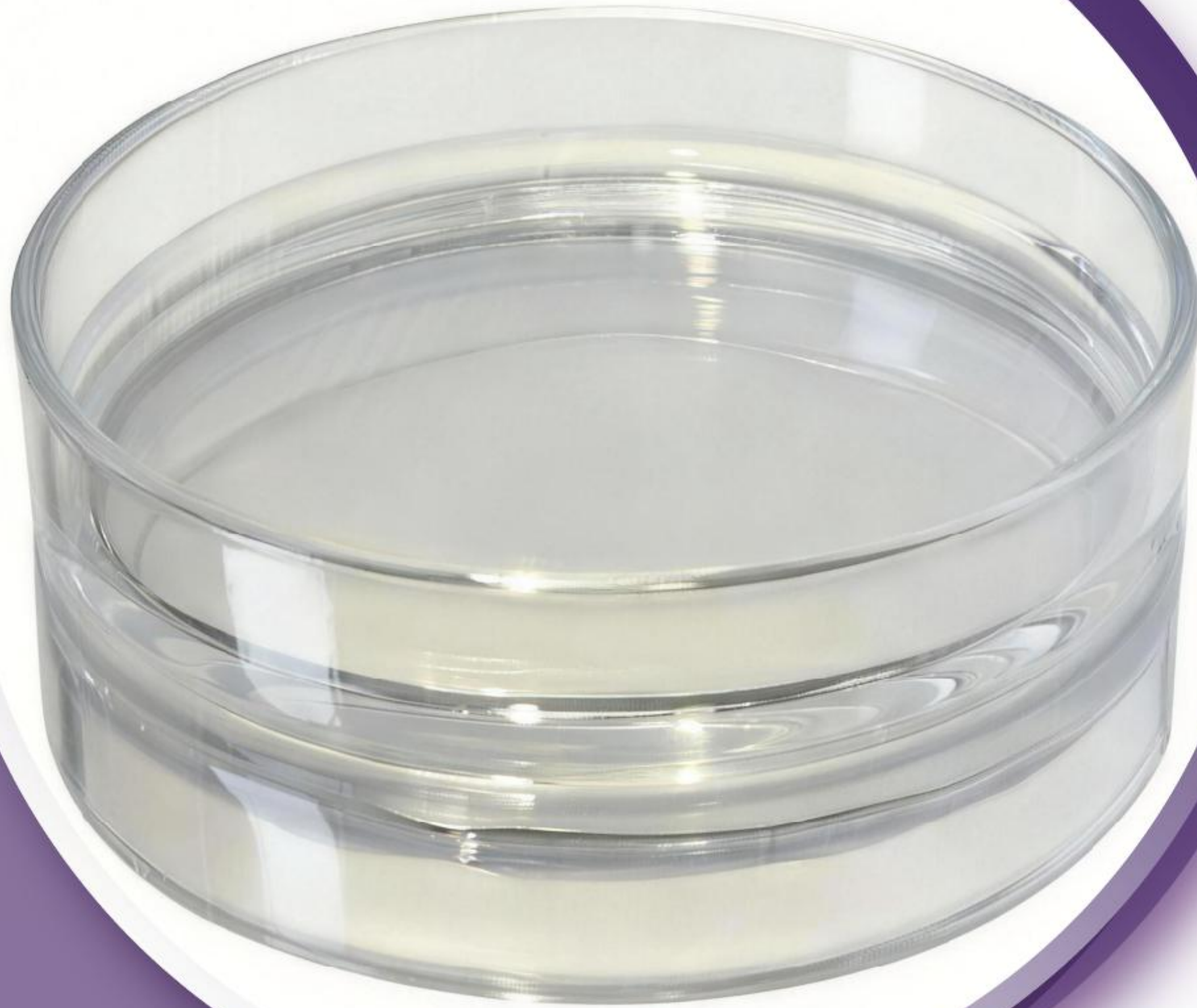




INNOVATIVE ELEMENTS TO AMELIORATE LIFE



## ZLEY®PhytoNeutralis

「Six-fold Odor Inhibition System,

Precisely Eliminate Complex Body Odor」

「24-hour Long-lasting Formaldehyde Removal up to 73.06%,

High-efficiency Purification」



# 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

「COMPLEX BODY ODORS」



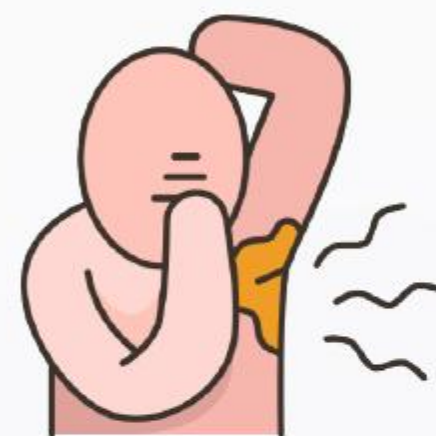
COMPLEX BODY ODOR

INNOVATIVE ELEMENTS TO  
AMELIORATE LIFE

# 「Complex Body Odors」



Sweat Odor



Axillary Odor



Foot Odor



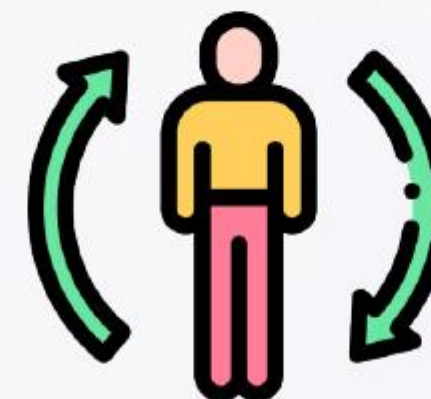
Oral Odor



**Sebum Odor**  
(scalp / chest / back, etc.)



**Aging-related Odor**  
("elderly smell")



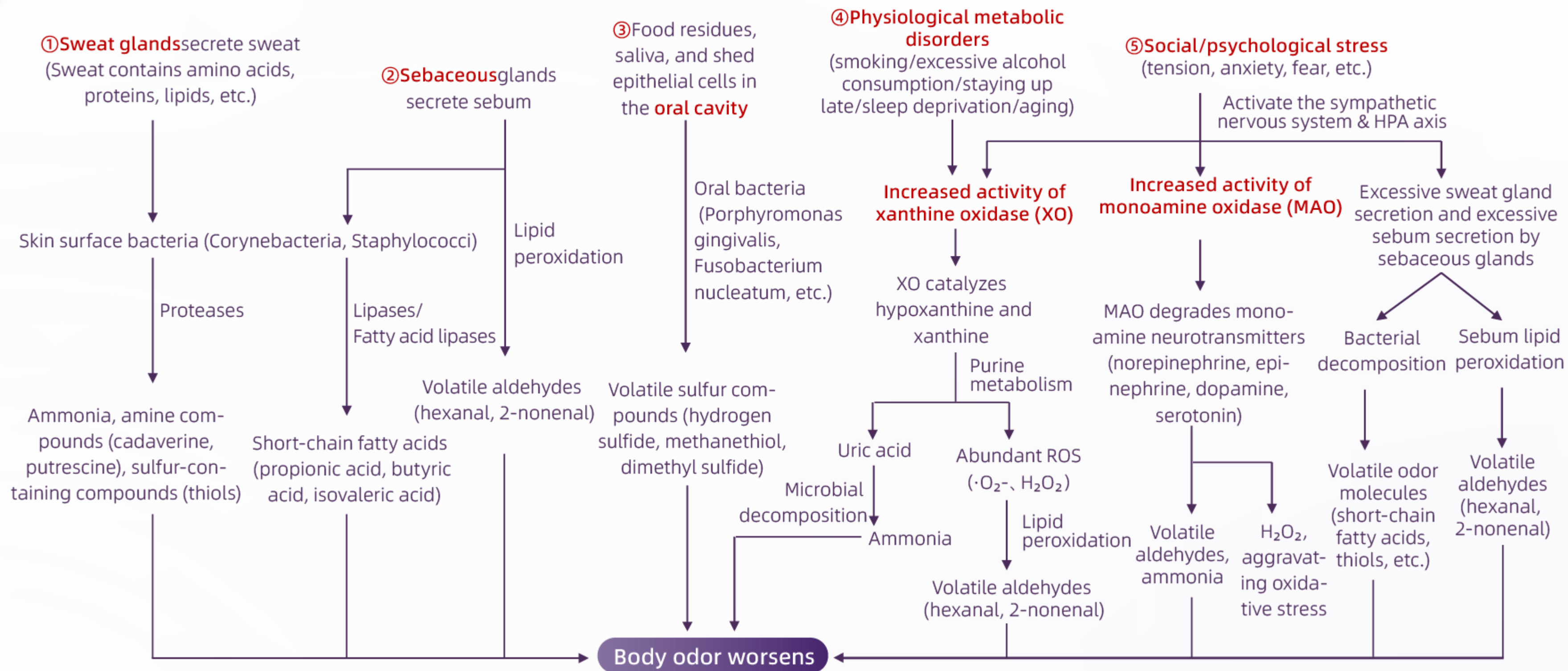
**Metabolic Disorder-related Odor**  
(caused by late nights, insufficient sleep, smoking, or excessive alcohol consumption)



**Social/psychological Stress Odor**  
(tension, fear, anxiety, etc.)



# 「Mechanisms of Body Odor Formation」



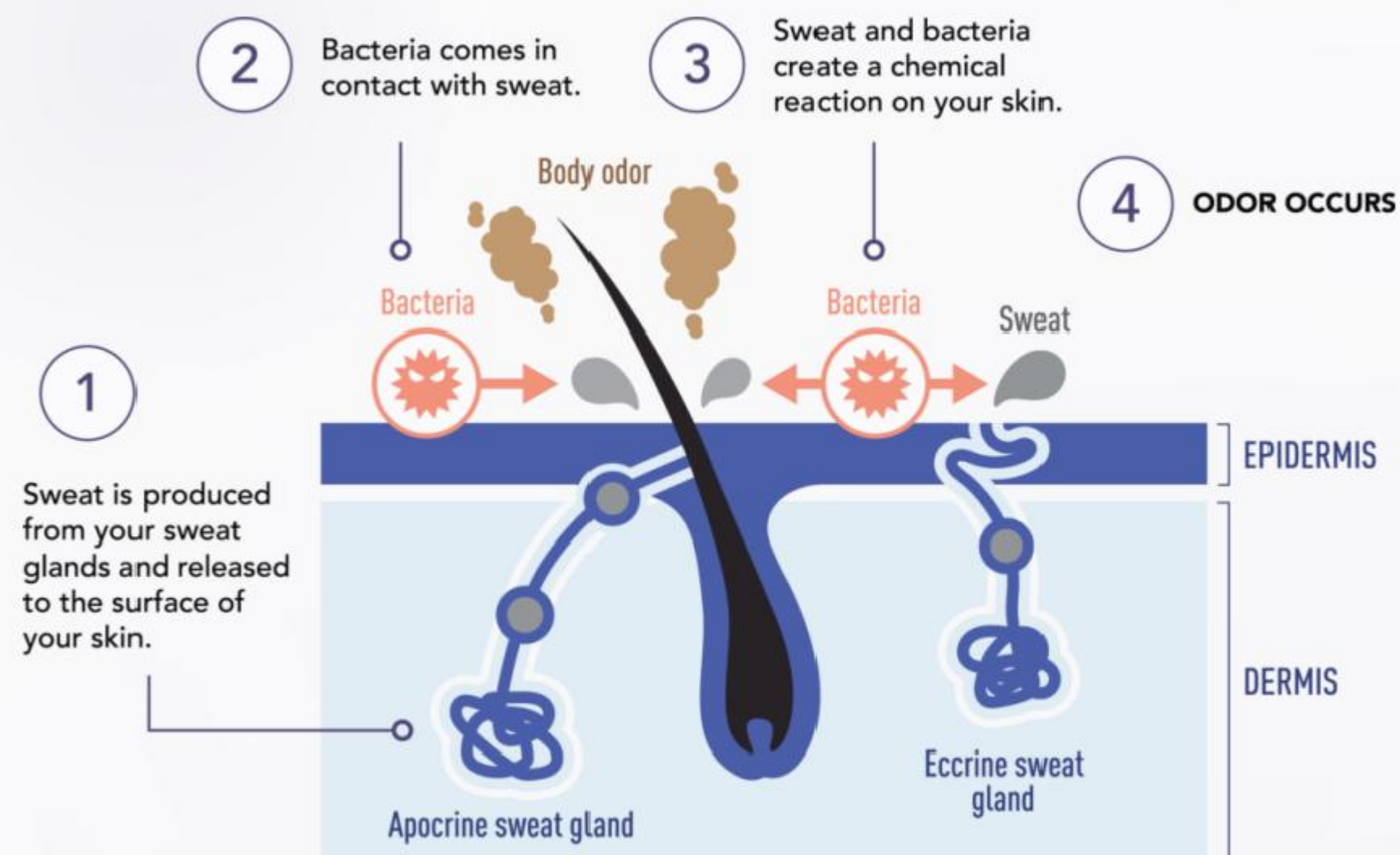
## 「01) Sweat Odor」

Sweat itself is almost odorless. Body odor arises when bacteria on the skin surface (such as *Corynebacteria* and *Staphylococci*) break down components in sweat—like proteins, amino acids, and lipids (sterols, fatty acids)—producing volatile compounds with unpleasant smells.

**Lipid breakdown:** Microorganisms secrete esterases and lipases that decompose lipids in sweat into short-chain fatty acids (such as propionic acid, butyric acid, and isovaleric acid), which have strong sour and rancid odors.

**Protein/amino acid breakdown:** Microorganisms secrete proteases that hydrolyze proteins in sweat into amino acids. These are further deaminated and decarboxylated to form ammonia, amines (such as cadaverine and putrescine), and sulfur-containing compounds (such as thiols), which produce fishy and putrid odors.

Figure: Mechanism of body odor from sweat



Body odor is a physiological phenomenon produced by the interaction between sweat and microorganisms on the skin surface.

## 「02) Sebum Odor」



Sebum secreted by sebaceous glands is a mixture mainly composed of triglycerides, wax esters, squalene, and cholesterol esters.

Sebum itself is odorless. The key mechanisms behind odor formation are the breakdown of sebum components by skin-surface bacteria (such as *Corynebacteria* and *Staphylococci*) and the lipid peroxidation of sebum components, which generate volatile odor-causing substances.

● **Bacterial decomposition:** Microorganisms secrete esterases and lipases that break down triglycerides in sebum into short-chain fatty acids (such as propionic acid, butyric acid, and isovaleric acid), which produce strong sour and rancid odors.

● **Lipid peroxidation:** Squalene and unsaturated fatty acids in sebum, under the mediation of reactive oxygen species (ROS), form volatile aldehydes (such as hexanal and 2-nonenal), which have rancid and greasy odors.



