



INNOVATIVE ELEMENTS TO AMELIORATE LIFE

ZLEY®BRC

4-Butylresorcinol

Superior Skin Brightening and Spot-Reducing
Efficacy Compared to Phenylethyl Resorcinol
and Hexylresorcinol



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.

「 1 2 3 」

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

「MAEKET ANALYSIS」

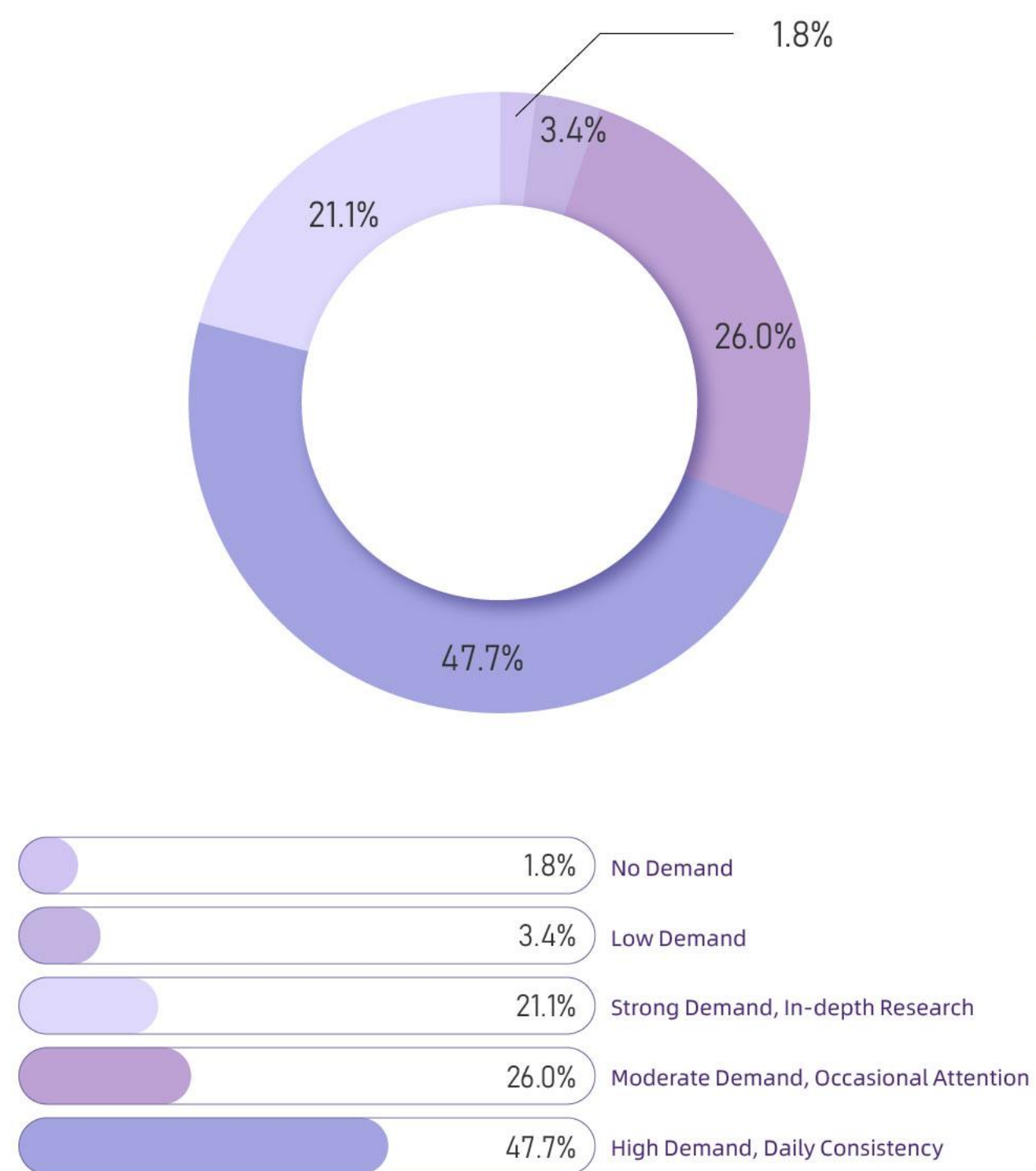
MAEKET ANALYSIS

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

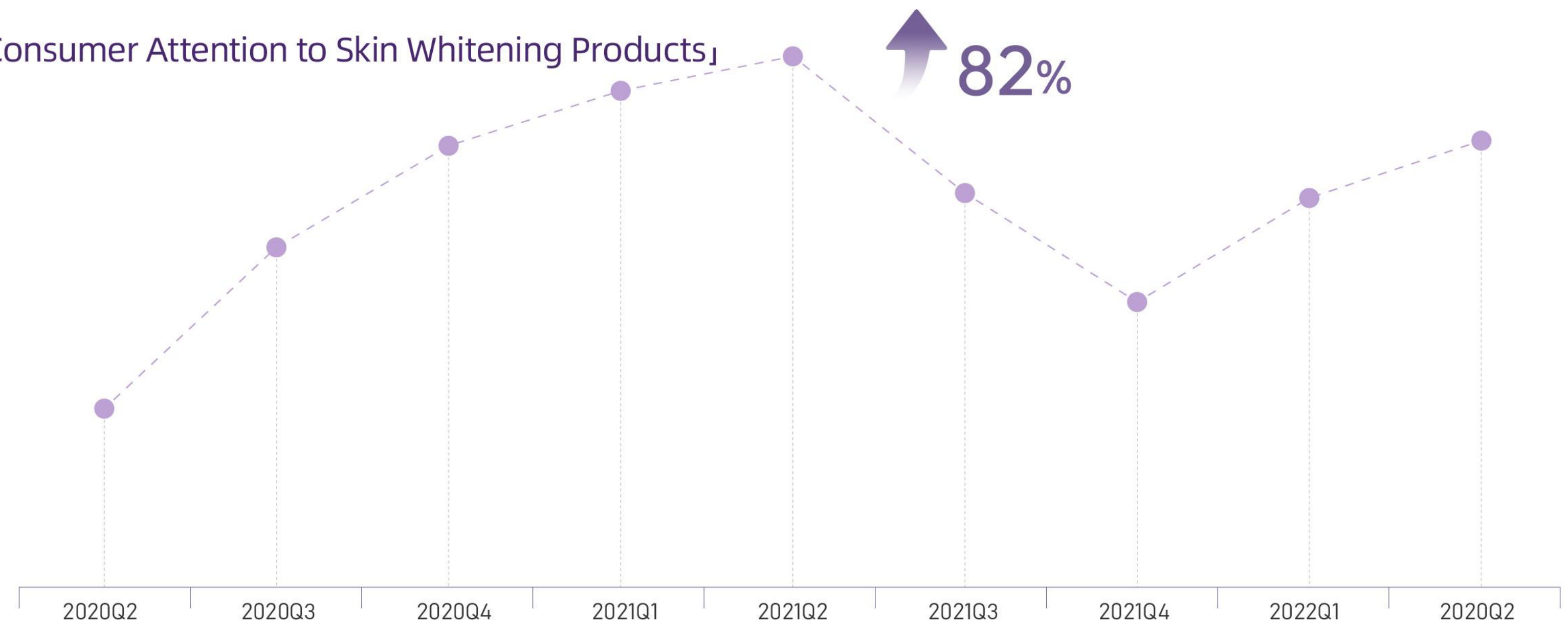
「DEMAND AND GROWTH POTENTIAL OF THE SKIN BRIGHTENING MARKET」

--Skin whitening is becoming an increasingly essential need, and the market has huge development potential.

「Consumer Demand for Skin Whitening」



「Consumer Attention to Skin Whitening Products」



Nearly 70% of users have a clear need for skin whitening, with over 20% of ingredient-conscious users conducting in-depth research on whitening products, and 50% consistently using them daily. Influenced by policy and seasonal factors, the attention given to whitening products has shown a wave-like upward trend, with nearly 30% experiencing an increase in attention exceeding 80%, indicating a growing strong consumer demand for skin whitening.

「REGULATORY LANDSCAPE OF SKIN BRIGHTENING PRODUCTS」

Regulatory Upgrades Drive the Healthy Development of the Whitening Market



Regulatory policies continue to be strengthened, raising the market entry threshold for the manufacturing of spot-correcting and whitening cosmetic products.

Under increasingly stringent regulatory enforcement, the whitening cosmetics market is expected to further consolidate its compliance foundation, promoting high-quality and sustainable industry development.

2020

Raw Material Supervision

In 2020, the State Council explicitly stated that new cosmetic raw materials with preservative, sun protection, and skin-whitening/blemish-removing functions can only be used after registration with the State Council's drug regulatory department.

2019

Claim Compliance

In 2019, the National Medical Products Administration (NMPA) updated the list of prohibited cosmetic claim terms. According to the Regulations on the Supervision and Administration of Cosmetics and its implementation rules, special cosmetics may not make claims beyond the legally defined scope of special-use cosmetics, and non-special cosmetics are prohibited from claiming special cosmetic functions.

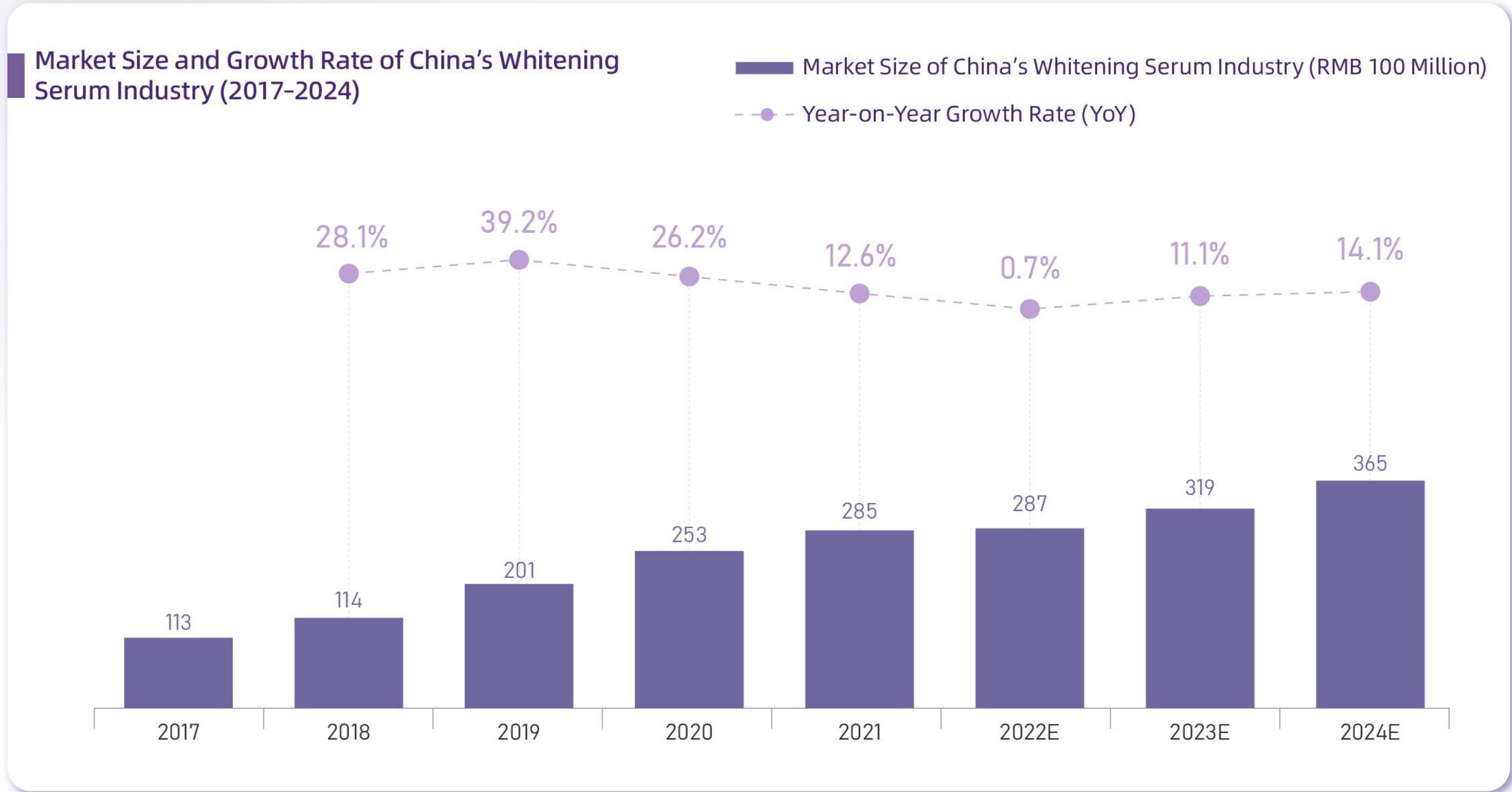
2021

Certification

In 2021, the National Medical Products Administration announced that cosmetics with skin-whitening, blemish-removing, sun protection, hair loss prevention, acne treatment, nourishing, and repairing effects must undergo efficacy claim evaluation through human efficacy evaluation trials.

