ZLEY®

妝萊集團

INNOVATIVE ELEMENTS TO AMELIORATE LIFE



ZLEY®FA



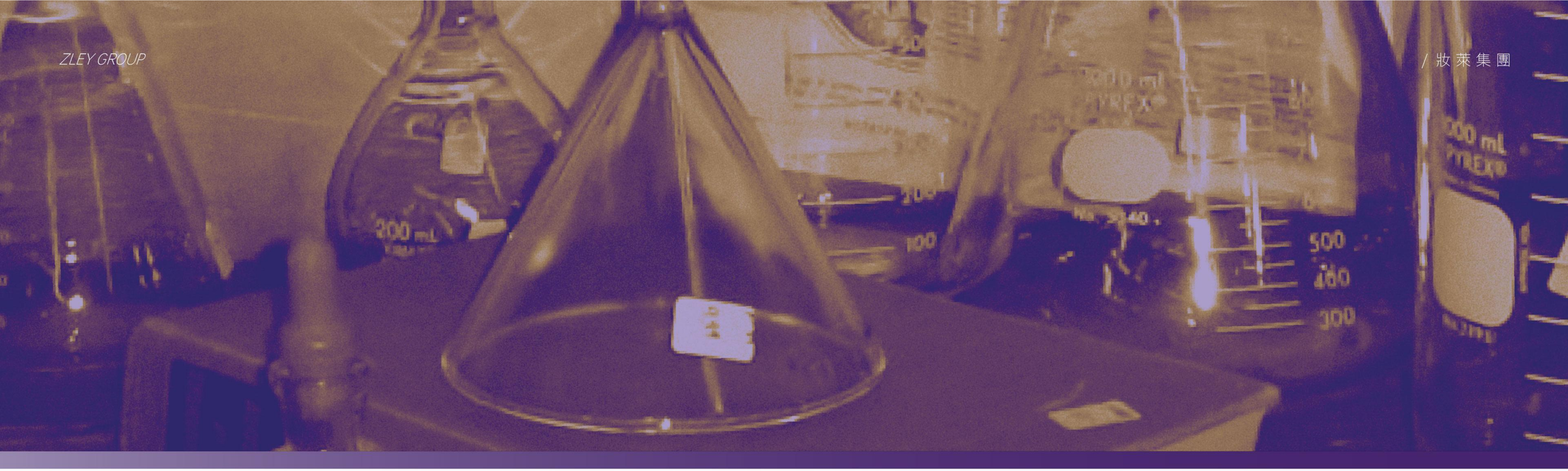
WHO WE ARE

COMMITTED TO AMELIORATE LIVE, WITH TECHNOLOGY

Driven by a vision of innovation and development, we are dedicated to producing high-quality raw materials for the global personal care industry, addressing the growing demand for functional ingredients. Our products are designed to promote skin rejuvenation, brightening, antioxidant, and anti-inflammatory benefits.

「123」

1 factory located in Weinan, Shaanxi Province
2 Innovation research and development centers
3 subsidiaries: [China] Guangzhou [Hongkong] and [Singapore] Over 200 employees



WHAT WE DO

COMMITTED TO AMELIORATE LIVE, WITH TECHNOLOGY

「Herbalism」

The cosmetic industry is actively exploring new neurocosmetic ingredients to enhance the connection between the skin and the nervous system. We harness plant extracts with soothing and anti-inflammatory properties to alleviate skin irritations, reduce redness, and support a healthier complexion.

「Metropolitan」

We are committed to continuously exploring innovative formulations for effective skin rejuvenation. Our team leverages advanced technologies and novel ingredients to push the boundaries and unlock new possibilities in this field.

「Revolution」

We utilize innovative technologies and ingredients to deliver exceptional results in skin brightening. Our ongoing research focuses on addressing pigmentation issues and promoting a radiant complexion.





PATENT CERTIFICATE

ZL 2022 1 1022382.9
Anti-inflammatory and Repairing Composition Containing Ethylene Glycol Salicylate and Its Preparation Method and Application

ZL 2022 1 1306298.X
Supramolecular Vesicle Aggregates of 4-Butylresorcinol and Their Preparation Method and Cosmetic Composition

ZL 2022 1 1147913.7
Microencapsulated Kava Extract and Its Preparation Method and Application

ZL 2016 1 0490027.2
Anti-Aging Cosmetic Composition and Its Preparation Method

ZL 2022 1 1648008.X
Composition Containing Amino Acid Derivatives for Regulating Skin Microbiota

ZL 2022 1 1038113.1
Anti-Acne, Whitening, and Antioxidant Essential Oil Composition Containing Ferulic Acid Derivatives and Its Preparation Method

ZL 2022 1 1187356.1
Composition for Skin Conditioning, Whitening, and Brightening, and Essence Lotion

ZL 2015 1 0077009.7
Preparation Method of High-Purity Piperazine

ZL 2023 1 0925891.0
Composition and Its Use in Improving Skin Barrier Function, and Skincare Product

ZL 2022 1 1251631.1
Liposomes Containing Ferulic Acid and Its Derivatives, Preparation Method, and Application

ZL 2015 1 0170034.X
Method for Synthesizing 2,4-Dihydroxyacetophenone and Recycling Wastewater

ZL 2014 1 0245210.7
Preparation Method of Half-Fumarate Quetiapine

ZL 2023 1 1500453.6
Deodorizing Composition, Its Preparation Method, and Application

ZL 2023 1 1366456.5
Peony Root Bark Extract-Based Perfume with Lemon Fragrance, Preparation Process, and Application

ZL 2024 1 0785149.9
Preparation Method of Highly Active Trigonella Extract and Its Uses in Care Products

ZL 2024 1 0726523.8
Preparation Method of Hydroxypinacolone Retinoate

ZL 2024 2 1028204.1 (Utility model patent)
Ultrasonic Cleaner for Cosmetic Testing

ZL 2024 1 0576240.X
Composition for Reducing Periorbital Skin Issues, Its Preparation Process, and Application

MORE PATENT APPLICATIONS ARE PENDING...



I&D STRENGTH

「BIRI」

(Biotechnology Innovation Research Institute)

Our team of experienced biologists leads the R&D efforts to identify active skincare ingredients with proven efficacy, high potency, and stability through experimental protocols, strain culture, and fermentation optimization.

Our facility adheres to the national laboratory safety standards GB 19489-2011, including P2 and biochemical laboratory requirements.

「FOSCRC」

(Functionality of Skin Care Research Center)

As society progresses and technology advances, there is a growing demand for effective skin care and a deeper understanding of cosmetics. At our Functional Skincare Research and Development Center, we focus on exploring skincare products through chemical testing and cell assays to study their functions and properties.

「FOSCTEC」

(Functionality of Skin Care Testing&Evaluation Center)

We partner with a professional third-party testing institute specializing in cosmetics, cosmetic raw materials, and pharmaceutical intermediates to ensure rigorous and reliable product testing.



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Part . 01

「MARKRT ANALYSIS」

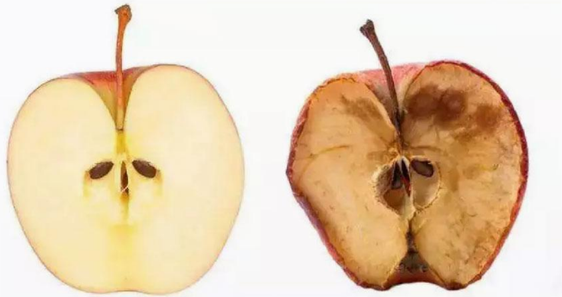


MARKRT ANALYSIS

INNOVATIVE ELEMENTS TO AMELIORATE LIFE



「WHY AGING」

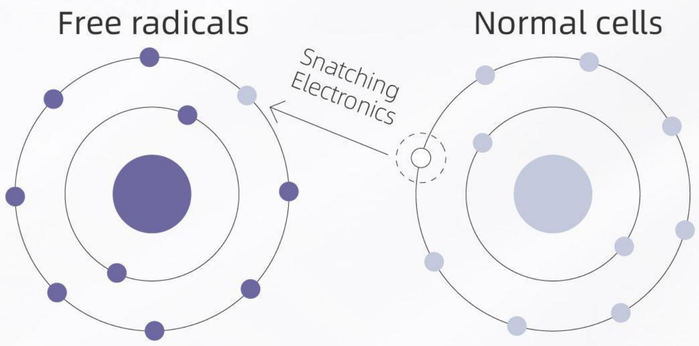


Can you imagine your aging face is just like a cut apple–turning from plump and full on the left to dull, dry and wrinkled on the right?
As we all know, a cut apple quickly oxidizes and turns yellow. It then loses moisture rapidly, shrivels up, and even rots. This is the process of oxidative damage to the apple.

The same goes for our face, as well as our organs, tissues and cells. They will also suffer oxidative damage, which directly leads to aging!

The process of aging is the process of oxidation. **The process of oxidation is accompanied by the production of free radicals.** Aging is not your fault–it's all caused by free radicals.

「FREE RADICAL THEORY OF AGING」



The Free Radical Theory of Aging was proposed by Professor Denham Harman in 1956. **He argued that oxidative damage to cytokines, genes, lipids and proteins caused by free radicals is the direct cause of illness and aging.**

Simply put, free radicals are highly unstable and extremely reactive elements in the human body.

To make it easy to understand: free radicals are like restless singles who crave a partner. They are overbearing and aggressive. Seeing all surrounding molecules paired up stably, they will seize electrons from nearby molecules to stabilize themselves.

The molecule that loses an electron then becomes a new free radical, which continues to snatch electrons from others. This creates a vicious cycle, causing free radicals to accumulate continuously in the body and trigger oxidative stress.