Short-chain fatty acids,  
volatile aldehydes  
→ scalp odor



Short-chain fatty acids,  
volatile aldehydes  
→ chest/back odor



Isovaleric acid  
→ foot odor



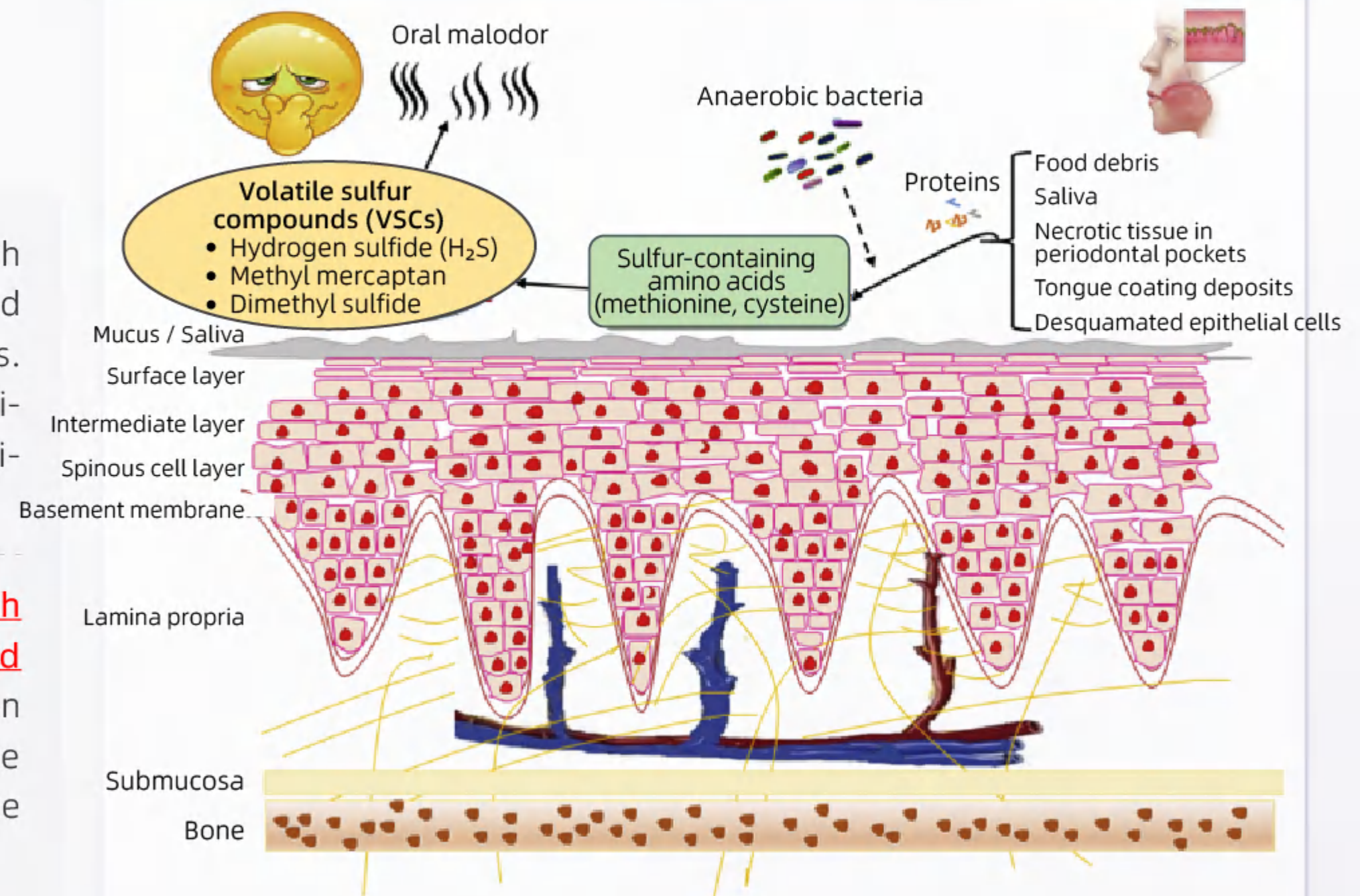
2-nonenal  
→ "aging odor" (old  
person smell)

## 「03) Oral Odor」

- Large numbers of anaerobic bacteria colonize the oral cavity (such as *Porphyromonas gingivalis* and *Fusobacterium nucleatum*), and they use protein substrates in the oral cavity as nutrient sources. These substrates include food debris, saliva, desquamated epithelial cells, tongue coating deposits, and necrotic tissue within periodontal pockets.

- Anaerobic bacteria decompose amino acids in proteins through deamination, producing volatile sulfur compounds (VSCs) and other malodorous substances. These mainly include hydrogen sulfide (rotten egg odor), methyl mercaptan (rotting vegetable odor), and dimethyl sulfide (putrid odor), which ultimately cause halitosis (oral malodor).

Figure – Degradation pathway of sulfur-containing amino acids and mechanism of halitosis formation



## 「04) Odors from Metabolic Disorders」



### Smoking



Smoking significantly increases serum xanthine oxidase (XO) and malondialdehyde (MDA) levels, while reducing antioxidant levels of vitamin C (VC) and vitamin E (VE).<sup>[1]</sup>

### Sleep deprivation / staying up late



Xanthine oxidase (XO) activity exhibits a clear circadian rhythm, with higher activity at night, peaking around 03:00.<sup>[2]</sup>

### Excessive alcohol consumption



Alcohol causes purine metabolism disorder, significantly increasing xanthine oxidase (XO) and lipid peroxidation end-product MDA levels.<sup>[3]</sup>

### Age



In human plasma, xanthine oxidase (XO) is positively correlated with age<sup>[4]</sup>, leading to increased ROS production and simultaneous elevation of lipid peroxidation.

[1]Effect of smoking on serum xanthine oxidase, malondialdehyde, ascorbic acid and  $\alpha$ -tocopherol levels in healthy male subjects. Pak J Med Sci. 2015 Jan-Feb;31(1):146-9.

[2]Molybdenum hydroxylase super family shows circadian activity fluctuation in mice liver: emphasis on aldehyde hydroxylase and xanthine oxidase. Pak J Pharm Sci. 2010 Oct;23(4):359-62.

[3]绿茶多酚对小鼠酒精性肝损伤的保护作用[J].食品科学,2011,32(13):310-313.

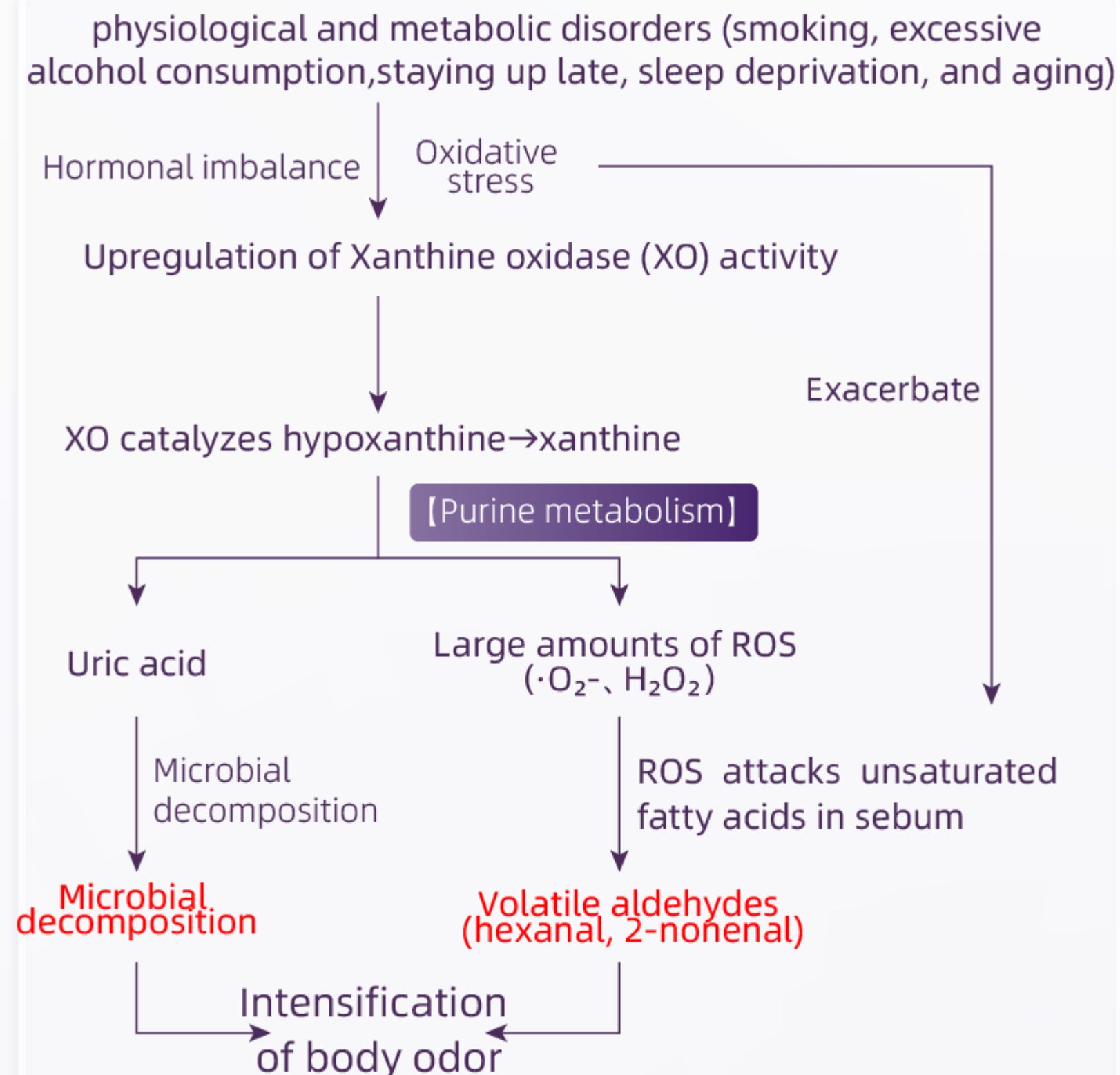
[4]Age-related increase in xanthine oxidase activity in human plasma and rat tissues. Free Radic Res. 2007 Nov;41(11):1195-200.

### Xanthine oxidase (XO)

is a key enzyme that catalyzes purine metabolism, capable of catalyzing the oxidation of hypoxanthine and xanthine, ultimately producing uric acid and a large amount of ROS ( $\cdot\text{O}_2^-$  and  $\text{H}_2\text{O}_2$ ).

- Uric acid is broken down by microorganisms into ammonia and  $\text{CO}_2$ .
- A large amount of ROS ( $\cdot\text{O}_2^-$  and  $\text{H}_2\text{O}_2$ ) attacks the unsaturated fatty acids in sebum, triggering lipid peroxidation and generating volatile aldehydes (hexanal, 2-nonenal) and other odor substances.

Studies have confirmed that physiological and metabolic disorders such as smoking, excessive alcohol consumption, staying up late, sleep deprivation, and aging all induce an increase in xanthine oxidase (XO) activity, producing ammonia, volatile aldehydes, and other odor substances, ultimately exacerbating body odor.



## 「05) Social / Psychological Stress Odor」

● ● ●

Shiseido selected 40 healthy Japanese women aged 35-44 (non-smokers) to study the relationship between psychological stress and skin-emitted gases.

### ① Stress interview:

A 20-minute Q&A session with an unfamiliar interviewer.

### ② Relaxation control:

Sitting quietly and reading magazines.

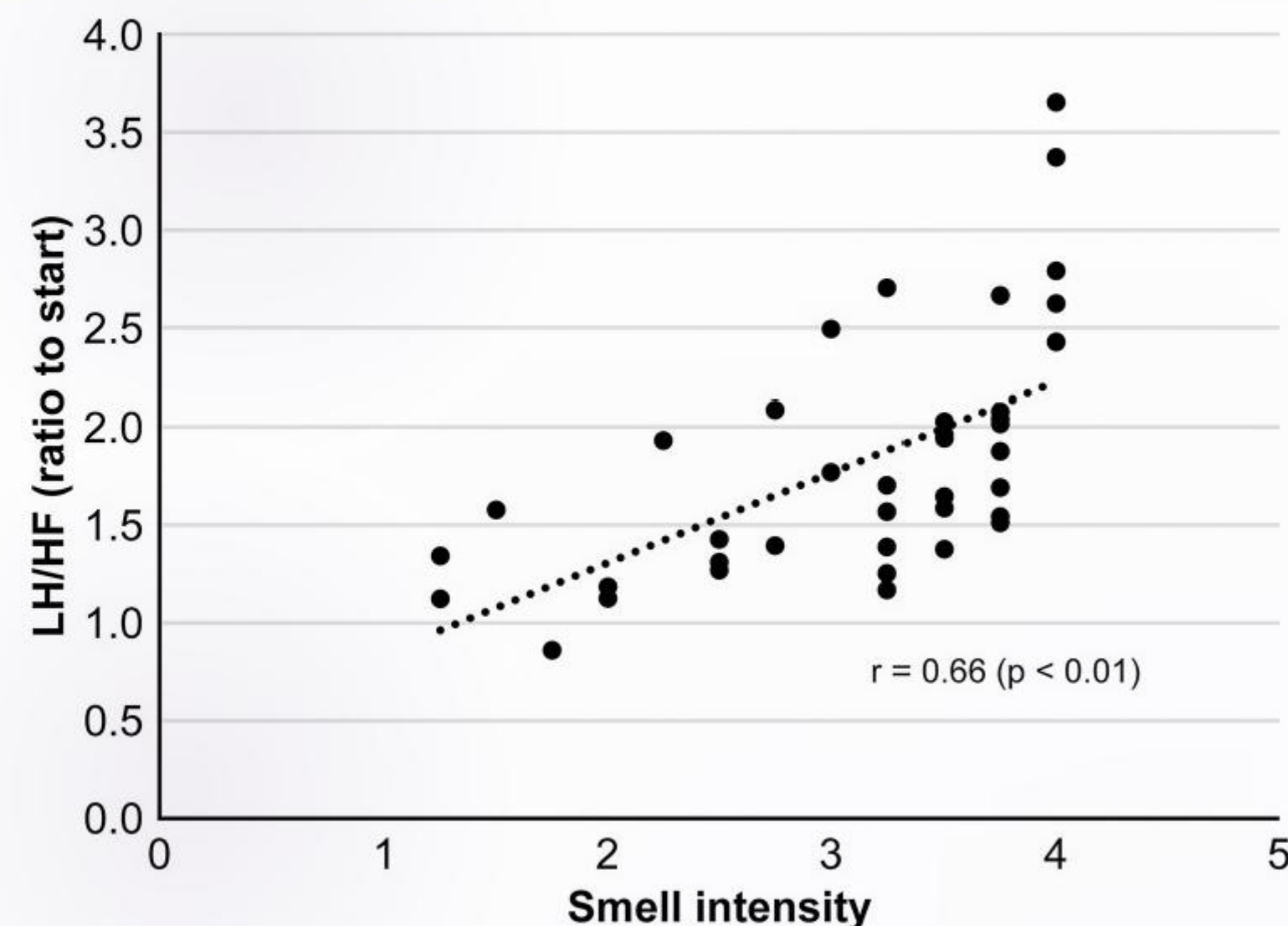
Physiological measurements: Electrocardiogram (LF/HF ratio)

Saliva sampling: Cortisol levels

Hand skin gas collection and analysis

- During the stress interview, participants showed a significant increase in sympathetic nervous system activity (LF/HF ratio) and salivary cortisol levels, confirming the effectiveness of the stress induction.
- During the stress interview, hand skin gases emitted a characteristic sulfurous, green, vegetal odor reminiscent of stir-fried garlic chives, which was absent in the relaxation scenario. The intensity of this odor was positively correlated with the increase rate of sympathetic nervous system activity during the stress interview.

