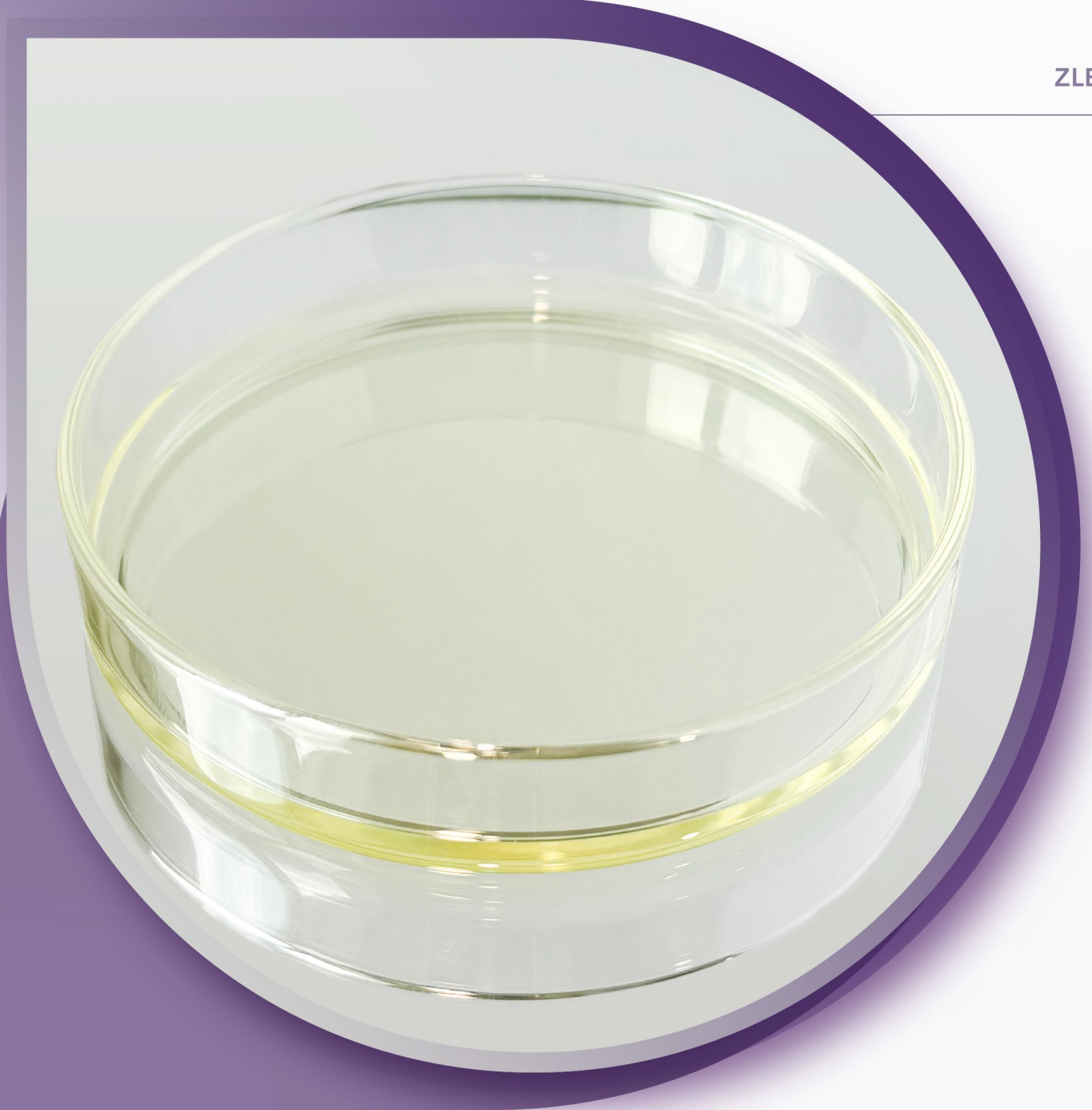
INNOVATIVE ELEMENTS TO AMELIORATE LIFE



ZLEY®Ironstant

「Topical Plant-Derived Botulinum-like Peptide – from Zanthoxylum bungeanum」

「Experience Microcurrent-Like Firmness and a Silken Tingling Touch」

「Instantly Smooth, Visibly Youthful – in Just 30 Minutes」

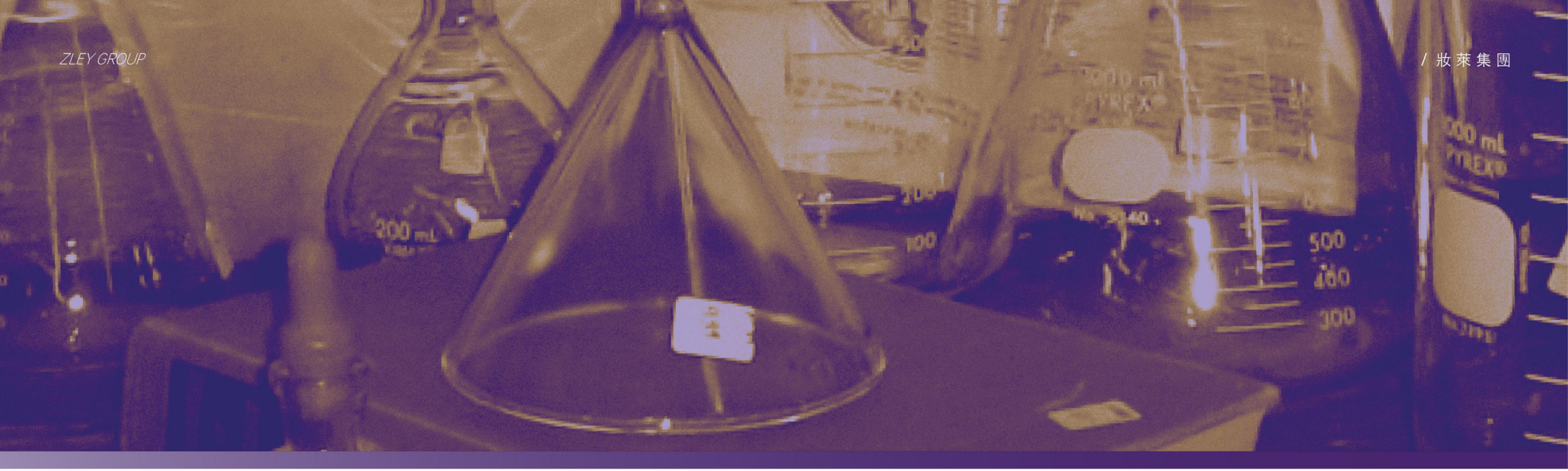
WHO WE ARE

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」

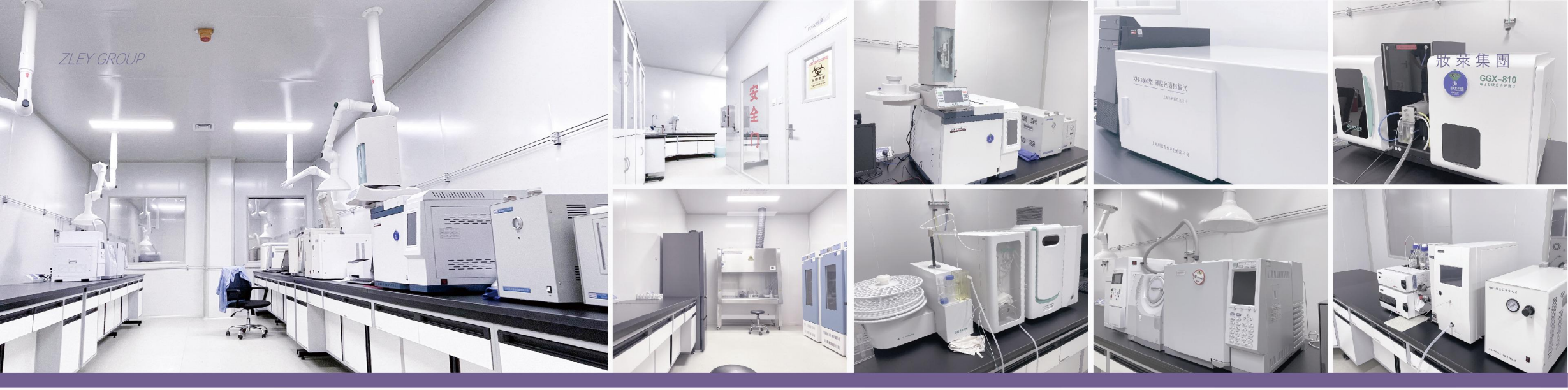
We are committed to continuously exploring innovative formulations for effective skin rejuvenation. Our team leverages advanced tech, nologies and novel ingredients to push the boundaries and unlock new possibilities in this field.

