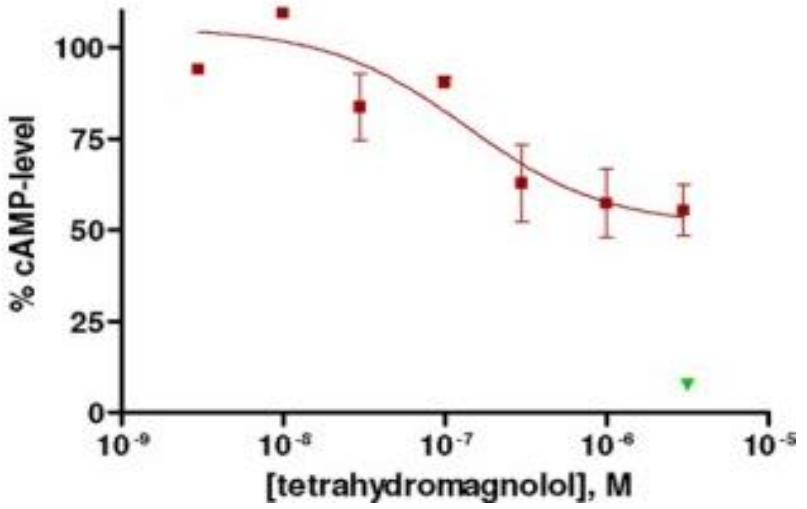
- LPS – Lipopolysaccharide; DEX – Dexamethasone

Magnolol inhibits the LPS-induced pro-inflammatory cytokines TNF-α, IL-1β, and IL-6 in a dose-dependent manner

Wei W, et al. Inflammation 38.1 (2015):16-26.

Tetrahidromagnolol – Anti-inflammatory





▼ Full agonist CP55,940(1 μM)

Activation of cannabinoid receptor CB2 inhibits the production of intracellular cyclic adenosine monophosphate (cAMP), thereby suppressing pro-inflammatory cytokines.

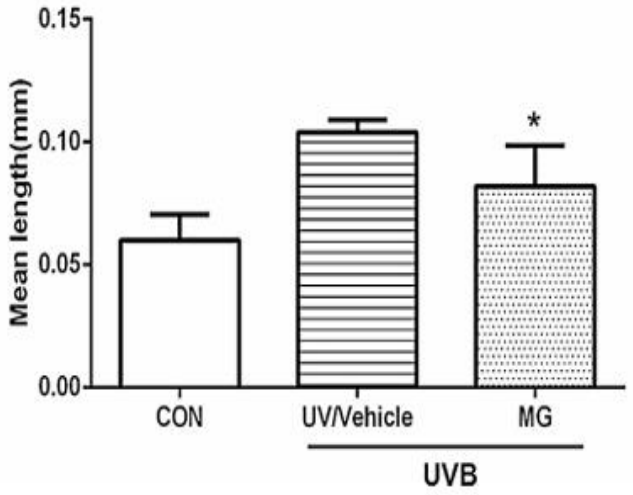
Magnolol (A) and Tetrahidromagnolol (B) dose-dependently inhibit cAMP accumulation.

Tetrahidromagnolol exerts superior anti-inflammatory effects through binding to the CB2 receptor compared to magnolol

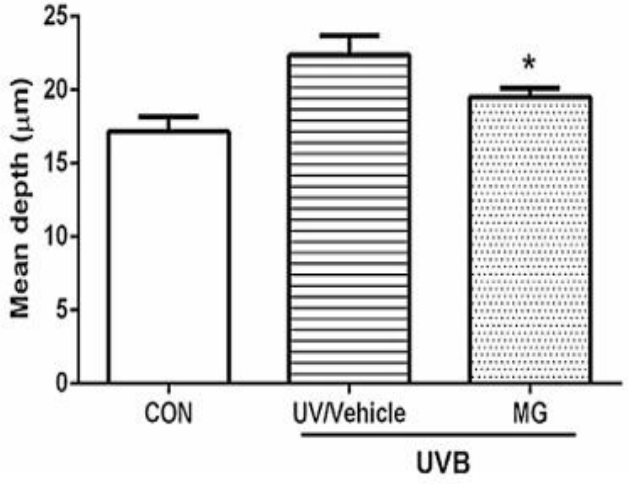
Rempel V, et al. ACS Med Chem Lett 4.1 (2012): 41-5.