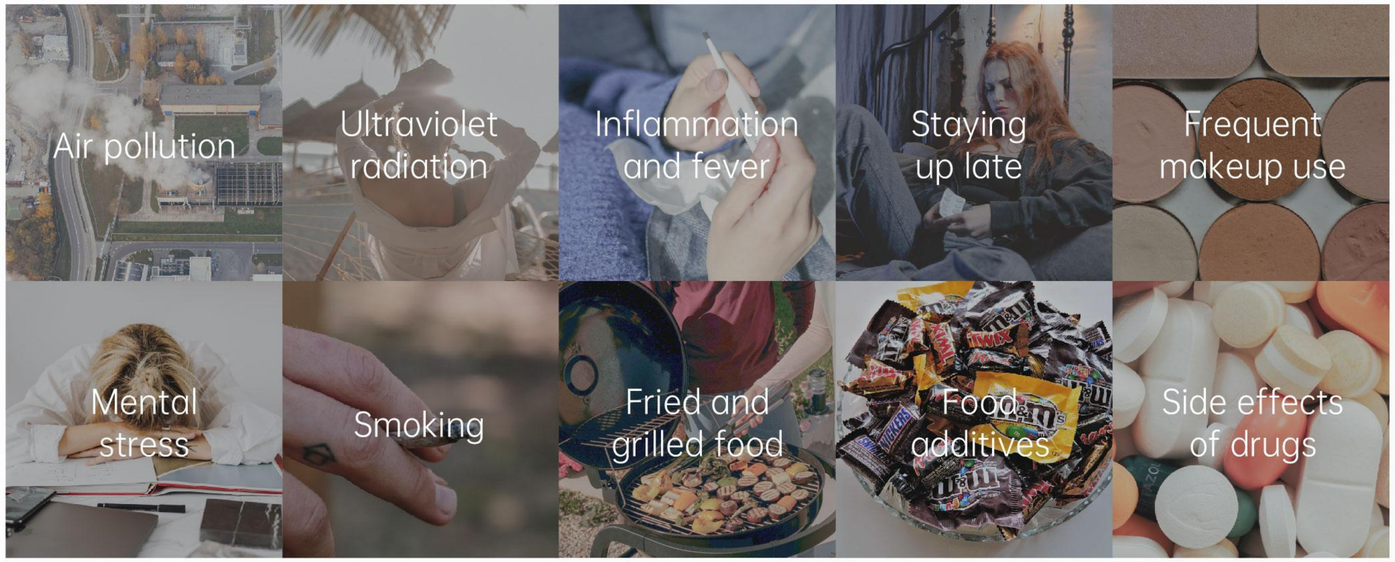
Oxidative stress undermines the integrity of body tissues and DNA. When the damage builds up beyond the body's self-repair capacity, obvious aging and physical lesions begin to appear.

「FREE RADICALS ARE EVERYWHERE」

Where do free radicals come from?

① External factors: Air pollution; Food contamination; Water pollution; Ultraviolet radiation; Frequent makeup wear

② Internal factors: Human metabolism; Anti-inflammatory response; Antiviral defense; Unhealthy lifestyle habits; Smoking, alcohol abuse and staying up late; Physical fatigue; Excessive exercise

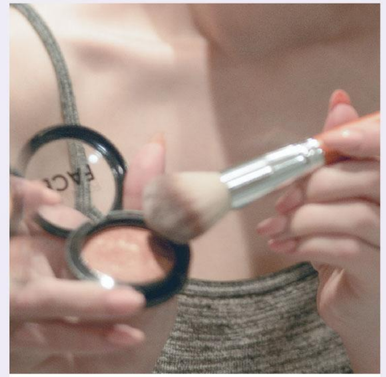




Drinking one glass of alcohol generates 800,000 free radicals.



Smoking one cigarette generates 1,000,000 free radicals.



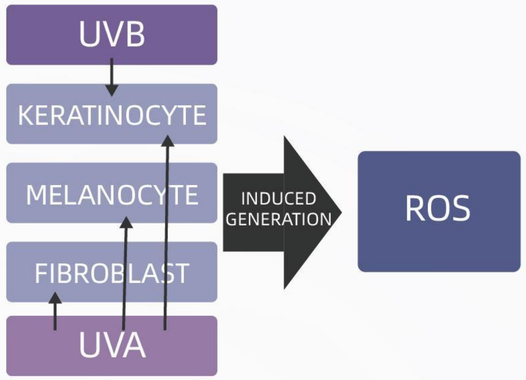
Using low-quality cosmetics once generates 1,000,000 free radicals.



Eating fried food once generates 10,000,000 free radicals.

「DAMAGE CAUSED BY FREE RADICALS」

Skin aging, dryness, sensitivity, acne-prone skin and dullness are all skin damage caused by free radicals.
Free radicals are truly the source of all skin evils!



Weakened antioxidant capacity, as well as reduced skin tolerance and repair ability	Skin barrier damage and the formation of sensitive skin
Collagen decomposition, loss and fracture	Dry skin, fine lines and sagging
Accelerated melanin production leads to spots, dullness and lack of radiance	Pigmentation, sallow dull skin and acne



「THE BODY'S NATURAL ANTIOXIDANT DEFENSE」

Ultraviolet (UV) rays create "terrorists carrying bombs" on our skin – various free radicals with unpaired electrons. These dangerous molecules run rampant and cause a series of cellular damages, leading to skin aging. Therefore, the human body needs brave "warriors" to work together against free radicals.

Step1: Vitamin E (VE) rushes in first and grabs the "bomb" carried by the free radical, consuming part of its energy.

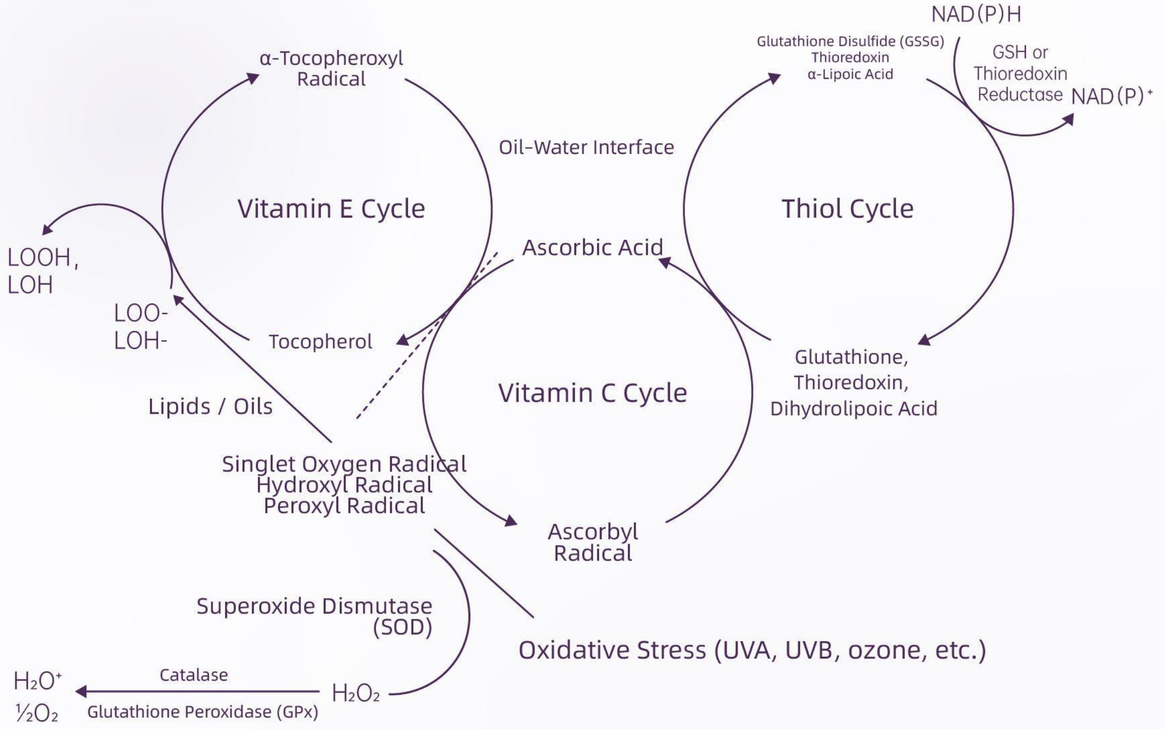
Step2: Vitamin C (VC), acting as the second runner, takes over the "bomb" and continues the relay.

Step3: The "hot potato" is then passed to glutathione, the third runner, which keeps carrying it forward.

Step4: Finally, the last runner – nicotinamide adenine dinucleotide phosphate (NADP) – takes over. After all this relay work, the "bomb" is exhausted and no longer wants to explode. NADP then works together with other cellular components to safely dismantle the fuse.

Ultimately, these antioxidant defenders themselves are also preserved and regenerated.

In antioxidant formulations, ferulic acid can stimulate the body to produce glutathione and NADP.
When used together with vitamins C and E:
It enhances the stability of both VC and VE; It can also double the antioxidant performance of the VC + VE combination.



「CLASSIC ANTIOXIDANT SERIES OF L'ORÉAL & SKINCEUTICALS」

Lancôme launched a major new product in 2022 – the Triple-Action Sculpting Serum.
The packaging features a unique three-chamber design, with each chamber containing specially selected ingredients for different skincare benefits.



