SC GROUP 斯拜科

Good Quality Comes From Qualified Materials

SINCE 1995

BIO-TECH DONOR

NATURAL · SUSTAINABLE · SAFE

Sophorolipid-New Generation Bio-surfactant

SpecBio® SL Series

Wakes up your skin with "**Fermentation**"

Verified by ECOCERT

COSMOS APPROVED

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- ✓ **Green**
- ✓ **Low carbon footprint**
- ✓ **Eco-friendly**
- ✓ **Sustainable**

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Part 01

Bio-surfactant Overview

01 Green Trend of Chemical Raw Material

---Sustainability: key to the future of humanity

01 Sustainable Plan of International Company

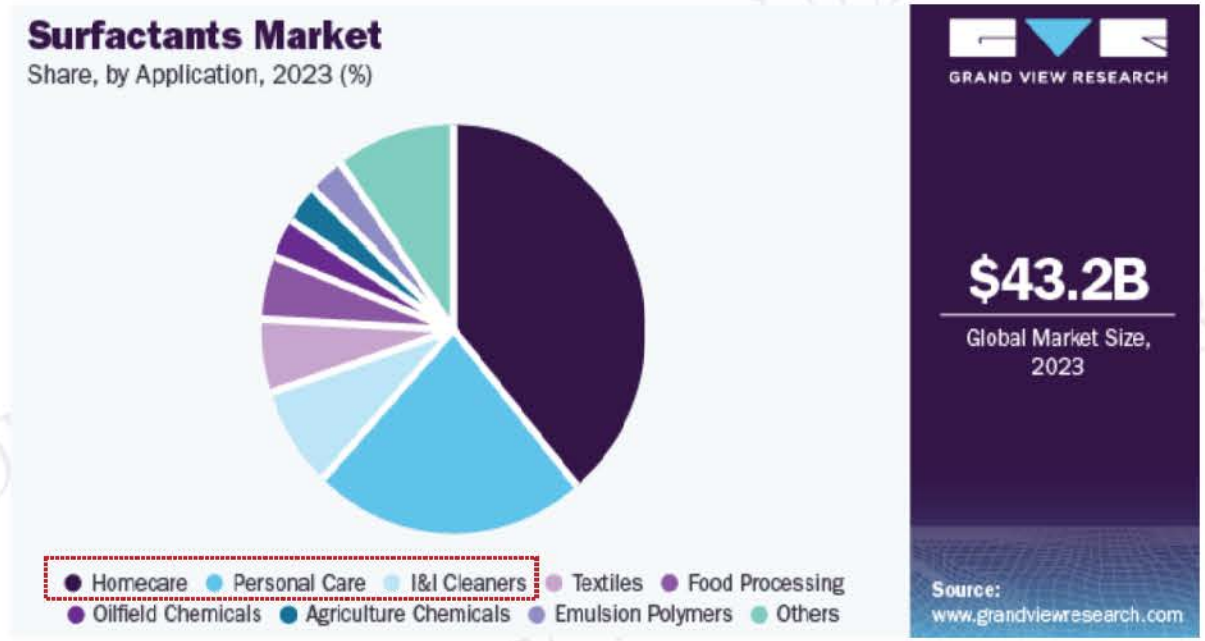
L'ORÉAL
FOR THE FUTURE
欧 莱 雅　为 明 天

欧莱雅2030年可持续发展承诺

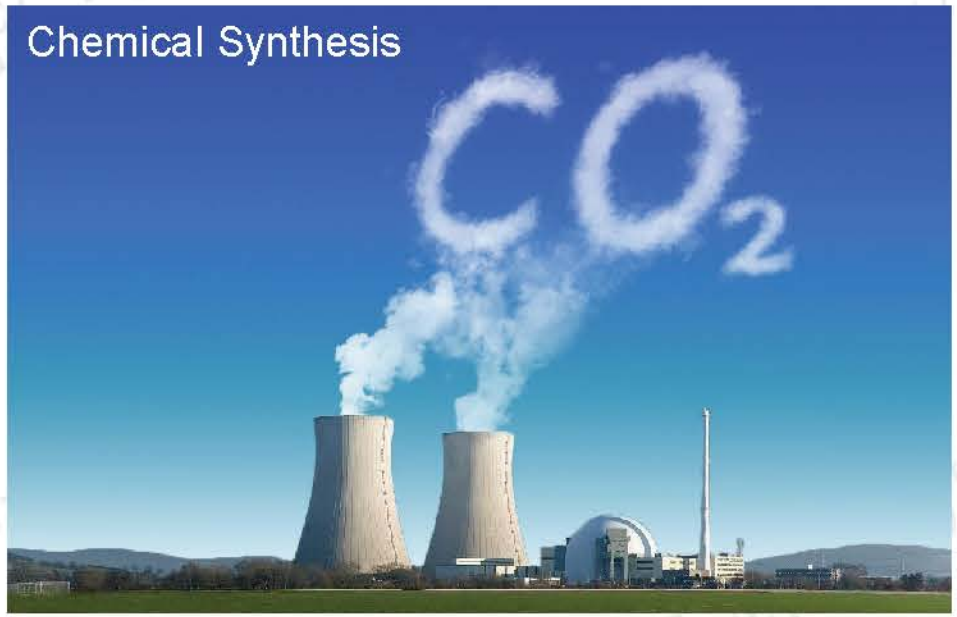
01 Surfactant Main ingredients in Detergent & Cosmetics

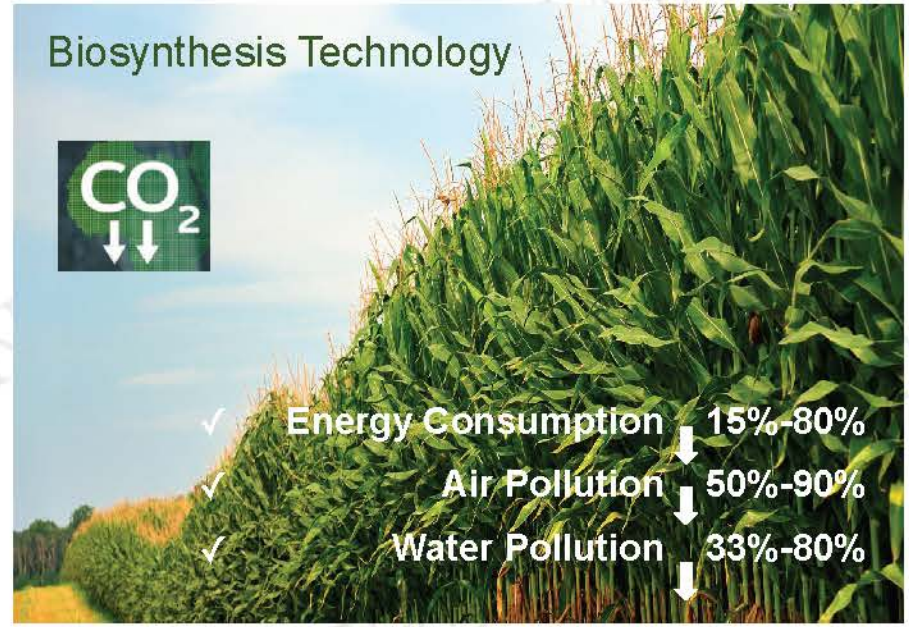
---Surfactant Property and Application

Surfactant properties	HLB value	Solubility
Defoamer	1.5–3	↑ Lipophilic
Water-in-oil emulsifier	3–6	
Wetting	7–9	
Oil in water emulsifier	8–18	↓ Hydrophilic
Detergent	13–15	
Peptizer-solubilizer	15–18	



01 Surfactant Development Tendency





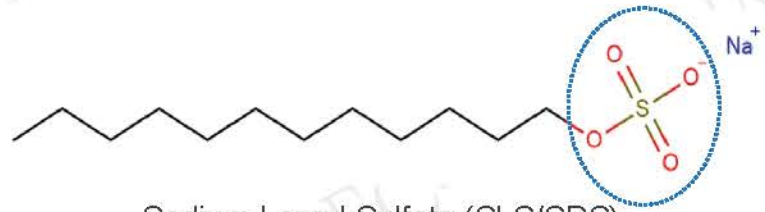
01 Surfactant Trend---Biosurfactant

Items	Petrochemical	Partially bio-based	Fully bio-based	Biosurfactants
Technology				
Feedstock		 		  
Examples	• LAS / Linear alkylbenzene sulfonate • AEO / Synthetic alcohol ethoxylates	• Alkyl Ether Sulfates • CAB / Cocamidopropyl Betaine	• APG / Alkyl Polyglucoside • Sodium cocoyl glycinate	Rhamnolipids Sophorolipids
Sustainability	-Crude oil feedstock -CO_2 footprint	-Mostly tropical oil based -Often hazardous raw -CO_2 footprint	-Mostly tropical oil based -Often hazardous raw -Performance gaps -CO_2 footprint	-Bio-fermentation -Safely / Volume production -Low Carbon footprint / Eco-friendly / Sustainable

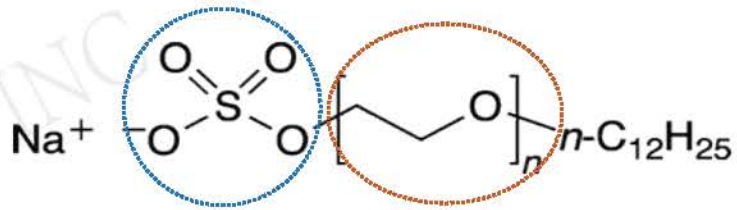
01 Sulfate Surfactants

Advantages

- Effective foaming agents
- Excellent detergency
- Rinse easily
- Good water solubility
- Easily thickened with salt
- Relatively inexpensive



Sodium Lauryl Sulfate (SLS/SDS)



Sodium Laureth Sulfate (SLES/AES)

Disadvantages

- Irritation to skin & eyes
- Strip the skin & hair
- Contains EO moieties (dioxane)
- Not friendly to the environment

(water/soil/air)

"Sulfates" are having negative connotation for a growing number of consumers

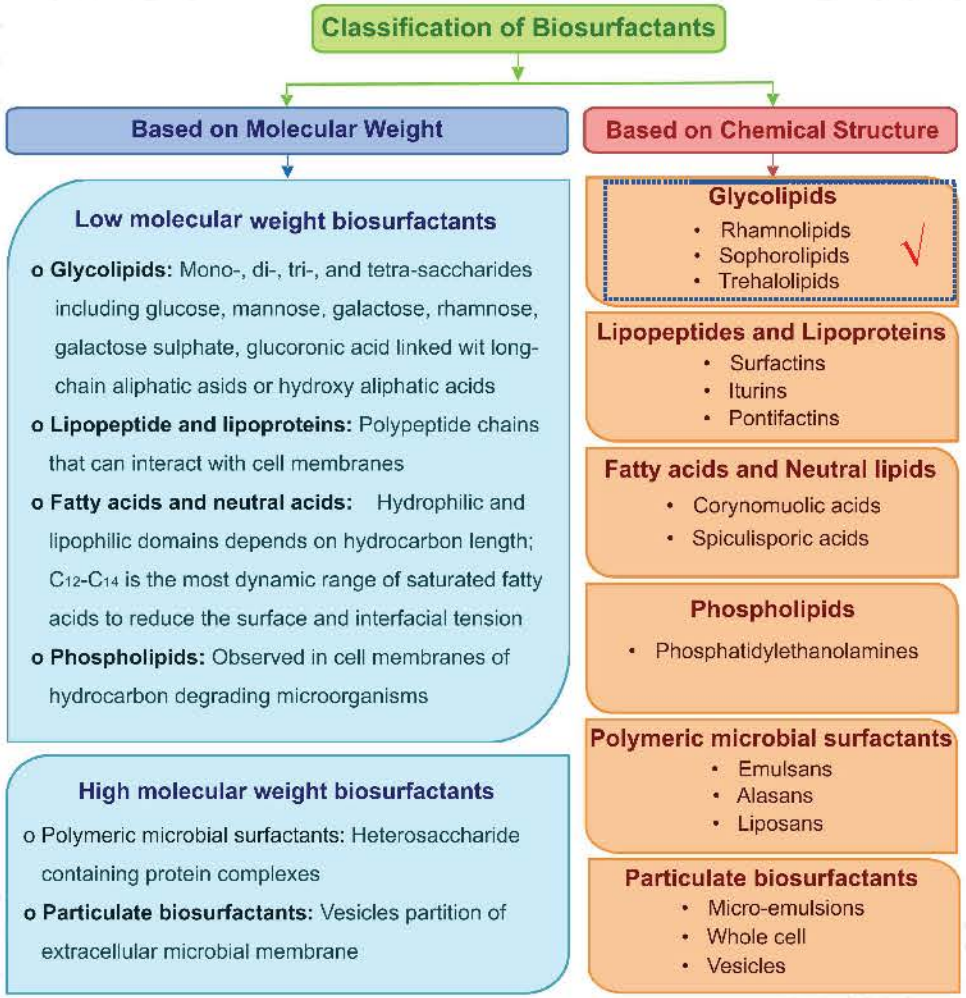
01 Surfactant Trend---Biosurfactant

Green alternatives to synthetic surfactants

- Natural sources
- Green production
- High environmental compatibility
- Good biodegradability
- Low toxicity
- Wide range of application temperatures and pH