Figure: Intensity of the stir-fried garlic chives odor is positively correlated with the increase in sympathetic nervous system activity during the stress interview.



**Under stress, the skin emits a sulfurous, green odor reminiscent of stir-fried garlic chives!**

## Research Background

**Objective:** To investigate the effect of psychological stress on the release of volatile organic compounds (VOCs) from the skin.

**Participants:** 35 non-smoking women aged 24-40 years (mean age  $34.9 \pm 5.4$  years).

## Methods

**Stress induction:** Computerized timed cognitive tasks (arithmetic, counting, word reorganization, word grids)

**Stress verification:** State-Trait Anxiety Inventory (STAI), electrodermal activity (EDA) measurement, and participant verbal expression analysis

**Sample collection:** Forehead skin VOCs collected using Sorb-Star® adsorbent

**Analytical technique:** GC-MS (for identification and quantification of VOCs)

**Skin parameter measurements:** TEWL (transepidermal water loss), sebum secretion

## Results

**Validation of stress induction:** State anxiety increased by 34.1% ( $p = 0.0001$ ), sebum secretion significantly increased by 37% ( $p < 0.001$ )

**VOCs analysis:** 17 stress-related VOC biomarkers were identified

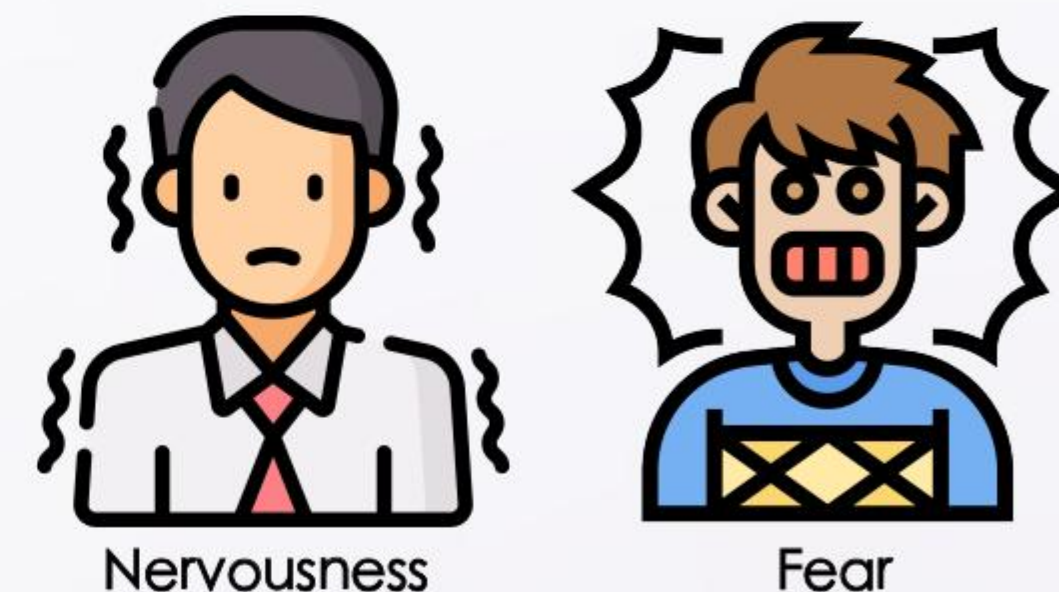
Psychological stress significantly promotes the release of skin VOCs, which can have a negative impact on social interactions.

## Monoamine oxidase (MAO)

inhibitors are a classic class of antidepressants. By inhibiting MAO activity, they reduce the breakdown of monoamine neurotransmitters such as dopamine and serotonin, thereby improving the mood of patients with depression.

Studies have confirmed that, social and psychological stress significantly increase MAO activity, accelerating the degradation of monoamine neurotransmitters such as norepinephrine, epinephrine, serotonin, and dopamine. This process produces volatile aldehydes, ammonia, and  $H_2O_2$ ,<sup>[1]</sup> further exacerbating oxidative stress in the body

In addition, social and psychological stress elevates cortisol levels<sup>[2]</sup>, which not only enhances xanthine oxidase (XO) activity<sup>[3]</sup>, but also stimulates excessive sebum secretion from sebaceous glands<sup>[4]</sup> and promotes hyperactivity of sweat glands, ultimately aggravating body odor.



[1]Regulatory Pathways of Monoamine Oxidase A during Social Stress. Front Neurosci. 2017 Oct 31;11:604.

[2]社会心理压力对个体HPA轴反应的影响和性别差异[J]. 社会科学前沿, 2023, 12(6): 3475-3480.

[3]Antidepressant Potential of Hispidulin Present in *S. barbata* D. Don: Mechanistic Insights through Neurochemical and Behavioral Assessments. Cent Nerv Syst Agents Med Chem. 2025;25(4):568-578.

[4]Exploring Stress-Induced Mechanisms in Acne Pathogenesis.(2024).

# 「Mechanisms of Social / Psychological Stress Odor Formation」



Social / Psychological Stress (Nervousness; Fear; Anxiety etc.)

Activation of sympathetic nervous system & HPA axis

## 【①Monoamine Metabolism】

Release of norepinephrine, epinephrine, and other stress hormones

MAO degrades monoamine neurotransmitters (norepinephrine, epinephrine, dopamine, serotonin, etc.)

Volatile aldehydes and ammonia

Increased monoamine oxidase (MAO) activity

H<sub>2</sub>O<sub>2</sub>, exacerbating oxidative stress

Cortisol release

Exacerbation of oxidative stress

XO activity increased

XO catalyzes hypoxanthine → xanthine

Uric acid

## 【②Purine Metabolism】

Microbial decomposition

Ammonia

Xanthine dehydrogenase (XD)  
Conversion to xanthine oxidase (XO)

Large amounts of ROS ( $\cdot\text{O}_2^-$ , H<sub>2</sub>O<sub>2</sub>)

ROS attacks unsaturated fatty acids in sebum, triggering lipid peroxidation

Volatile acids (hexanoic acid, 2-nonenic acid)

## 【⑤Lipid Peroxidation】

Intensified body odor

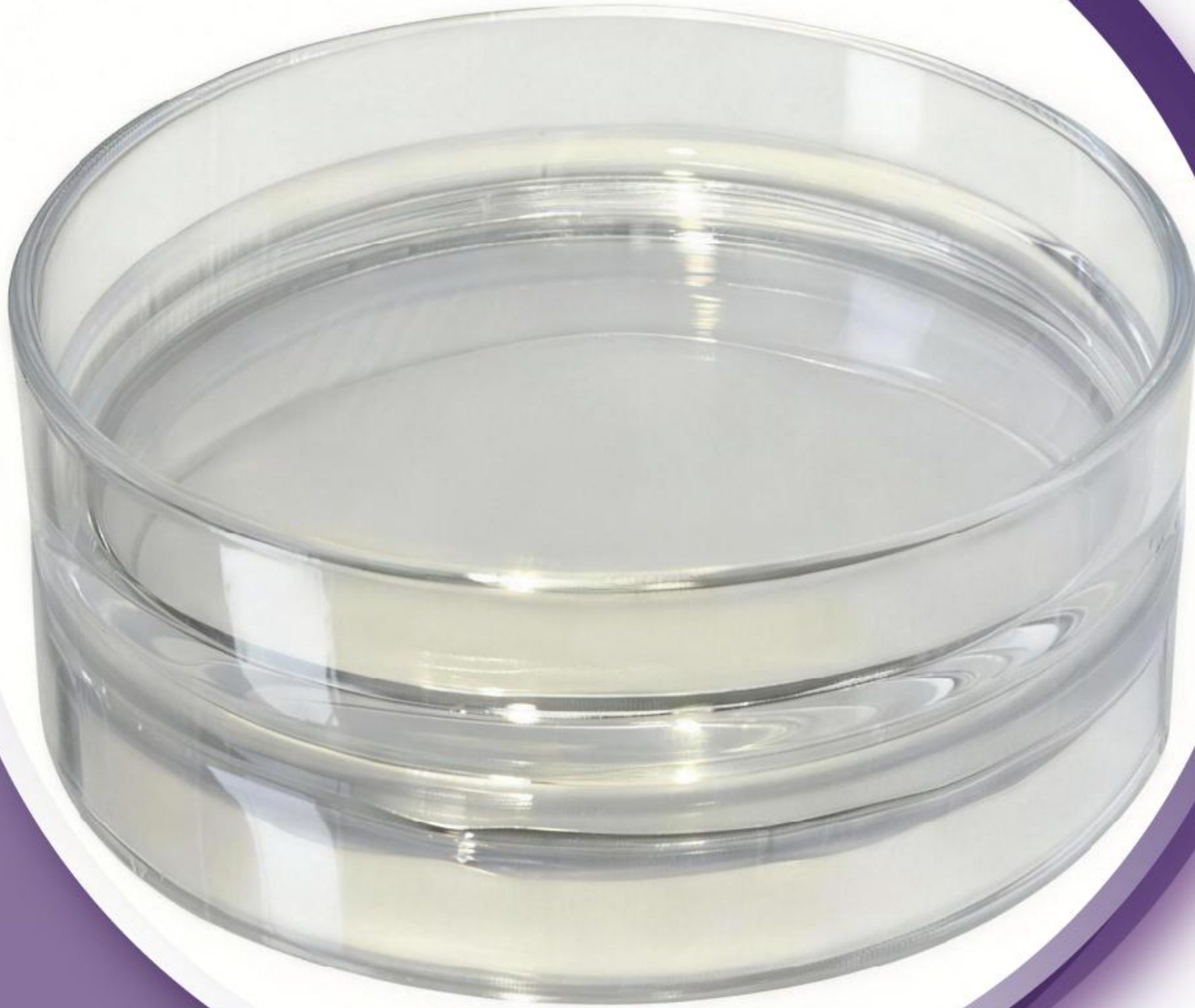
## 【④Sweat Gland Secretion】

Hyperactivity of apocrine sweat glands

Stimulates sebaceous glands to hypersecrete sebum

Microbial decomposition of amino acids, proteins, and lipids in sweat/sebum

Volatile odor molecules (short-chain fatty acids, thiols, etc.)



## 「Product Development Concept」



The formation of complex human odors is the result of multiple factors. It originates from three fundamental sources: the skin microbiome, glandular secretions, and the metabolism of oral residues. It is further influenced by physiological and metabolic disturbances caused by unhealthy habits such as sleep deprivation, excessive alcohol consumption, and smoking, and can be exacerbated by social and psychological stress, including nervousness, anxiety, and fear.

Based on the mechanism of complex human odor formation, ZLEY®PHY-TONEUTRALIS has innovatively developed a “6-fold Odor Control System”, targeting six core pathways: antimicrobial deodorization, anti-oxidant odor suppression, metabolic odor regulation, stress-related odor inhibition, chemical deodorization, and fragrance masking. This system provides comprehensive coverage, blocking odor at the source, intervening in its release process, and optimizing the sensory experience, achieving gentle yet highly effective management and elimination of complex human odors.

# Part . 02

「PART 2 PRODUCT INTRODUCTION」



PRODUCT INTRODUCTION

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

## 「Product Introduction」•••

ZLEY®PHYTONEUTRALIS, selects active ingredients such as Paeonia Suffruticosa Root Bark Extract, Eugenia Caryophyllus (Clove) Bud Extract, Citrus Paradisi (Grapefruit) Fruit Extract, Zinc Gluconate, to innovatively construct a **6-Fold Odor Control System**. Through six core pathways—antimicrobial deodorization, **antioxidant odor suppression, metabolic odor regulation, stress-related odor inhibition, chemical deodorization, and fragrance masking**, it achieves gentle yet effective management, high-efficiency elimination, and long-lasting protection against complex human odors. Additionally, it provides soothing and anti-inflammatory benefits, working synergistically to protect both body and mind.

Moreover, ZLEY®PHYTONEUTRALIS, **24-hour long-lasting formaldehyde removal at 73.06%**, efficiently eliminating environmental odors to create a fresh and safe breathing environment, suitable for various scenarios such as home and office use.

“Millennium fragrance ingredient”  
– Peony root bark



“Ancient ‘chewing gum’” – Clove



“Natural stress-relieving freshener”  
– Grapefruit



# Part . 03

## 「MECHANISM OF ACTION」

MECHANISM OF ACTION

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

**Paeonia Suffruticosa Root Bark Extract, Eugenia Caryophyllus (Clove) Bud Extract, Citrus Paradisi (Grapefruit) Fruit Extract, Zinc Gluconate**

**6-Fold Odor Control System** ↓

①**Antimicrobial Deodorization:** Inhibits odor-causing bacteria on the body surface and oral pathogens responsible for tooth decay and halitosis, reducing the production of odor molecules by bacterial decomposition and lowering odor formation at the source.

②**Antioxidant Odor Suppression:** Scavenges free radicals, reduces oxidative stress, inhibits lipid peroxidation, and decreases the triggers for odor formation.

③**Metabolic Odor Regulation:** Inhibits xanthine oxidase (XO) activity, regulates purine metabolism, reduces the generation of odor molecules, and improves body odor caused by physiological metabolic disturbances or social/psychological stress.

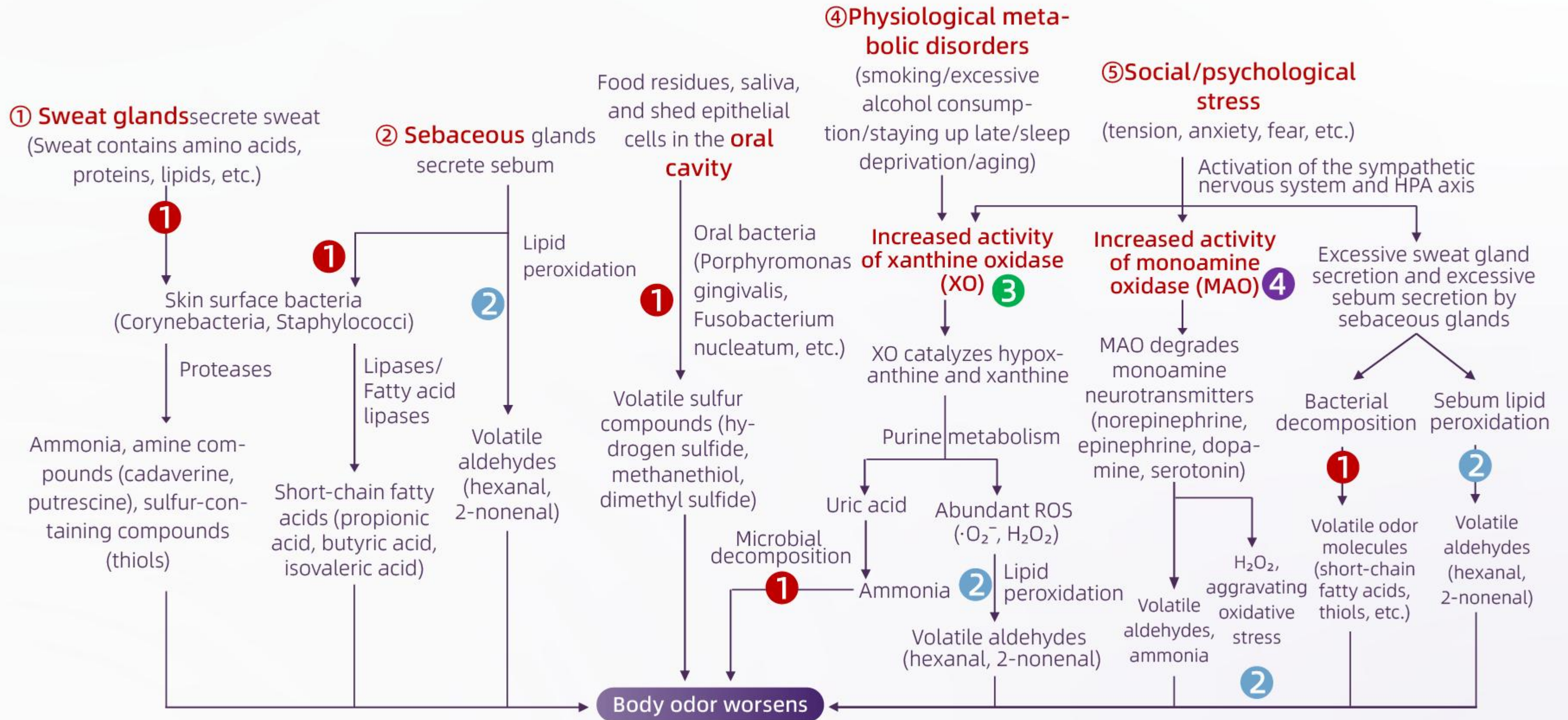
④**Stress-Related Odor Inhibition:** Inhibits monoamine oxidase (MAO) activity, reduces the degradation of monoamine “happiness factors” such as dopamine and serotonin, relieves emotional stress, and minimizes body odor caused by social or psychological stress.