Lancôme Advanced Génifique Sensitive Dual Concentrate
Combination: Ferulic Acid + Bifida Ferment Lysate
Positioning: High-potency antioxidant care, redness relief, and skin repair

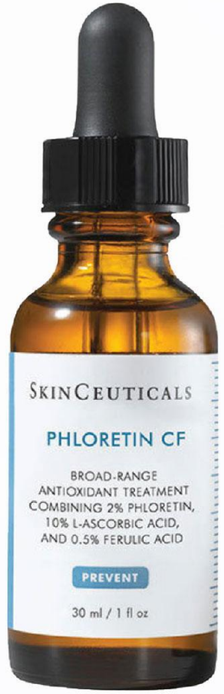


CE Classic Antioxidant Serum



Combination: **15% Vitamin C + 1% Vitamin E + 0.5% Ferulic Acid**
Positioning: Fights free radicals; suitable for healthy dry skin with good tolerance

CF Dark Spot Antioxidant Serum



Combination: **10% Vitamin C + 2% Phloretin + 0.5% Ferulic Acid**
Positioning: Brightening + antioxidant care; suitable for healthy oily skin

SCF Antioxidant Serum for Oily Skin



Combination:**15% Vitamin C + 0.6% Silymarin + 0.5% Ferulic Acid**
Positioning: Antioxidant + anti-inflammatory care; suitable for mildly oily and acne-prone skin



Recently, Lancôme's newly launched Triple Serum has been making quite a splash!
The product's advertising heavily highlights ferulic acid as its key antioxidant ingredient.

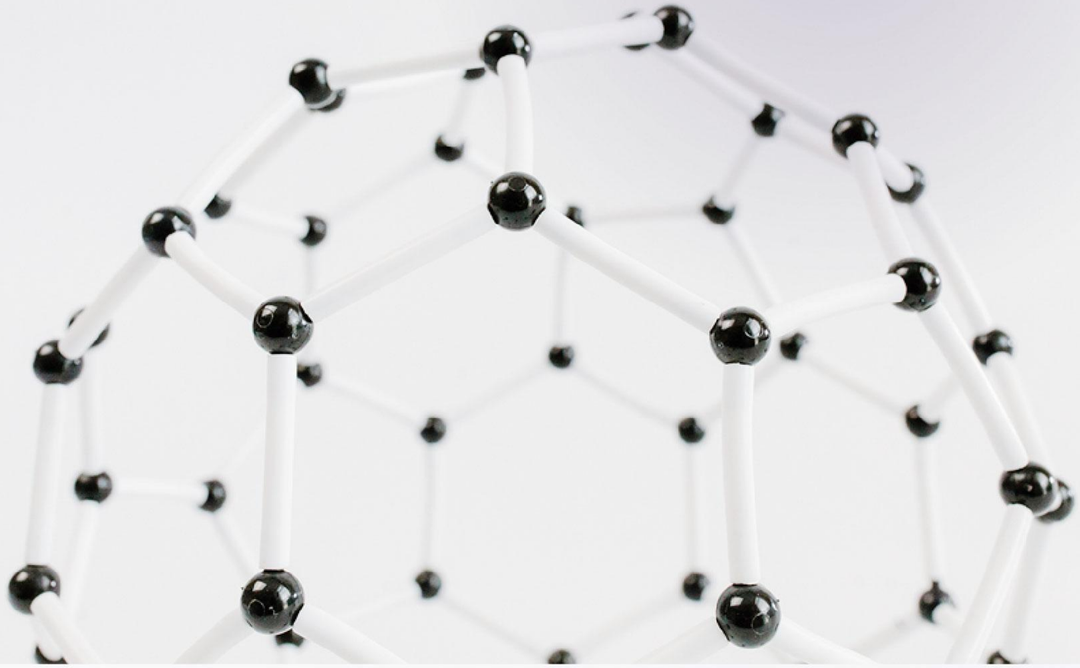
Meanwhile, the antioxidant "ampoule" from Lancôme and the classic antioxidant products from SkinCeuticals also feature ferulic acid as their star antioxidant component.

So... do you know ferulic acid?
Do you understand it?
Are you curious about it?

With all this buzz surrounding it, let's take a closer look at what ferulic acid actually is and why it has become such a popular skincare ingredient.

Part . 02

「PRODUCT INTRODUCTION」



PRODUCT INTRODUCTION

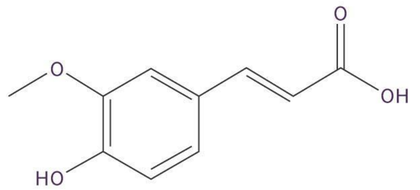
INNOVATIVE ELEMENTS TO AMELIORATE LIFE

「PRODUCT INTRODUCTION」

ZLEY®FA, with its INCI name as Ferulic Acid and chemical name as 4-hydroxy-3-methoxycinnamic acid, is a derivative of cinnamic acid and a phenolic acid widely present in plants. It is commonly found in various medicinal herbs such as Angelica sinensis, Ligusticum chuanxiong, Equisetum arvense, and Rhaponticum uniflorum, as well as in grains like rice bran, and foods like vanilla beans and wheat bran.

Ferulic acid features a phenolic acid structure, making it a weak organic acid. It acts as a tyrosinase inhibitor and can synergize with strong antioxidants such as resveratrol and vitamin C. It exhibits multifunctional properties including skin whitening, antioxidation, anti-wrinkle effects, photoprotection, and anti-inflammatory properties.

▶ **ZLEY is the first company in China to develop the synthetic process for ferulic acid and has been selling it for over 20 years.**



Food	Ferulic acid(mg/100g)
Bamboo shoots	243.6
Eggplant	7.3-35
Peanuts	8.7
Tomatoes	0.29-6
Radishes	4.6
Grapefruit	10.7-11.6
Oranges	9.2-9.9
Bananas	5.4
Beetroot juice	800
Popcorn	313
Whole wheat coffee flakes	25-32
Coffee	9.1-14.3
Pasta	12
Angelica sinensis	9.3
Ligusticum chuanxion	12.5

Part . 03

「MECHANISM OF ACTION」



MECHANISM OF ACTION

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

「ANTI-OXIDANT」

① Action against free radicals: Ferulic acid, with its phenolic hydroxyl group, exhibits strong efficacy against various free radicals such as DPPH radicals, superoxide radicals, and hydroxyl radicals. It effectively captures the unpaired electrons of free radicals, transforming them into stable molecules. This interruption of electron transfer helps to inhibit lipid peroxidation product MDA formation, thereby clearing excess reactive oxygen species in the body, suppressing oxidative stress, and protecting the body from oxidative damage.

② Strong reducing power: Ferulic acid possesses strong reducing capability towards Fe^{3+}, more than twice that of vitamin C.

「ANTI-AGEING」

① Ferulic acid promotes the biosynthesis of pro-collagen and hyaluronic acid (HA) in fibroblasts.

② It inhibits the activity of matrix metalloproteinase-1 (MMP-1) in fibroblasts and promotes the expression of tissue inhibitor of metalloproteinases-1 (TIMP-1).

「WHITENING」

① Ferulic acid inhibits melanin production in B16F10 melanoma cells.

② It inhibits the activity of tyrosinase within the cells.

「SUNSCREEN AGENT」

Being a relative in the cinnamic acid family, ferulic acid also exhibits sunscreen properties by absorbing ultraviolet (UV) rays. Ferulic acid effectively absorbs UV radiation around 290-330nm wavelengths. Particularly, UV rays between 305-310nm are known to induce skin pigmentation. By incorporating ferulic acid into sunscreen products, it helps protect the skin from UVB damage and enhances the cellular defense mechanisms against UV radiation.

「ANTI-INFLAMMATORY」

① Ferulic acid disarms the immune system by interrupting and inhibiting key processes in inflammation. It affects the metabolism of arachidonic acid, inhibits the synthesis of prostaglandin E2 (PGE2), and reduces the expression of TNF-α, IL-6, and IL-1β.

② It soothes the immune system to prevent stimulation, reducing the activation of mast cells and exhibiting anti-inflammatory and anti-sensitive effects.

* Ref.: Information comes from formulater Markgo

Part . 04

「EFFICACY EVALUATION」



EFFICACY EVALUATION

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

「ANTIOXIDANT」

(SCAVENGING DPPH FREE RADICALS)

▶IC_{50} Value：

The concentration of antioxidant required to inhibit lipid peroxidation or scavenge 50% of free radicals. Generally, a lower IC_{50} value indicates higher antioxidant activity.

▶DPPH Radical Scavenging Test Results Show:

As the concentration of ZLEY®FA-Ferulic Acid increases, there is a significant enhancement in the clearance of DPPH radicals, demonstrating a dose-dependent relationship.

▶The IC_{50} Value of ZLEY®FA-Ferulic Acid is 0.033 mg/ml.

Table 2 The DPPH clearance test results

Sample name	Concentration (mg/mL)	Clearance mean value (%)	SD (%)	IC_{50}value
VE	0.01	25.36	0.36	0.030mg/mL
	0.02	43.26	0.86	
	0.04	68.93	0.56	
	0.08	90.53	0.88	
ZLEY®FA	0.00315	5.33	0.62	0.033mg/mL
	0.00625	13.15	0.78	
	0.0125	22.75	0.96	
	0.025	48.46	0.84	
	0.05	68.13	0.52	

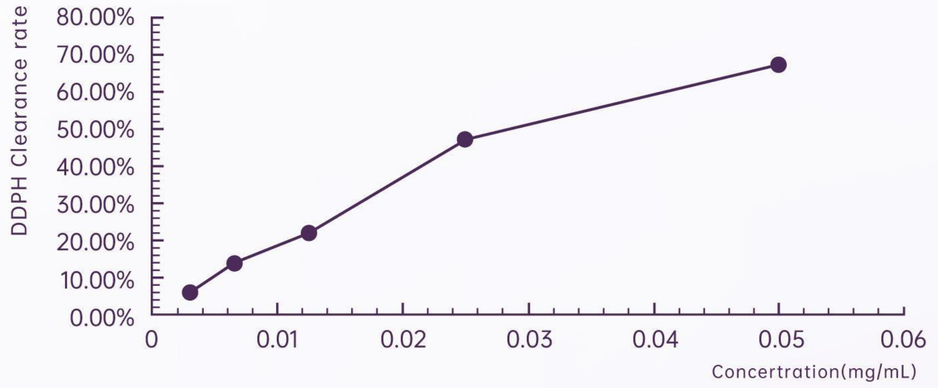


Figure 1 ZLEY®FA-Curves of the relationship between ferulic acid concentration and DPPH radical clearance

「OXIDATION RESISTANCE」

(STRONG REDUCTION ABILITY)

Many studies have confirmed that the antioxidant activity is closely related to the reducing force.