- Green Chemistry Concept
- Green Surfactant Concept
- Low Carbon Footprint Concept

01 Biosurfactants---Biofermentation Technology

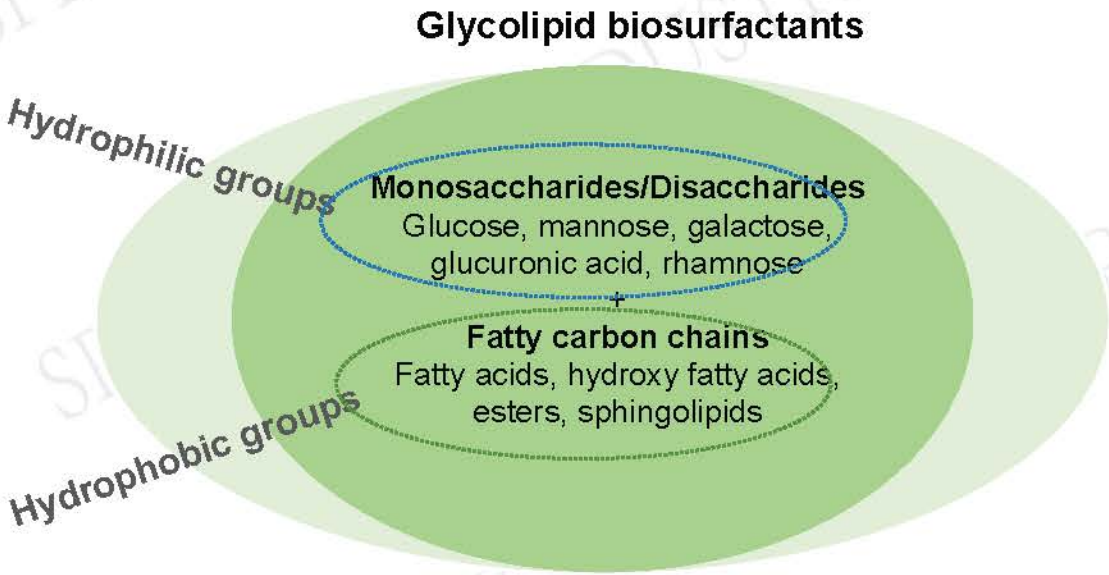


Classification of biosurfactants based on the chemical nature

◆Biosurfactants are naturally occurring, surface-active molecules produced by microorganisms, either on the cell surface or secreted extracellularly, microbial source such as Bacteria, Yeast, Fungi (mold) .

Biosurfactant	Examples of microbial sources
Rhamnolipid	Pseudomonas aeruginosa (P. aeruginosa)
Trehaloselipid	Nocardia erythropolis (N. erythropolis)
	Mycobacterium (Mycobacterium sp.)
Sophorolipid	Torulopsis bombicola (T. bambicola)
	Cercospora (T. apiicola/C. apiicola)
	Candida Bombicola
Cellobiose lipid	Ustilago zeae (Ustilago maydis (DC) Corola)
Lipopeptide	Bacillus licheniformis
Viscosin	Pseudomonas fluores (P. fluorescens)
Bacitracin	Bacillus subtilis (B. subtilis)
Gramicidin	Bacillus brevis (B. brevis)
Fatty acid and phospholipid	Rhodococcus erythropolis (R. erythropolis)
	Thiobacillus thiooxidans (T. thiooxidans)
Polysaccharide - fatty acid mixture	Candida tropicalis

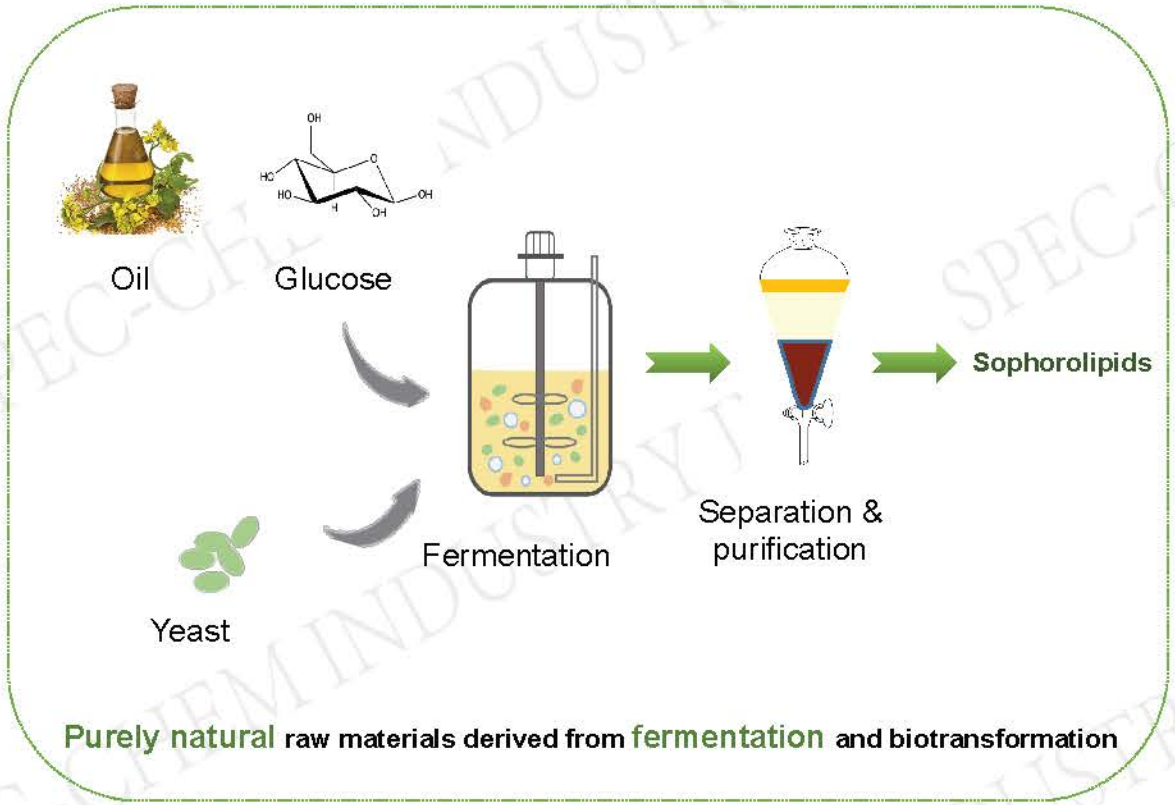
01 Discovery of Sophorolipid



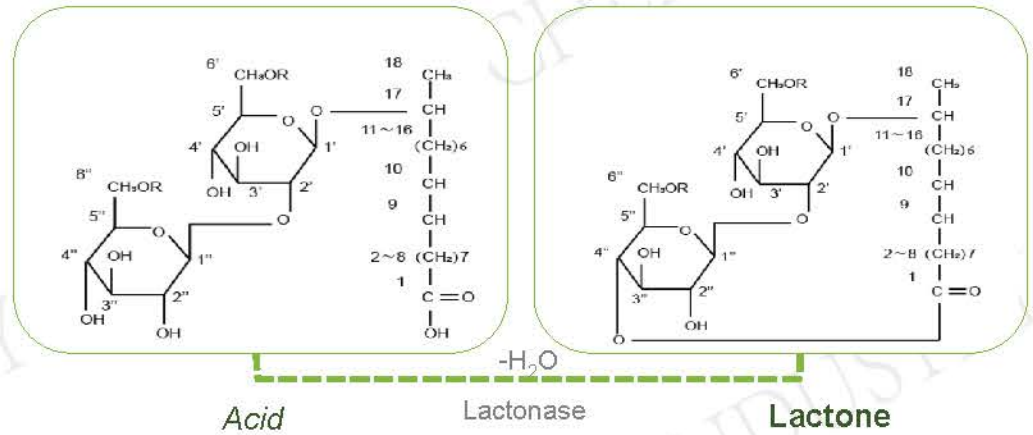
- In the 1950s, scientists discovered microorganisms in oil fields that could produce surfactants for the first time. Two types of bio-based surfactants, *glycolipids* and *lipopeptides*, were identified.
- In the 1990s, scientists isolated *Candida Bombicola* with high sophorolipid production, and the fermentation, separation, and purification processes of sophorolipids became gradually matured
- Since the 21st century, the application properties of sophorolipids have been widely studied, and they have been increasingly used in oil extraction, agriculture, and daily chemicals

- ✓ Glycolipids belong to low molecular weight biosurfactants and exhibit good surface activity.
- ✓ Sophorolipid has been added to the EPA SCIL (Safer Chemical Ingredients List) of Surfactants
- ✓ Its ingredients are proven to be safe for users and the environment.

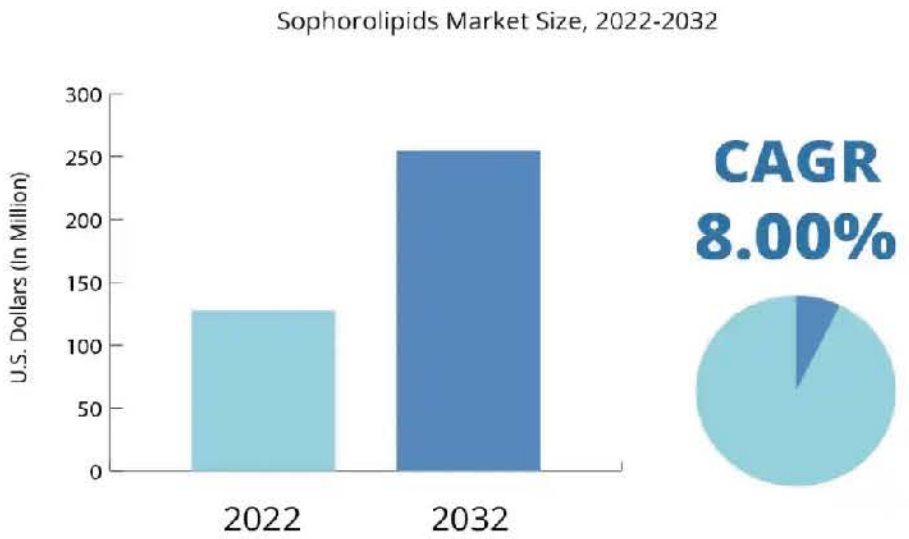
01 Sophorolipid Production

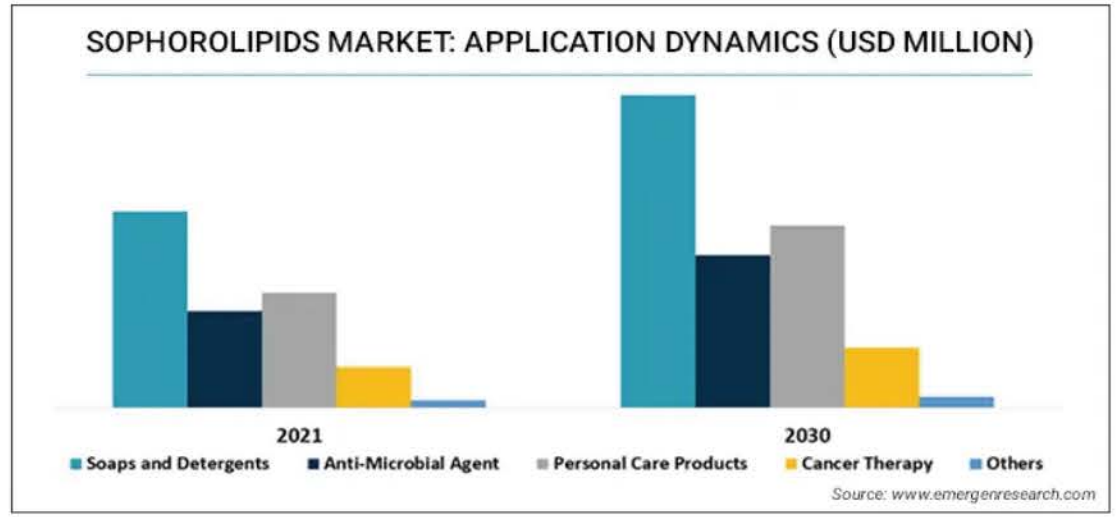


- The fermentation ***yield is significantly higher*** than other biosurfactants and is the most cost-effective biosurfactant.
- Natural Candida fermentation process produces a ***mixture of two types*** of sophorolipids (SLs) .