Magnolol – Anti-Photoaging

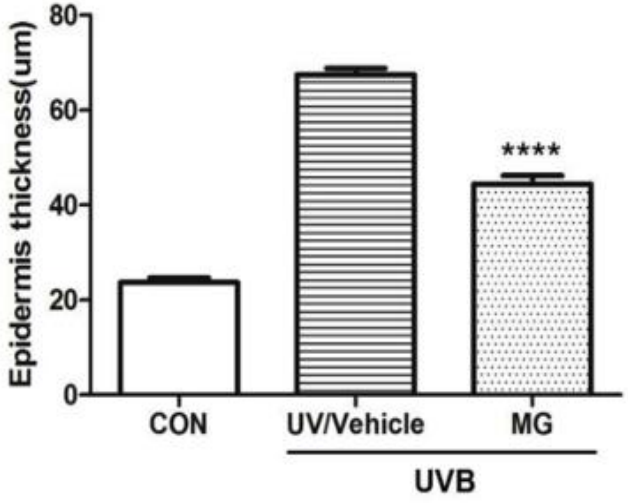
Wrinkle Length



Wrinkle Depth



Epidermal Thickness

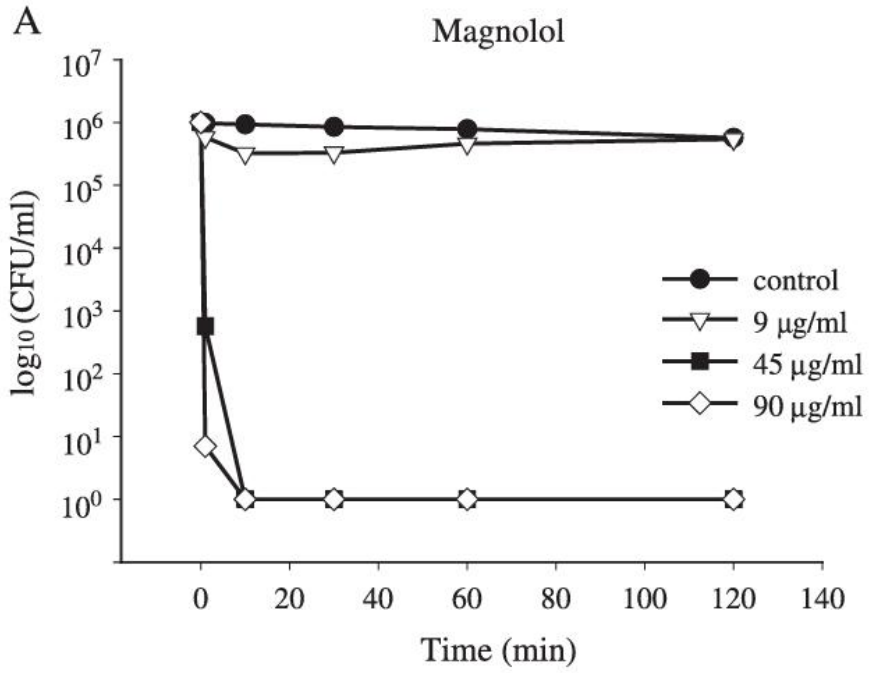


- MG– Magnolol

Magnolol reduces UVB-induced wrinkles, wrinkle length, depth, and epidermal thickening

Im AR, et al. Environ Toxicol Pharmacol 39.1 (2015): 417-23.

Magnolol – Antibacterial



The bactericidal effect of *magnolol on Propionibacterium acnes*（*P. acnes*） *at d*ifferent concentrations.

At a concentration of 45 μg/mL, magnolol inhibits over 99.9% of Propionibacterium acnes growth.

Monitoring for 24 hours showed no bacterial regeneration, confirming that magnolol effectively and **persistently kills *P. acnes***.

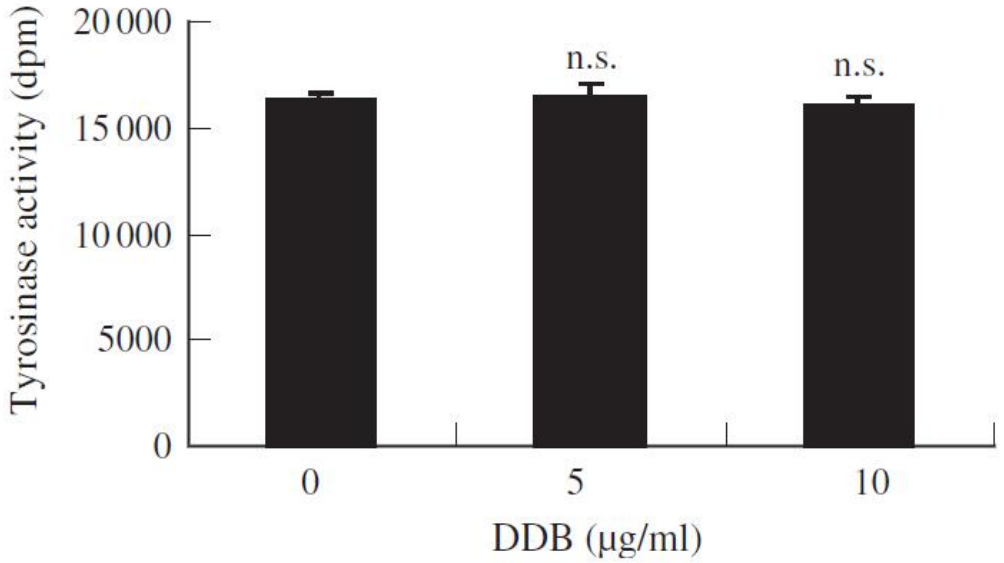
Magnolol effectively and persistently kills *P. acnes*

Park J, et al. Eur J Pharmacol 496.1-3 (2004): 189-95.