The detection of total reduction force showed that ferulic acid was highly potent to Fe3+, and the concentration of ZLEY® FA-ferulic acid was 0.415 mg/ml.

Table 2: Total Antioxidant Capacity Detection Results

Sample name	Concentration (mg/mL)	Clearance mean value (%)	SD (%)
ZLEY®FA	0.02	0.148	0.69
	0.04	0.193	1.57
	0.08	0.314	0.96
	0.16	0.500	1.29
	0.32	0.810	0.36
	0.64	1.457	0.58

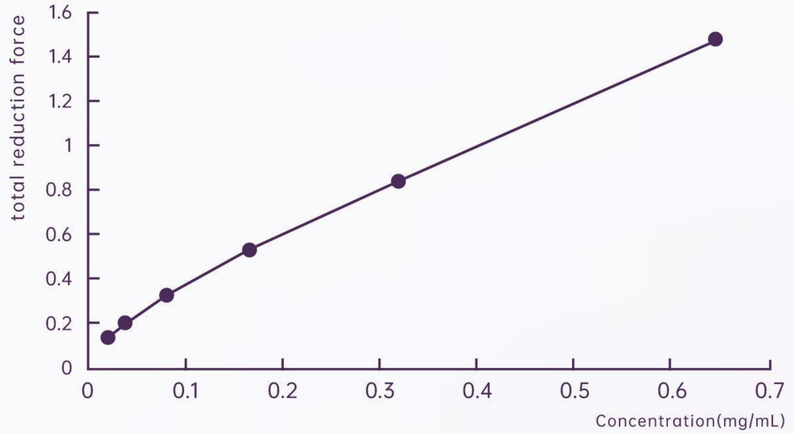
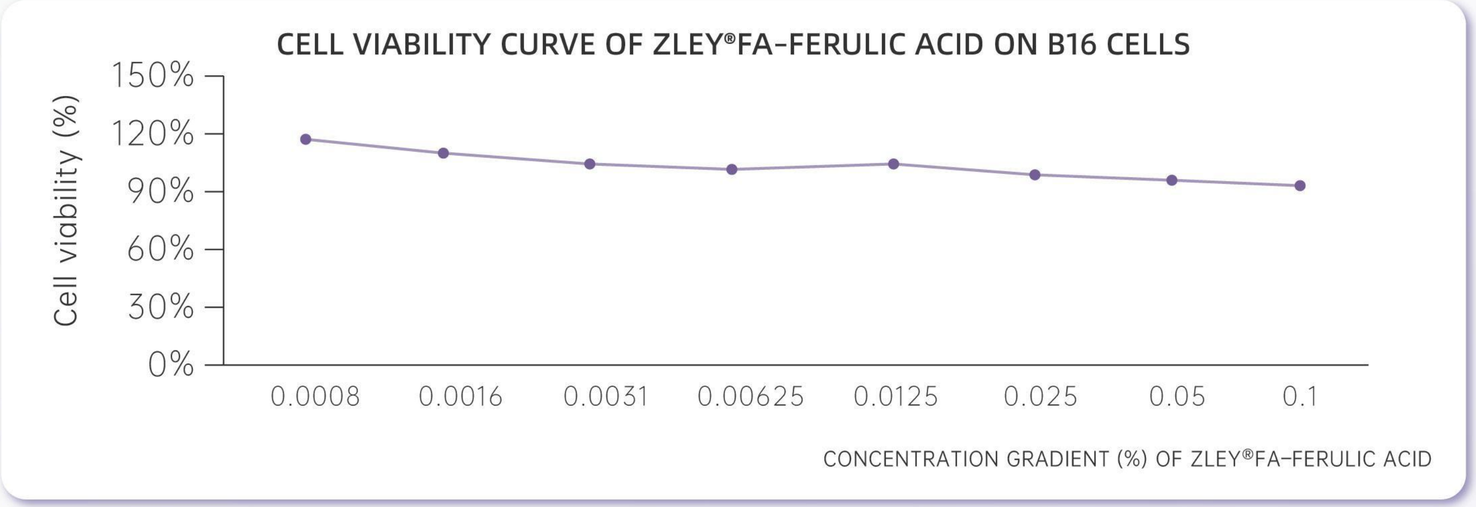


Figure 1 ZLEY®FA-Curves of the relationship between ferulic acid concentration and total reduction force

WHITENING (INHIBITION OF MELANIN PRODUCTION)



1) Cytotoxicity Test

Based on B16 cells, the cytotoxicity of ZLEY®FA-Ferulic Acid toward B16 cells was evaluated. The MTT assay results are shown below:

Concentration gradient (%) of ZLEY®FA-Ferulic Acid		0.0008	0.0016	0.0031	0.00625	0.0125	0.025	0.05	0.1
Cell viability	Mean	120.65%	111.45%	108.49%	106.45%	106.11%	100.92%	97.69%	97.48%
	SD	5.34%	0.93%	2.77%	2.81%	3.33%	4.10%	1.66%	2.21%
	P-value	0.009	0.020	0.068	0.133	0.163	0.822	0.506	0.485

WHITENING (INHIBITION OF MELANIN PRODUCTION)

2) Cellular Melanin Content Determination

①Experimental Basis: "B16 Cell Melanin Synthesis Inhibition Test for Cosmetics In Vitro" (Standard: T/SHRH 027-2019)

②Test Samples

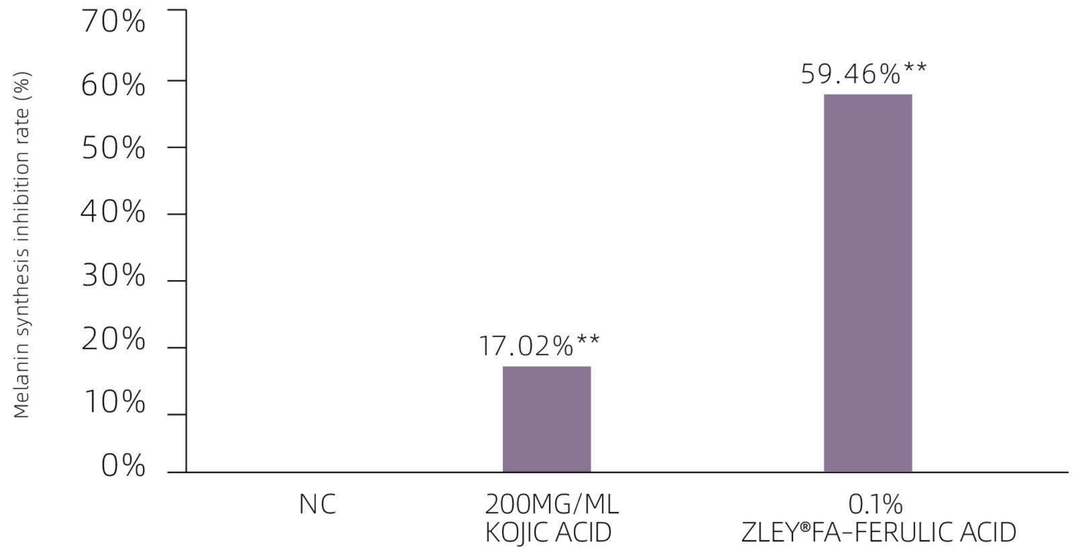
Positive control group: 200 μg/mL Kojic Acid

Sample group: 0.1% ZLEY®FA-Ferulic Acid

③ Test Results: 0.1% ZLEY®FA-Ferulic Acid showed a 59.46% inhibition rate of melanin production in B16 cells, with a statistically significant difference compared with the negative control group (*P = 0.011).

④ Conclusion: 0.1% ZLEY®FA-Ferulic Acid exerts a whitening effect by inhibiting melanin production.