01 Market and Property of Sophorolipid





Natural

Non-GMO, 100% biobased

Sustainable

Readily biodegradable, Eco-friendly

Gentle

Safe and mild

Multifunctional

Non-ionic and anionic uses, can act as primary or secondary surfactants

Part 02

SpecBio® SL-Active-60

02 SpecBio® SL-Active-60 Product Information

Items	SpecBio® SL-Active-60
Product Number	19001100
INCI Chinese name	Yeast ferment extract , water
Appearance	Amber viscous liquid
odor	Characteristic
pH (5%)	3.0 - 7.0
Solid Content (%)	65.0 - 75.0
Solubility	Water soluble
Rec. use level (%)	0.5 - 5.0
Storage conditions	Keep container tightly closedat room temperature
Shelf life	2 years

*Note: * INCI Name can be changed to "Glycolipids" or "Candida Bombicola/Glucose/Methyl Rapeseedate Ferment" as per regional regulations.*

Product Benefits

- ✓ Fermented, mild, biodegradable
- ✓ Unique antibacterial properties, reshaping skin microecological balance
- ✓ Anti-inflammatory, soothing and repairing skin barrier
- ✓ Inhibit sebum secretion, reduce inflammation, and improve acne skin
- ✓ Effective cleansing, gentle makeup removal, and efficient skin care
- ✓ Fresh breath, care for oral microecological health
- ✓ Maintain scalp health and rejuvenate hair beauty

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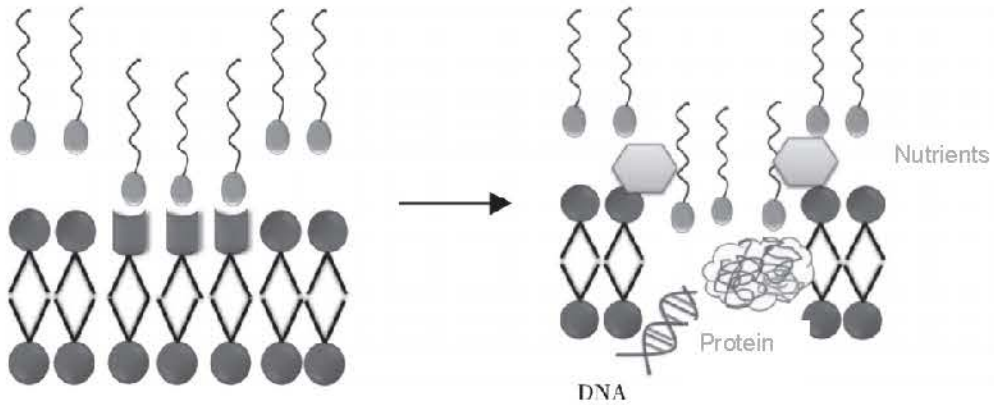
02 SpecBio® SL-Active-60 Product Performance

Antibacterial and odor-removing,
reshaping the microecological balance

Antibacterial Mechanism of Biosurfactants

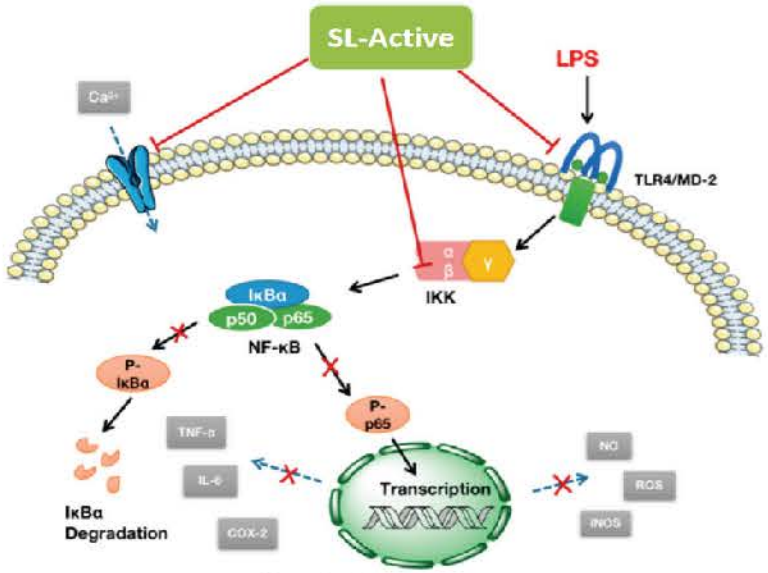


- The molecular structure of sophorolipids is similar to that of cell membranes and has good biocompatibility. It can combine with phospholipids on microbial cell membranes, change the permeability of cell membranes, form pores and ion channels, affect the transport of nutrients and gas exchange, cause the outflow of contents, and ultimately lead to the death of bacteria .

- Mild and non-irritating, suitable for multiple areas: skin care, scalp care, oral care, etc.

02 SpecBio® SL-Active-60 Product Performance

Anti-inflammatory, relieve itching, soothing and repairing

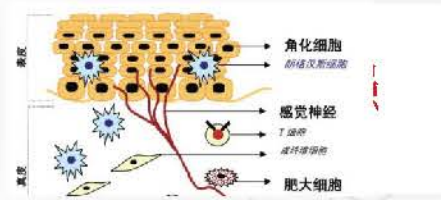


Schematic diagram of the anti-inflammatory mechanism of sophorolipids on macrophage RAW264.7 cells

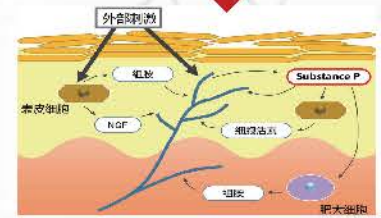
Source : Sophorolipid Suppresses LPS-Induced Inflammation inRAW264.7 Cells through the NF-κB Signaling Pathway , Molecules 2022, 27, 5037

Physiological mechanism of inflammation

Protect and repair skin barrier



Inhibit inflammatory response



Neutralize histamine receptor/TRPV1 receptor

Multiple Efficacy of SpecBio® SL-Active Series

02 SpecBio® SL-Active-60 Mild Performance

No adverse reaction to the skin

- **Skin Occlusive Patch test**

Grading Standard of Skin Occlusive Patch test

Level	Score	Reaction
-	0	Negative Reaction
±	1	Equivocal/uncertain reaction: only a mild erythema
+	2	Weak positive reaction (erythema reaction): erythema, infiltration, edema, pimple
++	3	Strong positive reaction (herpes reaction): erythema, infiltration, edema, rash, herpes; reaction can exceed the test area
+++	4	Extreme positive reaction (fusion of herpes reaction): obvious erythema, severe infiltration, edema, fusion of herpes; reaction exceed the test area

Test Results

Test samples	Number of subjects	Observation time	Number of different skin reactions				
			0	1	2	3	4
SpecBio® SL-Active-60	23	0.5h	23	0	0	0	0
		24h	23	0	0	0	0
		48h	23	0	0	0	0

- 23 skin occlusive patch tests showed that the skin reactions of the subjects were all negative.
- SpecBio® SL-Active-60 did not cause adverse reactions to human skin .

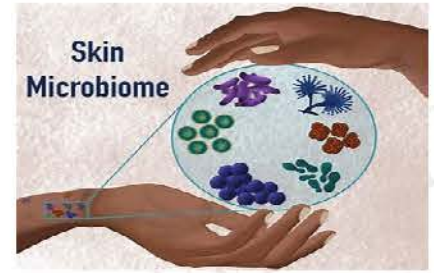
02 SpecBio® SL-Active-60 Antibacterial Performance

Reduce inflammation, acne, itching, protect skin health

- **Inhibitory effect on pro-inflammatory microorganisms** --- MIC minimum inhibitory concentration test

Test Sample	Product Type	Staphylococcus Aureus (ATCC 6538)	Propionibacterium Acnes (ATCC 6919)
SpecBio® SL-Active-60	Lactonic sophorolipids	0.0391%	0.0098%
Market Sample-B	Lactonic sophorolipids	2.5000%	0.0390%
Market Sample-L	Lactonic sophorolipids	5.0000%	0.0195%
Market Sample-H	Acidic sophorolipid	> 5.0000%	0.6250%
Market Sample-E	Acidic sophorolipid	5.0000%	5.0000%

- SpecBio® SL-Active-60 had significant inhibitory effect on pro-inflammatory microbial staphylococcus aureus, and propionibacterium acnes.
- It can be used in skin care products such as oily skin, acne skin, and hand antibacterial.



02 SpecBio® SL-Active-60 Antibacterial Performance

Antibacterial and deodorizing, keep away from body odor, double your confidence

- **Inhibition of armpit odor microorganisms ---** MIC minimum inhibitory concentration test

Test samples	Product Type	Staphylococcus aureus (ATCC 6538)	Corynebacterium xerosis (ATCC 373)
SpecBio® SL-Active-60	Lactonic sophorolipids	**0.0391%**	**0.0195%**
Market Sample-B	Lactonic sophorolipids	2.5000%	0.3125%
Market Sample-L	Lactonic sophorolipids	5.0000%	1.2500%
Market Sample-H	Acidic sophorolipid	> 5.0000%	> 5.0000%
Market Sample-E	Acidic sophorolipid	5.0000%	1.2500%

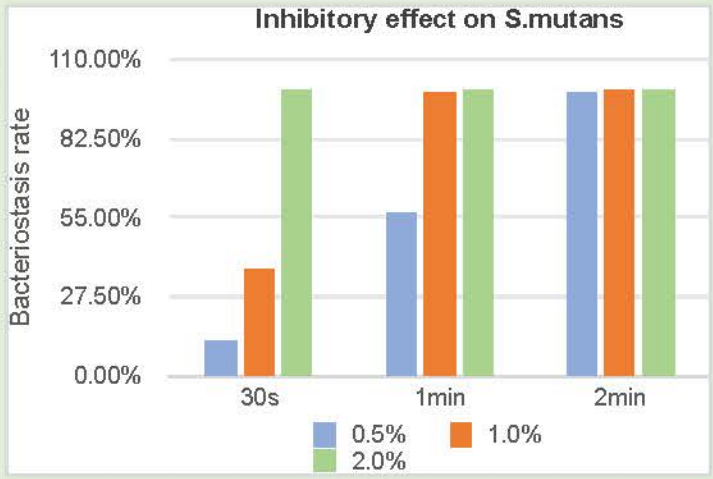
- The axillary flora (mainly Corynebacterium, Staphylococcus and anaerobic bacteria) converts odorless apocrine sweat into volatile odor molecules that reach or exceed the human olfactory threshold, the so-called "axillary odor".
- Corynebacterium and Staphylococcus are the main causes of underarm odor
- **SpecBio® SL-Active -60** has excellent antibacterial properties against Staphylococcus aureus and Corynebacterium xerogenum, and can be used in underarm odor removal care products.

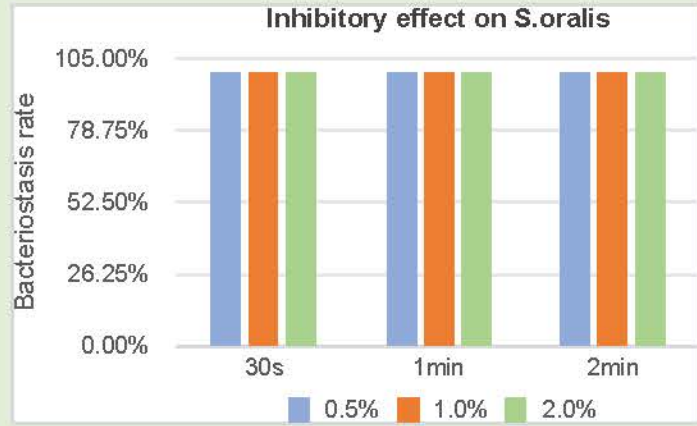
02 SpecBio® SL-Active-60 Antibacterial Performance

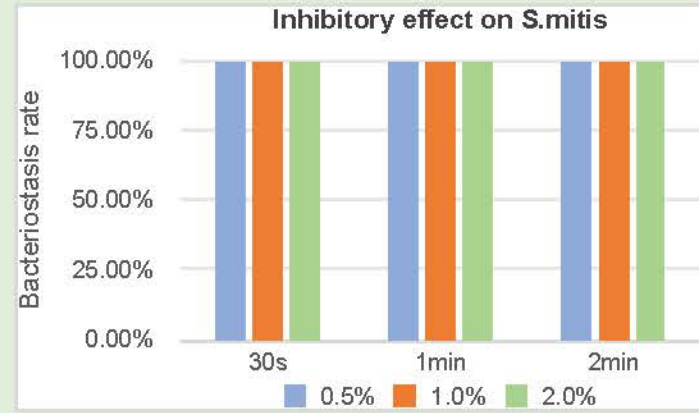
Freshen breath and protect oral microecological health