「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 phar, maceutical intermediates to ensure rigorous and reliable product testing.

TABLE OF CONTENTS

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

Part . 01

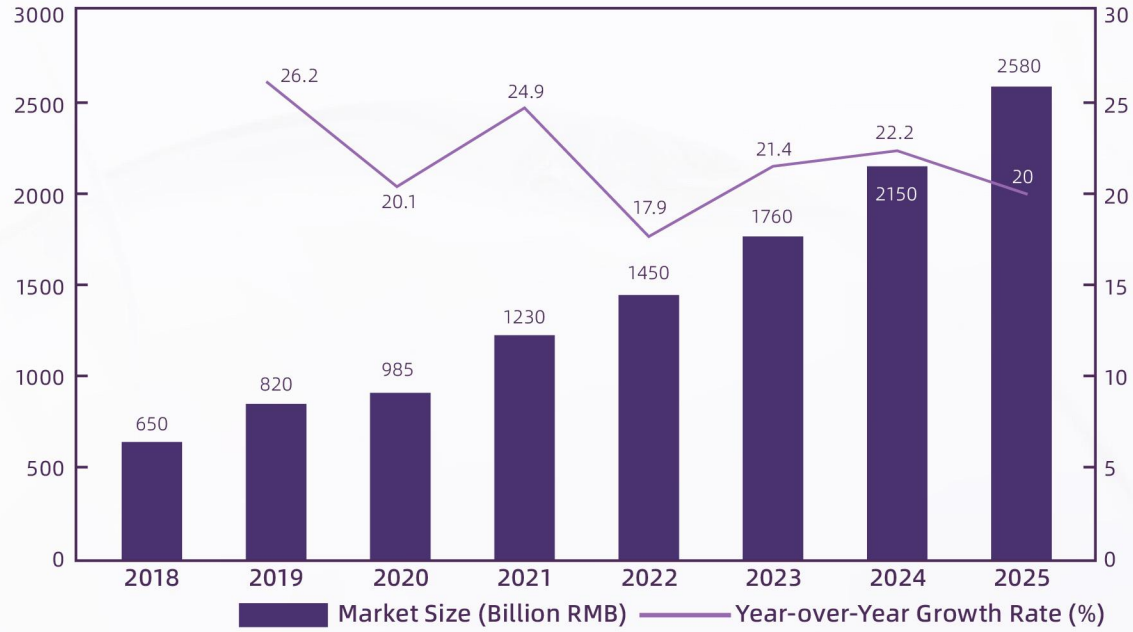
「MARKET ANALYSIS」

「Explosive Growth of Minimally Invasive Aesthetic Market」

Light medical aesthetics refers to non-surgical or minimally invasive treatments using medical knowledge, technology, and products for skin care, contouring, or rejuvenation.

In recent years, China’ s light medical aesthetics market has grown explosively, reaching RMB 176 billion in 2023 and expected to hit RMB 258 billion by 2025 (CAGR > 20%), becoming the fastest-grow. ing segment in the global medical aesthetics market.