Results of melanin production inhibition in B16 cells by the sample

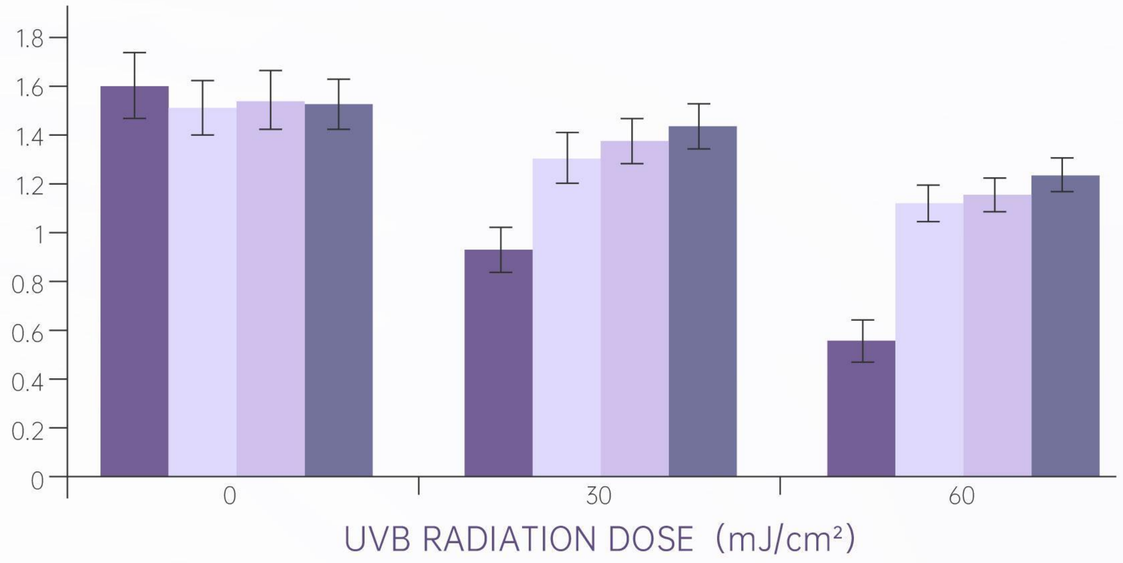


(In statistical analysis using the T-test method, significance compared with the negative control group is indicated by "*". P < 0.05 is represented as *, and P < 0.01 is represented as *.)

「NATURAL SUNSCREEN」

(PHOTOPROTECTION OF THE SKIN)

Effect of ferulic acid on the proliferation of HaCaT cells treated with UVB irradiation:
Ferulic acid had no significant toxic effect on cells at test concentrations (20,50,100 μg/ml). However, irradiation with daily physiological doses of UVB (30 mJ/cm^2 and 60 mJ/cm^2) can significantly reduce the proliferative activity of HaCaT cells in a certain dose-dependent manner. The degree of cell activity could be restored after adding ferulic acid for 24h.



- UVB
- UVB+FERULIC ACID（20μg/ml）
- UVB+FERULIC ACID（50μg/ml）
- UVB+FERULIC ACID（100μg/ml）

A value: Absorbance of HaCaT cells in each group after irradiation of HaCaT cells at the same dose of UVB: human keratinocytes

* Ref.: Study on the protective efect of feruic acid on the oxidatve damae of human keratinocytes cousedby Uv 1. Cosmetic Medidie in chine. 209.18 (8. 3

「NATURAL SUNSCREEN」

(ENHANCED UV-DEFENSE MECHANISMS IN CELLS)

Effect of ferulic acid on UVB induction on the SOD, GSH, CAT, and MDA in HaCaT cells									
Group	Control group	30mJ/cm²UVB				60mJ/cm²UVB			
		UVB	Ferulic acid (20μg/ml)	Ferulic acid (50μg/ml)	Ferulic acid (100μg/ml)	UVB	Ferulic acid (20μg/ml)	Ferulic acid (50μg/ml)	Ferulic acid (100μg/ml)
SOD(U/ml)	64.77	17.455	47.263	37.006	37.684	13.621	46.794	33.404	32.555
	±1.18	±1.84	±4.24	±2.44	±1.71	±3.83	±6.66	±7.62	±5.00
MDA (nmol/ml)	1.280	2.795	1.152	1.374	1.216	4.302	1.129	1.301	1.278
	±0.31	±0.52	±0.22	±0.29	±0.12	±0.31	±0.15	±0.26	±0.30
GSH-Px (U/g·prot)	3.810	1.309	2.806	3.053	2.716	0.815	2.407	3.338	2.762
	±0.38	±0.16	±0.50	±0.29	±0.29	±0.13	±0.56	±0.24	±0.29
CAT (U/mgprot)	2.673	1.003	2.886	2.152	1.817	0.571	2.272	2.007	1.99
	±0.28	±0.07	±0.47	±0.35	±0.27	±0.11	±0.13	±0.25	±0.05

After pretreatment with ferulic acid, the activities of SOD, GSH-Px, and CAT in cells were significantly increased compared to the blank control group, and also remained at higher levels compared to the light-exposed group. The MDA content showed a significant reduction, with all differences being statistically significant ($P < 0.05$). Ferulic acid enhances cellular antioxidant defense capabilities, suppresses oxidative stress damage, and strengthens the cell's defense mechanisms against UV radiation.

CAT: Catalase, responsible for clearing hydrogen peroxide (H2O2) from the body.

GSH-Px: Glutathione peroxidase, involved in the decomposition of peroxides.

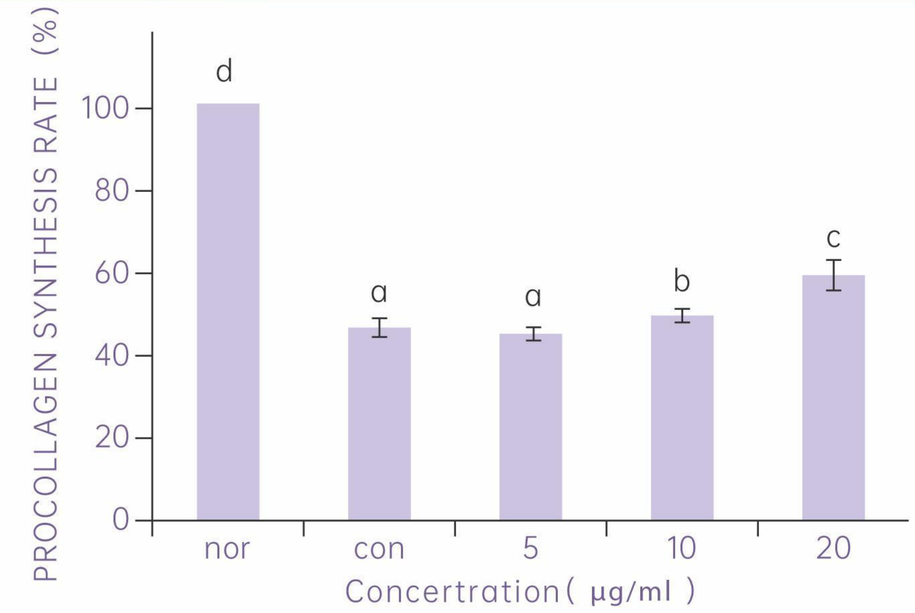
MDA: A major product of lipid peroxidation reactions.

* Ref.: Liu Shuying, Luo Dan. Study on the protective effect of ferulic acid on the oxidative damage of human keratinocytes caused by UVB [J. Cosmetic Medicine in China, 2009,18 (8): 3.

「ANTI WRINKLE」

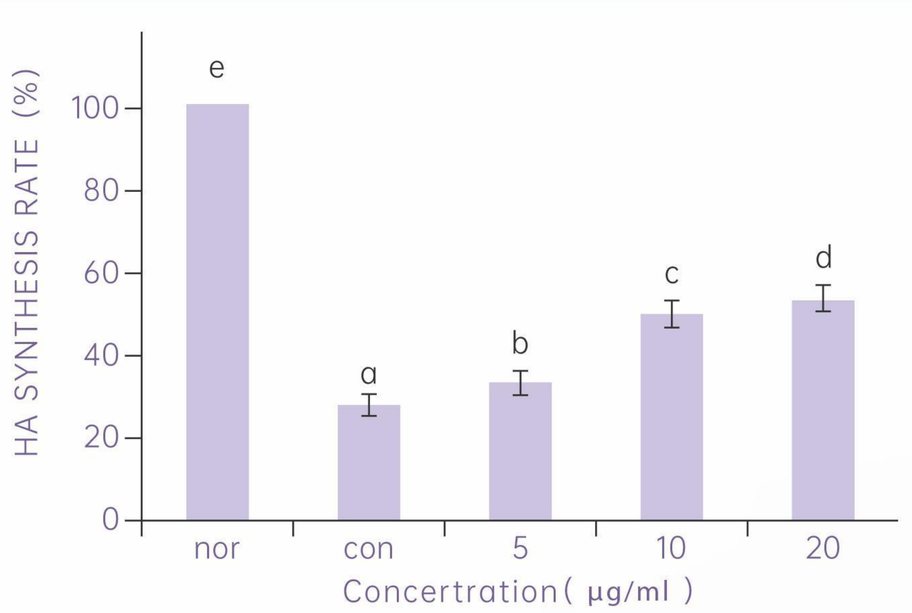
Ferulic acid promotes the biosynthesis of procollagen and HA in CCD-986sk fibroblasts

A



UVB (312nm)	-	+	+	+	+
Ferulic acid (μg/ml)	-	-	+	+	+

B



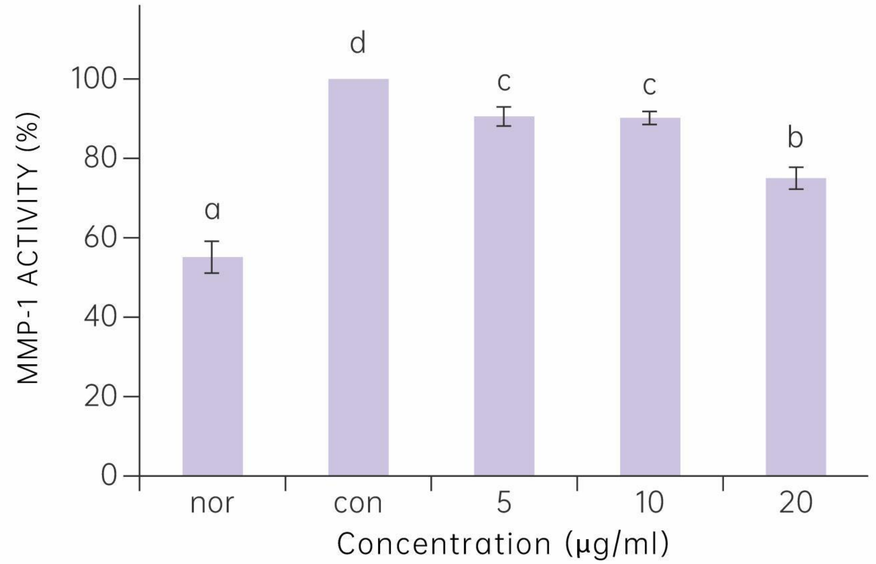
UVB (312nm)	-	+	+	+	+
Ferulic acid (μg/ml)	-	-	+	+	+

* Ref.: Whitening and anti-wrinkle activities of ferulic acid isolated from Tetragonia tetragonioides in B16F10 melanoma and CCD-986sk fibroblast cells.