- **Inhibitory effect on Streptococcal**





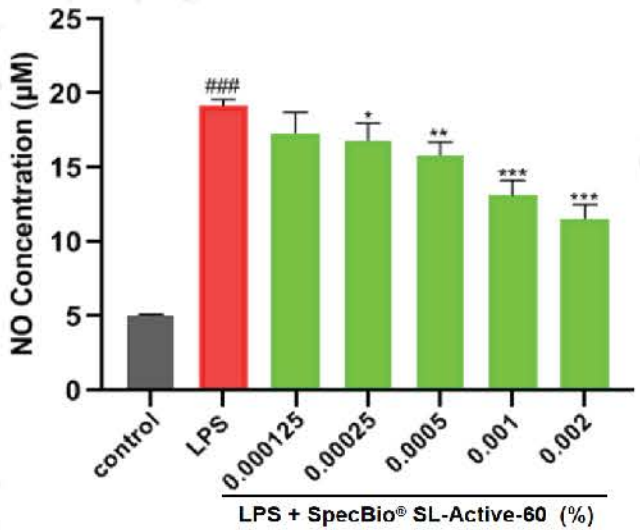


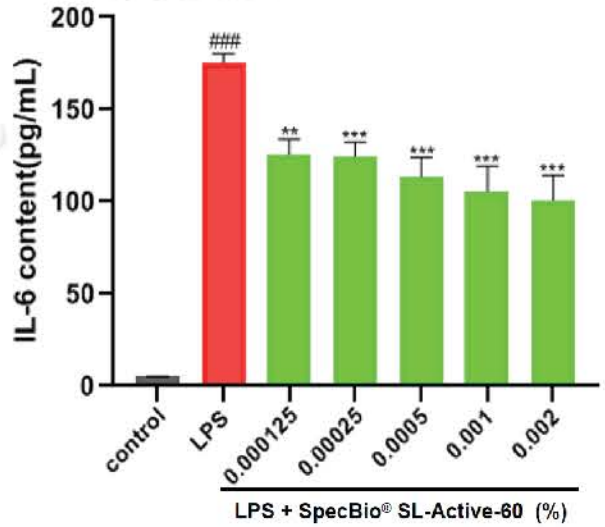


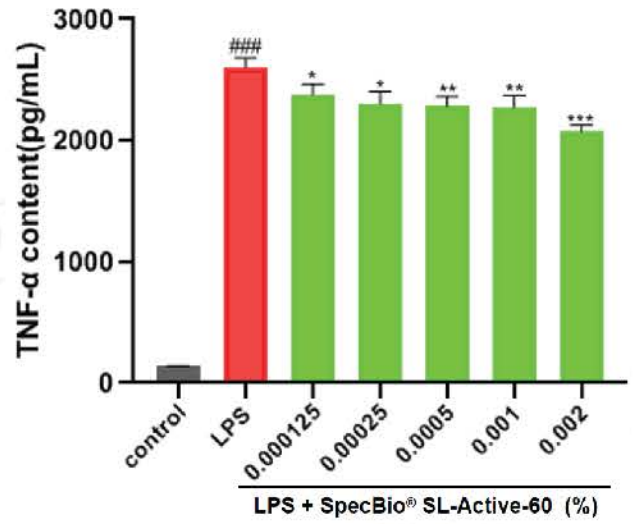
- Oral pathogens are the cause of corresponding oral diseases, **SpecBio® SL-Active-60** effectively **inhibits common oral pathogenic bacteria(**Mutans Streptococcus (S. mutans) /Oral Streptococcus (S. oralis)/Mild/mitis Streptococcus (S. mitis) **)** at an action concentration of **0.5-2.0%**, and can help prevent and reduce dental caries, cavities or dental plaque.

02 SpecBio® SL-Active-60 Anti-inflammatory Properties

- **Anti-inflammation---Relieving skin inflammation pressure**
  - After being stimulated, cells can secrete various inflammatory mediators and proinflammatory cytokines, including NO, TNF-α, IL-6, etc.
  - NO is the main mediator of oxidative stress response and can participate in regulating inflammatory response. Excessive NO secretion will react with superoxide anions to generate peroxynitrite, leading to local tissue damage and further aggravating inflammation.
  - IL-6 and TNF-α are two typical inflammatory cytokines, and their high-level expression will aggravate cell apoptosis and tissue damage.



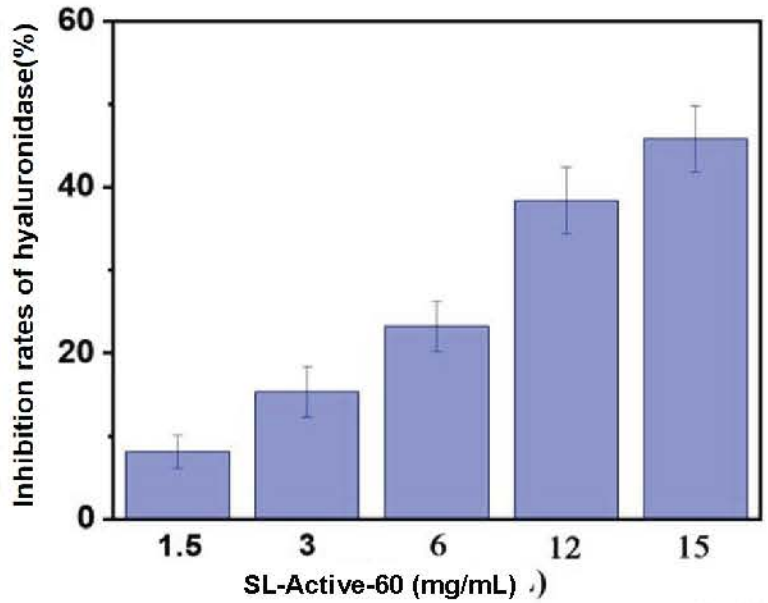




- **Test results:**
  - Establish an LPS-induced RAW264.7 cell inflammation model, the inhibiting ratio of SpecBio® SL-Active-60 on NO, IL-6 and TNF-α was 39.5%, 42.6% and 20.3%, respectively (***p＜0.001, **p＜0.01, *p＜0.05) at the concentration of 0.002%.

02 SpecBio® SL-Active-60 Anti-allergic Performance

- **Inhibit hyaluronidase activity and relieve inflammatory pressure caused by skin allergies**
  - Hyaluronidase is a hyaluronan-specific cleavage enzyme, whose excessive activity can lead to the degradation of hyaluronan, thus causing the occurrence and development of skin aging and inflammation.
  - The hyaluronidase inhibition test is the most typical in vitro anti-allergic activity evaluation method, which uses the hyaluronidase inhibition rate as an indicator to evaluate test substances. The greater the hyaluronidase inhibition rate, the stronger the anti-allergic activity.

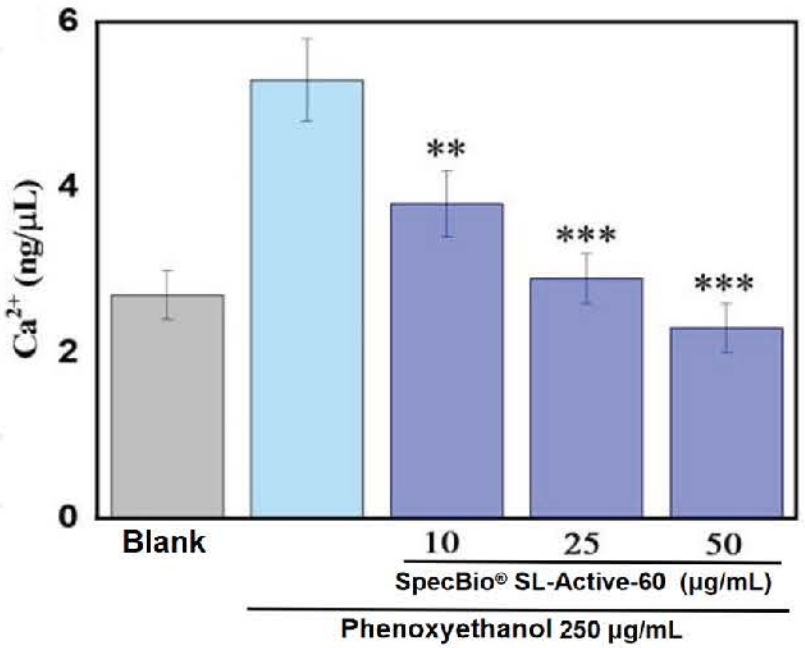


Test results:

- The inhibition rate of of SpecBio® SL-Active-60 to hyaluronidase was 45.8% at the concentration of 15 mg/mL.
- The results showed that SpecBio® SL-Active-60 has a certain soothing effect and can be used for daily care of sensitive skin, fragile skin and acne skin.

02 SpecBio® SL-Active-60 Soothing Properties

- **Inhibit calcium ion influx caused by phenoxyethanol stimulation, relieving skin itching and discomfort**
  - Transient receptor potential vanilloid Subfamily 1 (TRPV1) channel is a non-selective cation channel. When activated, it can cause extracellular calcium ions to flow into the cell, leading to an increase in intracellular calcium ion concentration, which in turn mediates a series of physiological or pathological reactions. Inhibiting the activation of TRPV1 can be used to measure the intracellular calcium ion concentration as an indicator of the intensity of itching and pain.
  - Using human immortalized epidermal cells HaCaT as a model, the soothing effect of SpecBio® SL-Active-60 on the skin was verified.

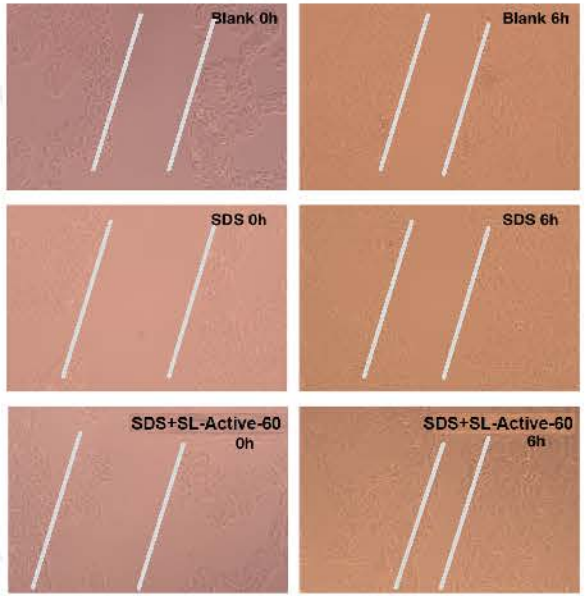


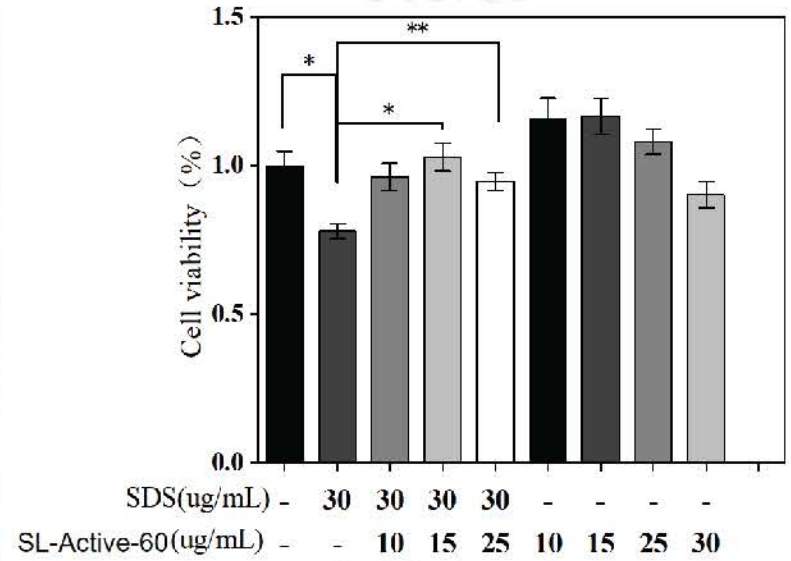
Test results:

- The inhibition rate of SpecBio® SL-Active-60 to calcium ion concentration reached 45.3% at the concentration of 25 μg/mL.
- The results showed that SpecBio® SL-Active-60 can inhibit the calcium ion influx caused by phenoxyethanol stimulation by regulating the activity of TRPV1 channels, and can reduce the itching and discomfort caused by stimulation conditions, indicating that it has a certain soothing effect.

02 SpecBio® SL-Active-60 Repair Performance

- **Improve cell vitality --- protect and repair skin barrier**
  - HaCaT cells were scratched to simulate stratum corneum damage. Sodium dodecyl sulfate (SDS) is a typical surfactant that causes stratum corneum barrier damage. SDS stimulation was used to establish a keratinocyte cell damage model. The repair effect of SpecBio® SL-Active-60 on damaged skin was investigated by observing the growth rate and migration movement of cells .





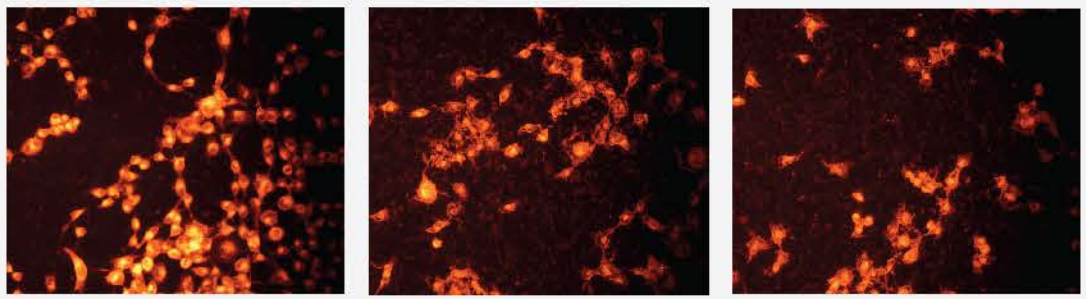
Test results:

- Compared with the blank control, 30 μg/mL SDS inhibited cell activity and prevented scratch repair to a certain extent, while 30 μg/mL SDS + 15 μg/mL SL-Active-60 increased cell viability and promoted wound healing.
- SpecBio® SL-Active-60 can enhance the migration ability of keratinocytes, accelerate the repair of damaged areas, and protect and repair the skin barrier.