⑤**Chemical Deodorization:** Flavonoids, polyphenols, zinc gluconate, and other active ingredients chemically react with odor molecules, breaking them down into odorless small molecules for direct odor elimination.

⑥**Fragrance Masking:** Clove buds and grapefruit peel naturally provide a fresh, pleasant aroma that masks unpleasant odors without producing an overpowering or pungent scent.

**Odor  
Types  
Addressed** →

- Sweat-related odors: body odor, underarm odor, foot odor, oral odor
- Sebum-related odors: scalp, chest, and back odor
- Age-related odors: “old person smell”
- Odors from physiological/metabolic disturbances: caused by sleep deprivation, smoking, excessive alcohol consumption
- Social/psychological stress-related odors: caused by nervousness, anxiety, fear



Note: ①, ②, ③, and ④ correspond to the deodorization mechanism on the previous page.

# Part . 04

## 「ACTIVE INGREDIENTS AND BENEFITS」



INGREDIENTS AND EFFICACY

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

## 「01) Paeonia Suffruticosa Root Bark Extract」



### “Millennium Fragrance Ingredient” - Paeonia Suffruticosa Root Bark Extract

- **Ancient aromatic use for odor control:** In the Song Dynasty, the Chen Family's Compendium of Incense recorded a laundry fragrance formula: “One liang of peony root bark mixed with one qian of sweet pine, ground into powder, and dissolved in the final rinse water; the fragrance lasts for one month.” This demonstrates that peony root bark was historically used to impart fragrance to clothing and suppress unpleasant odors.
- **Millennia-old herbal medicine with clinical history:** As a traditional Chinese medicinal material, the medicinal use of peony root bark can be traced back over 2,000 years to the Shennong Bencao Jing, with documented clinical effects including heat clearance, blood cooling, pain relief, and hematoma resolution.
- **Modern evidence and multifunctional activity:** The main active constituents of peony root bark, such as paeonol and paeoniflorin, exhibit multiple benefits including antimicrobial, antioxidant, and anti-inflammatory activities.



Peony Root Bark

## “Millennium Fragrance Ingredient” – Paeonia Suffruticosa Root Bark Extract

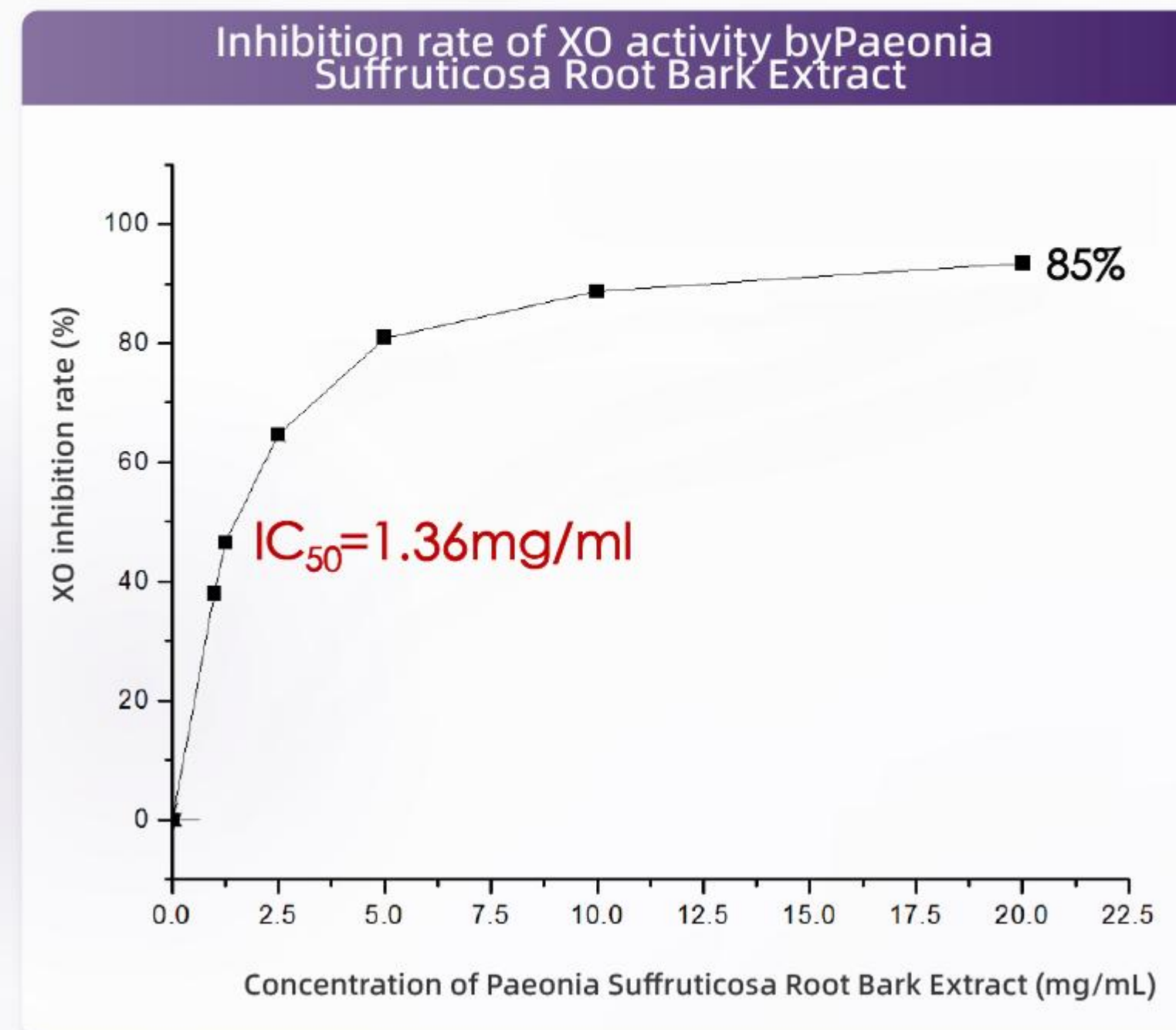
- **Antimicrobial Deodorization:** Paeonia Suffruticosa Root Bark Extract inhibits odor-causing bacteria on the body surface (e.g., *Escherichia coli*, *Staphylococcus aureus*) and oral pathogens responsible for tooth decay and halitosis (e.g., *Streptococcus mutans*, *Porphyromonas gingivalis*), reducing the production of odor molecules from bacterial decomposition and lowering odor formation at the source.
- **Metabolic Odor Regulation:** By inhibiting xanthine oxidase (XO) activity, peony root bark extract regulates purine metabolism, reduces the generation of odor molecules, and alleviates body odor caused by physiological metabolic disturbances or social/psychological stress.
- **Chemical Deodorization:** The active constituents of peony root bark chemically react with odor molecules, breaking them down into odorless small molecules for direct odor elimination.
- **Antioxidant / Anti-inflammatory Effects:** Scavenges free radicals, reduces oxidative stress, and inhibits lipid peroxidation; suppresses inflammatory factors, improving skin and oral inflammation and synergistically maintaining the health of skin and oral surfaces.



Peony Root Bark

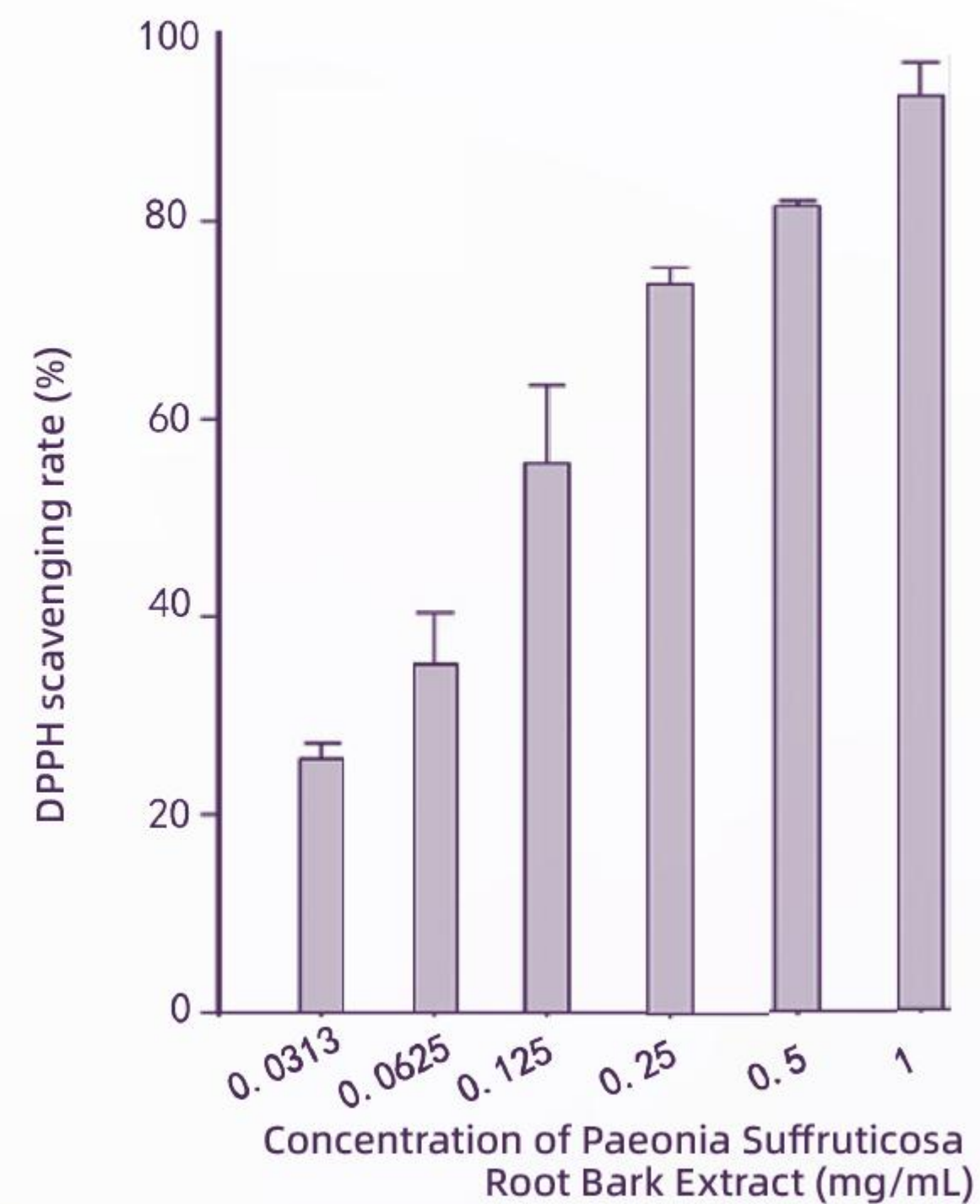
### 1.1) Inhibition of Xanthine Oxidase (XO) Activity

- As shown in the figure, Paeonia Suffruticosa Root Bark Extract inhibits xanthine oxidase (XO) activity in a dose-dependent manner, with an IC<sub>50</sub> value of 1.36 mg/mL.
- This indicates that Paeonia Suffruticosa Root Bark Extract can improve body odor caused by physiological metabolic disturbances (such as smoking, sleep deprivation, excessive alcohol consumption, and aging) and social/psychological stress (including nervousness, anxiety, and fear) by inhibiting XO activity.



## 1.2) Antioxidant Activity - DPPH Radical Scavenging

- As shown in the figure, peony root bark extract scavenges DPPH free radicals in a dose-dependent manner, demonstrating its antioxidant activity.



1.3) Antimicrobial Activity

**Background:** Dental caries and oral malodor are common oral conditions with a prevalence exceeding 50%. Streptococcus mutans (SM), a Gram-positive anaerobic bacterium, is the main pathogen causing dental caries and can damage tooth tissue and structure. Porphyromonas gingivalis (PG), a Gram-negative anaerobic bacterium, is considered a primary pathogen of chronic periodontitis and a major contributor to oral malodor, with strong odor-producing capability.

**Results:** As shown in the table, the minimum inhibitory concentrations (MICs) of peony root bark extract against Streptococcus mutans and Porphyromonas gingivalis were 3.91 mg/mL and 15.63 mg/mL, respectively.