「ANTI WRINKLE」

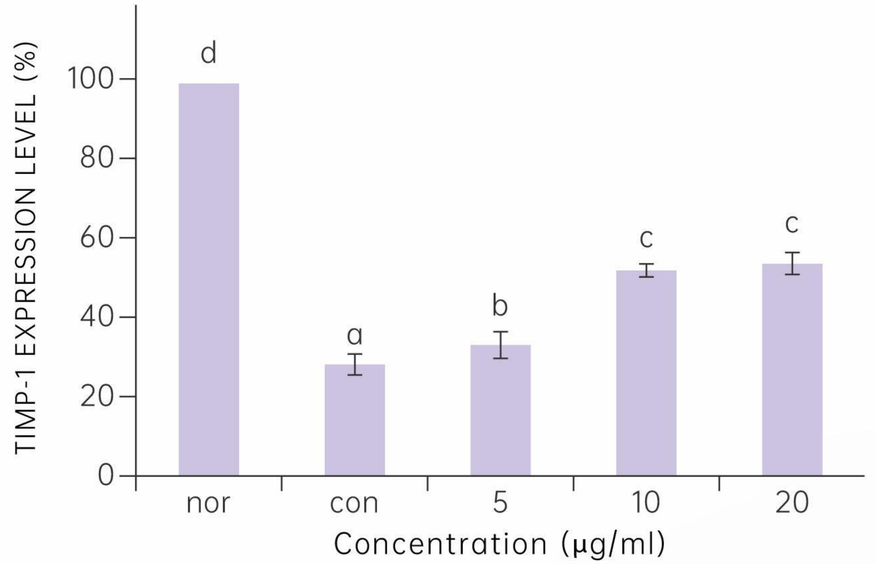
Ferulic acid inhibits the activity of MMP-1 (Matrix Metalloproteinase-1) in CCD-986sk fibroblasts and upregulates the expression of TIMP-1 (Tissue Inhibitor of Metalloproteinase-1).
Note: MMP-1 degrades collagen!

A



UVB (312nm)	-	+	+	+	+
Ferulic acid (μg/ml)	-	-	+	+	+

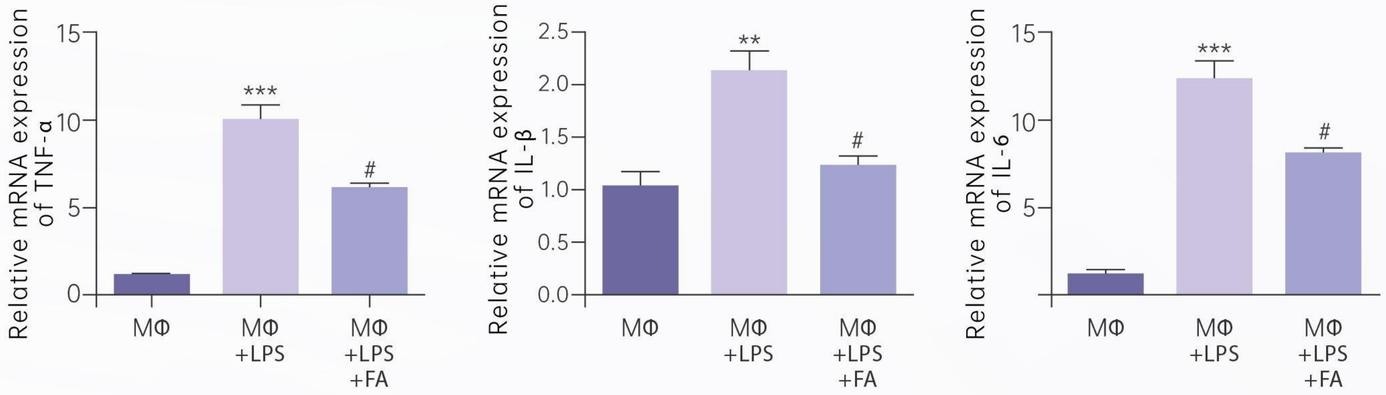
B



UVB (312nm)	-	+	+	+	+
Ferulic acid (μg/ml)	-	-	+	+	+

* Ref: Whitening and anti-wrinkle activities of ferulic acid isolated from Tetragonia tetragonioides in B16F10 melanoma and CCD-986sk fibroblast cells.

「ANTINFLAMMATORY」



- MΦ:MACROPHAGES
- LPS: LIPOPOLYSACCHARIDE (PRO-INFLAMMATORY ACTIVATOR
- FA: FERULIC ACID

Macrophages were pretreated with ferulic acid (20μM) for 24 hours and then stimulated with LPS(100 ng/mL) for 4 hours;

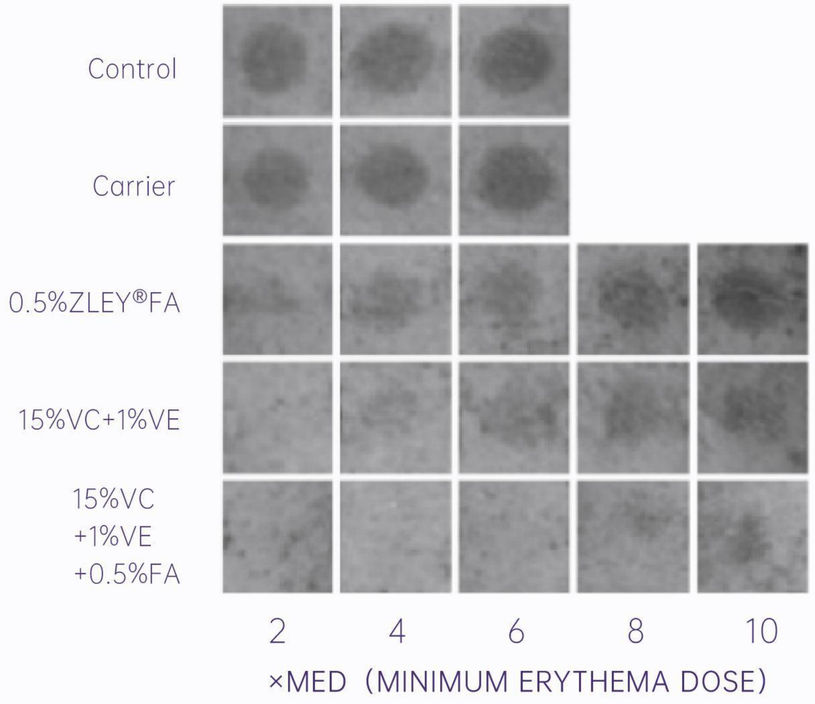
The result shows that LPS significantly increased the expression of the pro-inflammatory cytokines TNF-4, IL-6, and IL-1β ;

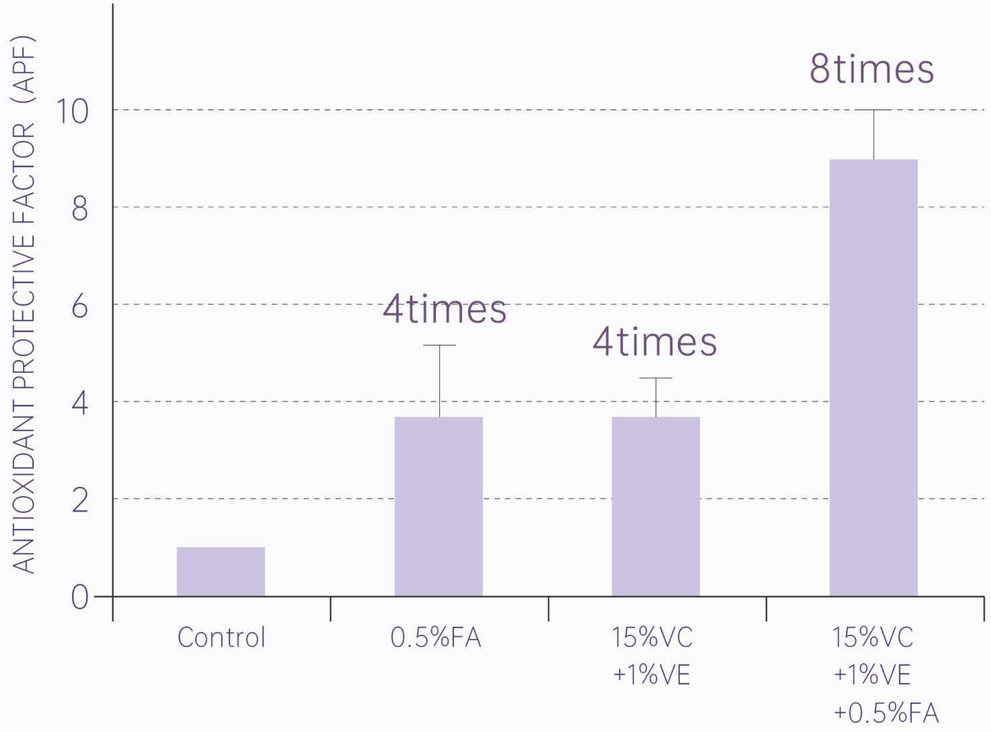
However, Ferulic acid significantly decreased the expression of TNF-α, IL-6 and IL-1β.