「 MARKET SIZE AND FUTURE OUTLOOK OF SKIN BRIGHTENING 」

The Whitening Serum Market Continues to Expand, with a Positive Mid- to Long-Term Outlook



According to iResearch's calculations, the Chinese skin whitening serum industry reached a scale of 28.51 billion yuan in 2021. In the first half of 2022, although the recurring pandemic had a short-term negative impact on the skin whitening serum industry, the overall recovery in consumption in the second half of the year and the boost from year-end shopping festivals are expected to help stabilize the annual data. Overall, driven by both increased demand and stronger supply, the skin whitening serum industry's growth rate continues to outperform other skin whitening categories and the overall skincare industry, and is expected to exceed 35 billion yuan in 2024.

* 数据源自：艾瑞咨询《2022年国人美白趋势洞察白皮书》

WHITENING EFFICACY AND SAFETY COEXIST

Summary of Popular Product Features ▼

- ① Good whitening effect
- ② Ingredient concentration and formula
- ③ Safe and non-irritating, gentle and soothing
- ④ Fast results
- ⑤ Refreshing and non-greasy skin feel

Top 6 Keywords in Consumer Reviews of Whitening and Spot-Fading Products ▼

- ① Obvious effect (90.2%)
- ② Synergistic effect (36.4%)
- ③ Safe and gentle (21.5%)
- ④ Skin feel experience (20.2%)
- ⑤ Ingredient formula (19.7%)
- ⑥ Prevention (5.4%)

* 数据源自：美修大数据《2021新洞察：解读美白淡斑市场》

Consumer Feedback Word Cloud for Popular Whitening and Spot-Fading Products





CONCEPT OF NEW WHITENING PRODUCTS

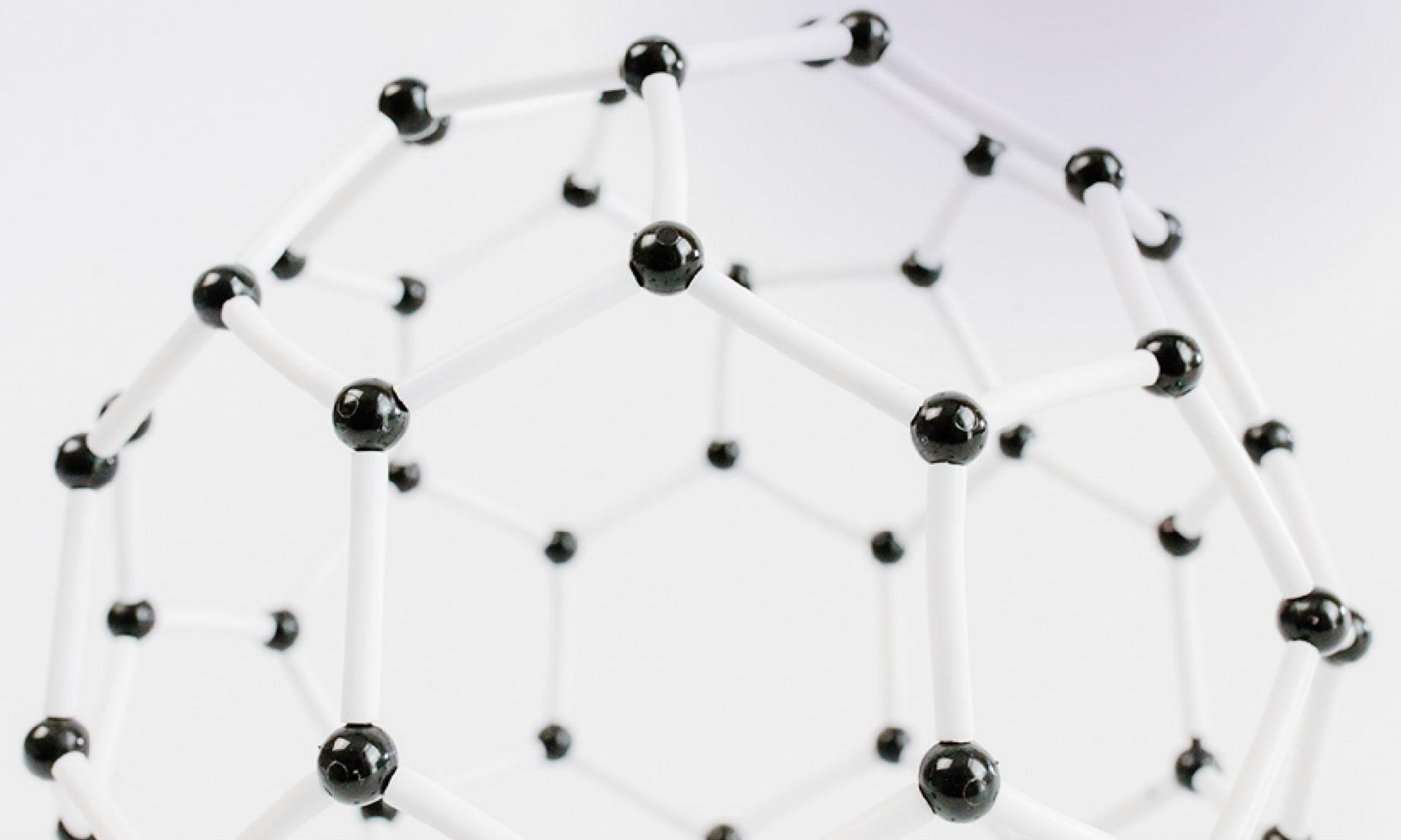
In response to consumer and market demands for whitening products, and to meet regulatory, safety, mildness, and efficacy requirements, we are introducing a whitening solution that combines efficacy and safety -

ZLEY®BRC-4-Butylresorcinol:

-
- 1.Superior skin brightening and spot-reducing efficacy compared to Phenylethyl Resorcinol and Hexylresorcinol
 - 2.End-to-end whitening process, gentle and non-irritating;
-

Part . 02

「PRODUCT INTRODUCTION」



PRODUCT INTRODUCTION

INNOVATIVE ELEMENTS TO AMELIORATE LIFE



ZLEY®BRC

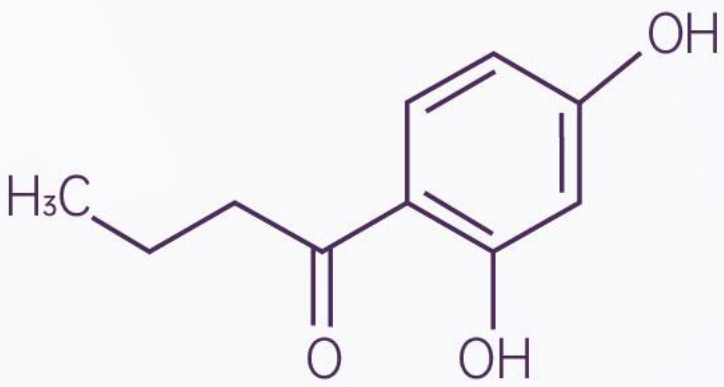
4-Butylresorcinol

Superior Skin Brightening and Spot-Reducing
Efficacy Compared to Phenylethyl Resorcinol
and Hexylresorcinol

「PRODUCT INTRODUCTION」

ZLEY®BRC, INCI Name: 4-Butylresorcinol

By acting on the active center of tyrosinase within melanosomes, it inhibits the activity of tyrosinase and tyrosinase-related protein TRP-1, blocking melanin formation. It promotes tyrosinase degradation, accelerates melanin breakdown and excretion, thereby reducing skin pigmentation and fading spots, without causing cytotoxicity to melanocytes.



4-Butylresorcinol

- 1.Superior skin brightening and spot-reducing efficacy compared to Phenylethyl Resorcinol and Hexylresorcinol
- 2.End-to-end whitening process, gentle and non-irritating;

Part . 03

「MECHANISM OF ACTION」

MECHANISM OF ACTION

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

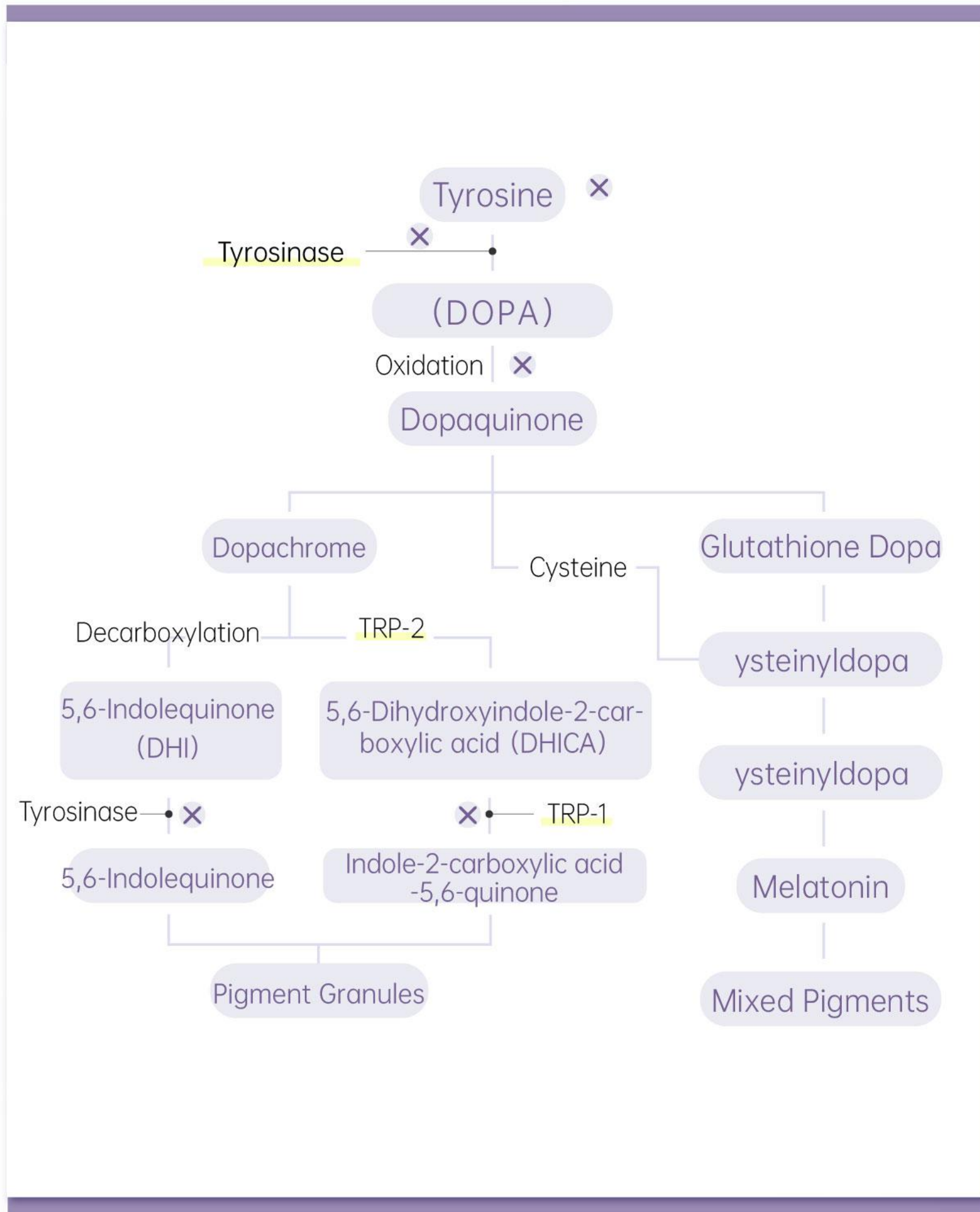


MECHANISM OF SKIN WHITENING

As we all know, skin whitening can be broadly divided into six major pathways:

-
1. Sun protection to reduce UV exposure
 2. Controlling or inhibiting the enzymes required in various stages of melanin production (such as tyrosinase, TRP-1, TRP-2, etc.)
 3. Reducing already synthesized melanin or inhibiting the auto-oxidation of dopa
 4. Inhibiting melanin transport
 5. Promoting keratin renewal to accelerate the shedding of epidermal melanin
 6. Selectively destroying melanocytes or altering the structure of melanocytes
-

The whitening mechanism of 4-Butylresorcinol mainly focuses on the second pathway, inhibiting the enzymes required for melanin production.