MIC of Paeonia Suffruticosa Root Bark Extract

| Microorganisms                       | MIC (mg/ml) |
|--------------------------------------|-------------|
| Streptococcus mutans (ATCC25175)     | 3.91        |
| Porphyromonas gingivalis (ATCC33277) | 15.63       |

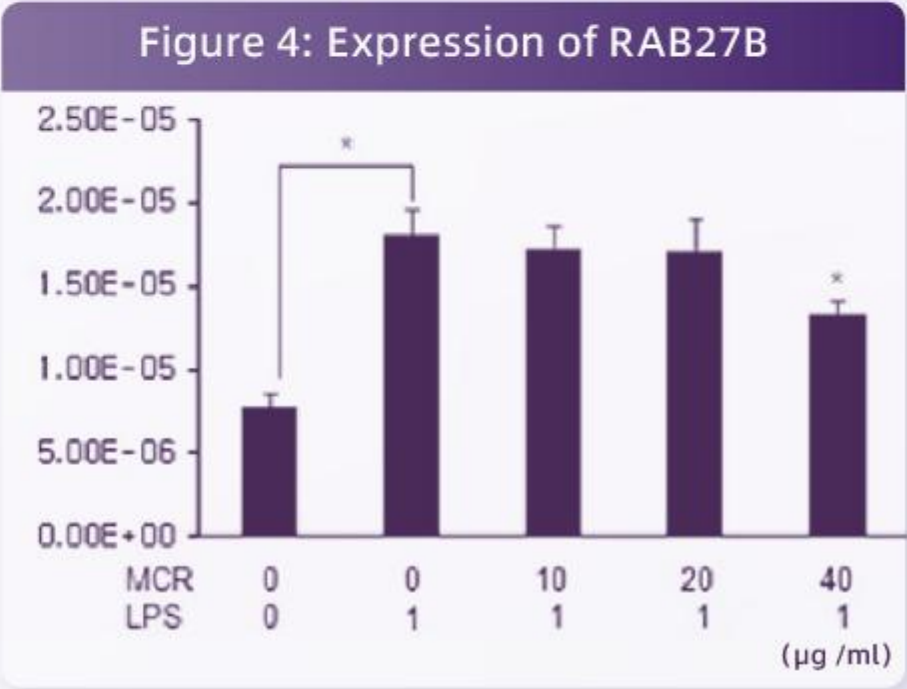
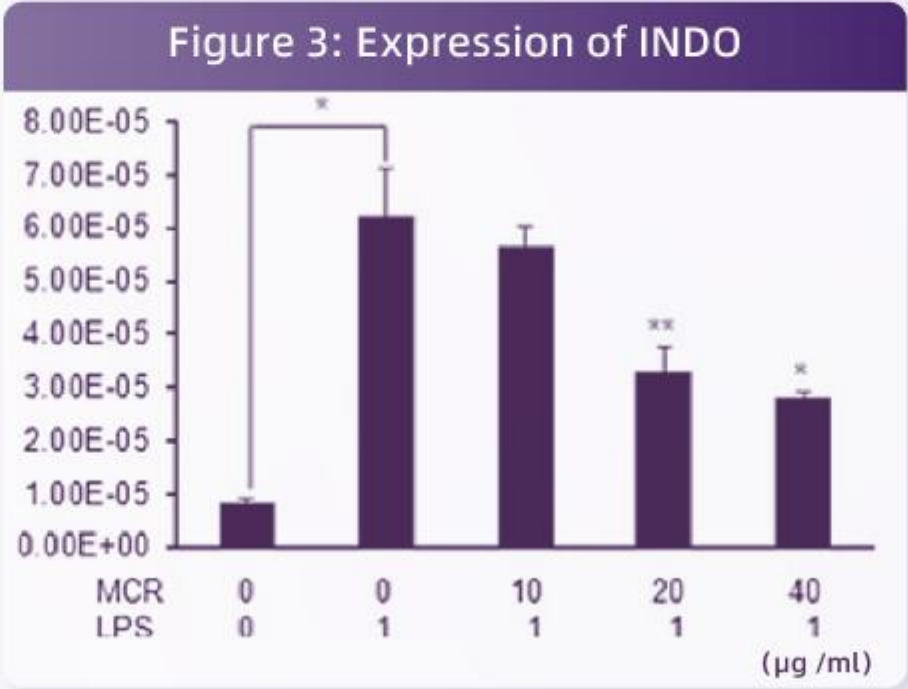
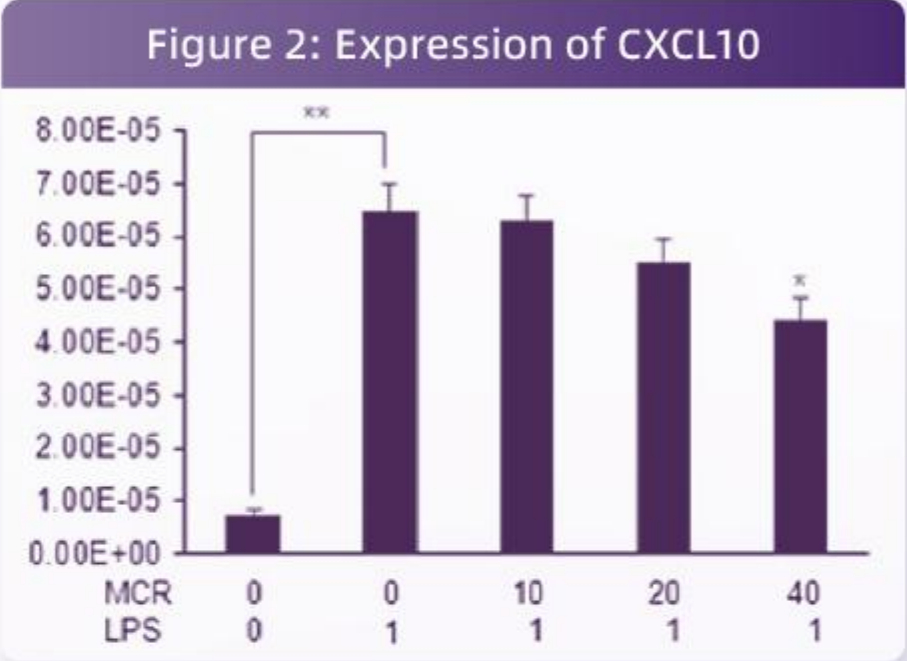
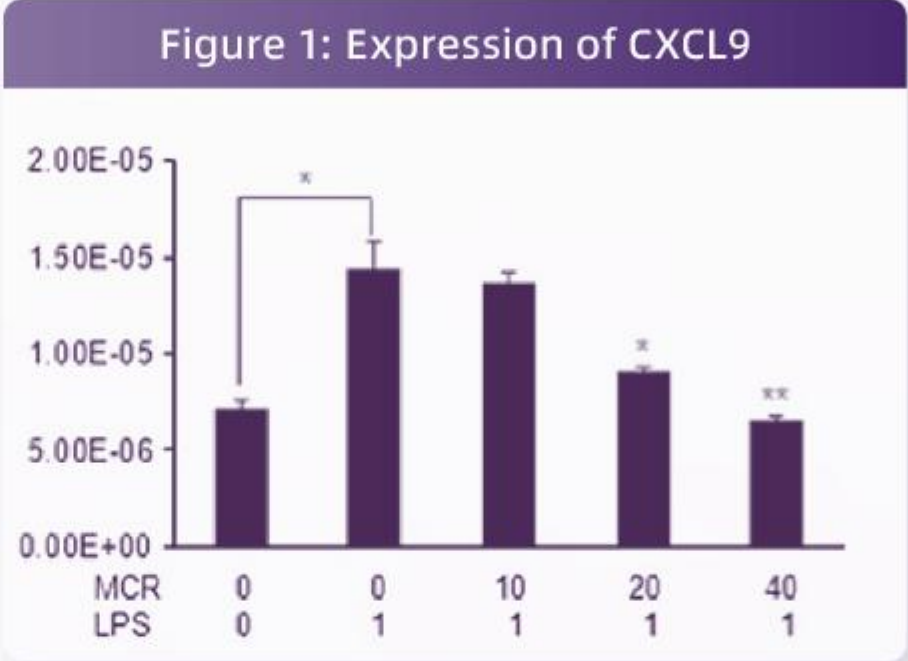
(Note : 1mg/ml=0.1%)

Paeonia Suffruticosa Root Bark Extract exhibits excellent inhibitory activity against the main pathogens causing dental caries, periodontitis, and oral malodor.

Ref: 八种中药及其配伍组方对口腔致病菌的体外抑菌研究[J].亚太传统医药,2025,21(08):6-10.

1.4) Anti-inflammatory Activity - Alleviation of Periodontal Inflammation

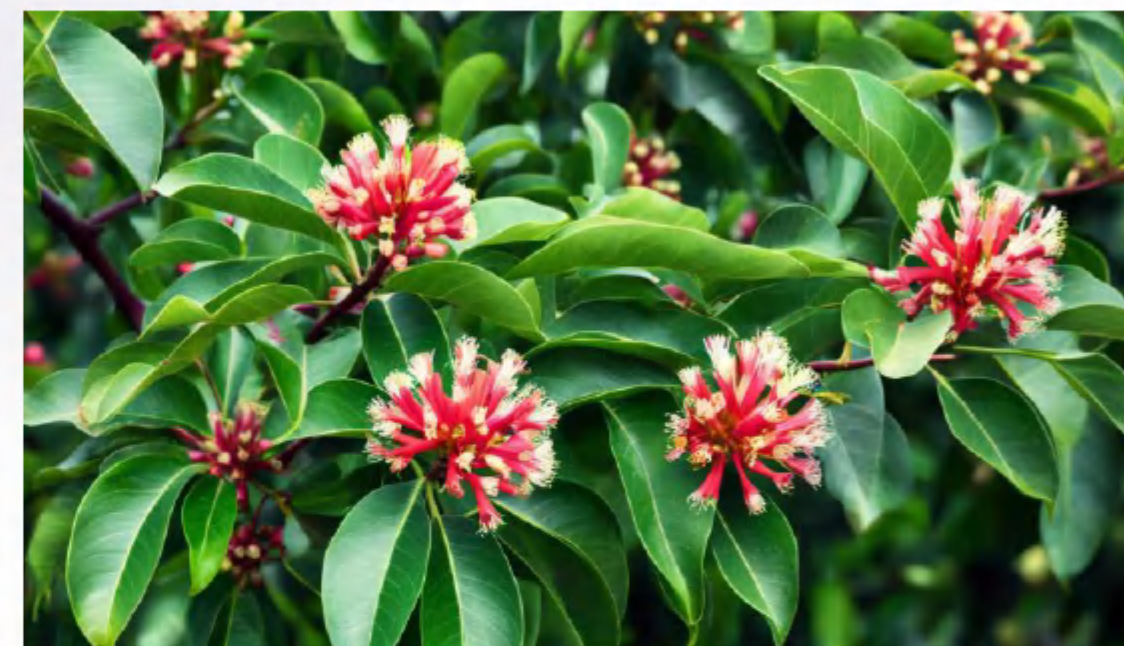
- **Background:**Periodontal disease is caused by oral bacteria, such as Porphyromonas gingivalis. Lipopolysaccharide (LPS), a major component of the bacterial outer membrane, can induce human gingival fibroblasts (HGFs) to secrete pro-inflammatory cytokines, leading to periodontal tissue damage.
- **Objective:** To investigate the anti-inflammatory effect of peony root bark extract on LPS-stimulated HGFs.
- **Results:** As shown in Figures 1-4, peony root bark extract (abbreviated as MCR) reduced the expression of pro-inflammatory mediators (CXCL9, CXCL10, INDO, RAB27B) in LPS-stimulated HGFs, ultimately alleviating periodontal inflammation.



## 「02) Eugenia Caryophyllus (Clove) Bud Extract」

### “Ancient ‘Chewing Gum’” – Clove

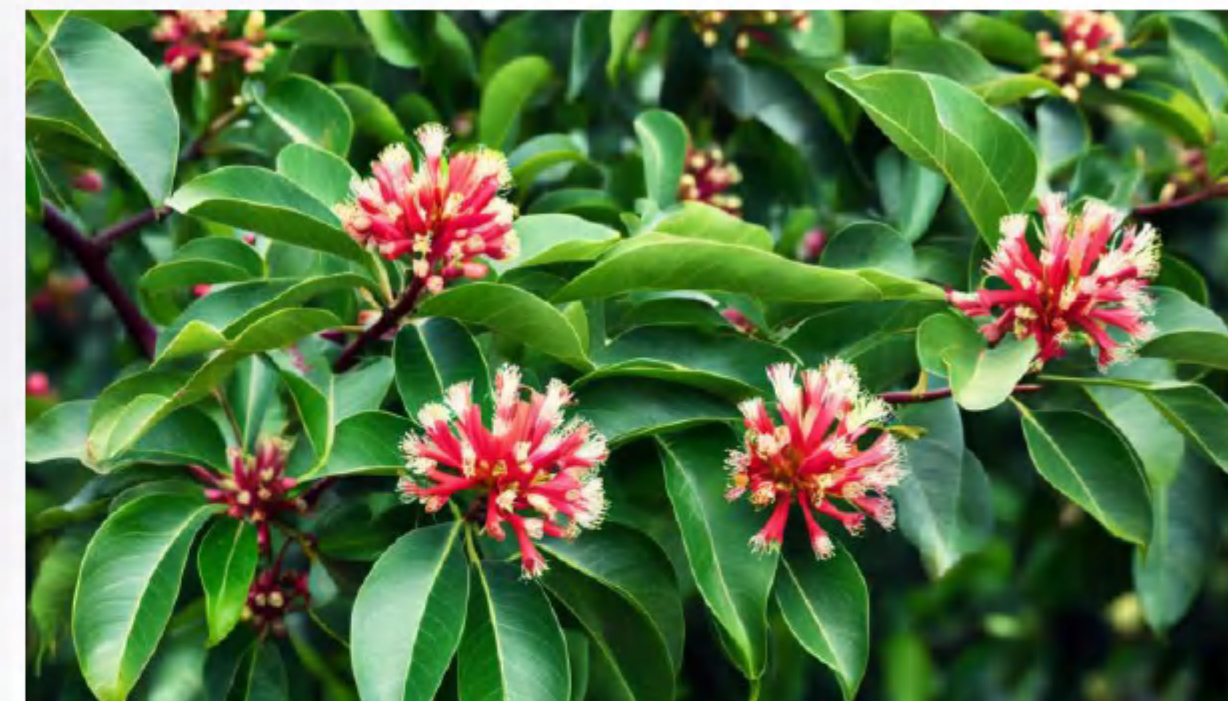
- In the Eastern Han Dynasty, the earliest record of clove use in China appears in the Han Guan Yi which mentions: “Officials of the Shangshu Lang office held a chicken-tongue fragrance in their mouths while reporting matters,” indicating that officials chewed or held cloves (historically called “chicken-tongue fragrance”) in their mouths to prevent bad breath.
- In the Northern Song Dynasty, scientist Shen Kuo recorded in Mengxi Bitan: “Officials of the Three Departments held chicken-tongue fragrance in their mouths when presenting matters, so that their breath would be fragrant during responses. This demonstrates the use of clove for oral freshness, a practice still recorded in pharmacopoeias today.”
- In the Five Dynasties, the Bencao of directly stated that “clove treats oral malodor,” formally including its effect on bad breath in the traditional materia medica system.
- In the Ming Dynasty, the authoritative Compendium of Materia Medica (Bencao Gangmu) summarized: “Clove is most effective for treating oral malodor,” clarifying its mechanism as aromatic purification and spleen-stomach regulation, forming the foundational reference for subsequent use of clove in oral odor control.



Cloves (historically called “chicken-tongue fragrance”)

Modern research shows that clove is rich in phenolics, volatile oils, and other active constituents, exhibiting multiple effects including antimicrobial, antioxidant, anti-inflammatory, and fragrance-masking properties.

- Antimicrobial Deodorization: Clove inhibits odor-causing bacteria on the body surface (e.g., *Escherichia coli*, *Staphylococcus aureus*) and oral pathogens responsible for dental caries and halitosis (e.g., *Streptococcus mutans*, *Porphyromonas gingivalis*), reducing the production of odor molecules from bacterial decomposition and lowering odor formation at the source.
- Chemical Deodorization: Active constituents in clove react chemically with odor molecules (e.g., ammonia, hydrogen sulfide), breaking them down into odorless small molecules for direct odor elimination.
- Fragrance Masking and Stress Relief: Clove naturally emits a rich and fresh aroma that can mask unpleasant odors. Its scent is gentle and comfortable, avoiding any overpowering or pungent sensation, while also helping to alleviate emotional stress.
- Antioxidant / Anti-inflammatory Effects: Clove scavenges free radicals, reduces oxidative stress, and inhibits lipid peroxidation; it also suppresses inflammatory mediators, improving skin and oral inflammation and synergistically maintaining skin and oral health.