* Ref.: Ferulic acid exhibits anti-inflammatory effects by inducing autophagy and blocking NLRP3 inflammasome activation. Mol Cell Toxicol. 2022 Jan 10:1-11.

CEF COMBINATION: 0.5% ZLEY®FA+15% VC+1%VE
0.5% ZLEY®FA+15% VC+1%VE

Ferulic acid can improve the chemical stability of VC+VE, and can also double the antioxidant capacity of the combination of VC and VE, and the skin photoprotection effect of the "CEF" combination under sun irradiation is increased by 4 to 8 times, effectively reducing the formation of thyme dimer.



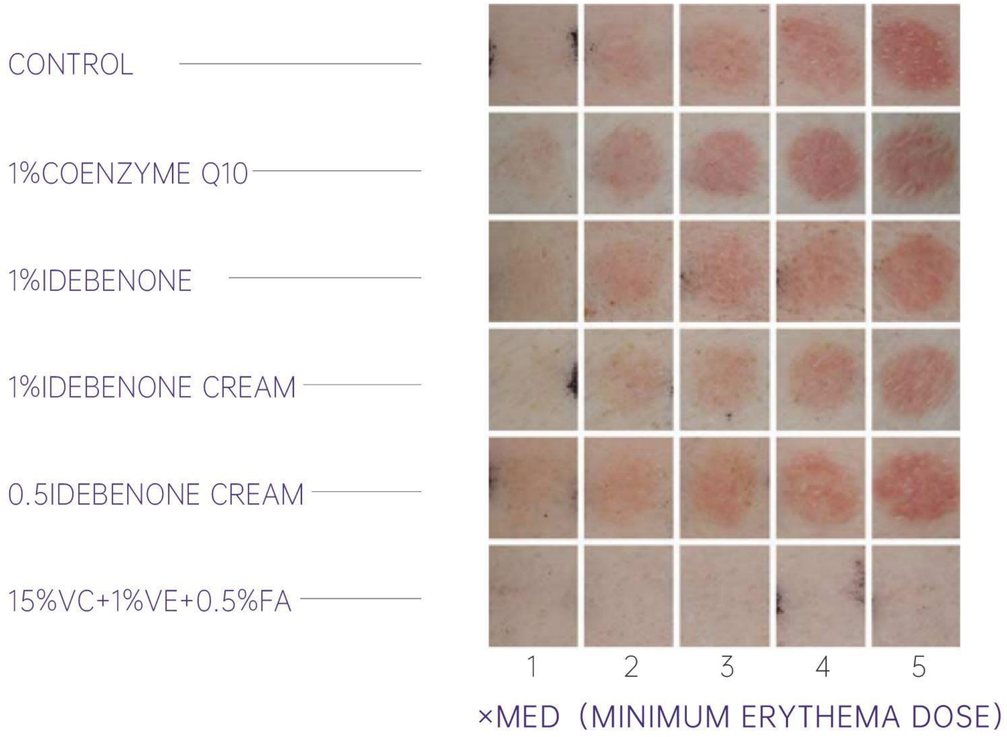


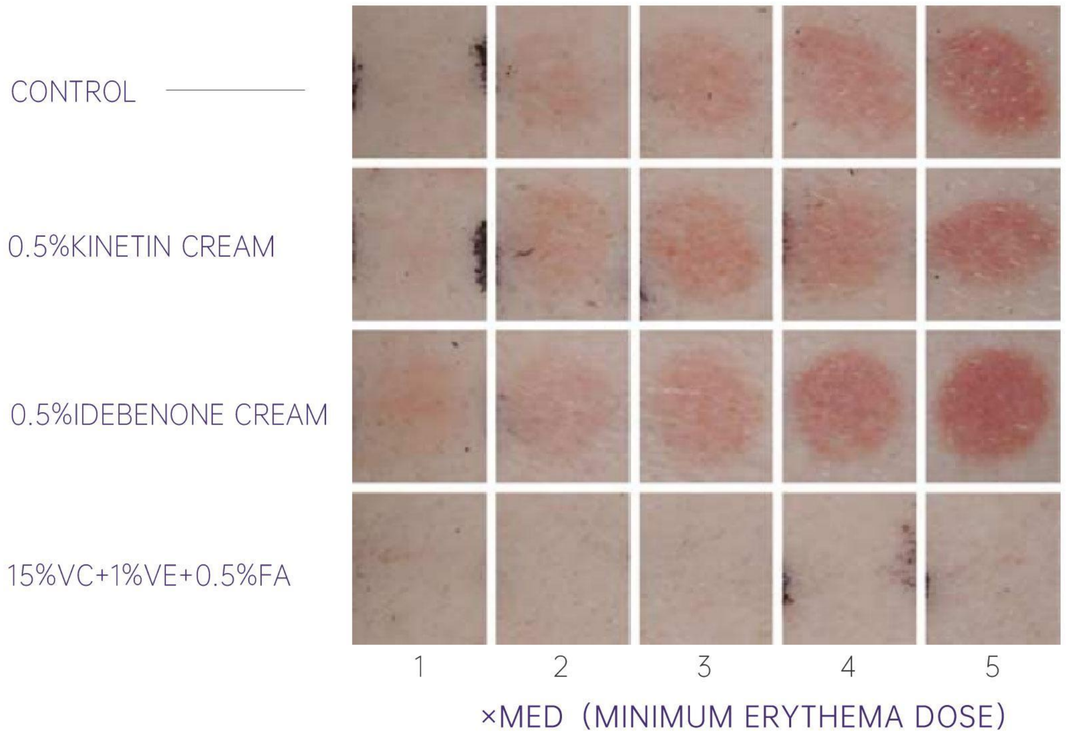
* Ref.: Ferulic acid stabilizes a solution of vitamins C and E and doubles its photoprotection of skin.

CEF COMBINATION: 0.5% ZLEY®FA+15% VC+1%VE

0.5% ZLEY®FA+15% VC+1%VE

The UV protection effect of the "CEF" combination exceeded that of Idebenone and coenzyme Q10