WHITENING MECHANISM OF 4-BUTYLRESORCINOL

4-Butylresorcinol not only plays a crucial role in inhibiting tyrosinase activity but also its whitening effect is achieved through the coordinated and simultaneous action of three stages in the formation of melanin:

1. Before Melanin Synthesis:

Inhibits the synthesis and glycosylation of tyrosinase, preventing tyrosinase from being absorbed by melanosomes.

2. During Melanin Synthesis:

Inhibits enzyme activity, acting as a competitive inhibitor of tyrosinase and TRP-1, reducing the formation of intermediates (DHICA Melanin) in the melanin production process. Reduces the intermediate product dopa in melanin, preventing the oxidation process of melanin.

3. After Melanin Synthesis:

Promotes the degradation of tyrosinase, inhibiting the transfer of melanosomes to the stratum corneum; Accelerates the shedding of melanin from keratinocytes, reducing pigment deposition;

Part . 04

「EFFICACY EVALUATION」



EFFICACY EVALUATION

ZLEY HOLDINGS | FOCUS ON MAKING PREMIUM QUALITY RAW
MATERIALS IN THE WORLD

ANTIOXIDANT (SCAVENGING DPPH FREE RADICALS)

IC₅₀ Value:

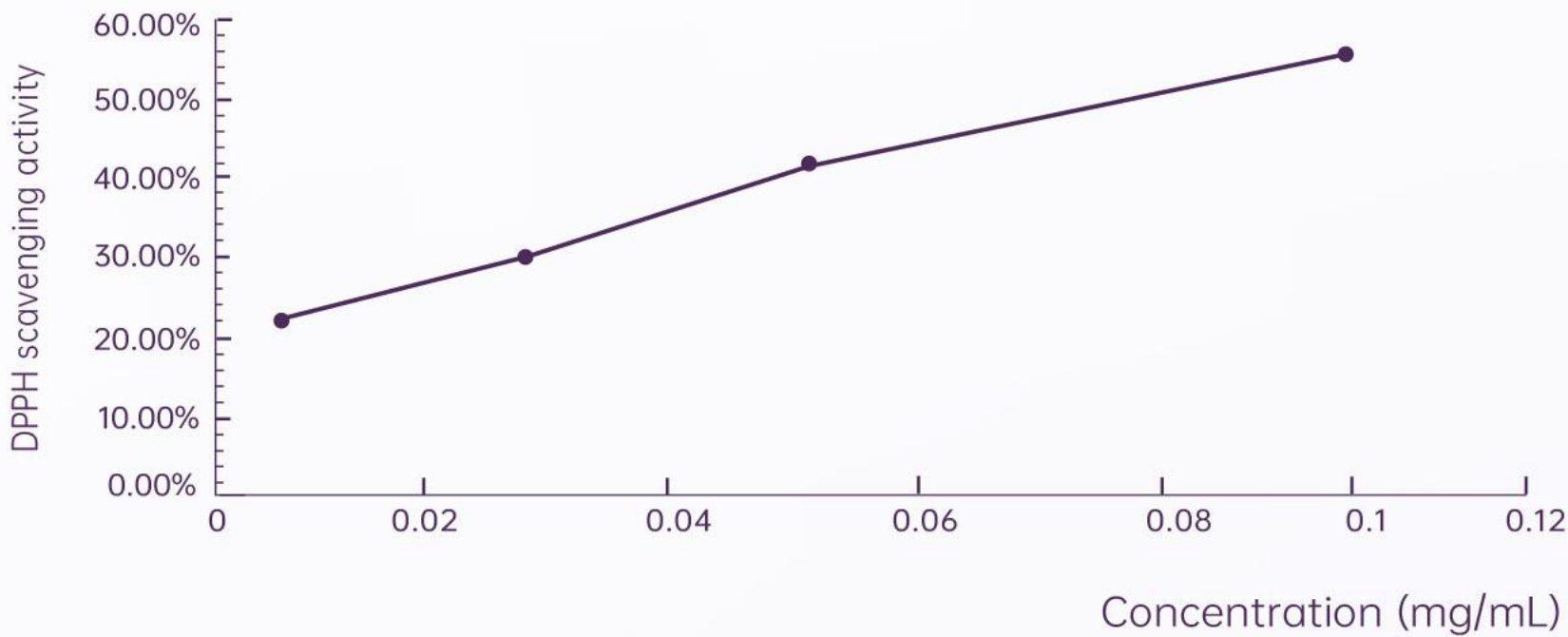
The concentration of antioxidant required to inhibit lipid peroxidation or scavenge 50% of free radicals. Generally, the smaller the IC₅₀ value, the higher the antioxidant activity.

DPPH Scavenging Rate Test Results:

The results show that as the concentration of ZLEY®BRC-4-Butylresorcinol increases, the scavenging of DPPH free radicals significantly enhances, and this relationship is dose-dependent. The IC₅₀ value of ZLEY®BRC-4-Butylresorcinol is 0.075 mg/ml.

DPPH Scavenging Rate Test Result

Sample Name	Concentration (mg/mL)	Average clearance(%)	SD(%)	IC ₅₀ Value
Vitamin E	0.01	24.3	0.95	0.029mg/mL
	0.02	45.21	1.23	
	0.04	70.62	0.55	
	0.08	92.36	0.97	
ZLEY®BRC	0.0125	24.3	1.65	0.075mg/mL
	0.025	33.84	0.59	
	0.05	44.68	1.22	
	0.1	56.83	0.36	



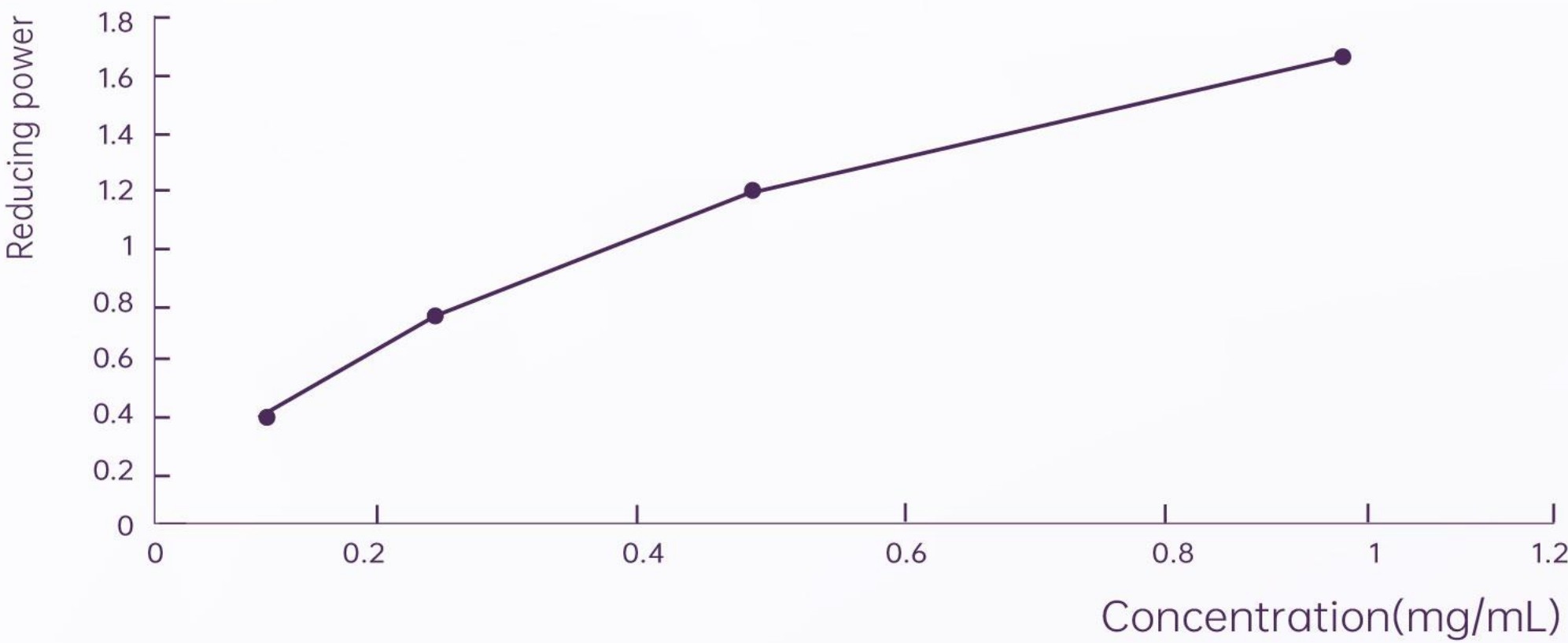
ANTIOXIDANT (STRONG REDUCING POWER)

Many studies have confirmed that antioxidant activity is closely related to reducing power. The total reducing power test results show that ZLEY®BRC-4-Butylresorcinol has a strong reducing ability for Fe³⁺. When the total reducing power equals 1, the concentration of ZLEY®BRC-4-Butylresorcinol is 0.481 mg/ml.