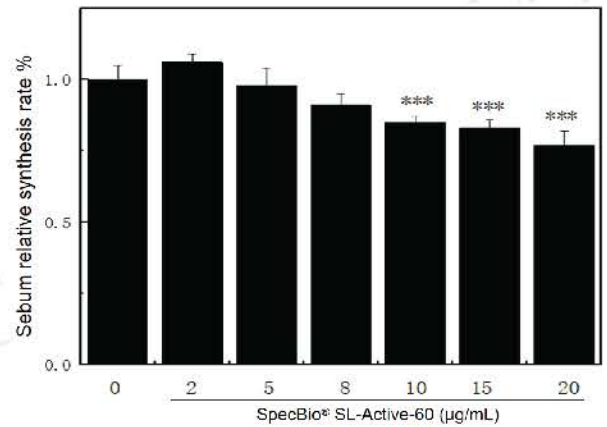
02 SpecBio® SL-Active-60 Oil Control Performance

- **Regulate excessive sebum secretion, relieve skin acne and seborrheic dermatitis, relieve acne-prone skin and greasy hair**
  - Excessive sebum secretion can cause skin inflammation and excessive microbial proliferation, and even lead to some skin diseases such as acne, acne-prone skin and seborrheic dermatitis.
  - Using the human immortalized sebaceous gland cell (SZ95) model, the neutral lipids secreted by SZ95 cells were quantified by Nile red staining , and the effect of SpecBio® SL-Active-60 on inhibiting sebum secretion was studied at a concentration level that did not affect cell viability .

Lipid staining experiment



Blank control | 10 ug/ml SL-Active -60 | 20 ug/ml SL-Active -60



Test results:

- SpecBio® SL-Active-60 begin to show an inhibitory effect on lipid synthesis with concentration increaseing. The inhibition rate on lipid synthesis in SZ95 cells can reach 20% at 10 μg/mL.
- SpecBio® SL-Active-60 helps maintain the metabolic balance of sebaceous gland cells, **can effectively control excessive sebum secretion**, and can be used for oily skin and scalp care.

02 SpecBio® SL-Active-60 Clinical Efficacy

- **Acne Skin Care --- Clinical Test**

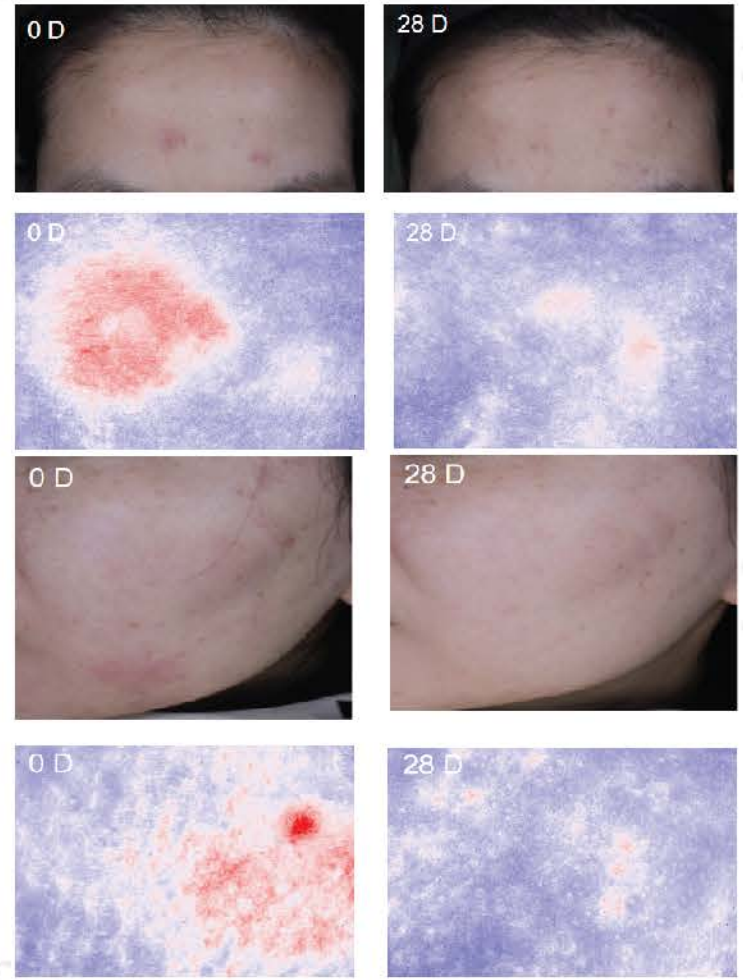
---This experiment was set up as a double-blind half-face test for 28 days.

---Test indicators: facial skin oil secretion, red zone ratio, facial porphyrin value and TEWL.

Anti-Acne Gel SC-AC2408013

w/w %	Product Name	INCI Name
Part A		
To 100	Water	Water
0.75	SpecThem® SCB21	Acrylates/C10-30 Alkyl Acrylate Crosspolymer
3.0	Glycerin	Glycerin
6.0	Butylene Glycol	Butylene Glycol
0.1	SpecKare® ALLA	Allantoin
1.0	SpecKare® DPA 98	Panthenol
3.0	SpecKare® HAL	Sodium Hyaluronate, Water, Sodium Hydroxymethylglycinate, Propylene Glycol
Part B		
0.5	PrzvFree® 4HAP	Hydroxyacetophenone
0.5	PrzvFree® HLG	1,2-Hexanediol
Part C		
pH to 5.5	Sodium Hydroxide (10%)	Sodium Hydroxide
2.0	**SpecBio® SL-Active-60**	**Yeast Ferment Extract, Water**

Typical subjects' photos



02 SpecBio® SL-Active-60 Clinical Efficacy

- **Scalp Care --- Clinical Test**
  - The scalp is the skin on your head and plays an important role in the growth and health of your hair.
  - Scalp care can balance the pH of the scalp, reduce oiliness or dryness of the scalp, remove chemicals left over from perming and dyeing, reduce blockage of hair follicles, improve the metabolism of hair follicles, promote hair growth, prevent hair loss, protect hair, make hair more elastic and resilient, and make hair soft and shiny.

Human efficacy evaluation test protocal

Subjects: 23 women

Age range: 20-55 years old

Test site: scalp (left and right half, half head test)

Test sample: 1% scalp care essence and blank control

Test period: 0D , 7D , 14D , 28D

Test equipment: C-CUBE (multifunctional skin imaging system),

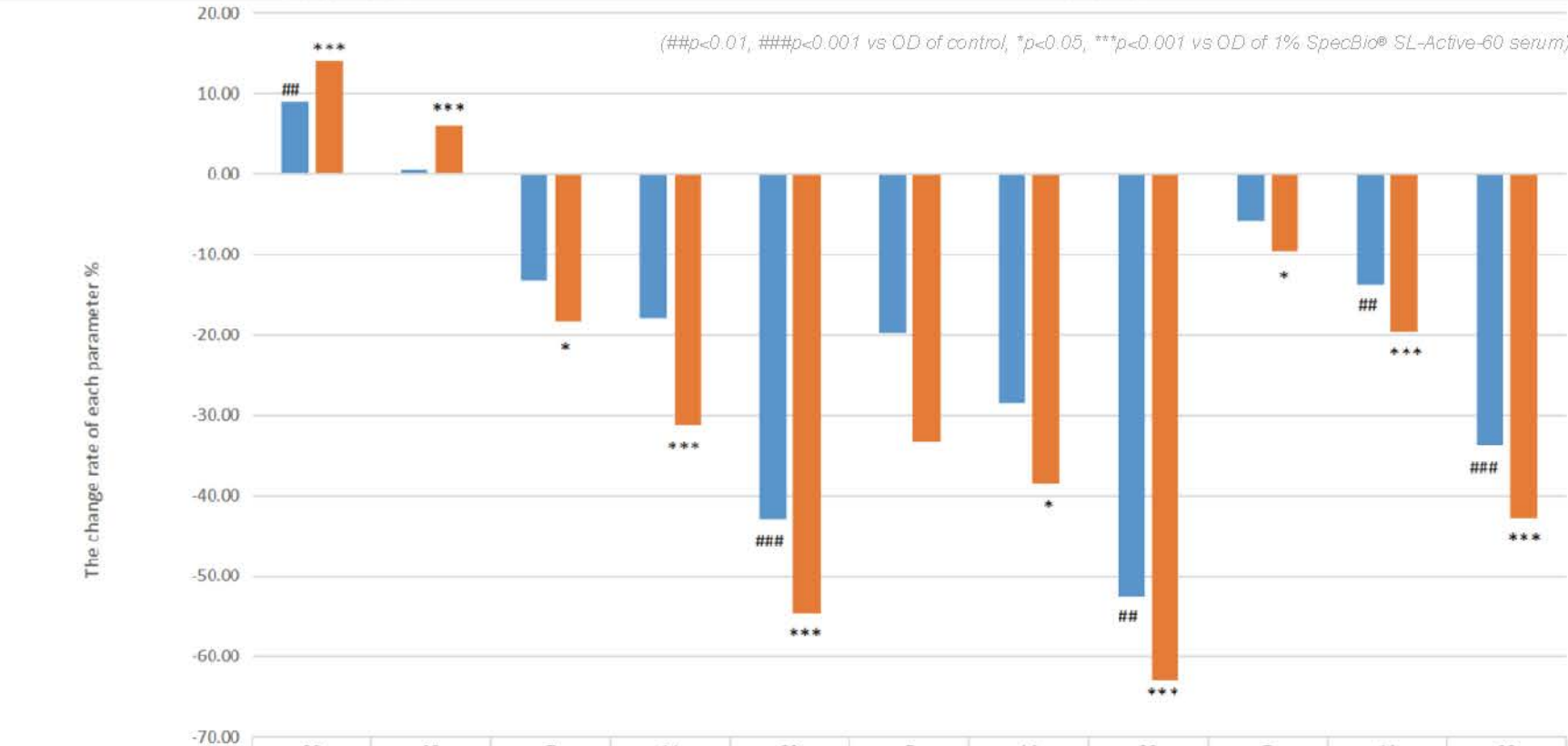
Mexameter® MX 18 (Melanin and Hemoglobin Test Probe),

VapoMeter SWL5 (transepidermal water loss meter)

Skin-PH-Meter PH 905 (Skin pH Test Probe)

02 SpecBio® SL-Active-60 Clinical Efficacy

- **Scalp care --- Changes in hair density & diameter, scalp erythema & water loss & pH over time**

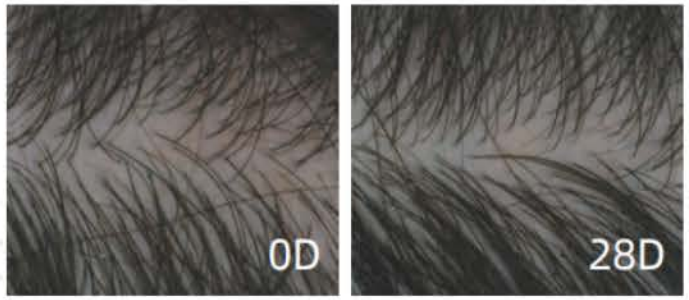


	28	28	7	14	28	7	14	28	7	14	28
	Hair density	Hair diameter	Scalp erythema			Scalp TEWL			Scalp PH		
Control	9.01	0.50	-13.25	-18.00	-42.91	-19.84	-28.46	-52.53	-5.83	-13.81	-33.74
1% SpecBio® SL-Active-60 Serum	14.14	6.03	-18.28	-31.17	-54.56	-33.30	-38.52	-63.02	9.55	-19.64	-42.75

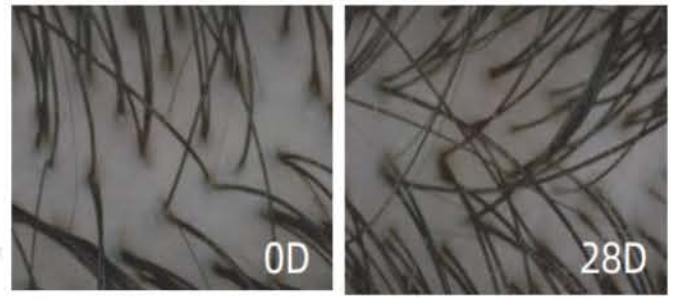
02 SpecBio® SL-Active-60 Clinical Efficacy