China Light Medical Aesthetics Market Size & Growth Rate（2018-2025）



Source: MCR Consulting, 2025 China Light Medical Aesthetics Industry Report

「Expression Lines Botulinum Neurotoxin Instant Wrinkle Reduction」

The formation of facial wrinkles is influenced not only by skin laxity, UV exposure, and gravity, but most im, portantly by the long-term contraction of facial expression muscles, which generates dynamic wrinkles that deepen progressively over time.

Botulinum neurotoxin, BoNT, it is one of the most commonly used fillers for injectable wrinkle treatments.

Mechanism of Instant Wrinkle Reduction by Botulinum Neurotoxin

- As shown in the figure on the right, botulinum neurotoxin acts on peripheral motor nerve terminals. Through receptor-mediated interactions with the acetylcholine vesicle membrane, it inhibits the release of the neurotransmitter acetylcholine, producing a chemical denervation effect. This blocks neural impulse from reaching the muscle, resulting in muscle relaxation and paralysis, reduced muscle tone and contractility, and the attenuation or elimination of wrinkles, thereby achieving facial wrinkle reduction [1].

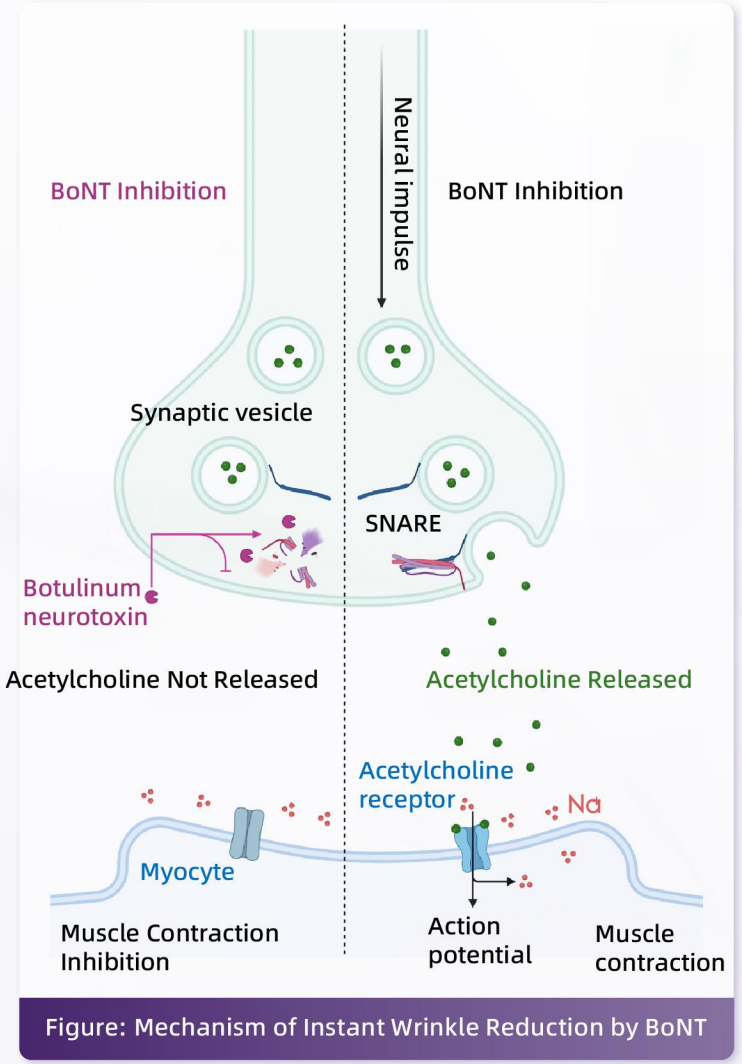


Figure: Mechanism of Instant Wrinkle Reduction by BoNT

[1]郭晓波,章一新,张振,等.A型肉毒素在面部除皱中的应用[J].组织工程与重建外科杂志,2010,6(04):225-226.

Facial Botulinum Toxin Injection Side Effects [1]

- 1.Ocular reactions: eyelid ptosis, localized edema, bruising, photophobia with tearing, eyebrow drooping, eyelid eversion, and exposure keratitis.
- 2. Local reactions: expression stiffness, forehead tightness, and deepening of wrinkles in adjacent areas.
- 3. Systemic reactions: fever, general discomfort, fatigue, weakness, and flu-like symptoms.

Non-invasive, safer botulinum-like solutions are urgently needed!

[1]梁英,王彦.A型肉毒毒素在美容整形外科中的应用进展[J].护理研究(上旬版),2006,(13):1135-1136.