Table 1 Test Result of Reducing Power

Sample Name	Concentration(mg/mL)	Average of reducing power	SD (%)
ZLEY®BRC	0.125	0.464	0.72
	0.25	0.705	0.88
	0.5	1.183	0.74
	1	1.588	1.52

ZLEY®BRC-4-Butylresorcinol concentration versus total reducing power curve

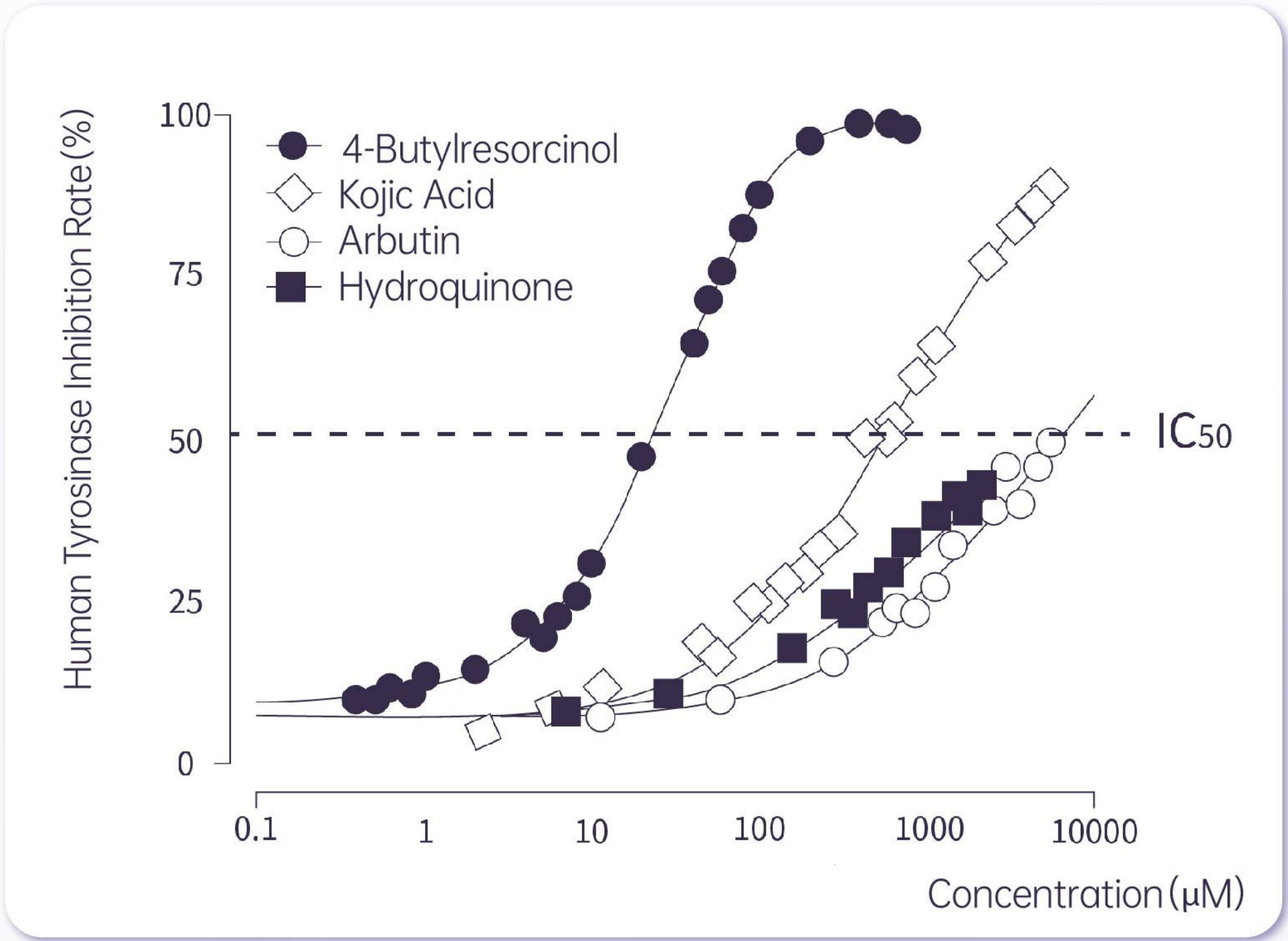


「SKIN WHITENING 」

(INHIBITION OF HUMAN TYROSINASE ACTIVITY)

Research by Beiersdorf (Germany) indicates that 4-Butylresorcinol requires a lower concentration to inhibit 50% of human tyrosinase activity compared to phenylethyl resorcinol, hexyl resorcinol, hydroquinone, kojic acid, and arbutin.

Results of Human Tyrosinase Inhibition	
Sample	Human Tyrosinase IC ₅₀
4-Butylresorcinol	21 μmol /L
Phenylethyl Resorcinol	131 μmol /L
Hexyl Resorcinol	94 μmol /L
Hydroquinone	4400 μmol /L
Kojic Acid	500 μmol /L
Arbutin	6500 μmol /L



* Ref: 4-n-butylresorcinol, a highly effective tyrosinase inhibitor for the topical treatment of hyperpigmentation. J Eur Acad Dermatol Venereol. 2013 Jan;27 Suppl 1:19-23.

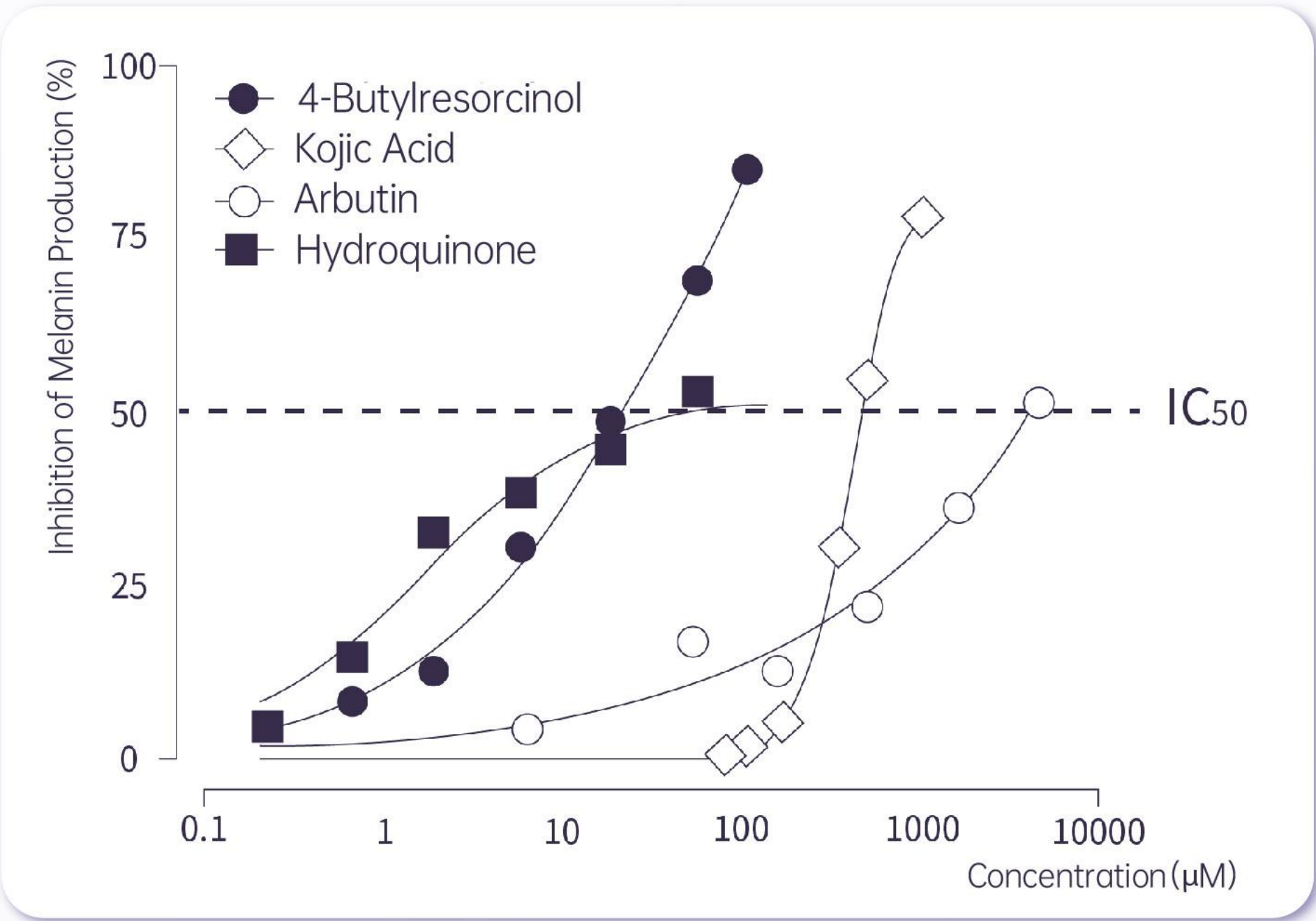
「SKIN WHITENING」

(INHIBITION OF MELANIN PRODUCTION)

In a study by Beiersdorf (Germany), an artificial skin model experiment was conducted using various whitening agents (4-Butylresorcinol, Kojic Acid, Arbutin, Hydroquinone) at different concentrations over 13 days. The melanin content in the skin model was tested, and the data results are the average of five independent experiments.

Results of Melanin Production Inhibition	
Sample	Artificial Skin Model IC50
4-Butylresorcinol	13.5 μmol /L
Hydroquinone	40 μmol /L
Kojic Acid	>400 μmol /L
Arbutin	>500 μmol /L

Compared to Hydroquinone, Kojic Acid, and Arbutin, 4-Butylresorcinol requires a lower concentration to inhibit 50% of melanin production.



* Ref: 4-n-butylresorcinol, a highly effective tyrosinase inhibitor for the topical treatment of hyperpigmentation. J Eur Acad Dermatol Venereol. 2013 Jan;27 Suppl 1:19-23.

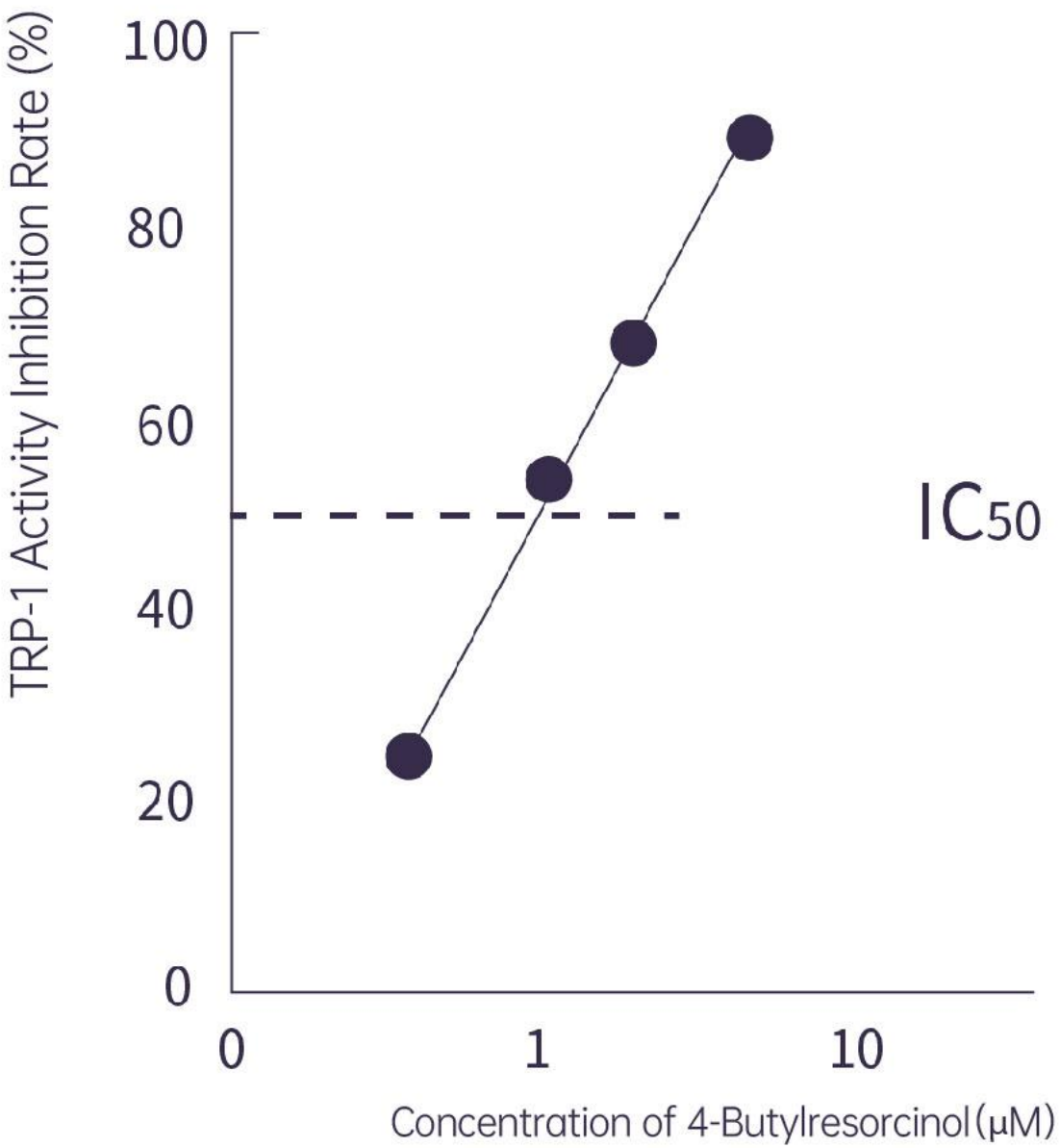
「SKIN WHITENING」

(INHIBITION OF TRP-1 ACTIVITY)

Research by POLA (Japan) shows that 4-Butyl Resorcinol requires a lower concentration to inhibit 50% of TRP-1 production.