- **Scalp care --- Typical subjects' photos**

Scalp Redness Reduced

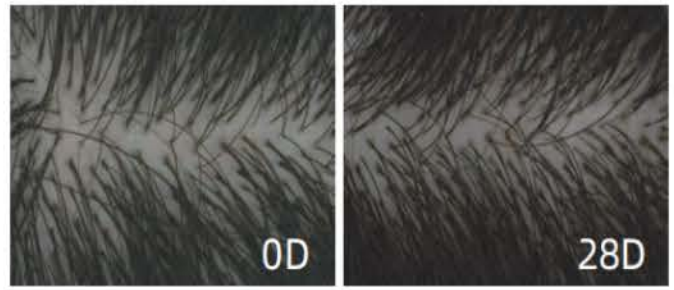


Hair Diameter Increased



Dandruff Reduced

Hair Density Increased

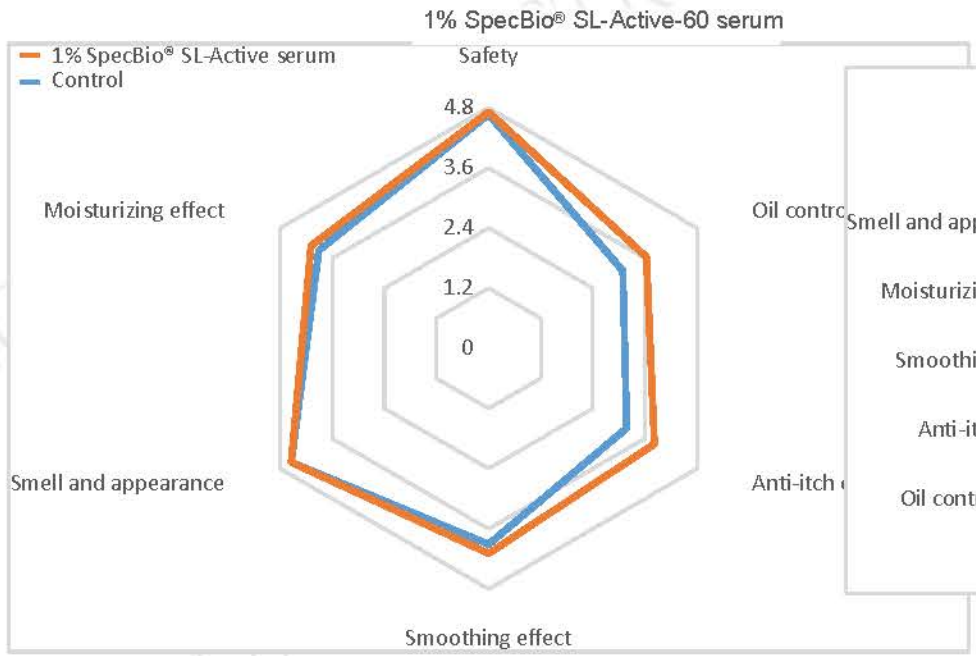


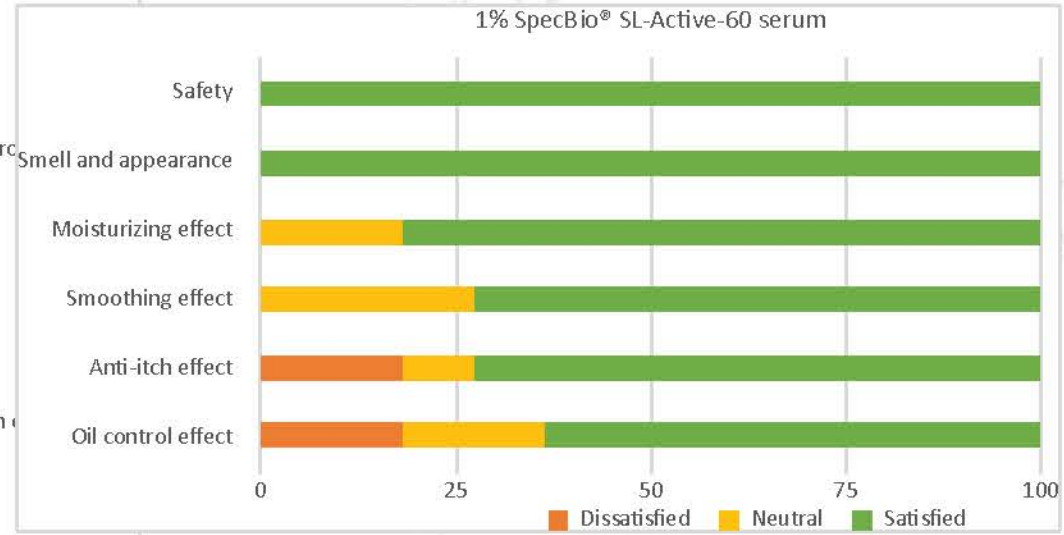
Test results:

- After 28 days, compared to blank serum, 1% SpecBio® SL-Active-60 Scalp Care Serum can ***improve scalp redness, water loss, pH, hair density, hair diameter.***
- ***SpecBio® SL-Active-60 has the effect of soothing, anti-dandruff, repairing scalp barrier, and potentially promoting hair growth.***

02 SpecBio® SL-Active-60 Clinical Efficacy

- **Scalp care --- Subjective evaluation** (safety, moisturizing, oil control effect, anti-itching effect, smoothing effect, smell and appearance)





Test results:

- 100% of the subjects thought that the scalp care essence containing 1% SpecBio® SL-Active-60 was safer and satisfied with the product's smell and appearance; **81.8% of the subjects were satisfied with the moisturizing effect; 72.7% of the subjects were satisfied with the smoothing and anti-itching effects; 63.6% of the subjects were satisfied with the oil control effect**. The test sample was significantly better than the blank control sample in terms of **oil control, anti-itching, smoothing, and moisturizing**.

02 SpecBio® SL-Active-60 Application

Clinically Tested Formula

Scalp Care Essence SC-AC2408006

w/w %	Product Name	INCI Name
Part A		
To 100	Water	Water
0.03	Disodium EDTA	Disodium EDTA
0.1	SpecThem® XTG200	Xanthan Gum
2.0	Glycerin	Glycerin
3.0	Butylene Glycol	Butylene Glycol
0.1	SpecKare® NMF50	Betaine
Part B		
1.0	ParbFree® PE91	Phenoxyethanol, Ethylhexylglycerin
0.3	Sodium Benzoate	Sodium Benzoate
1.0	**SpecBio® SL-Active-60**	**Yeast Ferment Extract, Water**
Part C		
0.12	SpecKare® ARG	Arginine
Appearance: Light yellow transparent liquid, pH: 5.5 ± 0.5		

➢ **Operation process:**

1. Stir and heat the phase A components to 85°C until the components are dissolved uniformly (pre-dispersed XTG200 with glycerin);
2. Cool down to below 45 °C, add phase B, mix uniformity
3. Add phase C stir until the system is homogeneous, and discharge.

➢ **Property:**

Appearance: Light yellow transparent liquid

pH: 5.5±0.5

02 SpecBio® SL-Active-60 Application

SC GROUP
Good Quality Comes From Qualified Materials
30 SINCE 1995

➢ Reference formula

Mouth Wash SC-AC2501003

w/w%	Product Name	INCI Name
Part A		
To 100	Water	Water
0.5	SpecKare® DPA 98	Panthenol
5.0	Glycerin	Glycerin
4.0	Sorbitol	Sorbitol
Part B		
1.0	**SpecBio® SL-Active-60**	**Yeast Ferment Extract, Water**
Part C		
q.s	SpecKare® ARG	Arginine
0.8	ParbFree® IPMP100	o-Cymen-5-ol, Isopentyldiol
0.005	Menthol	Menthol
0.05	Alcohol	Alcohol

➢ **Procedure:**

1. Mix Part A and heat to 85°C, stir until the system is uniform
2. Cool down to 45°C, add Part B, stir until the system is uniform
3. Add Part C (pre-dissolved Menthol with Alcohol), stir until the system is uniform and discharge

➢ **Properties:**

Appearance: Yellow transparent liquid

pH: 6.5±0.5

02 SpecBio® SL-Active-60 Application

➢ Reference formula

Toothpaste SC-AC2412002

w/w%	Product Name	INCI Name
Part A		
To 100	Water	Water
1.0	SpecSufc® SLES	Sodium Laureth Sulfate, Water
0.1	Disodium EDTA	Disodium EDTA
30.0	Sorbitol	Sorbitol
2.0	SpecKare® NMF50	Betaine
Part B		
0.15	SpecThem® XTG200	Xanthan Gum
20.0	Glycerin	Glycerin
Part C		
2.0	**SpecBio® SL-Active-60**	**Yeast Ferment Extract, Water**
0.1	Menthol	Menthol
0.07	Stevioside	Stevioside
0.3	Sodium Citrate	Sodium Citrate
0.8	Sodium Benzoate	Sodium Benzoate
Part D		
18.0	Hydrated Silica	Hydrated Silica

➢ **Procedure:**

1. Heat phase A to 85°C and stir to mix evenly;
2. Add phase B (pre-dispersed Xanthan gum with glycerin) and stir to mix evenly;
3. Cool down to 45°C, add phase C and phase D, and stir until the system is uniform;
4. Stir and cool to room temperature.

➢ **Properties:**

Appearance: light yellow transparent paste

pH: 6.5±0.5

Note: Yeast Ferment Extract is listed in China Oral Care Industry Association Draft list of toothpaste ingredients (Association version).

02 SpecBio® SL-Active-60 Application

➢ Reference formula

Armpit Fresh Spray SC-AC2504013

w/w%	Product Name	INCI Name
Part A		
To 100	Water	Water
0.05	Disodium EDTA	Disodium EDTA
3.0	Glycerin	Glycerin
5.0	SpecBio® Propanediol natural	Propanediol
0.1	SpecKare® ALLA	Allantoin
Part B		
0.5	PrzvFree® 4HAP	Hydroxyacetophenone
0.5	PrzvFree® HLG	1,2-Hexanediol
Part C		
1.0	**SpecBio® SL-Active-60**	**Yeast Ferment Extract, Water**
0.05	SpecKare® PO	Piroctone Olamine
10.0	Alcohol	Alcohol
0.3	Fragrance	Fragrance
1.2	Solubilisant LRI	PEG-40 Hydrogenated Castor Oil, PPG-26-Buteth-26, Water

➢ **Procedure:**

1. Mix Part A and heat to 85°C, stir until the system is uniform.

2. Cool down to 65°C, add Part B (pre-dissolved PrzvFree® 4HAP with hot water) .

3. Cool down to 45°C, add Part C (SpecKare® PO can be pre-dissolved with Alcohol, Fragrance can be pre-dissolved with solubilizer LRI).

4. Stir until the system is uniform and discharge.

➢ **Properties:**

Appearance: Light yellow transparent liquid

pH: 5.5±0.5

Part 03

SpecBio® SL-Cleansing

03 SpecBio® SL-Cleansing Product Information

Trade Name	SpecBio® SL-Cleansing
Product No.	19001101
INCI Name	Glycolipids, water
Appearance	Amber viscous liquid
Odor	Characteristic
pH (5%)	4.0 - 7.5
Solid Content (%)	55.0 - 75.0
Solubility	Water soluble
Rec. use level (%)	0.5 - 10.0
Storage conditions	Keep container tightly closedat room temperature
Shelf life	2 years

*Note: * INCI Name can be changed to "Yeast ferment extract" or "Candida Bombicola/ Glucose/Methyl Rapeseedate Ferment" as per regional regulations.*

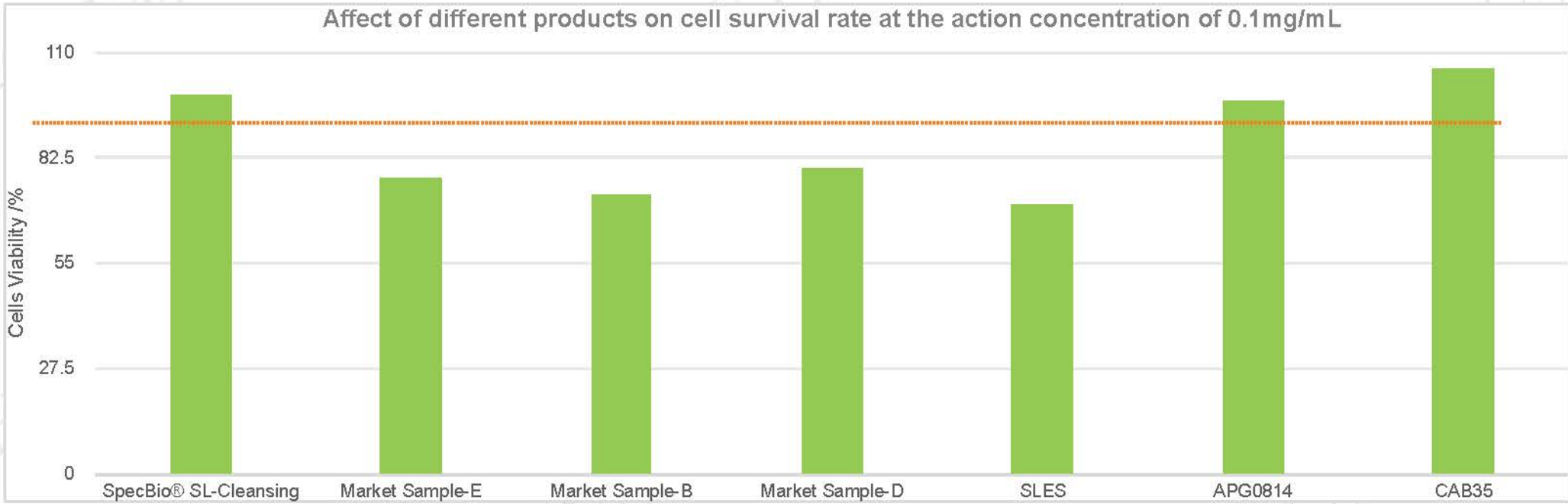
Product Benefits

- ✓ Fermented, biodegradable
- ✓ Safety, mild
- ✓ Effective and gentle cleansing
- ✓ Moisturizing and care for the skin
- ✓ Good solubilisation performance
- ✓ Easy to rinse and water-saving
- ✓ Reduce the irritation of other ingredients