Tetrahydromagnolol — inhibits melanin synthesis

Treatment	Melanin synthesis IC_{50} (μg/ml) B16F0	NHM	Tyrosinase activity IC_{50} (μg/ml) Mushroom tyrosinase
DDB	4.0	3.0	> 330
Arbutin	20	27	35
Kojic acid	120	70	4.1
Hydroquinone	1.2	3.0	0.9

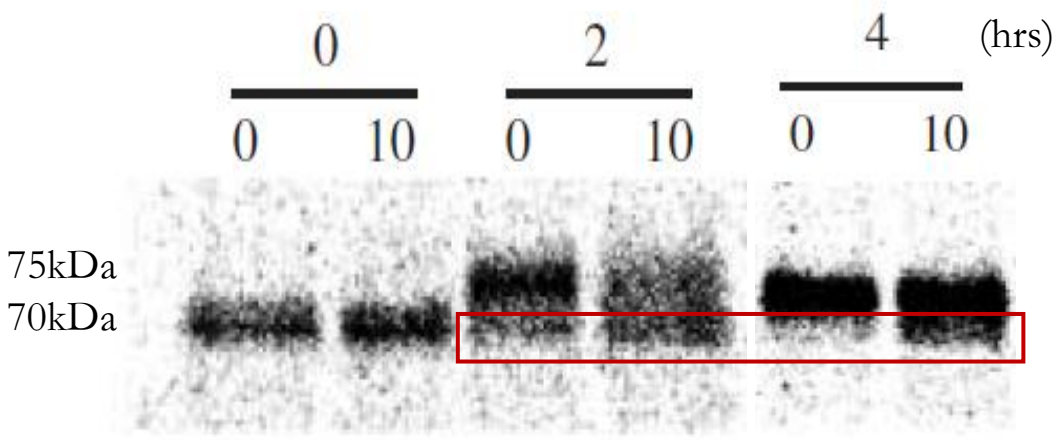
* Tetrahydromagnolol (DDB)
* B16 melanoma cells (B16F0)
* Human melanocytes (NHM)



Tetrahydromagnolol significantly inhibits melanin synthesis in both B16 melanoma cells and human melanocytes, but does not inhibit the activity of mushroom tyrosinase or mammalian tyrosinase.

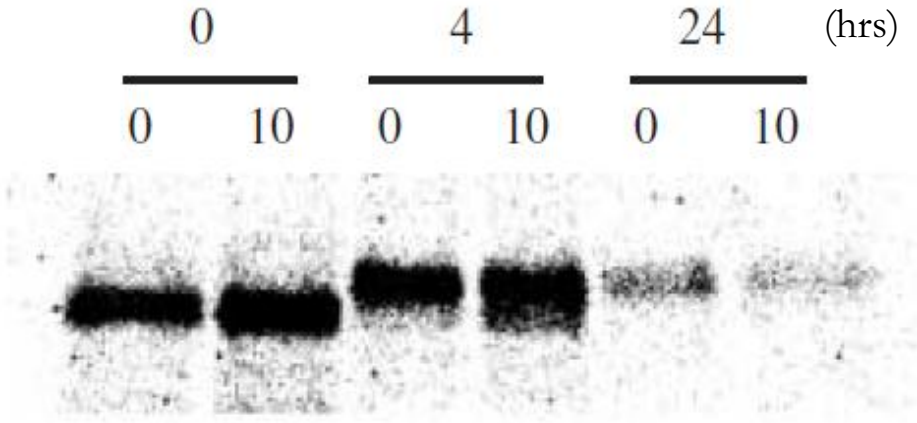
Nakamura K, et al. Pigment Cell Res 16.5 (2003): 494-500.

Tetrahydromagnolol — inhibits melanin synthesis



0：Blank control;　　10：10μg/ml Tetrahydromagnolol

After 2 or 4 hours, tyrosinase (~70 kDa) was converted to a larger form (~75 kDa) in control cells, while **the 70 kDa band remained in Tetrahydromagnolol-treated cells**.



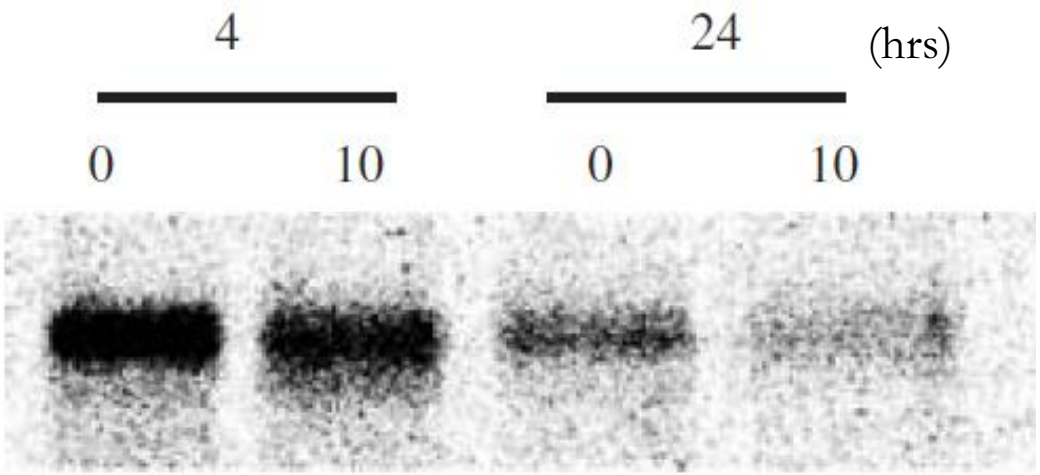
0：Blank control;　　10：10μg/ml Tetrahydromagnolol

After 24 hours, tyrosinase levels in cells treated with 10 μg/ml **Tetrahydromagnolol** dropped to **54%** of the control.

Tetrahydromagnolol inhibits the maturation of tyrosinase and accelerates its degradation

Nakamura K, et al. Pigment Cell Res 16.5 (2003): 494-500.