TRP-1: DHICA Oxidase

Whitening (Inhibition of TRP-1 Activity)	
Sample	Half Inhibitory Concentration(IC ₅₀)
4-Butylresorcinol	0.93 μmol /L



*Ref: Inhibitory Action of 4-n-Butylresorcinol (Rucinol) on Melanogenesis and Its Skin Whitening Effects.[J]. Journal of Society of Cosmetic Chemists of Japan, 2001, 35(1):42-49.

「SKIN WHITENING 」 (PROMOTING TYROSINASE DEGRADATION)

Studies on B16F10 mouse melanoma cells have found that Butylresorcinol can also promote the degradation of tyrosinase:

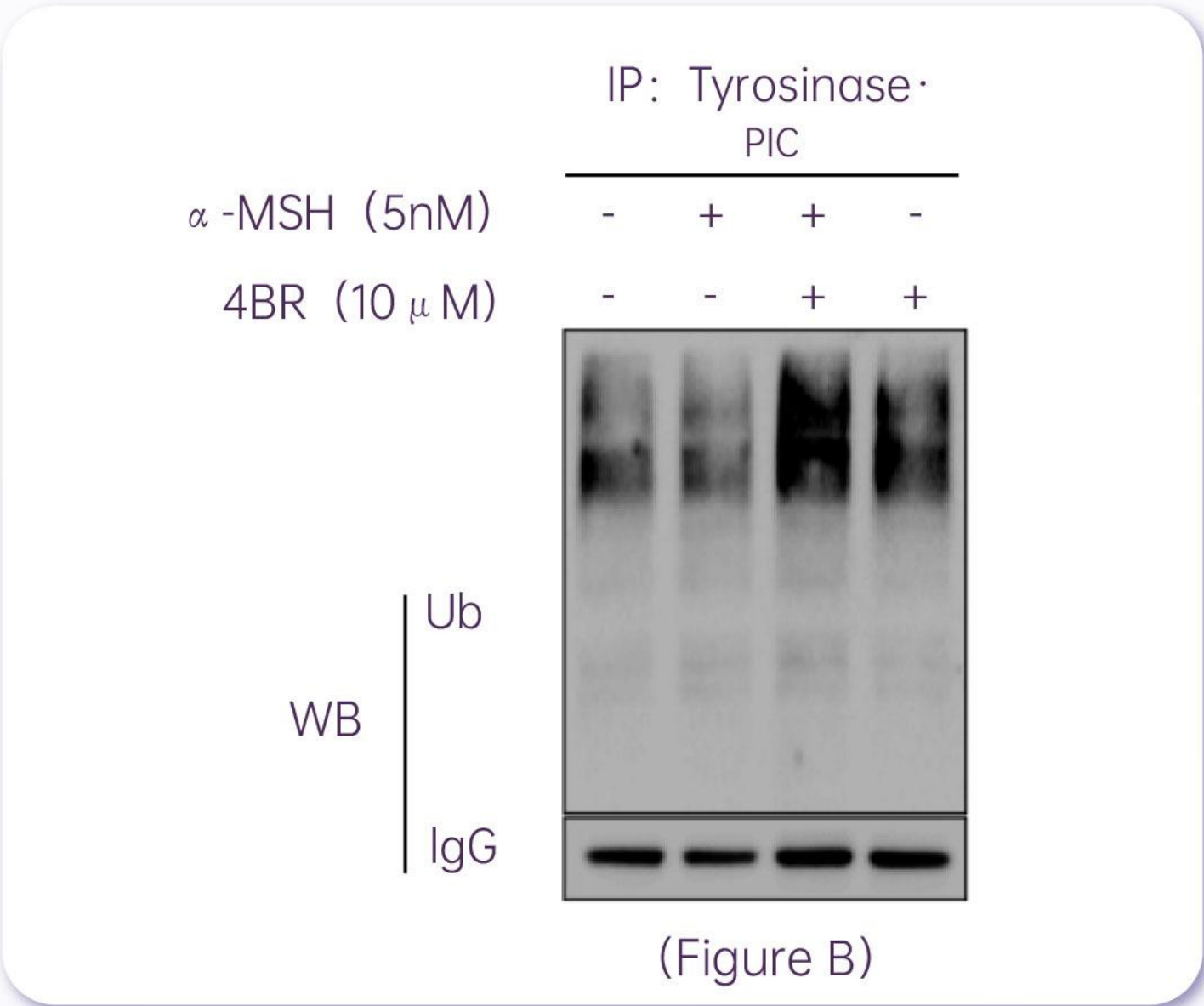
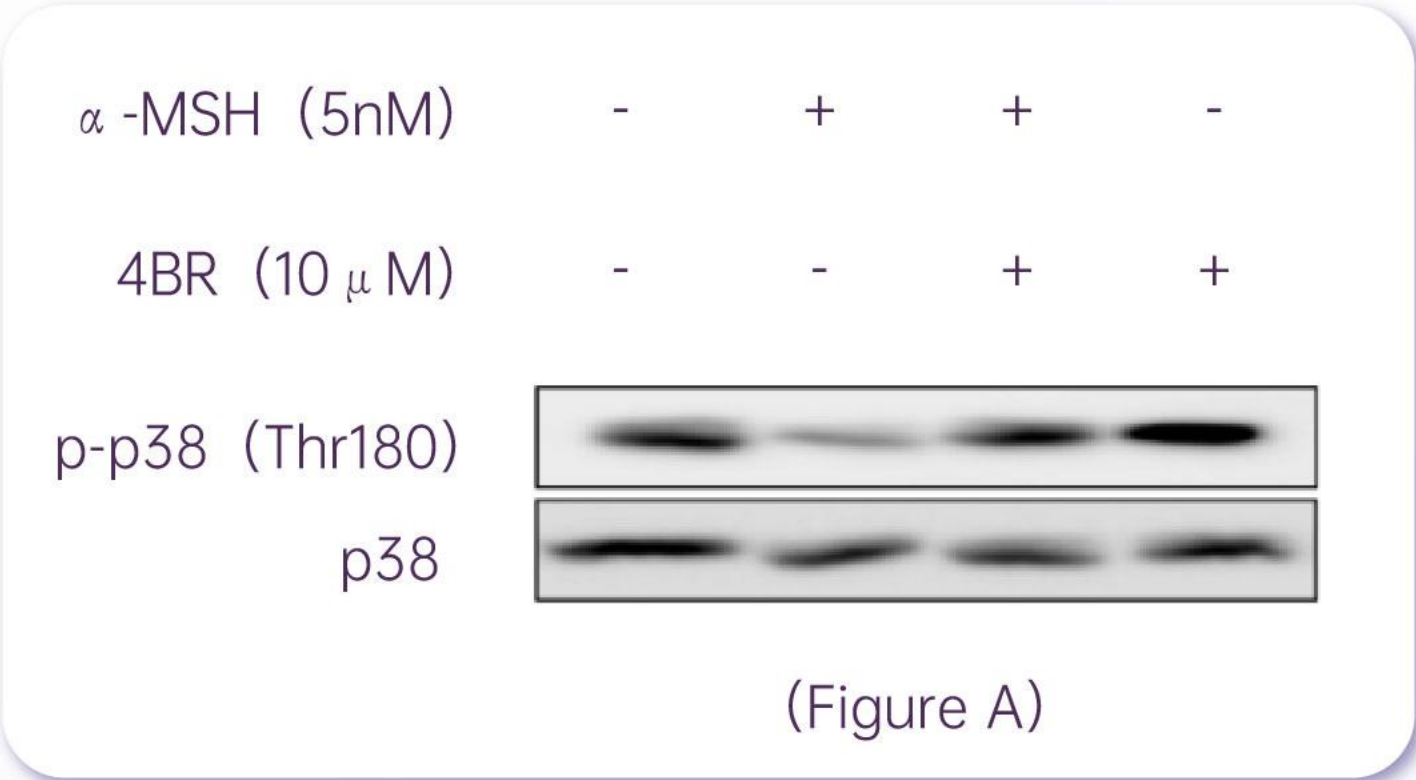
Activating the p38 MAPK signaling pathway to promote ubiquitin-proteasome degradation of tyrosinase;

Promoting autophagy of tyrosinase.

Experimental Procedure:

(Figure A) B16F10 cells were cultured for 48 hours in the presence of 5nM α-MSH and 10μM 4-Butyl Resorcinol (4BR). Lysates were immunoblotted with anti-phospho-p38 antibody. Total p38 protein was used as a control.

(Figure B) B16F10 cells were cultured for 24 hours in the presence of 5nM α-MSH, 10μM 4-Butyl Resorcinol (4BR), and PC. Lysates were immunoprecipitated with anti-tyrosinase antibody and immunoblotted with anti-ubiquitin and anti-IgG antibodies.



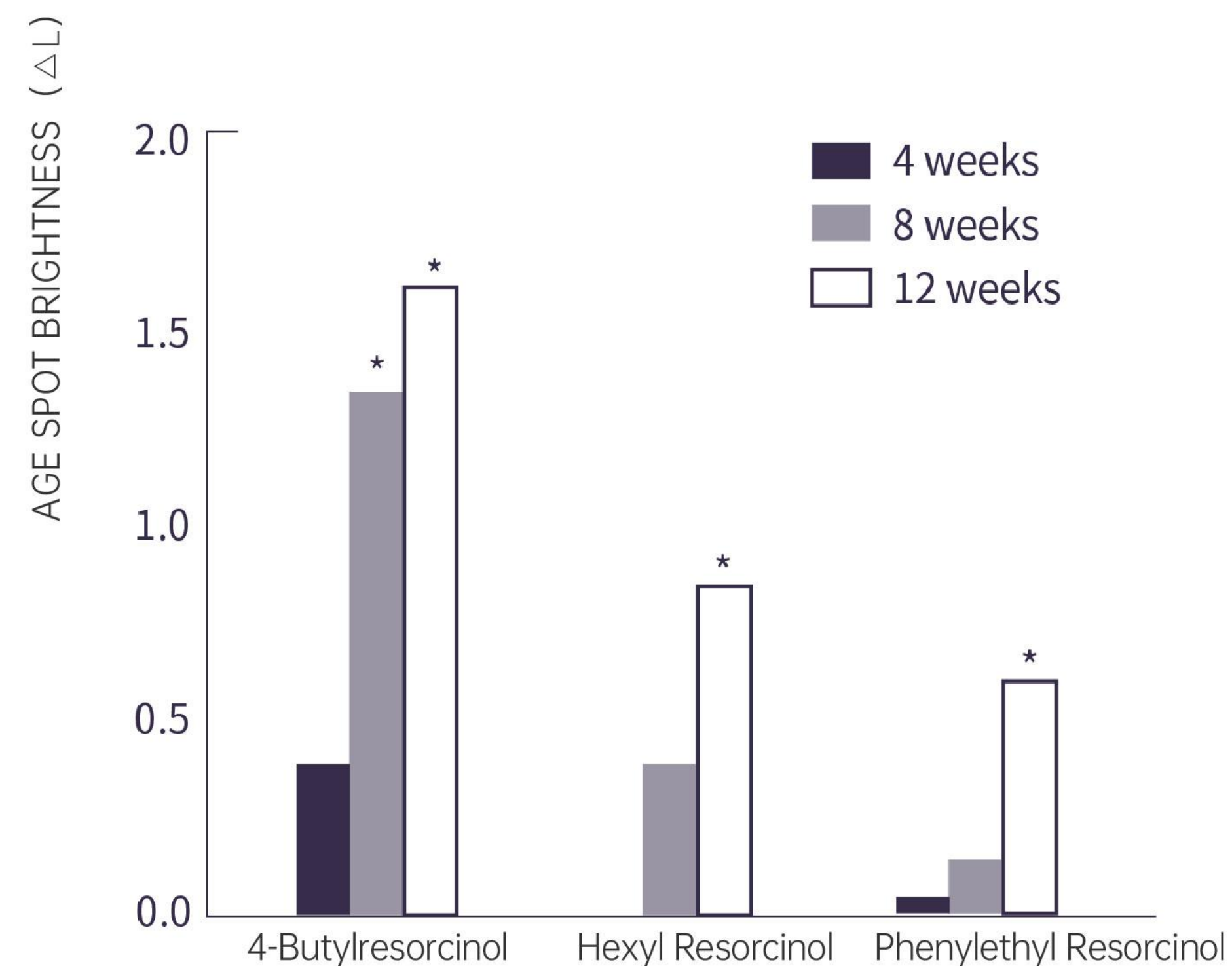
*Ref: 4-n-butylresorcinol enhances proteolytic degradation of tyrosinase in B16F10 melanoma cells.