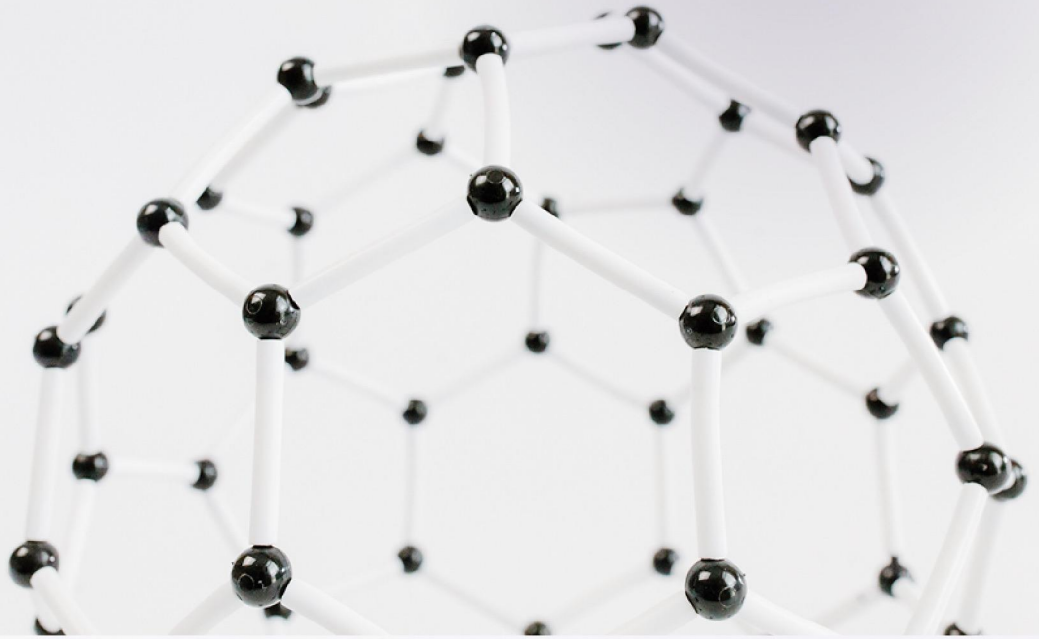
「Product Development Concept」

Aiming to address the “high risk, high barrier” limitations of traditional injectable botulinum neurotoxin and meet the main. stream demand for safe, non-invasive, naturally anti-aging solutions, ZLEY has combined natural plant ingredients with botulinum-like functional effects and market needs to develop **ZLEY-Ironstant**, a topical, **botulinum-like peptide instant wrinkle reducer** sourced from **Zanthoxylum bungeanum.**

Upon application, the skin immediately experiences a microcur. rent-like tightening sensation along with a naturally gentle tingling effect, delivering visible wrinkle-smoothing results within 30 minutes. The formulation is gentle, skin-friendly, and non-irritating.

Part . 02

「PRODUCT INTRODUCTION」



PRODUCT INTRODUCTION

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

「The Source of Zanthoxylum-Induced Tingling Sensation」

The dried mature pericarp of Zanthoxylum bungeanum is warm in nature and pun. gent in taste, traditionally used to warm the middle and relieve pain, as well as exter. minate insects and alleviate itching. It has been applied for the treatment of abdomi. nal cold pain, vomiting, diarrhea, and parasitic abdominal pain, and externally for eczema and genital itching.

Historical herbal texts, including the Shennong Bencao Jing, Yaoxing Lun, and Bencao Gangmu, all record the medicinal properties of Sichuan pepper. As early as the Tang Dynasty, the Shiliao Bencao described it as a food-medicine homology.

Amide compounds are the most characteristic class of alkaloids in Sichuan pepper, with sanshool being the main bioactive constituent. Sanshool is also the primary compound responsible for the tingling (numbing) sensation, and is therefore referred to as Sichuan pepper numb alkaloid.

（ZANTHOXYLUM BUNGEANUM）

[1]李焰梅,郝丹,蒋献.山椒素药理学研究进展[J].中国药理学通报,2019,35(02):172-175.
[2]牛博,庞广昌,鲁丁强.花椒麻素的生物功能研究进展[J].食品科学,2021,42(09):248-253.
[3]刘秀琼,陈鹏泽,何阳森,等.羟基-α-山椒素药理学作用及其作用机制研究进展[J].中国药业,2025,34(14):122-127.

「Product Introduction」

ZLEY®Ironstant - Topical Plant-Derived Botulinum-like Peptide

Extracted from the fruit of Zanthoxylum bungeanum, Ironstant harnesses the natural energy of Sichuan pepper and contains a high concentration of amide-type bioactive compounds. Upon application, the skin immediately experiences a microcurrent-like tightening sensation along with a naturally gentle tingling effect [1], delivering a revitalizing and refreshing experi. ence.

Ironstant works by inhibiting voltage-gated sodium (Na_v) channels and two-pore potassium (K2P) channels, rapidly blocking electrical signal transmission within nerve cells. By suppress. ing excessive muscle contraction at its source and relaxing facial muscles, it provides visible wrinkle-smoothing results within 30 minutes [1], while remaining gentle, skin-friendly, and non-irritating.

[1]Source: Internal research data from ZLEY Efficacy Laboratory

Part . 03

「MECHANISM OF ACTION」

ACTION MECHANISM

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

「Formation of Expression Lines: Neural-Muscular Junction Excitation Transmission」

1.Neural impulse conduction

- A neuron's action potential travels along the axon to the presynaptic terminal, depolarizing the membrane.

2.Calcium influx

- Depolarization opens voltage-gated calcium channels, allowing Ca^{2+} to enter.

3.Neurotransmitter release

- Calcium triggers synaptic vesicles to release acetylcholine (ACh) into the synaptic cleft.

4. ACh binding and end-plate potential

- ACh binds to nicotinic acetylcholine receptors (nAChRs) on the postsynaptic membrane, opening channels and causing Na^+ influx and K^+ efflux, generating an end-plate potential.

5.Muscle contraction

- If the end-plate potential reaches the threshold, the muscle cell generates an action potential, causing muscle contraction and forming expression wrinkles.