Cloves (historically called "chicken-tongue fragrance" )

2.1) Antimicrobial Activity

- As shown in Figure 1, clove extract exhibits good antibacterial activity<sup>[1]</sup>.
- As shown in Figure 2, clove extract demonstrates excellent inhibitory effects against the main pathogens responsible for dental caries, periodontitis, and oral malodor (Streptococcus mutans and Porphyromonas gingivalis)<sup>[2]</sup>.

Figure 1: Antibacterial activity of clove extract<sup>[1]</sup>

| Sample                   | Diameter of inhibition zone (mm) |                       |                  |                        |
|--------------------------|----------------------------------|-----------------------|------------------|------------------------|
| Clove extract (10 mg/mL) | Bacillus cereus                  | Staphylococcus aureus | Escherichia coli | Pseudomonas aeruginosa |
|                          | 14.6±0.37                        | 15.8±0.41             | 11.9±0.34        | 13.4±0.11              |

Figure 2: Minimum inhibitory concentration (MIC) of clove extract against oral pathogens<sup>[2]</sup>

| Sample        | MIC (mg/ml)                      |                                      |
|---------------|----------------------------------|--------------------------------------|
| Clove extract | Streptococcus mutans (ATCC25175) | Porphyromonas gingivalis (ATCC33277) |
|               | 3.91                             | 15.63                                |

[1]Antimicrobial activity of some plant extracts against bacterial strains causing food poisoning diseases[J]. Saudi journal of biological sciences, 2018, 25(2): 361-366.

[2]八种中药及其配伍组方对口腔致病菌的体外抑菌研究[J].亚太传统医药,2025,21(08):6-10.

2.2) Antimicrobial Activity

- As shown in Table 1, clove exhibits strong scavenging activity against hydroxyl radicals ( $\cdot\text{OH}$ ) generated by the Fenton reaction. At a concentration of 0.1%, the scavenging rate reaches 63%, and at 1%, it reaches approximately 92.4%.
- As shown in Table 2, clove demonstrates even stronger scavenging activity against superoxide anion radicals ( $\text{O}_2\cdot^-$ ) generated by the xanthine/xanthine oxidase system.

Table 1: Scavenging rate of hydroxyl radicals ( $\cdot\text{OH}$ ) generated by the Fenton reaction by clove

| concentration (%)   | 0.1      | 1        |
|---------------------|----------|----------|
| Scavenging rate (%) | 63.0±3.6 | 92.4±0.1 |

Table 2: Scavenging rate of superoxide anion radicals ( $\text{O}_2\cdot^-$ ) generated by the xanthine/xanthine oxidase system by clove

| concentration (%)   | 0.001    | 0.01     | 0.1      | 1   |
|---------------------|----------|----------|----------|-----|
| Scavenging rate (%) | 32.6±3.5 | 38.9±8.3 | 85.4±3.1 | 100 |

Ref: 丁香对自由基清除作用和对麻蝇寿命影响的研究[J].实用老年医学,1994,(04):166-169+189.

## 2.3) Anti-inflammatory Activity

- Clove extract (abbreviated as CWE) significantly inhibits the expression of pro-inflammatory cytokines (IL-6, TNF- $\alpha$ , iNOS) in LPS-stimulated RAW 267.4 cells in a dose-dependent manner.

Figure 1: Inhibition of IL-6 expression

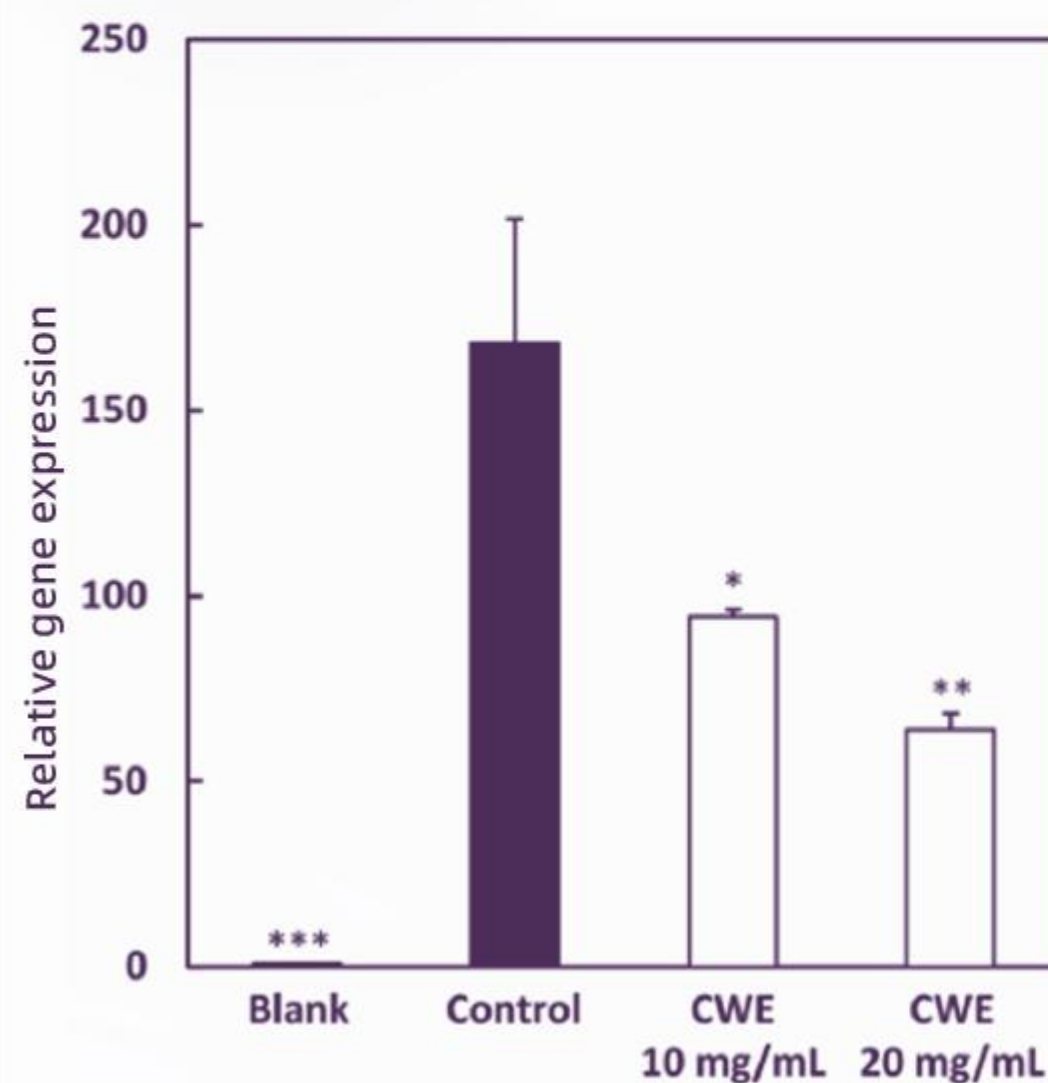


Figure 2: Inhibition of TNF- $\alpha$  expression

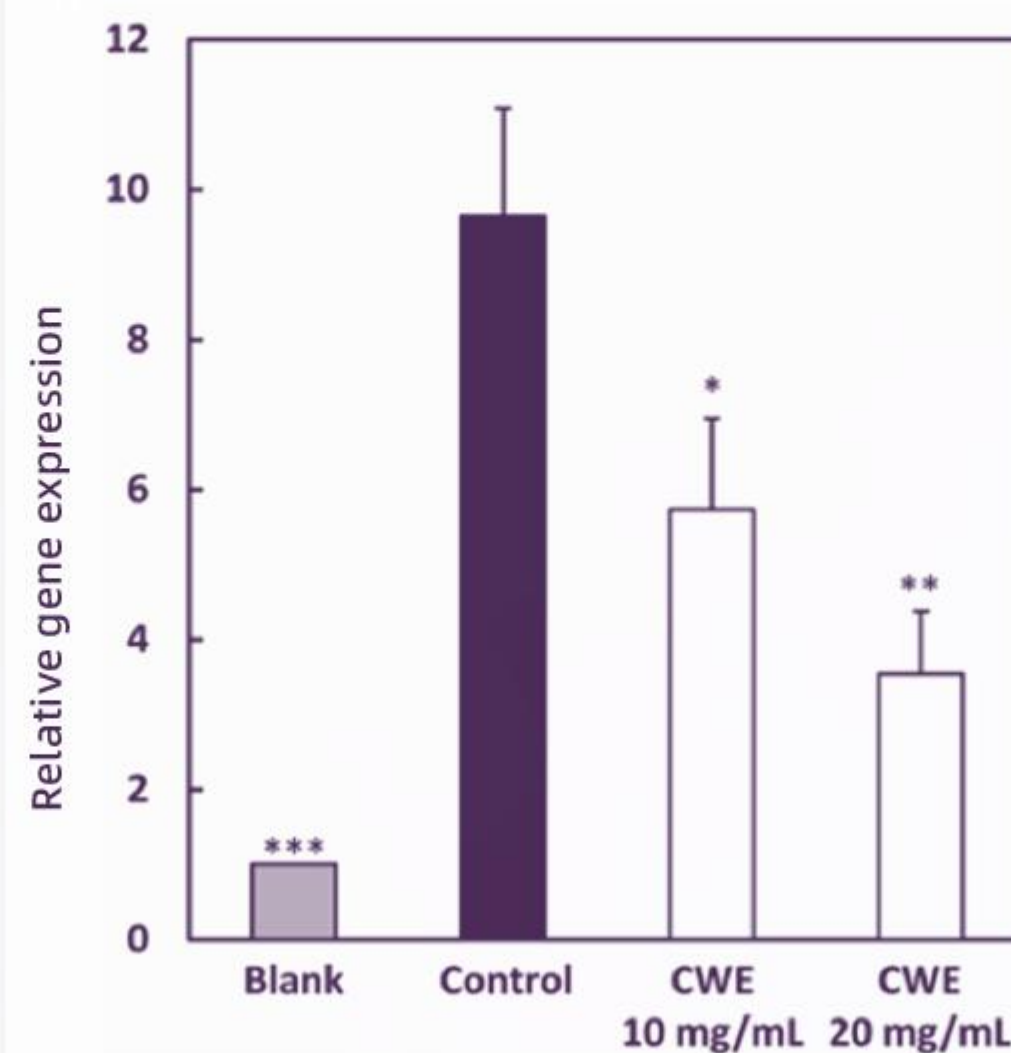
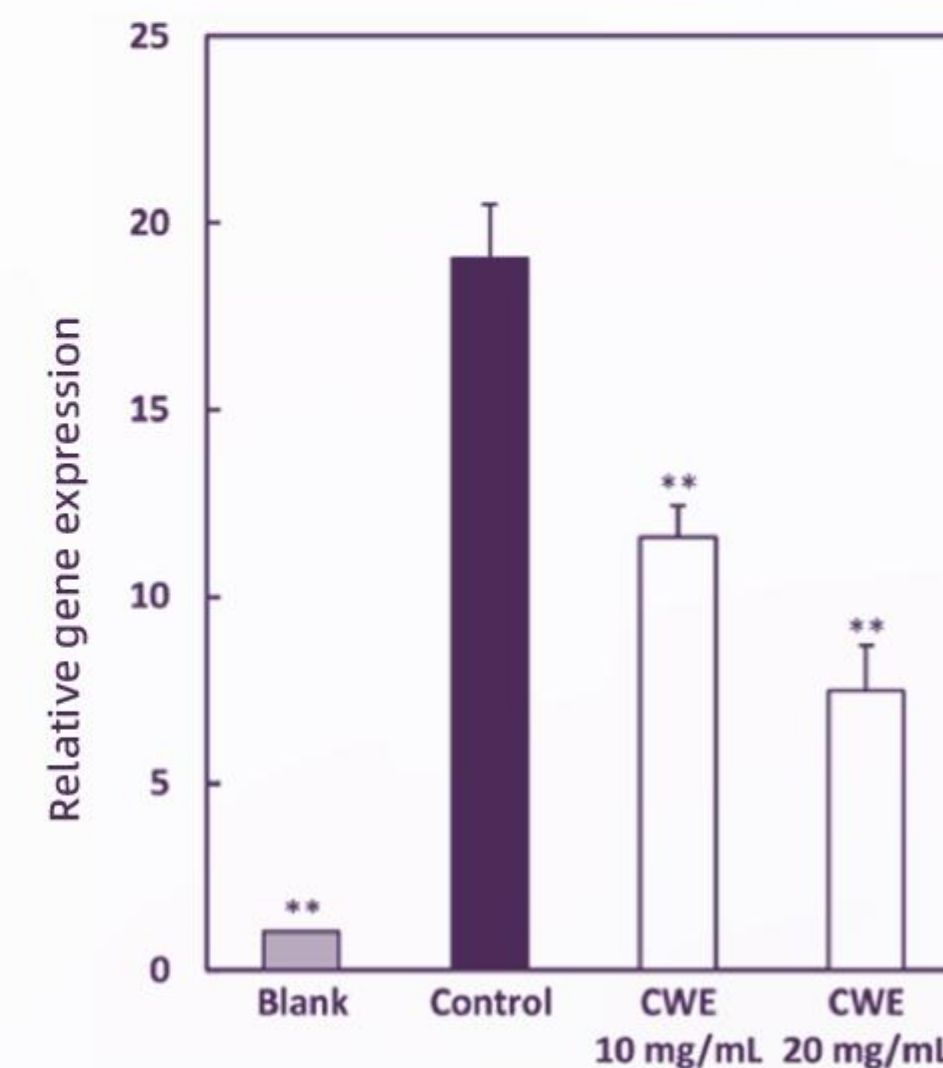