Tetrahydromagnolol — inhibits melanin synthesis



0：Blank control;　　10：10μg/ml Tetrahydromagnolol

The figure shows the amount of labeled tyrosinase protein in the melanosomes.

After 4 or 24 hours of cultivation, the level of labeled tyrosinase in the melanosomes of Tetrahydromagnolol-treated melanocytes was lower than in the control group.

Tetrahydromagnolol inhibits the transfer of tyrosinase to melanosomes

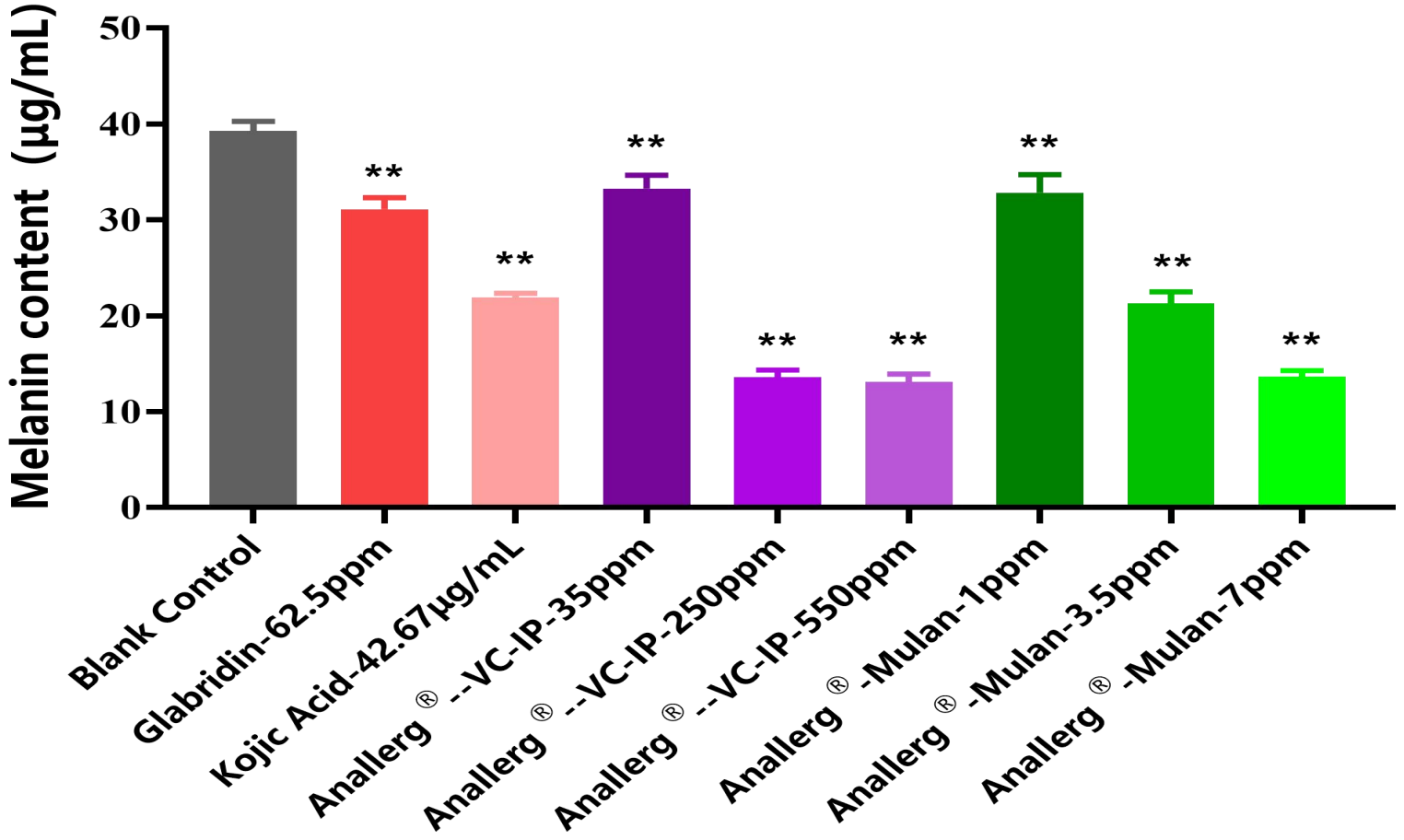
Nakamura K, et al. Pigment Cell Res 16.5 (2003): 494-500.