「DEPIGMENTATION: AGE SPOTS」 (0.3% 4-BUTYLRESORCINOL)

Method: In a study by Beiersdorf (Germany), 14 women (aged 55-69) were selected to use formulations containing 0.3% 4-Butylresorcinol, 0.3% Hexyl Resorcinol, and 0.5% Phenylethyl Resorcinol to treat age spots on their forearms. The treatment was applied twice daily, and data were recorded at 4, 8, and 12 weeks.

Conclusion: Within 8 weeks, 4-Butylresorcinol significantly reduced age spots, showing a more pronounced effect compared to Hexyl Resorcinol and Phenylethyl Resorcinol. Hexyl Resorcinol and Phenylethyl Resorcinol only showed noticeable depigmentation effects after 12 weeks.

The depigmentation effect of 4-Butylresorcinol is superior to that of Hexyl Resorcinol and Phenylethyl Resorcinol.



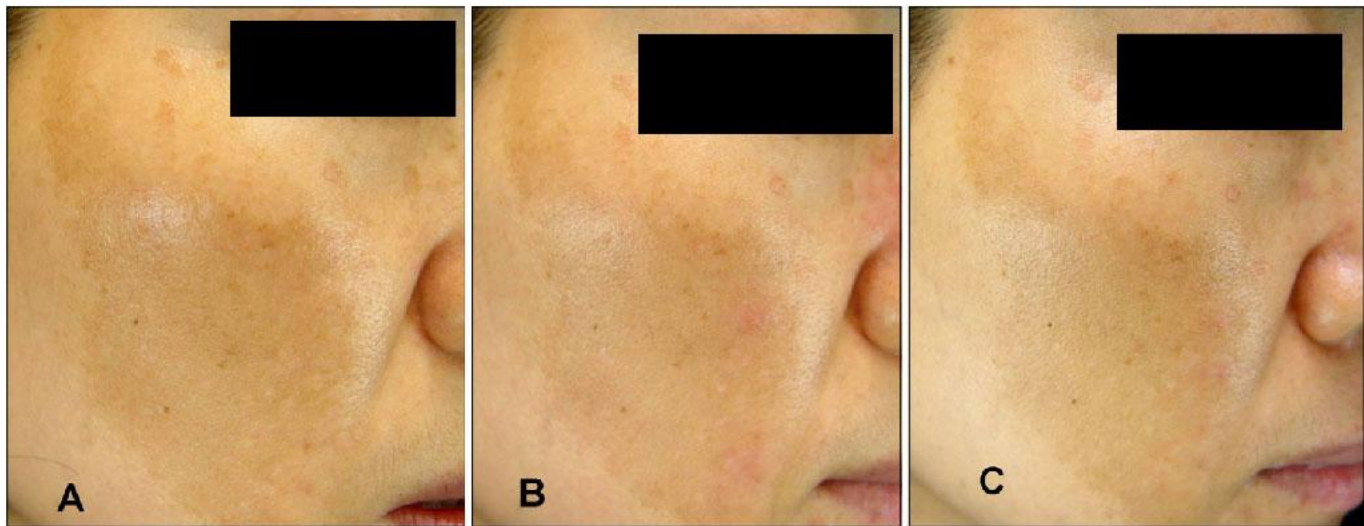
「DEPIGMENTATION: MELASMA」 (0.1% 4-BUTYLRESORCINOL)

Method: Seoul National University in Korea selected 20 volunteers with melasma. These volunteers used a 0.1% 4-butylresorcinol cream on one side of their face, twice daily for a total of 8 weeks. Photos of the volunteers were taken at the beginning, the fourth week, and the eighth week to observe and record data throughout the study.

The melanin index of 3 volunteers is as follows:

	Baseline	Week 4	Week 8
Volunteer 1	221.33	215.33	210.33
Volunteer 2	234.00	213.00	208.00
Volunteer 3	223.00	197.33	189.33

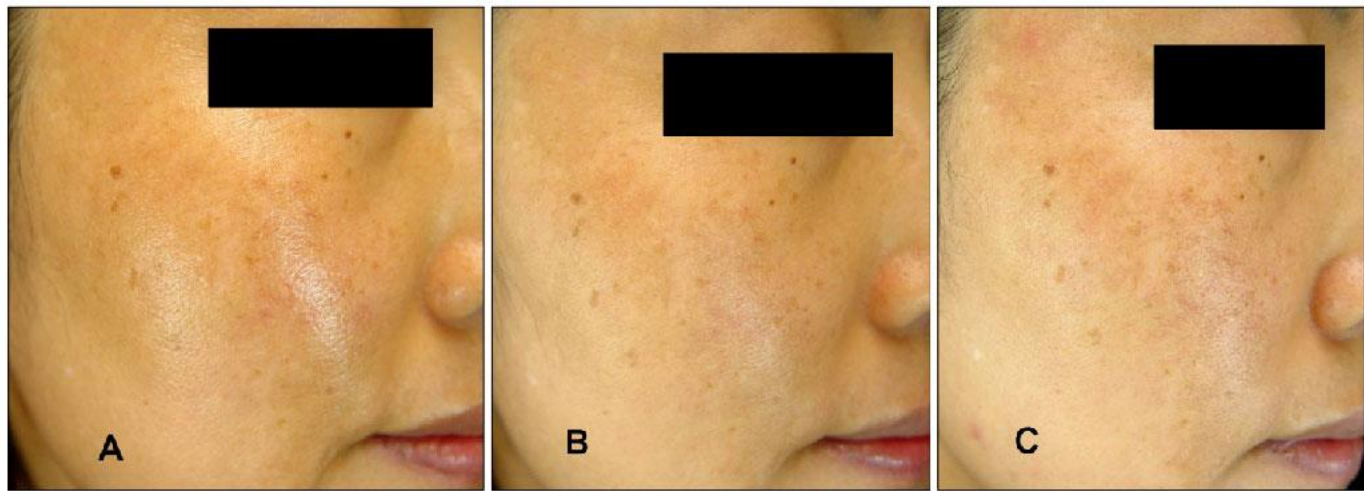
Conclusion: The 0.1% 4-butylresorcinol cream has a rapid effect and is well-tolerated when used to treat melasma.



Volunteer 1 (41-year-old female)



Volunteer 2 (46-year-old female)



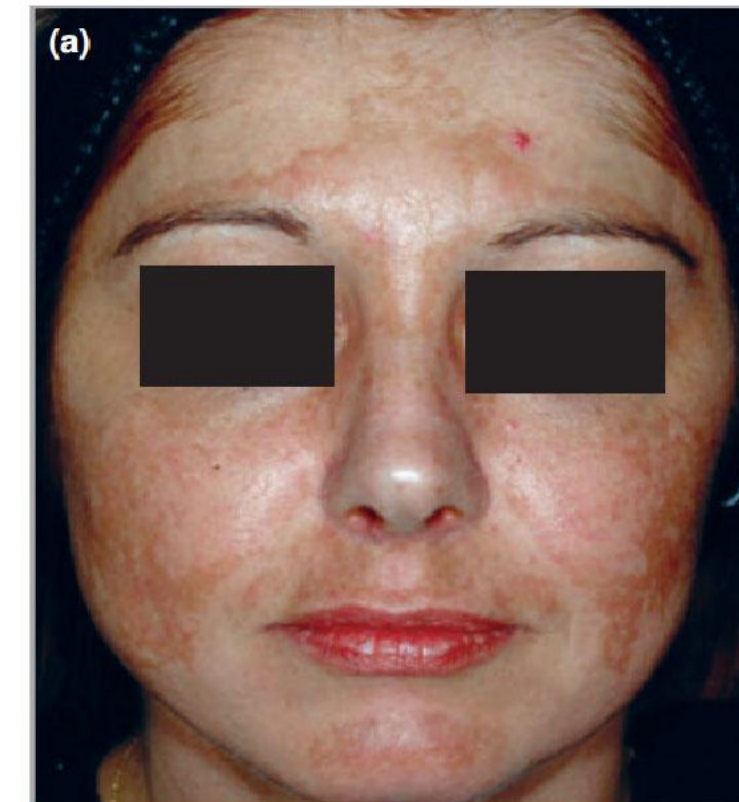
Volunteer 3 (44-year-old female)

*Ref: The Efficacy and Safety of 4-n-butylresorcinol 0.1% Cream for the Treatment of Melasma: A Randomized Controlled Split-face Trial. Ann Dermatol. 2010 Feb;22(1):21-5.

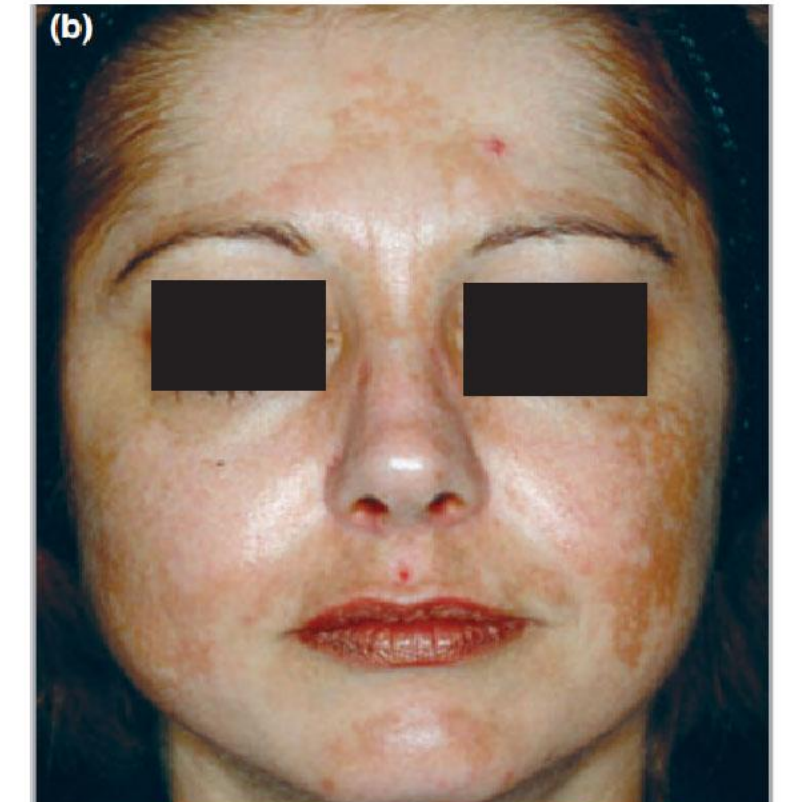
「DEPIGMENTATION: MELASMA」 (0.3% 4-BUTYLRESORCINOL)

Method: The University Hospital of Nice in France selected 32 volunteers with melasma. These volunteers used a 0.3% 4-butylresorcinol cream on one side of their face, twice daily for a total of 24 weeks. Photos of the volunteers were taken to observe and record data throughout the study.