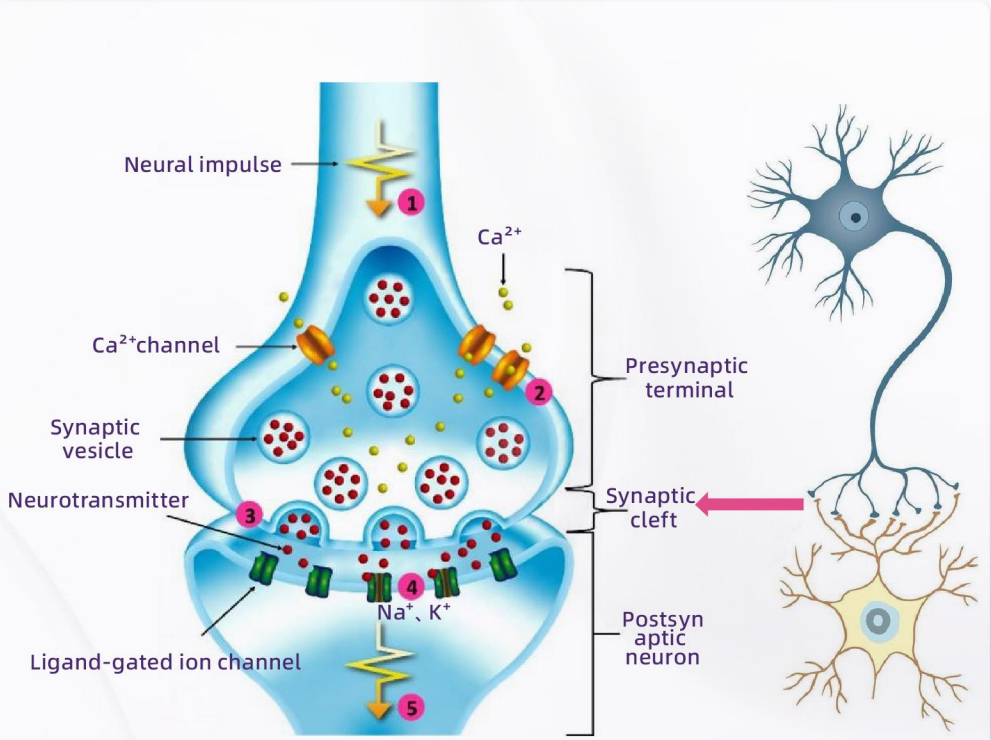
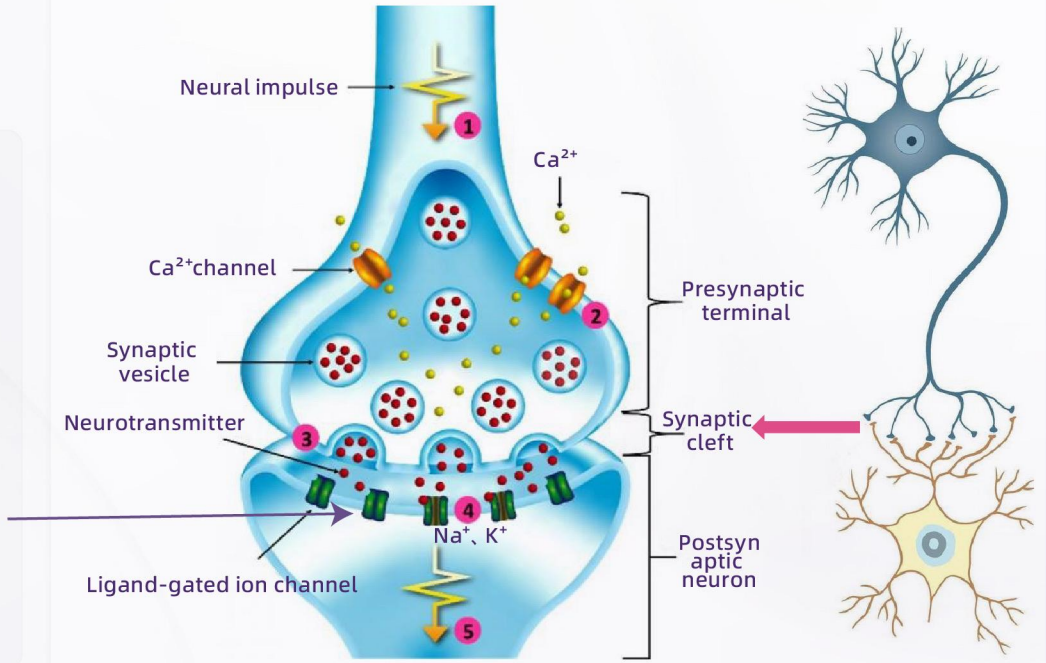


Figure: Excitation Transmission at the Neuromuscular Junction

Ref：神经美容学原理与研究进展[J].中国食品药品监管,2025,(01):140-155.

ZLEY®Ironstant-Instant anti-wrinkle mechanism

- Ironstant rapidly blocks electrical signal transmission within nerve cells by inhibiting voltage-gated sodium (Na_v) channels and two-pore-domain potassium (K2P) channels. By targeting the root cause of muscle overactivity, it relaxes facial muscles and achieves a visible wrinkle-smoothing and anti-wrinkle effect within 30 minutes.