03

Product Introduction

Anallerg®–Mulan

Tetrahydromagnolol — Inhibition of Melanin Production

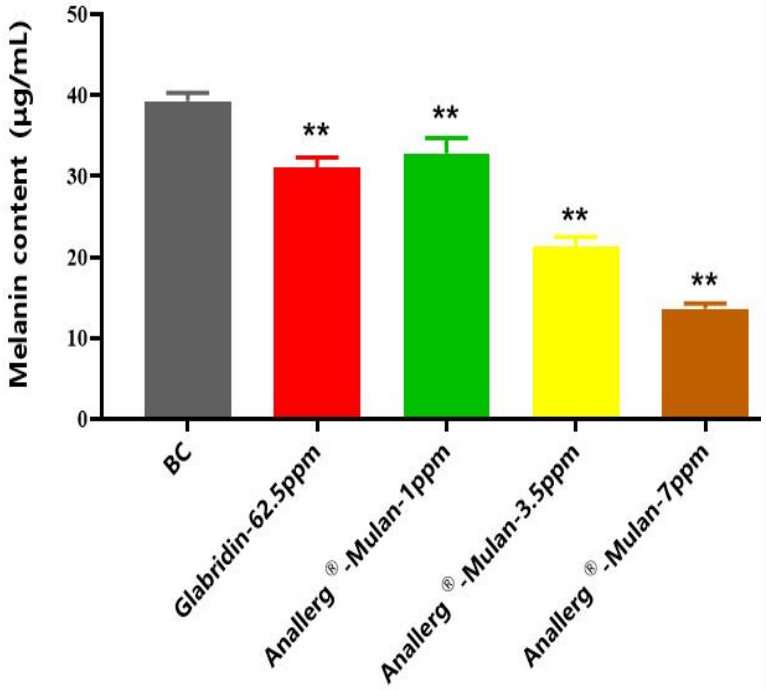


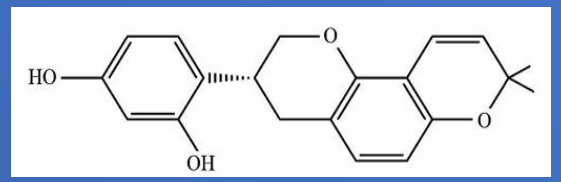
Anallerg® - Mulan's melanin inhibition ability is ten times that of VC-IP!

Data comes from a third-party testing agency

Anallerg®–Mulan

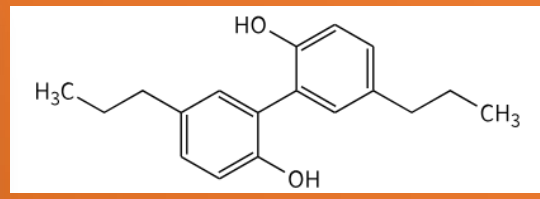
Tetrahydromagnolol — Inhibition of Melanin Production





Glabridin

- Whitening, antioxidant, anti-inflammatory, antibacterial
- Inhibits tyrosinase competitively (via hydrogen bonds)
- Significant inhibition at 62.5 ppm
- High cost