Conclusion: The 0.3% 4-butylresorcinol cream showed significant depigmentation effects after several months of use.



Baseline

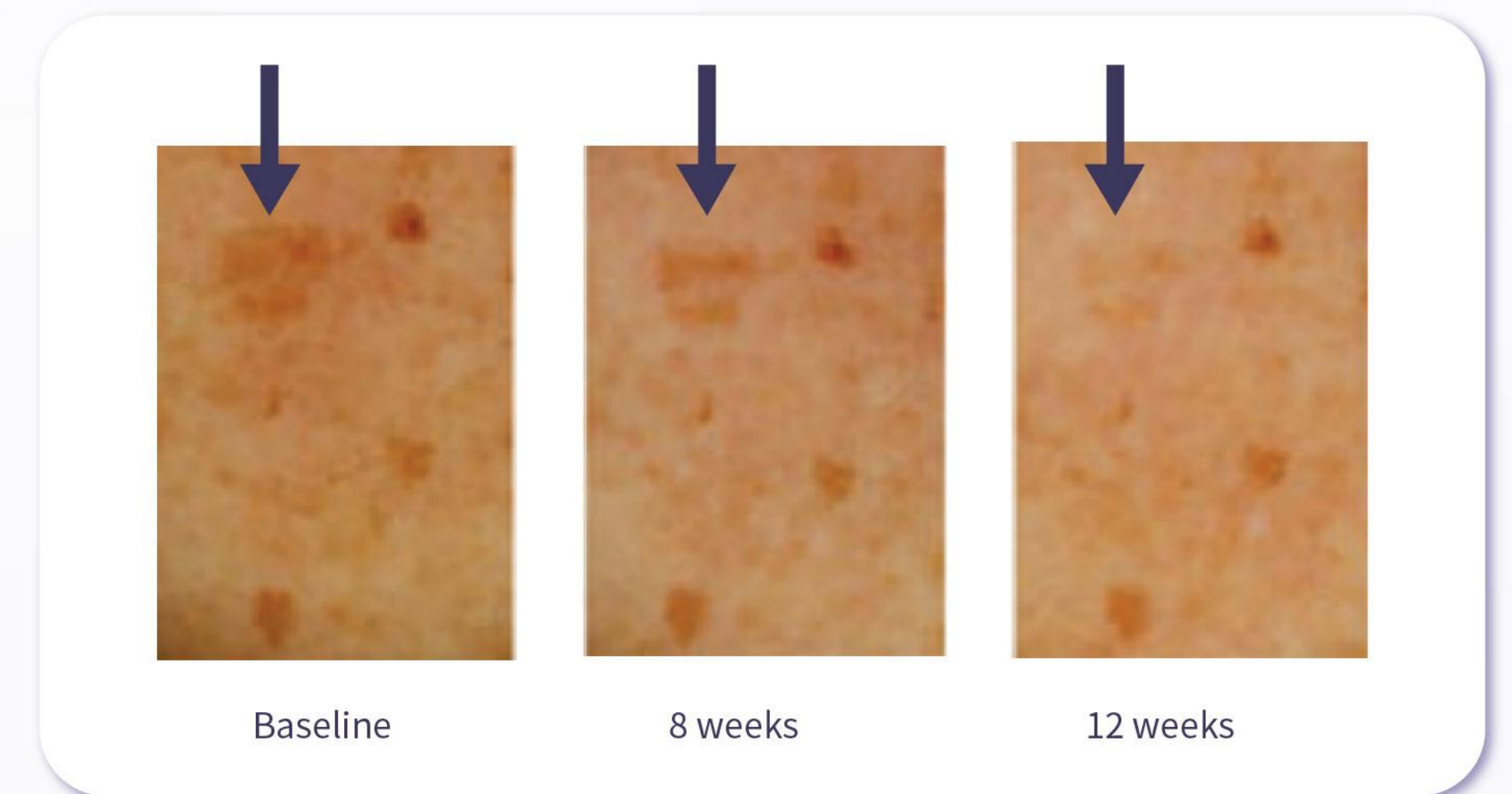


3 months

「DEPIGMENTATION: MELASMA」 (1.0% 4-BUTYLRESORCINOL)

Method: In a study conducted by Beiersdorf (Germany), a formulation containing 1.0% 4-butylresorcinol was used to treat age spots on the forearms. The treatment was applied twice daily, and data were recorded at 0 weeks, 8 weeks, and 12 weeks.

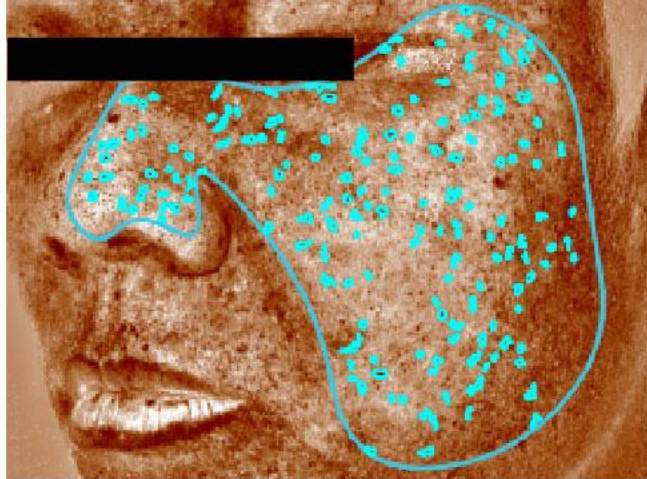
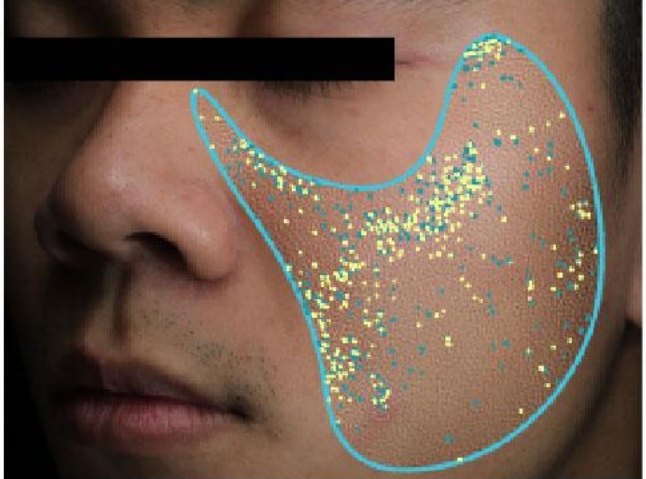
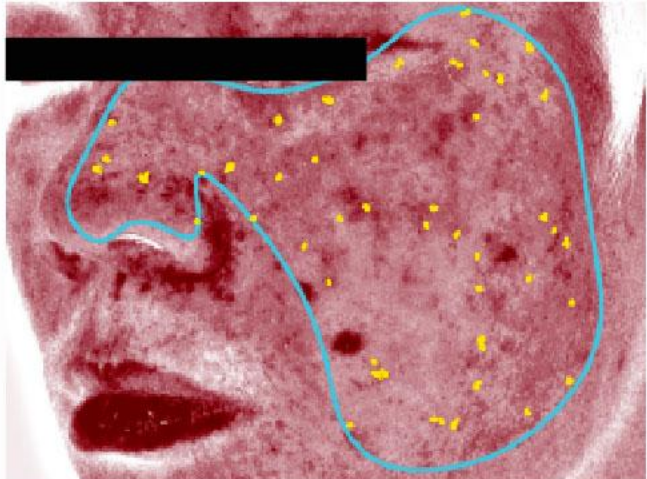
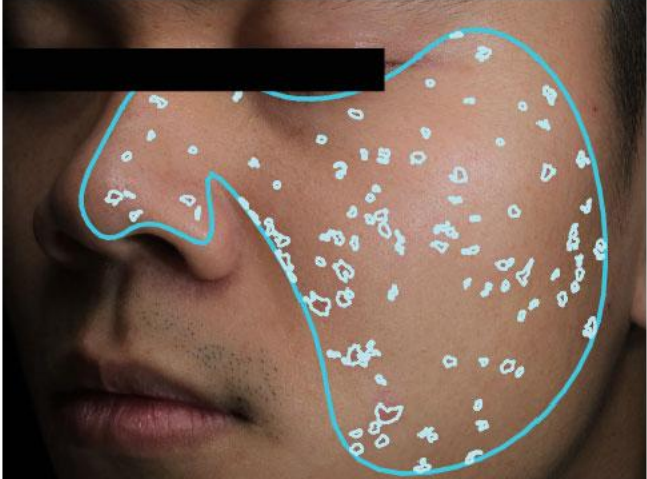
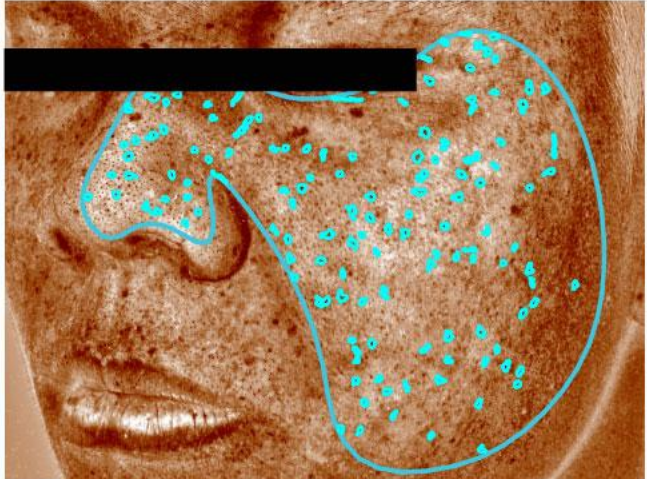
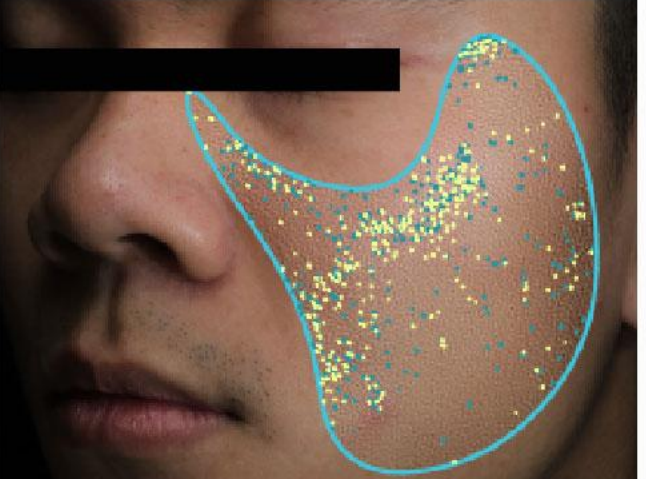
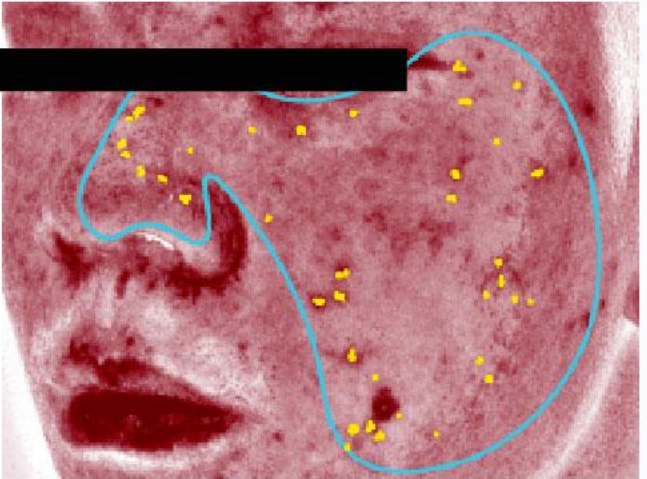
Results: Clinical study photos showed that after 12 weeks of treatment with the 1% 4-butylresorcinol formulation, age spots significantly faded. In contrast, the age spots in untreated areas showed no change.