Figure 3: Inhibition of iNOS expression



## 「03) Citrus Paradisi (Grapefruit) Fruit Extract」



### “Natural Stress-Relieving Freshener” – Grapefruit

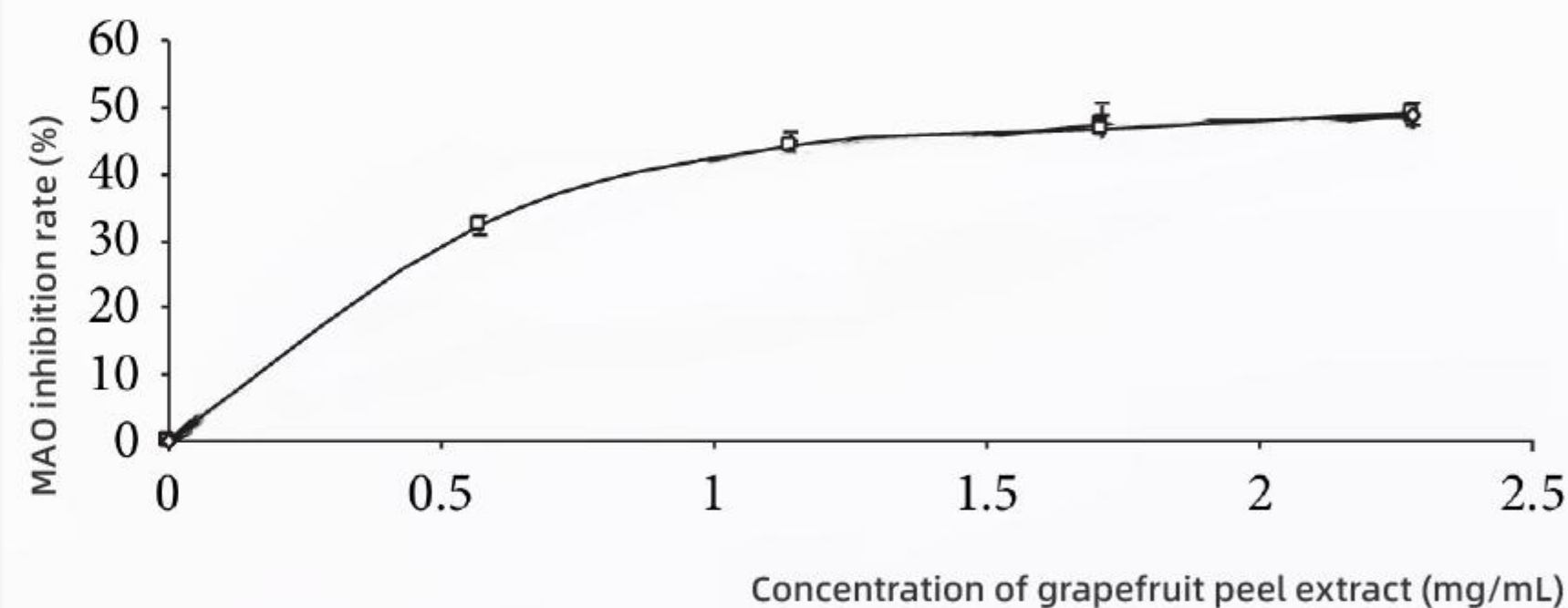
Modern research shows that grapefruit peel is rich in flavonoids, volatile oils, and other active constituents, exhibiting multiple effects including antimicrobial, antioxidant, anti-inflammatory, fragrance-masking, and stress-relieving properties.



- **Antimicrobial Deodorization:** Inhibits the growth of odor-causing microorganisms, reducing the production of odor molecules from bacterial decomposition and lowering odor formation at the source.
- **Stress-Related Odor Suppression:** By inhibiting monoamine oxidase (MAO) activity, grapefruit peel reduces the degradation of monoamine “happiness factors” such as dopamine and serotonin, alleviating emotional stress and minimizing body odor caused by social/psychological stress.
- **Chemical Deodorization:** Flavonoids in grapefruit peel chemically interact with odor molecules (e.g., volatile sulfur compounds) via hydrogen bonding and redox reactions, disrupting the odor-active functional groups and converting them into odorless small molecules.
- **Fragrance Masking:** Volatile oils in grapefruit peel provide a fresh, sweet citrus aroma that is pleasant and mild, without the sharpness of artificial fragrances.
- **Antioxidant / Anti-inflammatory Effects:** Scavenges free radicals, reduces oxidative stress, and inhibits inflammatory mediators, improving skin inflammation and synergistically maintaining skin health.

### 3.1) Inhibition of Monoamine Oxidase (MAO) Activity

- As shown in the figure on the right, grapefruit peel extract inhibited monoamine oxidase (MAO) activity in a dose-dependent manner, with an EC50 value of  $2.00 \pm 0.08$  mg/mL.



By specifically inhibiting MAO activity, grapefruit peel extract helps relieve emotional stress and blocks the formation of social/psychological stress-related body odor at the source.

相 商品名称

3.2) Antimicrobial Activity: Disc Diffusion Method 20 mg/mL grapefruit peel extract (diluted with 30% DMSO)

| Sample                            | Average diameter of inhibition zone (mm) |                       |                  |                  |                  |                   |
|-----------------------------------|------------------------------------------|-----------------------|------------------|------------------|------------------|-------------------|
|                                   | Bacteria                                 |                       |                  |                  | Bacteria         |                   |
|                                   | Bacillus subtilis                        | Staphylococcus aureus | Escherichia coli | Salmonella typhi | Candida albicans | Aspergillus niger |
| Grapefruit peel extract (20mg/ml) | 17±1.41                                  | 15±0.00               | 13±0.70          | 14±0.00          | 22±1.41          | 24±0.00           |

3.3) Anti-inflammatory Activity: Bovine Serum Albumin (BSA) Denaturation Inhibition Assay

| Sample                     | Inhibition rate of protein denaturation (%) |
|----------------------------|---------------------------------------------|
| Grapefruit peel extract    | 77.57                                       |
| Aspirin (positive control) | 89.59                                       |

3.4) Antioxidant Activity: DPPH Free Radical Scavenging Assay

| Sample                           | DPPH scavenging rate (%) |
|----------------------------------|--------------------------|
| Grapefruit peel extract          | 55                       |
| Ascorbic acid (standard control) | 93.5                     |

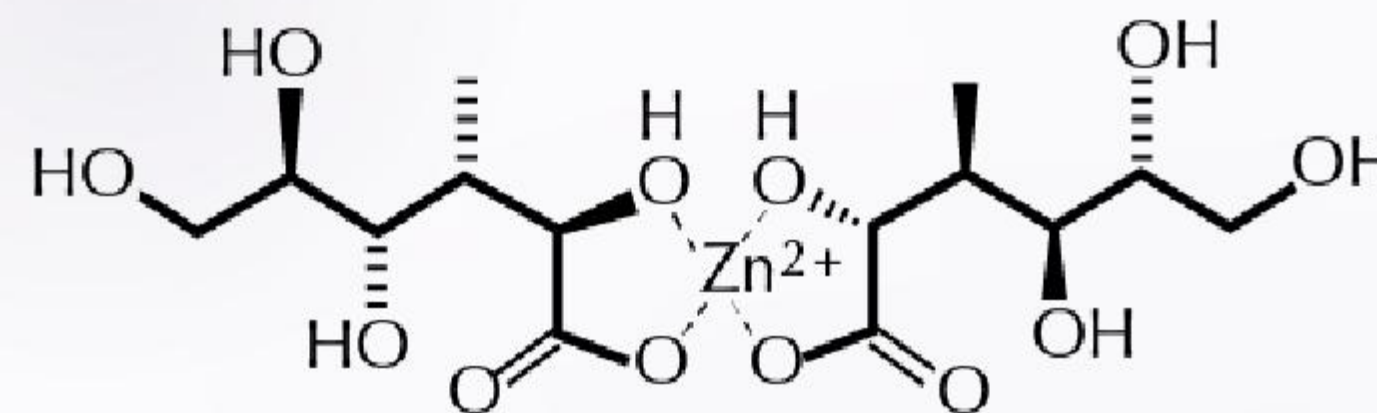
## 「04) Zinc Gluconate」



Zinc Gluconate works through a triple mechanism of antibacterial action, sebum control, and odor-factor binding to help reduce the formation of body odor and oral malodor at the source.

- **Antibacterial deodorizing effect:**  $\text{Zn}^{2+}$  disrupts the cell membrane structure of odor-causing bacteria, inhibiting their growth and proliferation and cutting off the bacterial source of malodor production.
- **Sebum-control deodorizing effect:** It reduces sebum secretion, lowers the metabolic substrates available to bacteria, and indirectly decreases odor generation.
- **Odor-binding deodorizing effect:**  $\text{Zn}^{2+}$  binds to sulfhydryl ( $-\text{SH}$ ) and amino ( $-\text{NH}_2$ ) groups in odor molecules, forming stable and odorless complexes that directly neutralize volatile sulfur compounds (VSCs), ammonia, and other odor-causing substances.

Molecular structural formula of Zinc Gluconate



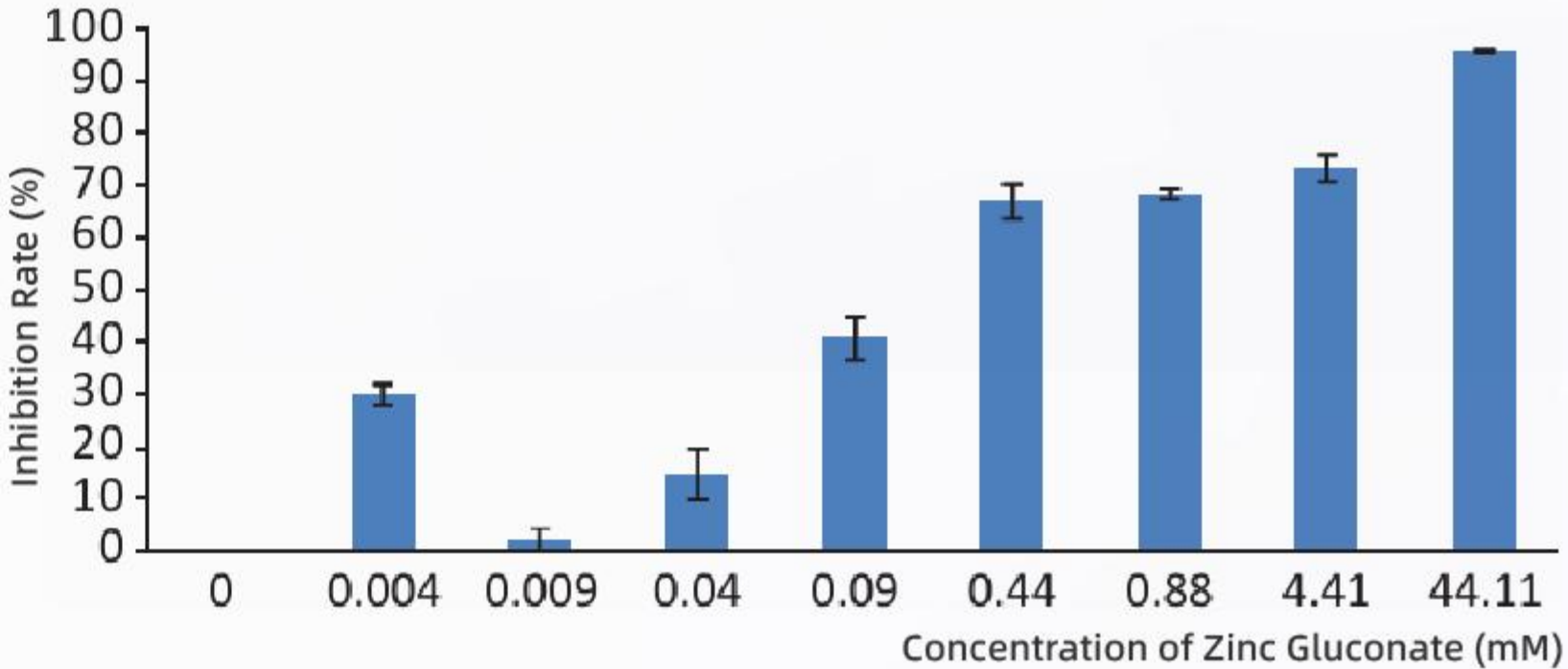
4.1) Antibacterial Effect - Oral Cavity

- As shown in Table 1, zinc gluconate exhibits good inhibitory activity against oral pathogenic microorganisms.
- As shown in Figure 1, zinc gluconate inhibits the protease activity of Porphyromonas gingivalis in a dose-dependent manner. When the concentration of zinc gluconate is below 1 mM, the inhibition rate of protease activity exceeds 50%.

Table 1: MIC and MBC of Zinc Gluconate Against Oral Pathogens

| Microorganisms                       | MIC (mM) | MBC (mM) |
|--------------------------------------|----------|----------|
| Streptococcus mutans (NCTC10449)     | 2.76     | 11.03    |
| Actinomyces viscosus (NCTC10951)     | 11.03    | 11.03    |
| Fusobacterium nucleatum (NCTC10562)  | 5.51     | 22.05    |
| Porphyromonas gingivalis (ATCC53978) | 2.76     | 11.03    |
| Candida albicans (NCPF3179)          | 5.51     | >44.11   |

Figure 1: Inhibitory Effect of Zinc Gluconate on the Protease Activity of Porphyromonas gingivalis



# Part . 05

## 「EFFICACY EVALUATION」



EFFICACY EVALUATION

INNOVATIVE ELEMENTS TO AMELIORATE LIFE



## Odor molecules

— • **(-75.51%)** —  
Methanethiol

— • **(-73.06%)** —  
Formaldehyde

— • **(-95.00%)** —  
2-Nonenal

Body  
odor-causing  
bacteria

— • **(-95.59%)** —  
Staphylococcus  
aureus

— • **(-89.55%)** —  
Escherichia coli

Oral  
odor-causing  
bacteria

— • **(-68.24%)** —  
Porphyromonas  
gingivalis

— • **(-59.14%)** —  
Streptococcus  
mutans

Skin-soothing  
target

— • **(-27.40%)** —  
Hyaluronidase

# 「01 ) 24h Methanethiol Removal: 75.51%」•••

- **Test Purpose:** Methanethiol is a volatile sulfur compound with an extremely low odor perception threshold. It is mainly produced through microbial degradation and metabolism of sulfur-containing amino acids, emitting pungent fecal, putrid, and rotten egg-like odors. It is one of the key odor-causing molecules responsible for oral malodor, body odor, pet odor, and garbage decomposition odors.
- **Test Item:** Removal Rate (Methanethiol)
- **Test Sample:** ZLEY®PHYTONEUTRALIS
- **Sample Preparation:** The sample was diluted with purified water to prepare a 3% aqueous solution. Then, 300 mL of the solution was evenly sprayed in three separate applications onto three sheets of 0.49 m<sup>2</sup> base paper. After natural air drying, the treated papers were placed into a 1 m<sup>3</sup> test chamber for evaluation.

| Sample Chamber                | Pollutant    | Exposure Time | Concentration in Blank Chamber (mg/m3) | Concentration in Sample Chamber (mg/m3) | Removal Rate (%) |
|-------------------------------|--------------|---------------|----------------------------------------|-----------------------------------------|------------------|
| 3%<br>ZLEY®<br>PHYTONEUTRALIS | Methanethiol | 24h           | 1.21                                   | 0.326                                   | 75.51            |

3% ZLEY®PHYTONEUTRALIS continuously removes methanethiol for 24 hours, effectively eliminating malodor.

# 「02） 24h Formaldehyde Removal: 73.06%」●●●

- **Test Purpose:** Formaldehyde has been classified by the World Health Organization (WHO) as a Group 1 carcinogen. Continuous exposure may irritate the respiratory tract, impair immune function, and pose serious risks to human health.
- **Test Item:** Removal Rate (Formaldehyde)
- **Test Sample:** ZLEY®PHYTONEUTRALIS
- **Sample Preparation:** The sample was diluted with purified water to prepare a 3% aqueous solution. Then, 300 mL of the solution was evenly sprayed in three separate applications onto three sheets of 0.49 m<sup>2</sup> base paper. After natural air drying, the treated papers were placed into a 1 m<sup>3</sup> test chamber for evaluation.

| Sample                        | Pollutant    | Exposure Time | Concentration in Blank Chamber (mg/m3) | Concentration in Sample Chamber (mg/m3) | Removal Rate (%) |
|-------------------------------|--------------|---------------|----------------------------------------|-----------------------------------------|------------------|
| 3%<br>ZLEY®<br>PHYTONEUTRALIS | Formaldehyde | 24h           | 1.21                                   | 0.326                                   | 73.06            |

3% ZLEY®PHYTONEUTRALIS continuously removes formaldehyde for 24 hours, helping purify the air.