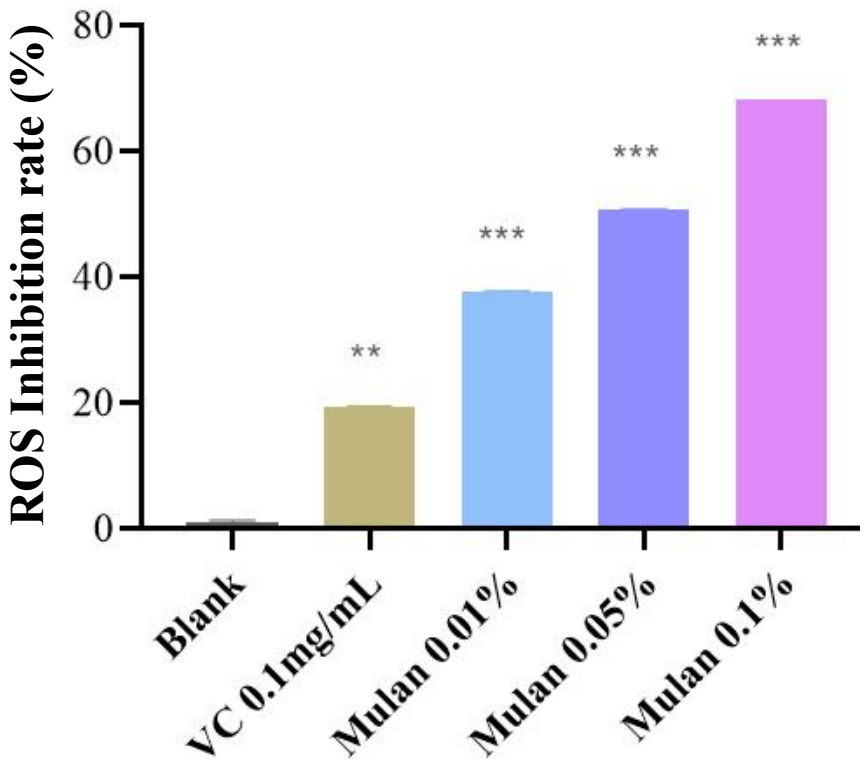


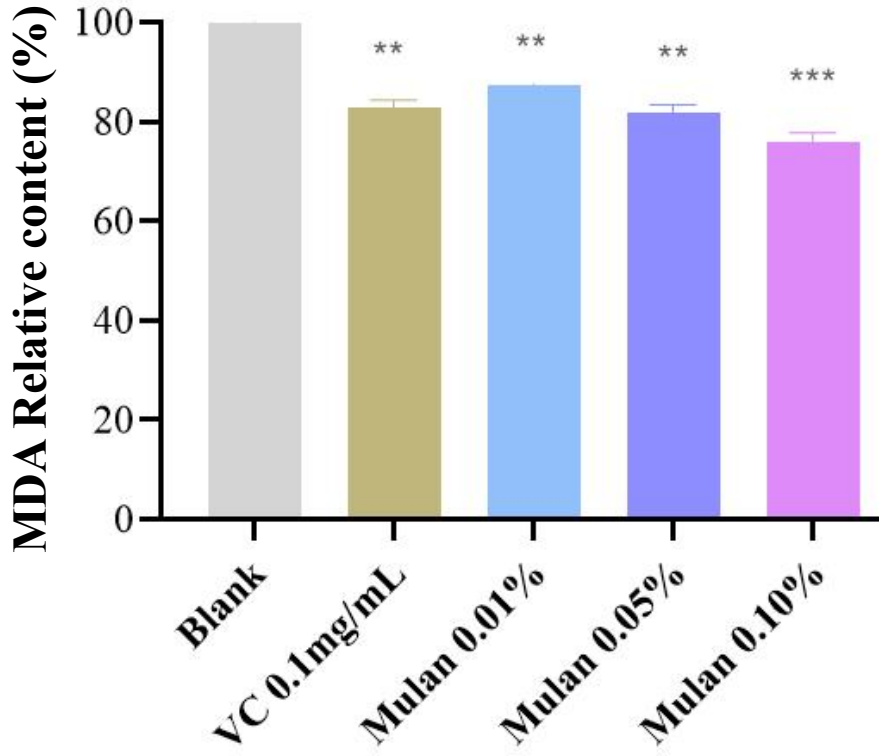
Tetrahydromagnolol

- Whitening, antioxidant, anti-inflammatory, anti-photoaging, antibacterial (including P. acnes)
- Inhibits tyrosinase maturation, accelerates tyrosinase degradation, inhibits tyrosinase transfer to melanosomes
- Significant inhibition at 7 ppm
- Cost-effective

Anallerg®–Mulan

Tetrahydromagnolol — Antioxidant





** means P<0.01， *** means P<0.001

Anallerg® - Mulan can significantly reduce ROS and lipid peroxidation product MDA at concentrations of 0.01%, 0.05% and 0.1%, demonstrating antioxidant effects.

Data comes from a third-party testing agency

Anallerg®–Mulan

Skin Brightening Efficacy Testing

Test Item: Method for Testing the Skin Brightening and Pigmentation-Reducing Efficacy of Cosmetics

Test Basis: *Cosmetic Safety Technical Specifications* (2015 Edition)

Test Results: The product has demonstrated efficacy in diminish spot and brightening the skin

Negative Control: Blank control in the pigmented area.

Positive Control: 7% VC product formulated according to Appendix I.

Test Sample: 0.5% Anallerg®-Mulan cream.

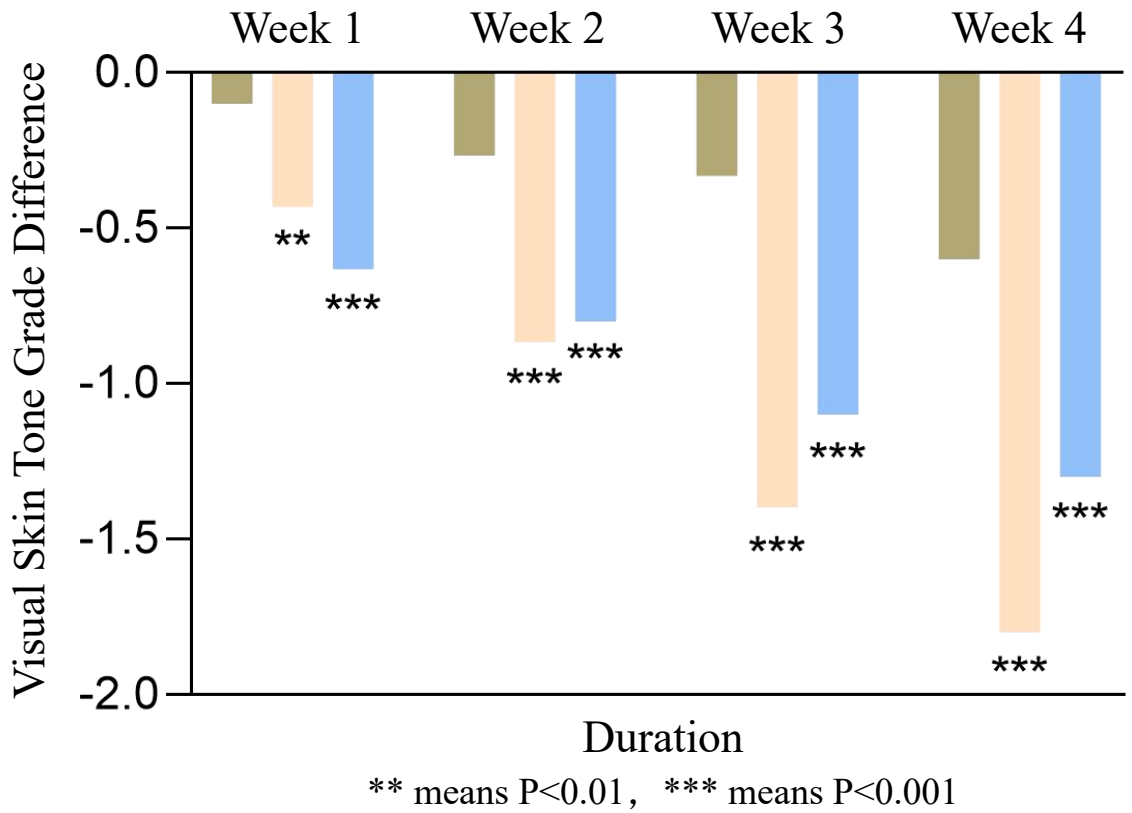
Subjects: A total of 30 subjects, including 19 males and 11 females, aged between 22 and 60 years, with an average age of 41.4±12.8 years.