「HUMAN EFFICACY」

Instructions for use: For D0-D14, use 1% ZLEY®BRC-4-Butylresorcinol cream.

Volunteer (Male): Left side of the face

Time	Skin Tone	Spots	Brown Spots	Texture	Red Areas
D0					
D14					
Brightening skin tone refining skin texture		↓37.82%	↓20.61%	↓46.98%	↓19.77%

*Note ①: Brown spots refer to common pigmentation issues such as melasma and age spots.
*Note ②: Red areas represent skin issues related to blood vessels, such as acne, skin inflammation, and skin sensitivity.

「QUALITY REPORT」

- 1. Purity up to 99.5%
- 2. No heavy metals detected (lead, mercury, arsenic, cadmium)
- 3. 500 ppm resorcinol residue

No: ZLEY-SX-2022076

No.	Test Item(s)	Unit	Test result(s)	Limit Standards	Test Method(s)
1	Resorcinol	%	0.05	/	Safety and Technical Standards for Cosmetics 2015 Part 3, 4
2	Methanol	%	0.05	/	Chinese Pharmacopoeia 2020 Part 4 general rule 0521-Gas chromatography

No: ZLEY-SX-2022029

No.	Test Item(s)	Unit	Test result(s)	Limit Standards	Test Method(s)
1	Pb	mg/kg	ND (MDL: 1.5)	≤10	Safety and Technical Standards for Cosmetics 2015 Part 4 section 1.3
2	Hg	mg/kg	ND (MDL: 0.002)	≤1	Safety and Technical Standards for Cosmetics 2015 Part 4 section 1.2
3	As	mg/kg	ND (MDL: 0.01)	≤2	Safety and Technical Standards for Cosmetics 2015 Part 4 section 1.4
4	Cd	mg/kg	ND (MDL: 0.18)	≤5	Safety and Technical Standards for Cosmetics 2015 Part 4 section 1.5
5	Purity	%	99.5	≥99.0	TS/ZL/CP/02000 Quality Standard for 4-butylresorcinol TS/ZL/CP/02000
Blank below					

*Note: Resorcinol is listed as a Group 3 carcinogen and is a restricted ingredient in cosmetics, with a minimum detectable concentration of 16 ppm.

「SUMMARY OF EFFICACY EVALUATION」

Study	Efficacy	Test		Result		Data Validity
In Vitro Tests	Antioxidant	DPPH scavenging assay		IC ₅₀ = 0.075 mg/ml		Third-party test report
		Total reducing power assay		Total reducing power = 1 at a concentration of 0.481 mg/ml for ZLEY®BRC		Third-party test report
	Whitening	Inhibition of human tyrosinase activity		IC ₅₀ =21 μmol /L		Beiersdorf, Germany
		Inhibition of melanin production		IC ₅₀ =13.5 μmol /L		Beiersdorf, Germany
		Inhibition of TRP-1 activity		IC ₅₀ =0.93 μmol /L		POLA Orbis, Japan
		Promotion of tyrosinase degradation		Activates the p38 MAPK signaling pathway to promote ubiquitin-proteasome degradation of tyrosinase		Seoul National University, Korea
Study	Research Institutes	Time	Efficacy	Number of Subjects	Result	
In Vivo Tests	POLA Orbis, Japan	2001	UVB-induced pigmentation	449 名	After 1 month, 0.3% 4-butylresorcinol can significantly improve various degrees of skin conditions.	
	University Hospital of Nice, France	2006	Melasma	32 名	After 3 months, 0.3% 4-butylresorcinol cream has a significant whitening and depigmentation effect.	
	Beiersdorf, Germany	2010	Age Spots	14 名	After 8 weeks, the depigmentation effect of 0.3% 4-butylresorcinol is significantly better than that of 0.5% phenylresorcinol.	
					After 12 weeks, 1% 4-butylresorcinol significantly fades age spots.	
	Seoul National University, Korea	2010	Melasma	20 名	After 8 weeks, 0.1% 4-butylresorcinol cream effectively lightens melasma.	
	ZLEY Group, China	2023	Whitening	/	After 14 days, 1% 4-butylresorcinol significantly fades spots, removes yellowish tones, and brightens the skin.	

「GOOD STABILITY」

ZLEY®BRC-4-Butylresorcinol from ZLEY has good heat stability, and almost no discoloration for 60 days, giving it a white appearance

Appearance of 4-butylresorcinol



Imported (brownish-yellow)

ZLEY (white)

ZLEY (2% BRC cream)

Imported (2% BRC cream)

0 day	(White)	(Pale Yellow)	0 day
Room temperature in a dark place: 60 days	(White)	(Yellow)	Room temperature in a dark place: 14 days
Heat resistance at 45°C: 60 days	(White)	(Deep Yellow)	Heat resistance at 45°C: 14 days

Part . 05

「TECHNICAL INFORMATION」



TECHNICAL INFORMATION

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「ZLEY® BRC」

Product Name	ZLEY®BRC
INCI Name	4-Butylresorcinol
CAS NO.	1135-24-6
Safety Risks	Green(1)
Acne-causing Risk	None
Number of uses in registered products	4622
Appearance	White to off-white solid
Recommended Dosage	0.1-2.0%
Highest historical usage of leave-on product	2%
Solubility	Oil-soluble (Melting Point≈50%)
pH Applicable Range	Stable within a pH range of 4-8; neutral to slightly acidic pH is more conducive to stability.
Efficacy	Whitening, Antioxidant, Fades Acne Scars
Application	Emulsions, essential oils, oil masks, etc.
Selling points	1.Superior Skin Brightening and Spot-Reducing Efficacy Compared to Phenylethyl Resorcinol and Hexylresorcinol 2.It inhibits tyrosinase activity, promotes tyrosinase degradation, and accelerates melanin metabolism;



「ZLEY® BRC」

FORMULATION PROCEDURE

It is recommended to dissolve 4-butylresorcinol in a solvent (such as glycerin) under heated conditions, then add the pre-solution to the emulsion system (below 45°C) and stir evenly.

PRECAUTIONS

- 1. 4-butylresorcinol tends to chelate with iron and copper metals, so disodium EDTA must be added as a chelating agent.
- 2. Adding 0.05% sodium metabisulfite as an antioxidant can enhance product stability.
- 3. Adding micronized zinc oxide and titanium dioxide further aids in stability.
- 4. Incompatible with colorants such as carmine and acid red.
- 5. 4-butylresorcinol is a phenolic compound, which may change color when exposed to air and sunlight, so it is best to package the raw material and finished product in light-proof packaging.

DISSOLUTION SOLUTIONS

- | | |
|--|-------|
| 1. ZLEY®BRC: GTCC (Caprylic/Capric Triglyceride) | 1: 5 |
| 2. ZLEY®BRC: PEG-8 Caprylic/Capric Glycerides | 1: 5 |
| 3. ZLEY®BRC: Ethanol | 1: 2 |
| 4. ZLEY®BRC: IPA (Isopropyl Alcohol) | 1: 5 |
| 5. ZLEY®BRC: Propylene Glycol | 1: 2 |
| 6. ZLEY®BRC: Glycerin | 1: 10 |
| 7. ZLEY®BRC: PPG-15 Stearyl Ether | 1: 10 |
| 8. ZLEY®BRC: Polyglyceryl-3 Diisostearate | 1: 3 |

WHITENING SERUM

PHASE	COMPONENTS	INCI	DOSAGE/%	SUPPLIER
A	DEIONIZED WATER	Water	To 102	-
	GLYCERIN	Glycerin	5.00	-
	BUTYLENE GLYCOL	Butylene Glycol	3.00	-
	XANTHAN GUM	Xanthan Gum	0.05	-
	EDTA-2NA	Disodium EDTA	0.02	ZLEY
B	OLV 10	Sorbitan Olivat, Cetearyl Glucoside, Cetearyl Alcohol	2.00	ZLEY
	A165	Glyceryl Stearate/PEG-100 Stearate	1.00	-
	GTCC	Caprylic/Capric Triglyceride	2.00	-
	DC200 (350CST)	Dimethicone	2.00	-
	ZLEY®BRC	4-Butylresorcinol	0.50	ZLEY
	AVENA SATIVA ALKALOID	Hydroxyphenyl Propamidobenzoic Acid	0.10	-
	SQUALANE	Squalane	3.00	-
C	SEPIGEL 305	Polyacrylamide, C13-14 Isoparaffin, Laureth-7	1.00	-
D	COSMECARE 603	Capryloylhydroxamic Acid, Ethylhexylglycerin, 1,2-Hexanediol	1.00	-
	ZLEY®SS	Sodium Metabisulfite	0.15	ZLEY
	ZLEY-PE201-KAENDA	Kava Root Extract, Hydroxypropyl Cyclodextrin, Water	0.50	ZLEY
	DEIONIZED WATER	Water	0.50	-
	ZLEY®DMI	Dimethyl Isosorbide	0.50	ZLEY

Whitening: 0.5% ZLEY®BRC-4-Butylresorcinol

Soothing: 0.1% Hydroxyphenyl Propamidobenzoic Acid + 0.5% ZLEY-PE201-Kaend

Antioxidant: 0.15% ZLEY®SS-Sodium Metabisulfite

Penetration Enhancer: 0.5% ZLEY®DMI-Dimethyl Isosorbide

Appearance: White emulsion

pH (10% solution): 5.00-7.00

「PROCESSING PARAMETERS」

1. Accurately weigh Phase A and heat in a water bath at 80°C, homogenize quickly for 5 minutes until uniform, and maintain the temperature for 20 minutes.
2. Accurately weigh Phase B, heat in a water bath at 80°C, and stir until uniform.
3. At 75-80°C, add Phase B to Phase A, homogenize for 3-5 minutes, then quickly add Phase C, homogenize at high speed for 3-5 minutes, and stir for 15-30 minutes.
4. At 50°C, add Phase D materials and stir until uniform.

WHITENING AND ANTI-AGING ESSENCE OIL

PHASE	COMPONENTS	INCI	DOSAGE/%	SUPPLIER
A	GTCC	Caprylic/Capric Triglyceride	To 100	--
	Simmondsia Chinensis (Jojoba) Seed Oil	Simmondsia Chinensis (Jojoba) Seed Oil	3.00	--
	ZLEY®FA	Ferulic Acid	0.05	ZLEY
	ZLEY®HPR	Hydroxypinacolone Retinoate	0.20	ZLEY
B	VE	Tocopheryl Acetate	1.00	--
	ZLEY®DMI	Dimethyl Isosorbide	0.50	ZLEY
	ZLEY®BRC	4-Butylresorcinol	1.20	ZLEY
	ZLEY®GS	Glycol Salicylate	1.00	ZLEY
	ZLEY®PE402-PHEACNE-OIL	Stephania Tetrandra Extract, Caprylic/Capric Triglyceride	0.50	ZLEY
	ST LIQUID	Diethylhexyl Syringylidenemalonate	0.10	--
	Orange blossom oil	Orange blossom oil	0.08	--

- Whitening: 1.2% ZLEY®BRC-4-Butylresorcinol
- Anti-aging: 0.2% ZLEY®HPR-Hydroxypinacolone Retinoate
- Antioxidant: 2% ZLEY®Luxaigis
- Soothing: 0.5% ZLEY-PE402-Pheacne-Oil
- Anti-inflammatory: 1.0% ZLEY®GS-Glycol Salicylate
- Penetration Enhancer: 0.5% ZLEY®DMI-Dimethyl Isosorbide

Appearance: Yellow transparent essence oil

「PROCESSING PARAMETERS」

- 1.Mix phase A, heat and stir until dissolved, then stir and cool;
- 2.Cool down to approximately 50 degrees Celsius, then add phase B sequentially and stir until homogeneous;
- 3.Inspect and discharge.

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