03 SpecBio® SL-Cleansing Product Performance

Mild without irritation

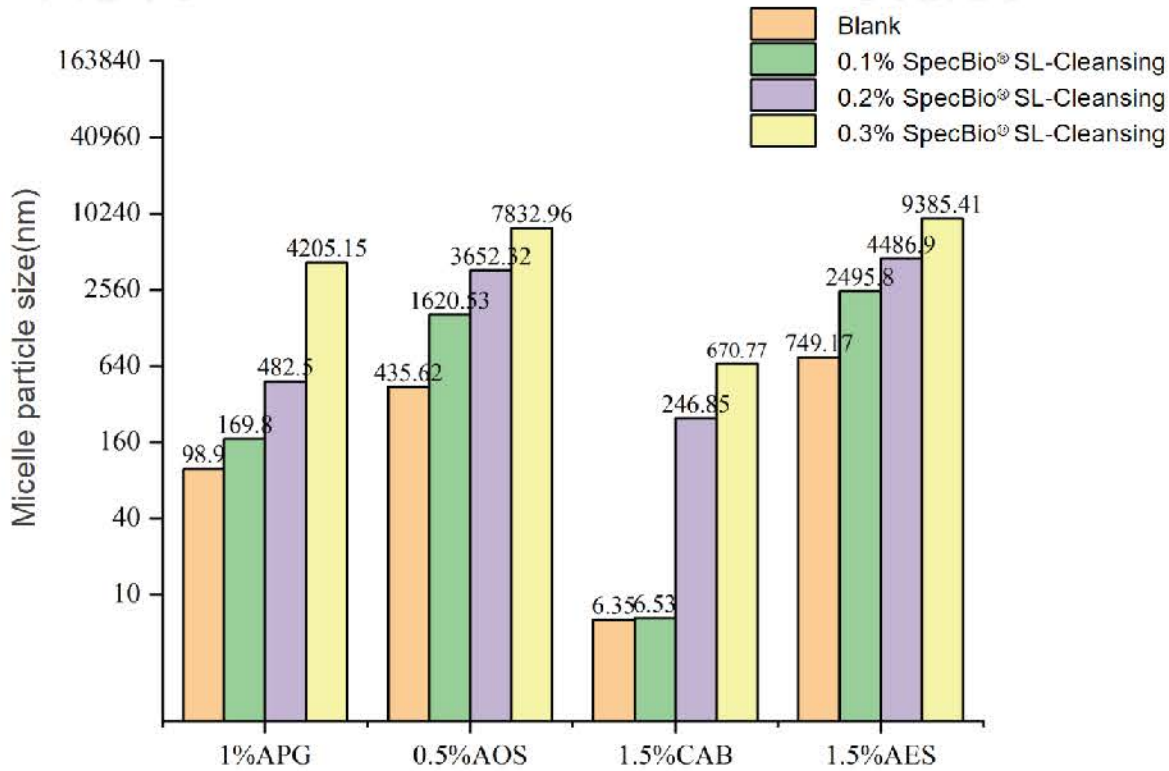
- **Cell Viability Test**



Test results: Compared with the market surfactants, SpecBio® SL-Cleansing has excellent performance on cells viability, it has almost no toxicity to cells.

03 SpecBio® SL-Cleansing Product Performance

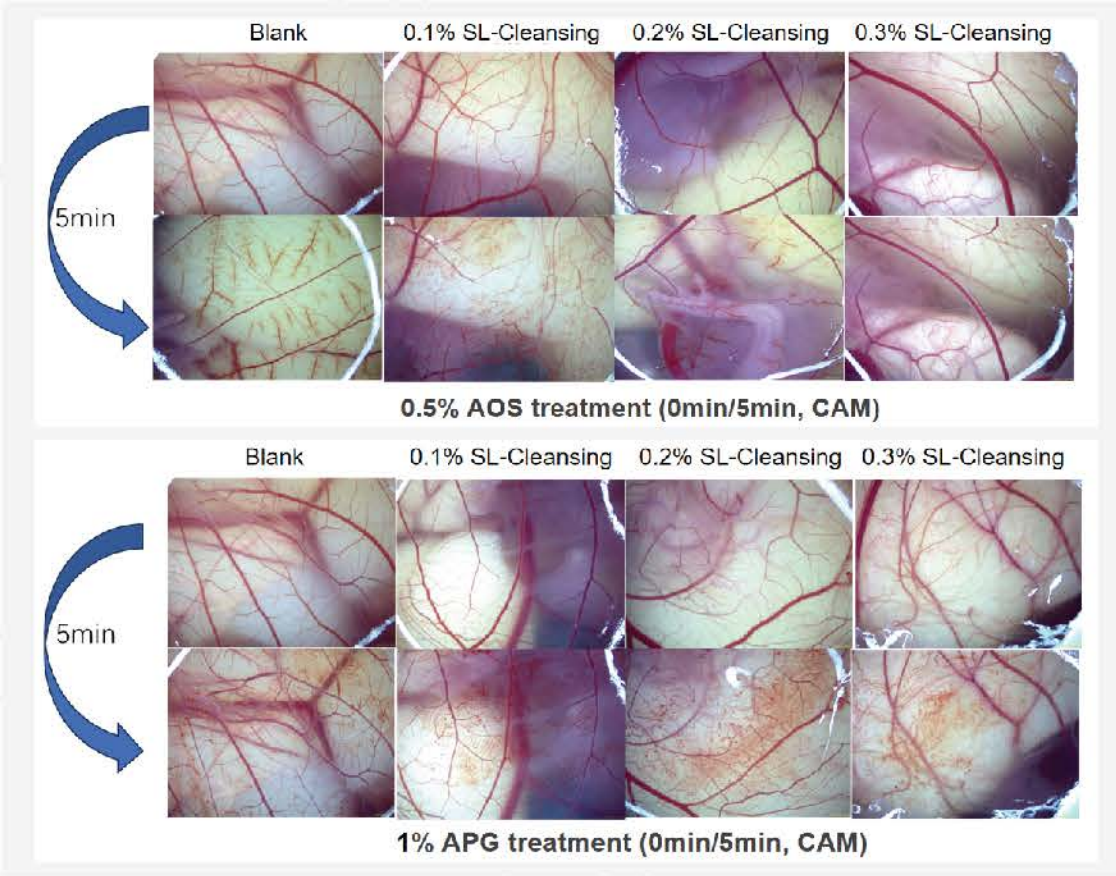
- **Mild Improved---Inhibiting the penetration and stimulation of other surfactants**
  - The irritancy of surfactants stems from their permeability and the interaction with skin cells after penetration.
  - The permeability of surfactants is closely related to the size and stability of the formed micelles.
  - SpecBio® SL-Cleansing can inhibit the penetration and stimulation of other surfactants by forming stable macro-micelles (Dynamic Light Scattering, DLS)

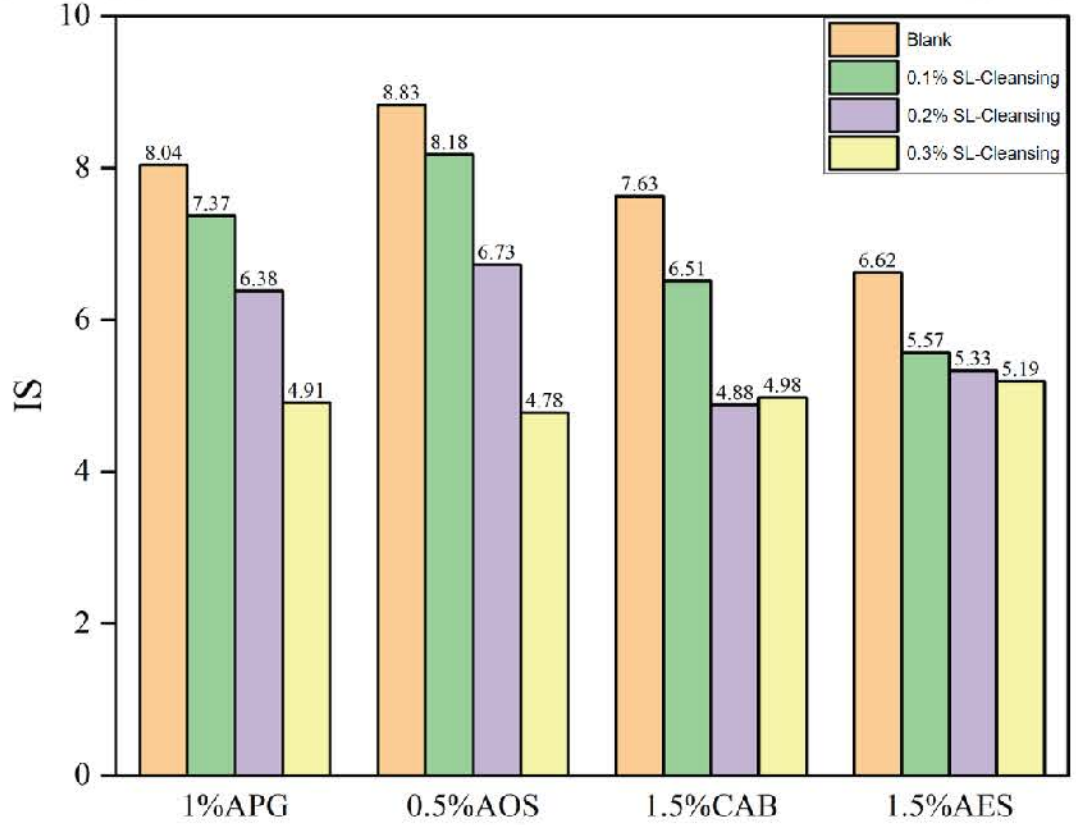


Product Name	Surfactant Type
APG: Alkyl Polyglycoside	Nonionic surfactant
AOS: Sodium alpha-olefin Sulfonate	Anionic surfactant
CAB: Cocoamidopropyl Betaine	Amphoterics
AES: Sodium Laureth Sulfate	Anionic surfactant

03 SpecBio® SL-Cleansing Product Performance

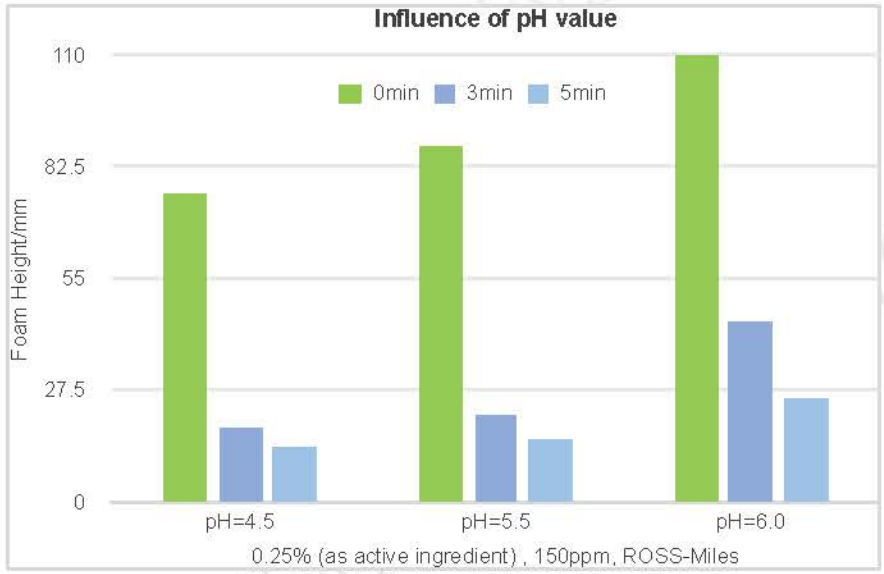
- **Mild Improved---Reducing the irritation caused by other surfactants**
  - HET-CAM Test, 0.1-0.3% SpecBio® SL-Cleansing can reduce the irritation of the surfactant system from moderate irritation to mild irritation.