Part . 04

「EFFICACY EVALUATION」

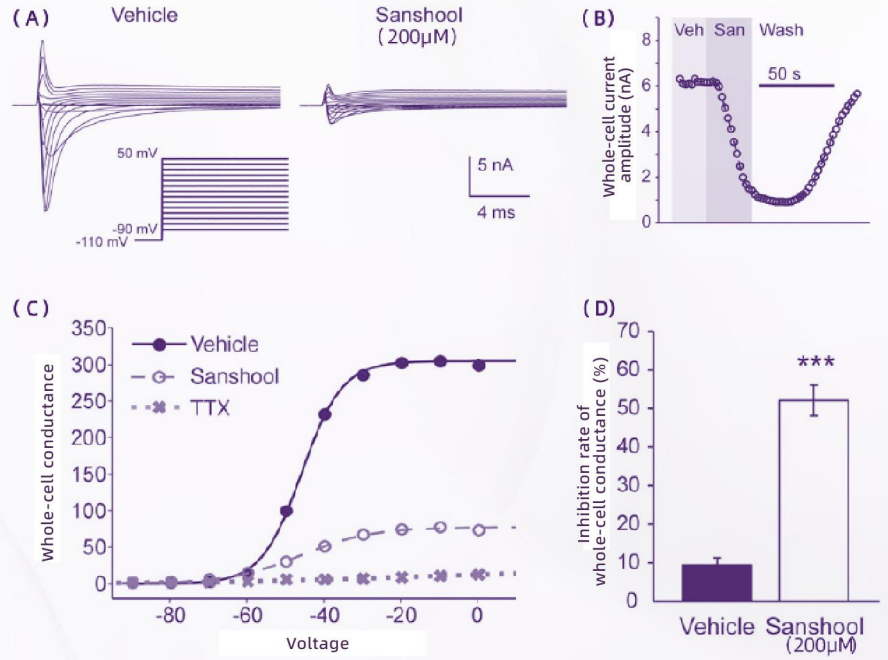
EFFICACY EVALUATION

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

「01-Inhibits voltage-gated sodium (Na_v) channels」

- (Figure A): Sodium current recordings from DRG neurons obtained using the patch-clamp technique in the absence and presence of 200 μM sanshool.
- (Figure B): Time-dependent changes of voltage-gated sodium currents in response to sanshool, and the recovery of sodium currents after washout of sanshool.
- (Figure C): TTX (tetrodotoxin) is a potent sodium channel blocker. This panel shows the whole-cell voltage-gated sodium conductance of a representative DRG neuron shown in Figure A.
- (Figure D): Compared with the vehicle control, 200 μM sanshool significantly reduced the peak sodium conductance (***P < 0.001).

Figure: Endogenous voltage-gated sodium currents in cultured sensory neurons are inhibited by sanshool

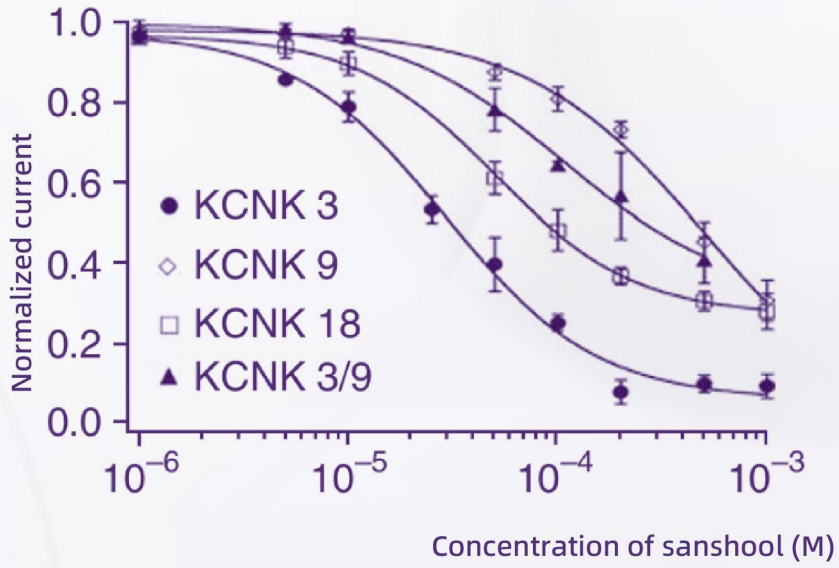


Experimental results: Sanshool can cause a rapid and reversible decrease in voltage-gated sodium current.

Ref: A 'toothache tree' alkylamide inhibits Aδ mechanonociceptors to alleviate mechanical pain. J Physiol. 2013 Jul 1;591(13):3325-40.

「02-Inhibits two-pore potassium (K2P) channels」

As shown in the figure on the right, sanshool inhibits the two-pore potassium channels KCNK3, KCNK9, and KCNK18 (also known as TASK-1, TASK-3, and TRSK, respectively), with IC_{50} values of 30.3±4.9μM, 450±30.1μM, and 50.2±1.9μM, respectively.



Ref: Pungent agents from Szechuan peppers excite sensory neurons by inhibiting two-pore potassium channels. Nat Neurosci. 2008 Jul;11(7):772-9.

「03-100%Mild and Irritartion-Free」

4% Instant Wrinkle-Smoothing Agentt

100% Mild and lrritation-Free

4. 试验方法：选用合格的斑试器材，以封闭型斑贴试验方法，将受试物约 0.020g-0.025g（固体）置于斑试器内，外用低致敏胶带贴敷于受试者背部，24 小时后去除受试物，分别于去除后 0.5、24、48 小时观察皮肤反应，按《化妆品安全技术规范》（2015 年版）中皮肤反应分级标准记录其结果。

皮肤封闭型斑贴试验皮肤反应分级标准

反应程度	评分等级	皮肤反应
-	0	阴性反应
±	1	可疑反应，仅有微弱红斑
+	2	弱阳性反应（红斑反应）；红斑、浸润、水肿、可有丘疹
++	3	强阳性反应（疱疹反应）；红斑、浸润、水肿、丘疹、疱疹；反应可超出受试区
+++	4	极强阳性反应（融合性疱疹反应）；明显红斑、严重浸润、水肿、融合性疱疹；反应超出受试区

二、试验结果

化妆品人体皮肤斑贴试验结果汇总

组别	受试人数	观察时间	斑贴试验不同皮肤反应人数				
			0	1	2	3	4
受试物	30	0.5h	30	0	0	0	0
		24h	30	0	0	0	0
		48h	30	0	0	0	0
对照	30	0.5h	30	0	0	0	0
		24h	30	0	0	0	0
		48h	30	0	0	0	0