Subject Screening: The ITA° value of the test area was between 20° and 41°.

Measurement Parameters: Visual skin tone grade, ITA° difference and MI difference.

Anallerg®–Mulan

Skin Brightening Efficacy Testing



** means P<0.01， *** means P<0.001

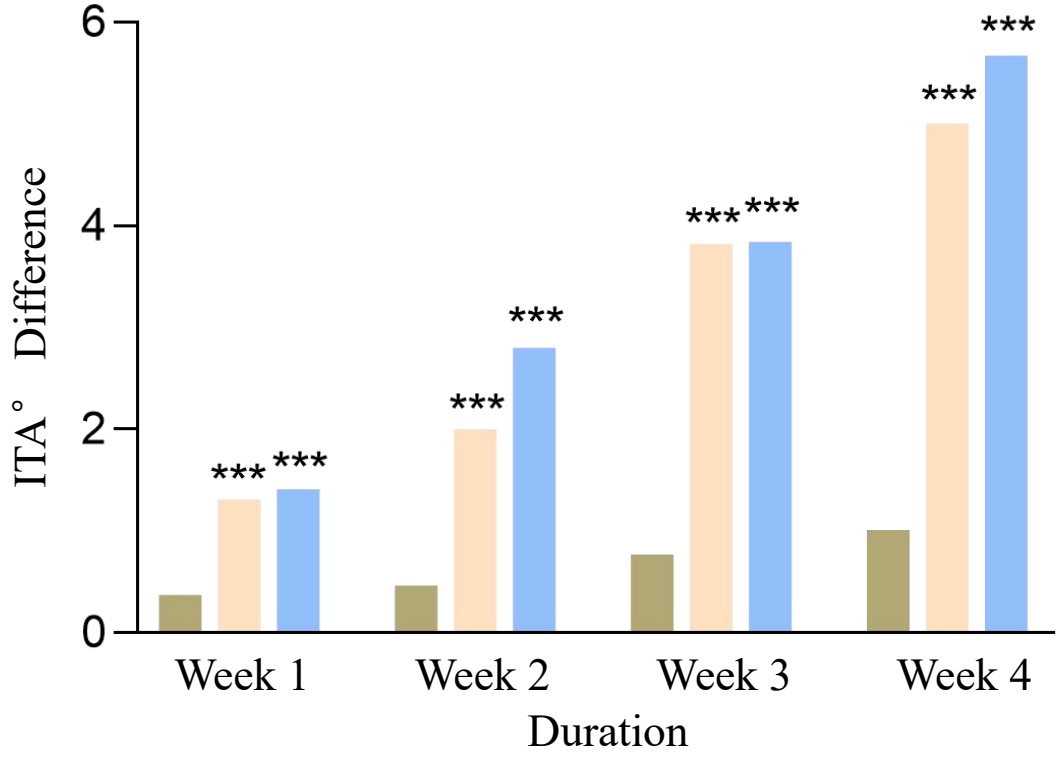
Visual assessment grade: Dermatologists use a color card ranging from light to dark skin tones to separately evaluate the skin tone of each test area and promptly record the scores.

0.5% Anallerg® - Mulan cream significantly reduces the visual skin tone grade, demonstrating brightening efficacy.

Data comes from a third-party testing agency

Anallerg®–Mulan

Skin Brightening Efficacy Testing



*** means P<0.01， *** means P<0.001

NC

PC

0.5% Anallerg®-Mulan cream

The **ITA° value** is calculated by measuring the skin's lightness and the yellow-blue tone. The higher the ITA° value, the fairer the skin; the lower it is, the darker the skin tone.

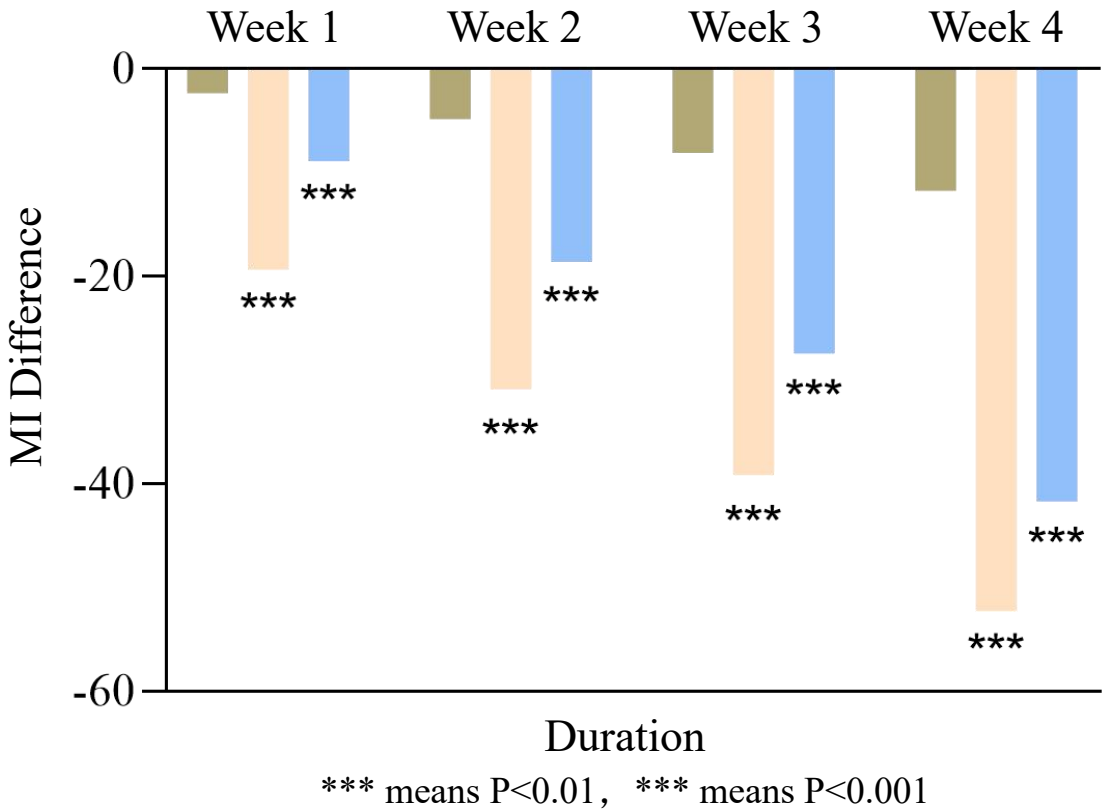
Effectiveness determination: An increase in ITA° value of ≥3° (or a reduction in the area of pigmentation by ≥10%) is considered to indicate a brightening effect.