# 「03 ) Effectively Removes 95% of Aging Odor 」



- **Detection Purpose:** 2-Nonenal is a signature odorant produced by the oxidation of ω-7 unsaturated fatty acids in sebum with age. It is also the core source of the well-known "aging odor".
- **Detection Item:** Removal Rate (2-Nonenal)
- **Test Sample:** ZLEY®PHYTONEUTRALIS
- **Sample Treatment:** Under normal temperature and pressure, 15L of gas was passed through a large bubble absorption tube containing 10mL of sample at a flow rate of 1L/min. The treated gas was collected and its concentration was analyzed. The sample was diluted to a 3% solution with laboratory grade III water for testing.

| Sample                    | Pollutant | Concentration Before Treatment (mg/m3) | Concentration After Treatment (mg/m3) | Removal Rate (%) |
|---------------------------|-----------|----------------------------------------|---------------------------------------|------------------|
| 3%<br>ZLEY®PHYTONEUTRALIS | 2-Nonenal | 0.602                                  | 0.030                                 | 95.0             |

3%ZLEY®PHYTONEUTRALIS, Effectively Removes 95% of "Aging Odor", Leaving a Fresh and Pleasant Scent!

# 「04 ) Inhibition of Core Odor-Causing Skin Bacteria」...

- **Test Purpose:** Escherichia coli and Staphylococcus aureus are key odor-causing bacteria on the body surface. They decompose nitrogen- and sulfur-containing organic substrates such as sweat and sebum secreted by the skin, producing volatile organic compounds (VOCs) with strong unpleasant odors.
- **Test Sample:** 3% ZLEY®PHYTONEUTRALIS
- **Test Standard:** QB/T 2738-2012: Evaluation Method for Antibacterial and Bacteriostatic Effects of Daily Chemical Products
- **Evaluation Criteria:** Bacteriostatic rate ≥50%-90%: the product exhibits antibacterial activity; Bacteriostatic rate ≥90%: the product exhibits strong antibacterial activity

| Test Sample         | Active Concentration | Test Microorganism                  | Exposure Time | Bacteriostatic Rate (%) |
|---------------------|----------------------|-------------------------------------|---------------|-------------------------|
| ZLEY®PHYTONEUTRALIS | 3%                   | Escherichia coli<br>(ATCC25922)     | 10min         | 78.08                   |
|                     |                      |                                     | 30min         | 88.64                   |
|                     |                      |                                     | 60min         | 89.55                   |
|                     | 3%                   | Staphylococcus aureus<br>(ATCC6538) | 10min         | 52.50                   |
|                     |                      |                                     | 30min         | 89.71                   |
|                     |                      |                                     | 60min         | 95.59                   |

3% ZLEY®PHYTONEUTRALIS exhibits inhibitory effects against key body odor-causing bacteria (Escherichia coli and Staphylococcus aureus).

# 「05 ) Inhibition of Core Odor-Causing Skin Bacteria」•••

- **Test Purpose:** Escherichia coli and Staphylococcus aureus are key odor-causing bacteria on the body surface. They decompose nitrogen- and sulfur-containing organic substrates such as sweat and sebum secreted by the skin, producing volatile organic compounds (VOCs) with strong unpleasant odors.
- **Test Sample:** 3% ZLEY®PHYTONEUTRALIS
- **Test Standard:** QB/T 2738-2012: Evaluation Method for Antibacterial and Bacteriostatic Effects of Daily Chemical Products
- **Evaluation Criteria:** Bacteriostatic rate ≥50%-90%: the product exhibits antibacterial activity; Bacteriostatic rate ≥90%: the product exhibits strong antibacterial activity

| Test Sample             | Active Concentration | Exposure Time | Test Microorganism                     | Average Colony Count (Test Group) (CFU/ml) | Average Colony Count (Control Group) (CFU/ml) | Bacteriostatic Rate (%) | Average Bacteriostatic Rate (%) |
|-------------------------|----------------------|---------------|----------------------------------------|--------------------------------------------|-----------------------------------------------|-------------------------|---------------------------------|
| ZLEY®<br>PHYTONEUTRALIS | 3%                   | 10min         | Streptococcus mutans (ATCC25175)       | 1.62×10 <sup>4</sup>                       | 4.00×10 <sup>4</sup>                          | 59.50                   | 59.14                           |
|                         |                      |               |                                        | 2.76×10 <sup>4</sup>                       | 6.30×10 <sup>4</sup>                          | 56.19                   |                                 |
|                         |                      |               |                                        | 8.00×10 <sup>3</sup>                       | 2.09×10 <sup>4</sup>                          | 61.72                   |                                 |
|                         | 3%                   | 10min         | Porphyromonas gingivalis (ATCCBAA-308) | 4.50×10 <sup>3</sup>                       | 1.44×10 <sup>4</sup>                          | 68.75                   | 68.24                           |
|                         |                      |               |                                        | 3.40×10 <sup>3</sup>                       | 1.16×10 <sup>4</sup>                          | 70.68                   |                                 |
|                         |                      |               |                                        | 7.60×10 <sup>3</sup>                       | 2.19×10 <sup>4</sup>                          | 65.29                   |                                 |

3%ZLEY®PHYTONEUTRALIS exhibits inhibitory effects against the major pathogenic bacteria responsible for dental caries, periodontitis, and oral malodor (SM and PG).

## 「06) Soothing Effect – Inhibition of Hyaluronidase Activity」



### 5.1) Test Principle

- Hyaluronidase is a specific enzyme that degrades hyaluronic acid and is associated with most IgE-mediated Type I allergic reactions and T cell-mediated Type IV allergic reactions. It plays a promoting role in skin inflammation.
- In this test, the inhibition rate of hyaluronidase was used as the evaluation indicator. A higher hyaluronidase inhibition rate indicates a stronger soothing effect.

### 5.2) Test Results

- The hyaluronidase inhibition rate of 5% ZLEY®PHYTONEUTRALIS was 27.4%.

5%

ZLEY®PHYTONEUTRALIS

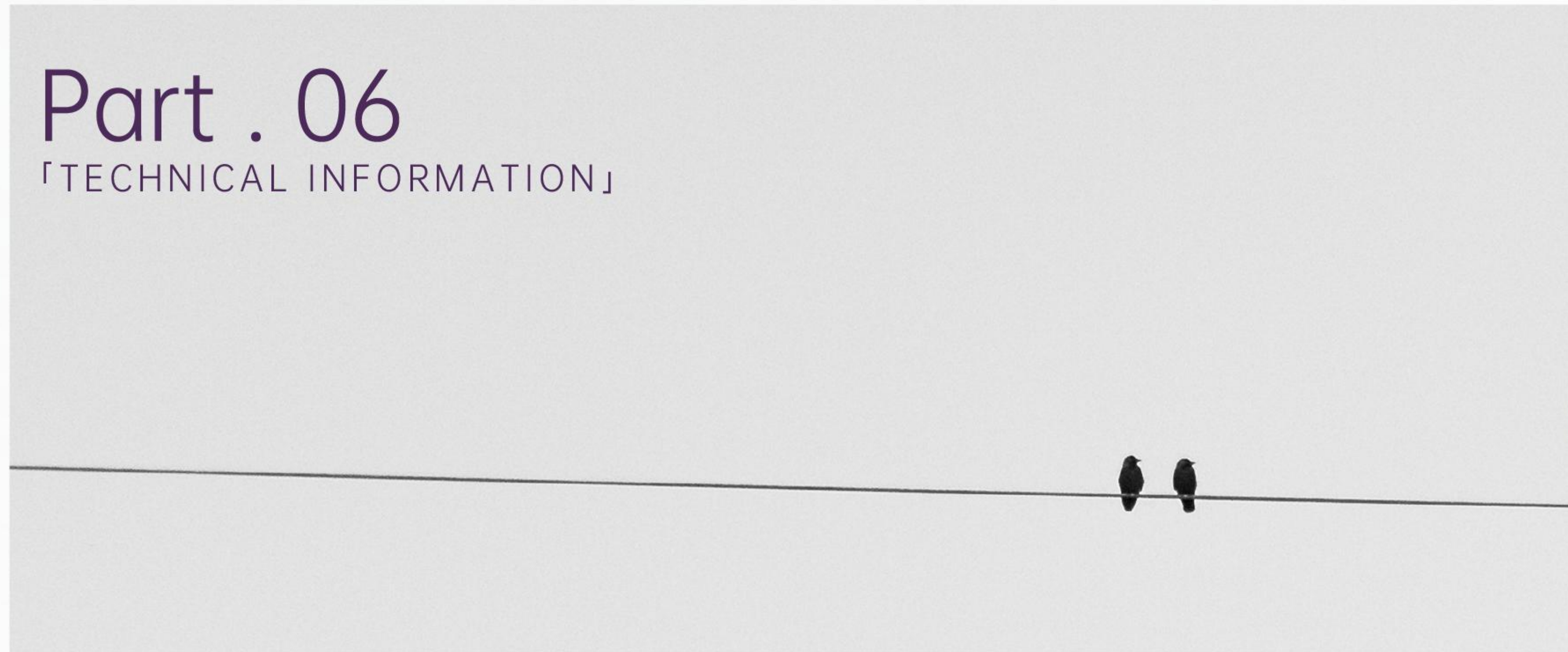
27.4%

Hyaluronidase Inhibition Rate

ZLEY®PHYTONEUTRALIS demonstrates soothing efficacy and gently helps maintain healthy skin.

# Part . 06

「TECHNICAL INFORMATION」



PRODUCT INFORMATION

INNOVATIVE ELEMENTS TO AMELIORATE LIFE

# 妆兰-PhytoNeutalis

「Six-fold Odor Inhibition System,

Precisely Eliminate Complex Body Odor」

「24-hour Long-lasting Formaldehyde Removal

up to 73.06%, High-efficiency Purification」



## 「Technical Information」

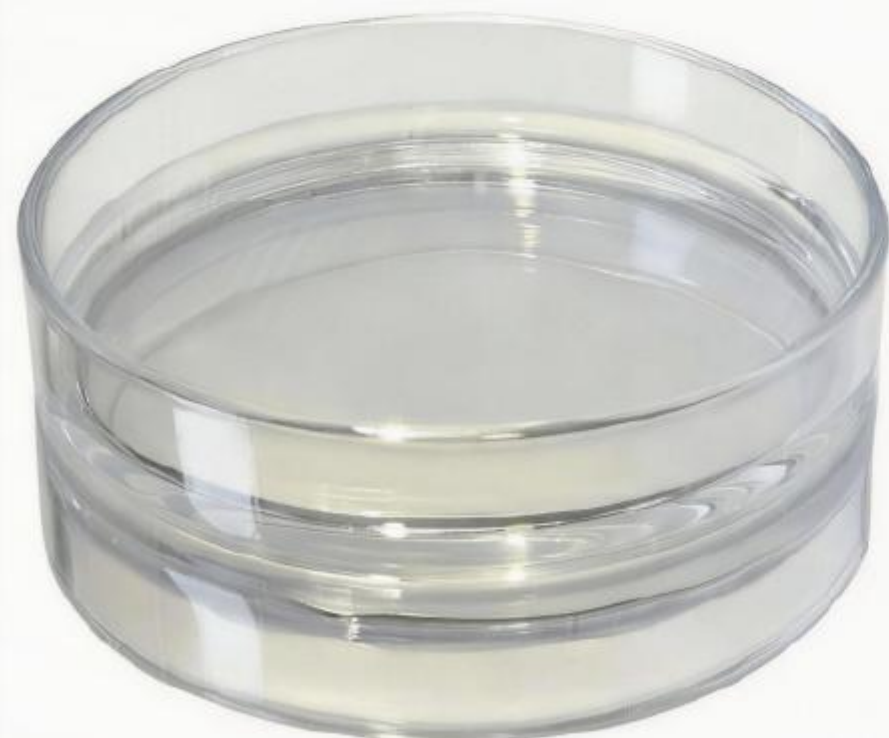
|                    |                                                                                                                                                                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name       | ZLEY®PHYTONEUTRALIS                                                                                                                                                               |
| INCI NAME          | Paeonia Suffruticosa Root Bark Extract, Eugenia Caryophyllus (Clove) Bud Extract, Citrus Paradisi (Grapefruit) Fruit Extract, Sodium PCA, Zinc Gluconate, Propylene Glycol, Water |
| CAS No.            | /,84961-50-2,8016-20-4,149-87-1,4468-02-4,57-55-6,7732-18-5                                                                                                                       |
| Product Functions  | Deodorizing (oral, body, and environmental odor removal), antibacterial activity, antioxidant protection, soothing and anti-inflammatory effects, and emotional stress relief.    |
| Appearance         | Colorless to light-colored solution with the characteristic odor of the raw materials.                                                                                            |
| Recommended Dosage | 1~8%                                                                                                                                                                              |
| Solubility         | Water-soluble                                                                                                                                                                     |
| Processing Method  | Add directly into the formulation system at room temperature and mix evenly.                                                                                                      |
| Applications       | Human and pet care (body and oral care), air purification (formaldehyde, garbage decomposition odors, excrement odors, etc.)                                                      |

# 「Product Selling Points」



## Six-Action Odor Control & Deodorizing System for Physical and Emotional Comfort

"Antibacterial deodorization · Antioxidant odor suppression · Metabolic odor regulation · Stress-relief odor control · Chemical deodorization · Fragrance masking"



## 「Formulation Guidance」...

| Phase | Ingredient          | INCI 名称                                                                                                                                                                                             | ω/%    | Supplier |
|-------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------|
| A     | DEIONIZED WATER     | Water                                                                                                                                                                                               | TO 100 | —        |
|       | ZLEY®BIOCARE-CPH    | Chlorphenesin                                                                                                                                                                                       | 0.20   | ZLEY     |
|       | 2NA                 | Disodium Edta                                                                                                                                                                                       | 0.05   | —        |
| B     | ZLEY®PHYTONEUTRALIS | Paeonia Suffruticosa Root Bark Extract,<br>Eugenia Caryophyllus (Clove) Bud Extract,<br>Citrus Paradisi (Grapefruit) Fruit Extract,<br>Sodium PCA,<br>Zinc Gluconate,<br>Propylene Glycol,<br>Water | 3.00   | ZLEY     |

► 「Formula Name」: Botanical  
Odor-Control Spray

► 「Formula No.」: L-26022702

► 「Product Function」: Antibacterial  
deodorizing spray

► 「Product Appearance」: Colorless  
transparent  
aqueous solution

► 「pH Value (10% Solution)」: 3.42

### ► 「Processing Parameters」

- Mix Phase A ingredients and heat with stirring to 85 ° C until completely dissolved.
- Stir and cool down to 50°C, then add Phase B ingredients.
- Discharge the batch at 45°C.

# 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](mailto:SERVICES@ZLEYGROUP.COM)



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