注：30 例受试者不同观察时间皮肤反应情况见附件。

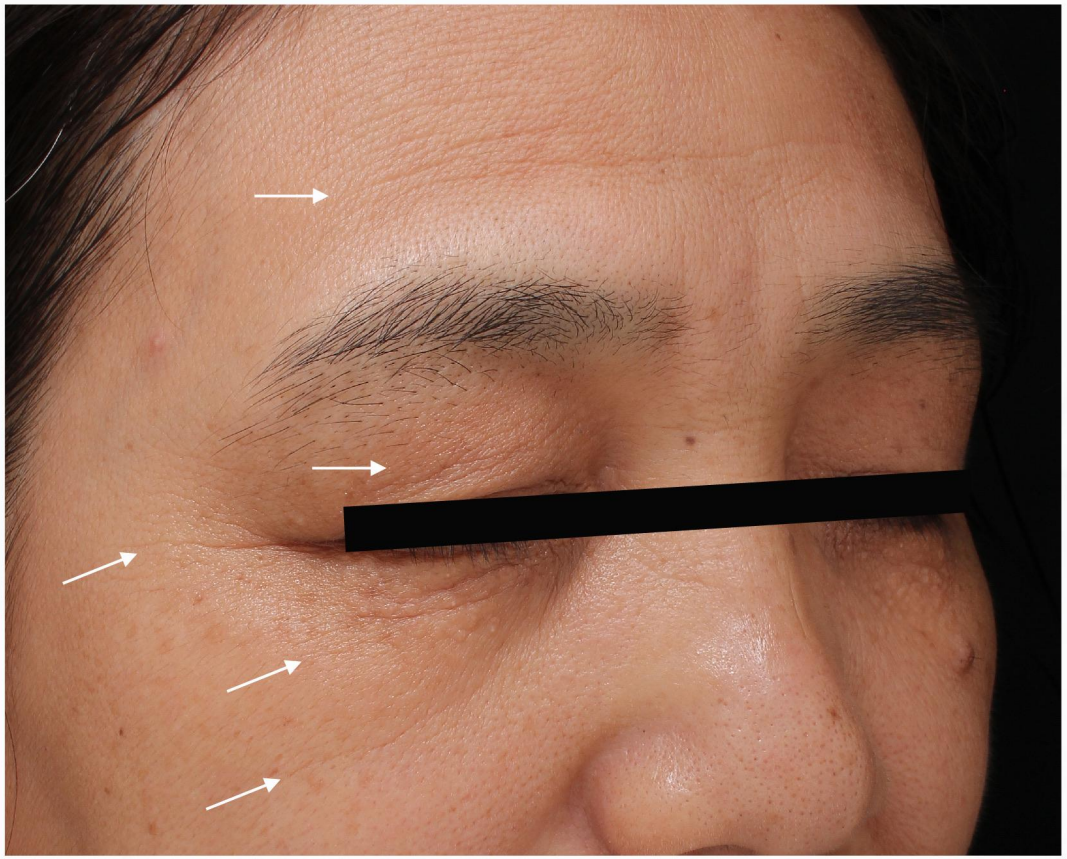
结果显示：人体皮肤斑贴试验结果显示，30 人中 0 例出现皮肤不良反应。

「04-In vivo test: visible wrinkle reduction observed within 30 minutes.」

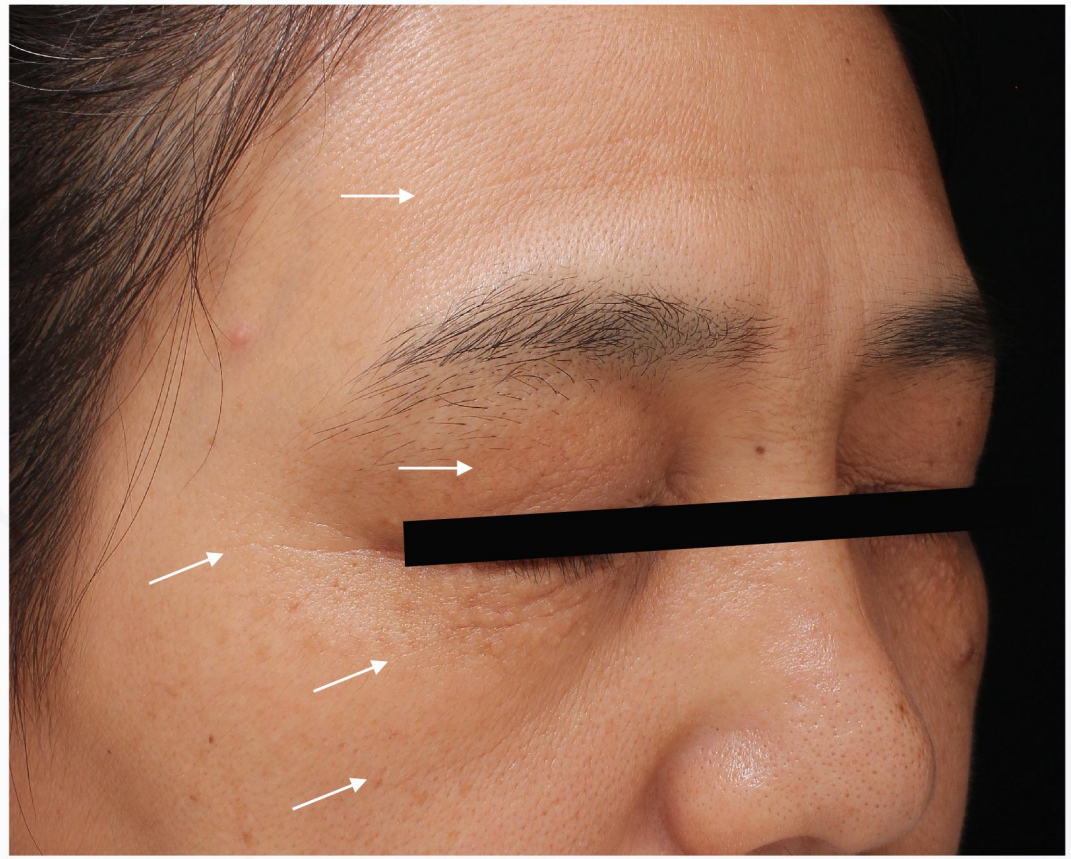
- **Sample Used:** Sanshool Instant Wrinkle-Smoothing Essence
- **Application Method:** Apply evenly over the entire face
- **Application Time:** 30 minutes
- **Instrument Used:** VISIA Skin Analysis System