0.5% Anallerg® - Mulan cream significantly reduces the ITA° value, demonstrating brightening efficacy.

Data comes from a third-party testing agency

Anallerg®–Mulan

Skin Brightening Efficacy Testing



*** means P<0.01, *** means P<0.001

MI, Melanin Index. The MI value of healthy skin is usually between 100 and 200, while the pigmented area may exceed 250.

0.5% Anallerg® - Mulan cream significantly reduces the MI value, demonstrating brightening efficacy.

Data comes from a third-party testing agency

04

Technical Information

Anallerg®–Mulan

solubility

NO.	Ingredient Name	Room temperature
1	Mineral Oil	Insoluble
2	Caprylic/capric triglyceride	Slightly soluble, 0.5%
3	Hexyl Decanol	
4	Butylene Glycol	Slightly soluble（1%）
5	Pentylene Glycol	Soluble（3.3%）
6	C12-13 Alkyl Alcohol Polyether-9	Soluble（4%）
7	Dicaprylate/Dicaprate	Soluble（5%）
8	Diisopropyl Adipate	Soluble（9%）
9	Isopropyl Lauryl Glutamate	Soluble（1-%）
10	PEG-400	Soluble（18%）

The solubility data is derived from Coachchem Lab.

Anallerg®–Mulan

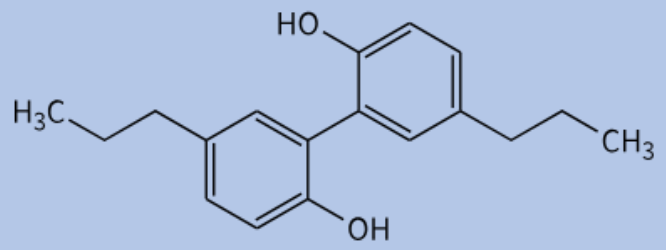
Encapsulation

Appearance	Composition	Active content	Features
	Tetrahydromagnolol Phospholipid/Hydrogenated Lecithin Oils Polyols, Water, etc.	5%	1. All green ingredients 2. Better biological compatibility 3. Improves transdermal absorption 4. Better stability and water dispersibility

Anallerg®–Mulan

Technical Information

Product Name: **Anallerg®** - Mulan



INCI Name: Tetrahydromagnolol

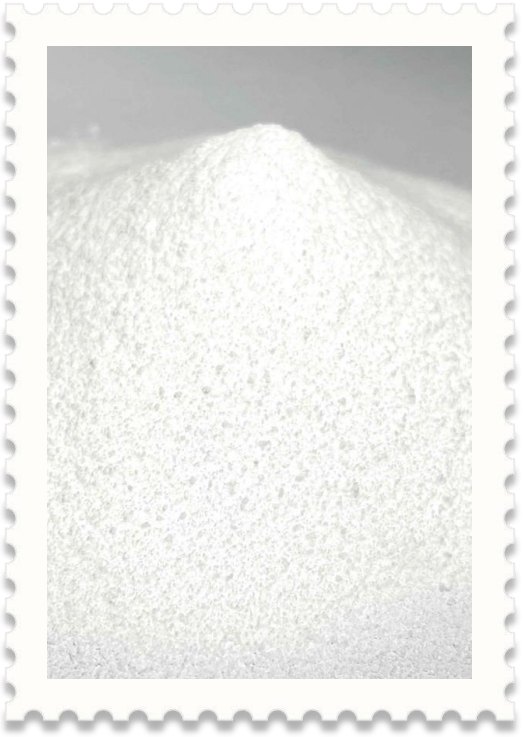
Appearance: White or off-white crystalline powder

Benefits: Whitening, antioxidant, anti-inflammatory, anti-photoaging, antibacterial

Recommended Usage: 5ppm - 0.5%

Applications: Suitable for serums, lotions, creams, masks, etc. It is recommended to add to formulations at temperatures below 45° C

Storage Conditions: Store in a cool, dry place, away from light, and below 10° C



THANKS