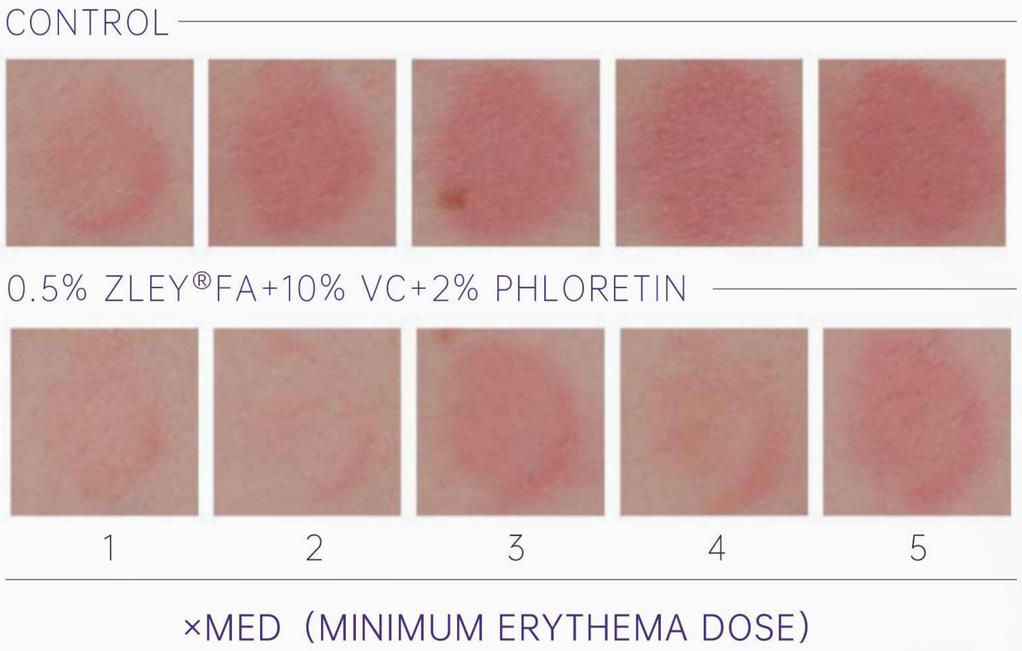


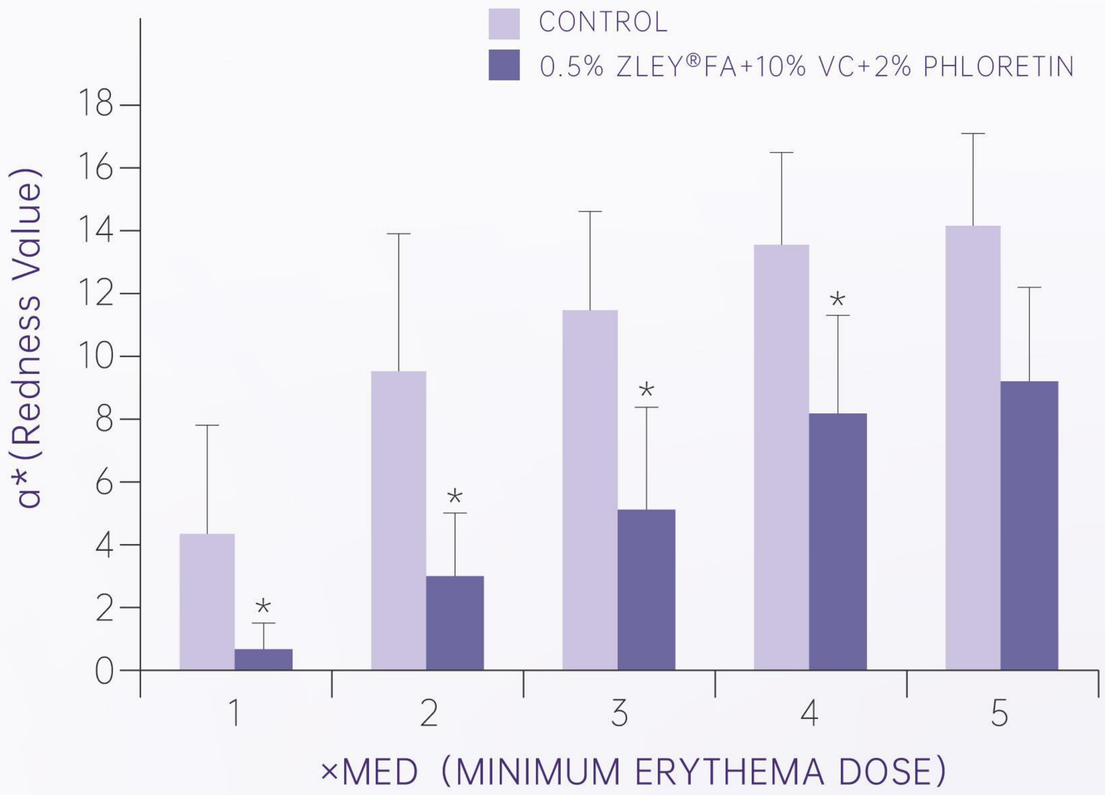


* Ref.: Ubiquinone, idebenone, and kinetin provide ineffective photoprotection to skin when compared to a topical antioxidant combination of vitamins C and E with ferulic acid.

PCF COMBINATION: 0.5% ZLEY®FA+10% VC+2% PHLORETIN

- PCF combination plays a significant role in protecting human skin from UV induced photodamage





* Ref.: Oresajo C, Stephens T, Hino PD: Protective effects of a topical antioxidant mixture containing vitamin C, ferulic acid, and phloretin against ultraviolet-induced photodamage in human skin. J Cosmet Dermatol 2008;7:290–297.

Part . 05

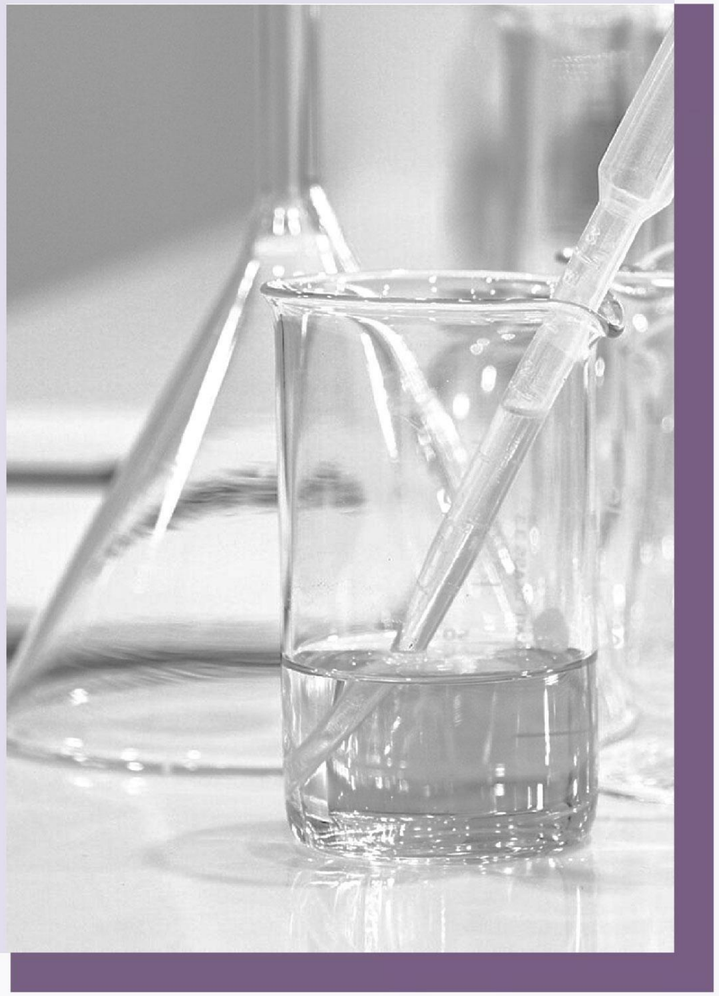
「TECHNICAL INFORMATION」





「ZLEY®FA」

INCI NAME	FERULIC ACID
CAS NO:	1135-24-6
SAFETY	Green(1)(EWG、BEBD)
ACNE RISK	None(BEBD)
NUMBER OF USES IN REGISTERED VALID PRODUCTS	1726(Data from BEBD, as of 2022.08.26)
APPEARANCE	White to yellowish crystalline powder
EFFICACY	Whitening, anti-oxidant, anti-aging, soothing, anti-inflammatory, sun protection (Photoprotection)
RECOMMENDED DOSAGE	0.1~3.0%
SOLUBILITY	Soluble in hot water and glycol
FORMULATION INSTRUCTION	• 1.Ferulic acid is well soluble in a high content of butanediol • 2.It is suggested that the antioxidant sodium metabisulfite should be added to the formula; Ferulic acid: Sodium metabisulfite =10:1, this will bring a better antioxidant effect, and prevent ferulic acid oxidation and discoloration. • 3.Applicable dosage form: Serums, lotions, creams, etc
RECOMMENDED PH OF THE SYSTEM	4.00~5.00(Ferulic acid has a better stability under lower pH value conditions)
MATTERS NEEDING ATTENTION	• 1.Ferulic acid is easy to discolor and degrade when exposure to light and oxygen, so need to pay attention to avoid light; • 2.Ferulic acid should not be heated for a long time
STORAGE CONDITIONS	Please store it in a sealed, cool and dry place away from the light, strictly prohibited with toxic and harmful goods mixed, mixed transport. This product does not belong to hazardous goods or mixtures and can be transported according as general cargo.



「DISSOLUTION SCHEME」

Item No.	Dissolution scheme	State
1	0.5g Ferulic acid+7.9g Butylene Glycol	It is completely dissolved by heating at 60℃, and the solution is transparent
2	0.5g Ferulic acid+3.5g Ethoxydiglycol	It is completely dissolved by heating at 45℃, and the solution is transparent
3	0.5g Ferulic acid+6.3g Propanediol	It is completely dissolved by heating at 60℃, and the solution is transparent
4	0.5g Ferulic acid+7.5g Pentylene Glycol	It is completely dissolved by heating at 60℃, and the solution is transparent
5	0.5g Ferulic acid+7.78g 1, 2-Hexanediol	It is completely dissolved by heating at 60℃, and the solution is transparent

SOOTHING BRIGHTENING CLEAR SERUM

PHASE	COMPONENTS	INCI	DOSAGE/%	SUPPLIERS
A	Deionized water	Water	To 102	–
	Glycerin	Glycerin	5.00	–
	ZLEY®BIOCARE-CPH	Chlorphenesin	0.08	ZLEY
	HA	Sodium Hyaluronate	0.05	–
	NMF-50	Betaine	1.00	–
	Xanthan Gum	Xanthan Gum	0.05	–
	ZLEYTMPE503	Rehmannia Glutinosa Root Extract	0.25	ZLEY
	EDTA-2Na	Disodium Edta	0.02	–
	Xanthan Gum	Xanthan Gum	0.20	–
B	Butylene Glycol	Butylene Glycol	18.00	–
	Propanediol	Propanediol	5.00	–
	ZLEY®FA	Ferulic Acid	0.50	ZLEY
C	NaOH	Sodium Hydroxide	0.02	–
	Deionized water	Water	5.00	–
	Cosmecare 603	Caprylhydroxamic Acid, Ethylhexylglycerin, 1,2-Hexanediol	0.08	–
	ZLEY®GENTIANA SCABRA	Gentiana Scabra Root Extract,Butylene Glycol, Water	2.00	ZLEY
D	ZLEY®BRC-WS	4-Butylresorcinol, Propanediol, Hydroxypropyl Cyclodextrin, Sodium Bisulfite, Water	0.90	ZLEY
	ZLEY®ZMSK	Potassium Methoxysalicylate	0.50	ZLEY
	Sodium Metabisulfite	Sodium Metabisulfite	0.05	–

「EFFICACY」

Delivers visible brightening effect within 2 weeks; soothes sensitive skin and is mild & skin-friendly.

「APPEARANCE」

Colorless transparent liquid

「CORE BRIGHTENING INGREDIENT COMBINATION」

① 0.5% ZLEY®FA (Ferulic Acid)
② 0.5% ZLEY®ZMSK (Potassium Methoxysalicylate)
③ 0.9% ZLEY®BRC-WS (Encapsulated 4-Butylresorcinol)

「MANUFACTURING PROCESS」

1. Pre-treatment: Weigh Phase B accurately, heat and stir until fully dissolved for standby use.
2. Weigh Phase A accurately, heat in 80°C water bath, homogenize rapidly for 5 minutes to obtain uniform mixture.
3. Add Phase B and stir evenly, then add Phase C and mix well, keep warm for 20 minutes.
4. Cool down to below 50°C, add raw materials of Phase C1 in sequence, stir thoroughly until complete dissolution, then discharge the material.

ZLEY GROUP

[INNOVATIVE ELEMENTS TO AMELIORATE LIFE]

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