Phase	Product Name	INCI Name	ω/%	Supplier
A	Deionized water	Water	TO 100	—
	Glycerin	Glycerin	3.00	—
	Disodium Edta	Disodium Edta	0.02	—
	Xanthan Gum	Xanthan Gum	0.10	—
	HA	Sodium Hyaluronate	0.04	—
	EDT2020	Carbomer	0.12	—
	AVC	Ammonium Acryloyldimethyltaurate/VP	0.12	—
	Trehalose	Trehalose	2.50	—
	BG	Butylene Glycol	5.00	—
	Allantoin	Allantoin	0.15	—
	EG-1	Glycereth-26	1.50	—
	ZLEY®BIOCARE-ZHD	1,2-Hexanediol	0.60	ZLEY
B	Simugel EG	Sodium Acrylate; Sodium Acryloyldimethyl Taurate Copolymer; Isohexadecane; Polysorbate-80	0.80	—
	DC345	Dimethicone; Dimethiconol	2.00	—
C	Arginine	Arginine	0.12	—
	Deionized water	Water	5.00	—
D	ZLEY®IRONSTANT	Zanthoxylum Bungeanum Fruit Extract, Caprylic/Capric Triglyceride, C12-13 Pareth-9, Pentylene Glycol	4.00	ZLEY

Before application



30 minutes after application



Subject No. 1: Upon initial application of the Sanshool Instant Wrinkle-Smoothing Essence, the skin experienced a mild tingling and microcurrent-like sensation. After 30 minutes of application, noticeable reduction in forehead and under-eye wrinkles was observed, resulting in smoother skin texture.

Source: Internal research data from ZLEY Efficacy Laboratory

Before application

30 minutes after application

Subject No. 2: Upon initial application of the Sanshool Instant Wrinkle-Smoothing Essence, the skin experienced a mild tingling and microcurrent-like sensation. After 30 minutes of application, the wrinkles around the eyes were visibly reduced, and the skin appeared smoother.

Part . 05

「TECHNICAL INFORMATION」

TECHNICAL INFORMATION

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

PRODUCT NAME	ZLEY®IRONSTANT
INCI NAME	ZANTHOXYLUM BUNGEANUM FRUIT EXTRACT、CAPRYLIC/CAPRIC TRIGLYCERIDE、C12-13 PARETH-9、PENTYLENE GLYCOL
CAS NO.	102242-62-6、65381-09-1、66455-14-9、5343-92-0
SAFETY RISK	1, Green (from Beauty Evolution)
ACNE RISK	None (from Beauty Evolution)
NUMBER OF USES IN VALID PRODUCT REGISTRATION	11,597 (Zanthoxylum bungeanum fruit extract, from Beauty Evolution 2025.10.14)
PRODUCT BENEFITS	Instant wrinkle and line smoothing
APPEARANCE	light yellow to yellowish green transparent liquid with characteristic odor
RECOMMENDED DOSAGE	1 ~ 10%
SOLUBILITY	Oil-soluble
PROCESSING	After emulsification and homogenization, add and stir thoroughly
APPLICATIONS	Emulsions, microemulsions, oils

「Technical Information」

ZANTHOXYLUM BUNGEANUM

「ZLEY®IRONSTANT」

- A topical “plant-based Botox” inspired by Sichuan Pepper.
- By modulating Nav and K2P ion channels, it quickly interrupts neural electrical signaling, helping to relieve muscle tension and smooth facial lines.
- Experience a microcurrent-like tightening and a delicate tingling sensation as the skin becomes visibly smoother and firmer within 30 minutes.

Phase	Product Name	INCI Name	ω/%	Supplier
A	DEIONIZED WATER	WATER	TO 100	—
	GLYCERIN	GLYCERIN	3.00	—
	DISODIUM EDTA	DISODIUM EDTA	0.02	—
	XANTHAN GUM	XANTHAN GUM	0.10	—
	HA	SODIUM HYALURONATE	0.04	—
	EDT2020	CARBOMER	0.12	—
	AVC	AMMONIUM ACRYLOYLDIMETHYLTAURATE/VP	0.12	—
	TREHALOSE	TREHALOSE	2.50	—
	BG	BUTYLENE GLYCOL	5.00	—
	ALLANTOIN	ALLANTOIN	0.15	—
	EG-1	GLYCERETH-26	1.50	—
	ZLEY®BIOCARE-ZHD	1,2-HEXANEDIOL	0.60	ZLEY
B	SIMUGEL EG	SODIUM ACRYLATE; SODIUM ACRYLOYLDIMETHYL TAURATE COPOLYMER; ISOHEXADECANE; POLYSORBATE-80	0.80	—
	DC345	DIMETHICONE; DIMETHICONOL	2.00	—
C	ARGININE	ARGININE	0.12	—
	DEIONIZED WATER	WATER	5.00	—
D	ZLEY®IRONSTANT	ZANTHOXYLUM BUNGEANUM FRUIT EXTRACT, CAPRYLIC/CAPRIC TRIGLYCERIDE, C12-13 PARETH-9, PENTYLENE GLYCOL	4.00	ZLEY

「Technical Information」

- **Product Name:** Sanshool Instant Wrinkle-Smoothing Essence
- **Recipe Number:** T25071401
- **Product Efficacy:** Instantly smooths fine lines and reduces wrinkles within 30 minutes.
- **Appearance:** Semi-transparent essence.
- **pH Value (10% Sol.):** 6.92
- **Viscosity (μ/mPa·s, 25 ℃):** 6199/3#12R
- **Processing Parameters:**
  - Accurately weigh Phase A and heat in a water bath at 80 ℃. Homogenize rapidly for 5 minutes until uniform, and set aside.
  - Accurately weigh Phase B, add it to Phase A, and homogenize for 3–5 minutes.
  - Add Phase C for neutralization, then cool the mixture to room temperature.
  - Finally, add Phase D, stir well until homogeneous, and discharge the product.

ZLEY GROUP

[INNOVATIVE ELEMENTS TO AMELIORATE LIFE]

IF YOU'RE INTERESTED, PLEASE SCAN THE QR CODE TO FOLLOW US OR CONTACT OUR TEAM.

400-092-8866

EMAIL: SERVICES@ZLEYGROUP.COM

[ZLEY GROUP]

[LINKEDIN]