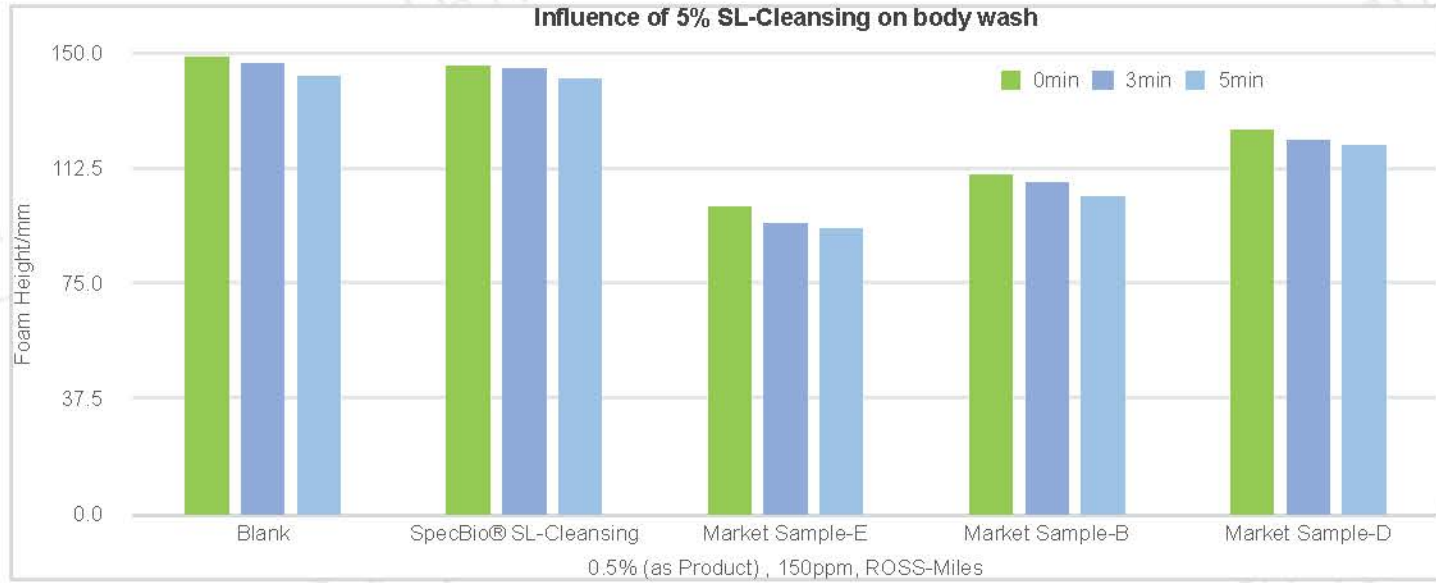




* Standard: IS<1 non-irritation, 1<IS<5 mild irritation, 5<IS<9, moderate irritation, IS>9, severe

03 SpecBio® SL-Cleansing Foam Performance





Test results:

- SpecBio® SL-Cleansing has a better foaming ability at pH 6.0 than 4.5. SpecBio® SL-Cleansing is easy to defoaming, and suitable for low-foaming detergent.
- The performance of the body wash foam is barely affected by the use of SpecBio® SL-Cleansing in the formula system.

03 SpecBio® SL-Cleansing Moisturizing Performance

➢ **Moisturizing performance in body wash**

w/w%	Product Name	INCI Name
To 100	Water	Water
0.05	EDTA 2Na	Disodium EDTA
7.0	SLES, 70%	Sodium Laureth Sulfate, Water
10.0	SpecSuFC® CAB	Cocamidopropyl Betaine, Water
5.0	**SpecBio® SL-Cleansing**	**Glycolipids, Water**
0.8	ParbFREE® PE91	Phenoxyethanol,Ethylhexylglycerin
0.15	Fragrance	Fragrance
0.5	NaCl	Sodium Chloride

☐ **Test results:** (5%, in parallel):

- Moisturizing performance at 2h: SpecBio® SL-Cleansing > Market Sample-E ≈ Market Sample-D > Market Sample-B.
- Moisturizing performance at 8h: SpecBio® SL-Cleansing > Market Sample-D > Market Sample-E > Market Sample-B.
- SpecBio® SL-Cleansing has excellent moisturizing performance and long-term moisturizing effect.

03 SpecBio® SL-Cleansing Solubilization Performance

➢ Solubilization performance of perfume

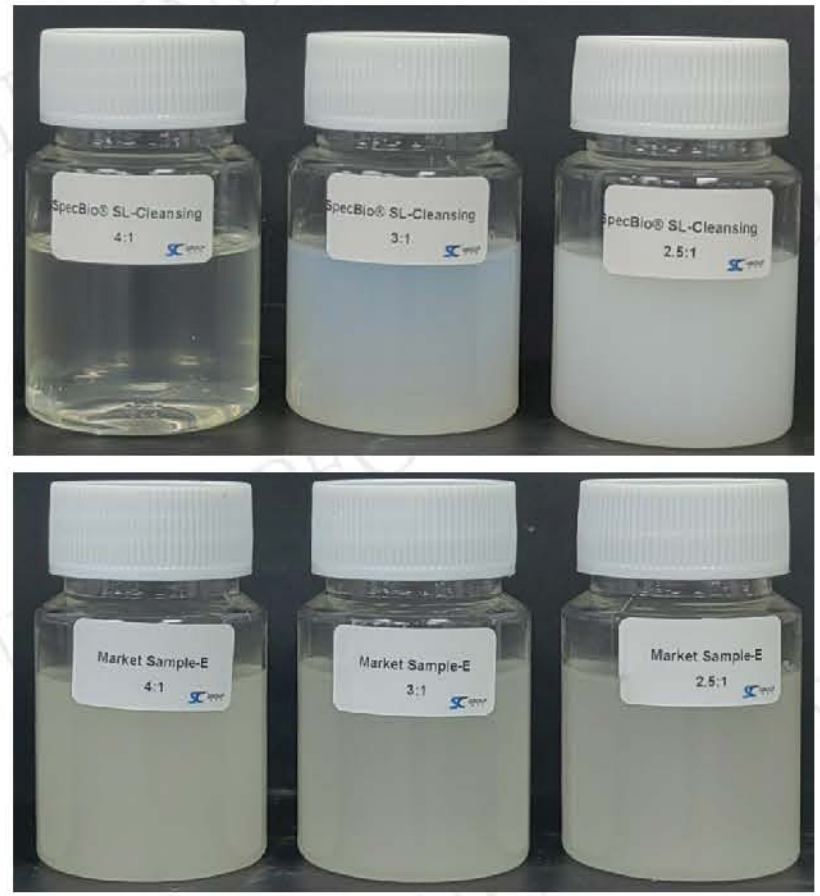
☐ Test procedure:

First, pre-solubilize and mix 0.1% perfume and 0.4%, or 0.3%, or 0.25% SpecBio® SL-Cleansing or the market sample-E, then add water to make up to 100% and observe.

☐ Test results:

- One part of perfume can be solubilized by every four parts of SpecBio® SL-Cleansing.
- **The solubilization performance of** SpecBio® SL-Cleansing was better than the Market Sample-E at the same ratio.

☐ Test Pictures:

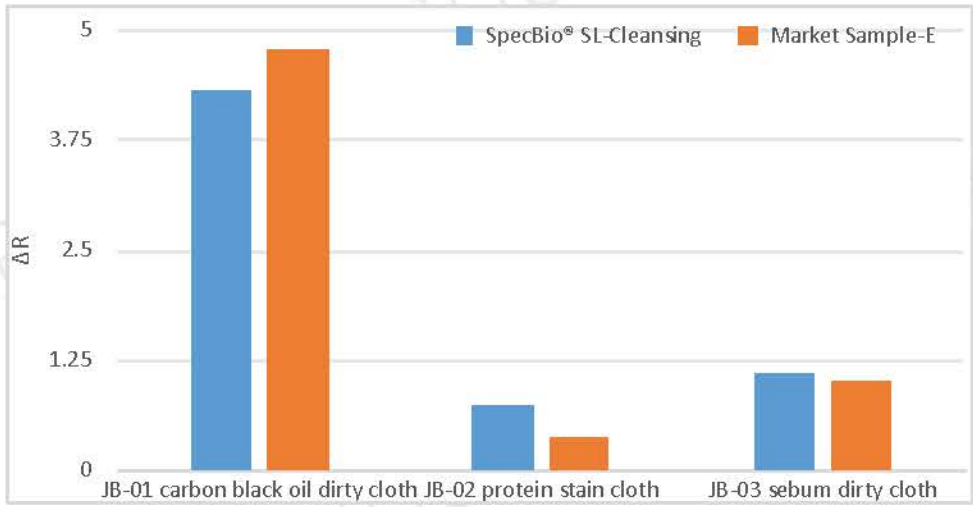


https://aocs.onlinelibrary.wiley.com/doi/abs/10.1002/jsde.12841

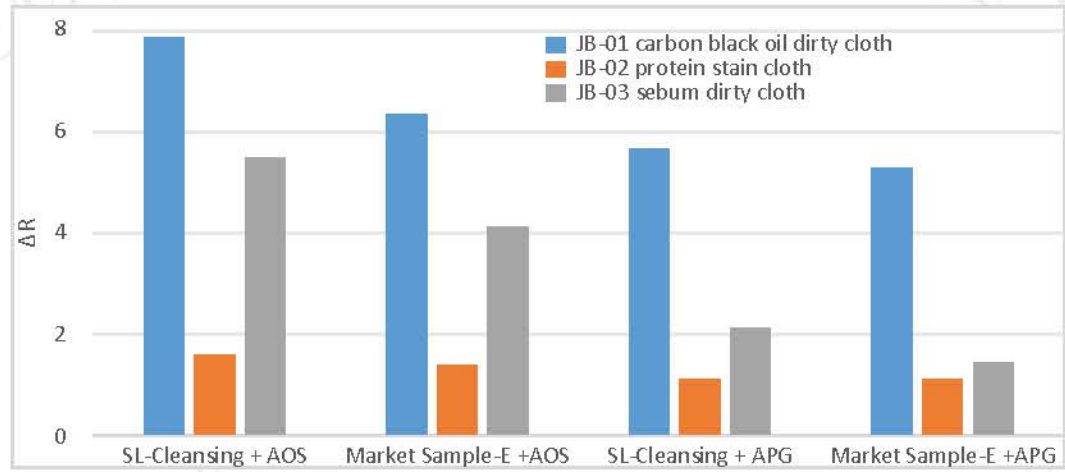
03 SpecBio® SL-Cleansing Detergency Performance

Good Quality Comes From Qualified Materials

➢ A single component



➢ Combined with other surfactants

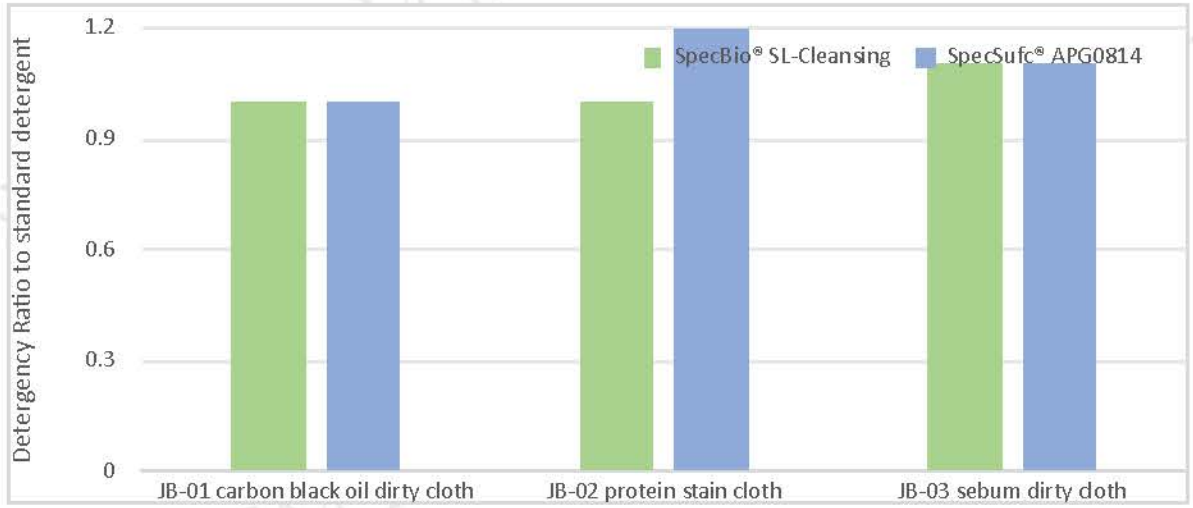


☐ Test results:

- Vertical-type Detergency Test Machine, Whiteness Meter ; whiteness index F1 of the piece of test cloth before washing, whiteness index F2 after washing, ΔR=F2-F1.
- Test concentration： 0.2%， Combined ration: surfactant:SL-Cleansing=10:1.
- Compared with the market sample-E， the detergency of SpecBio® SL-Cleansing on carbon oil and sebum cloth was similar, it was better on protein cloth.
- When combined with other surfactants, the detergency of SpecBio® SL-Cleansing was better than the market sample-E.

03 SpecBio® SL-Cleansing Detergency Performance

➢ Detergency performance in Laundry detergent



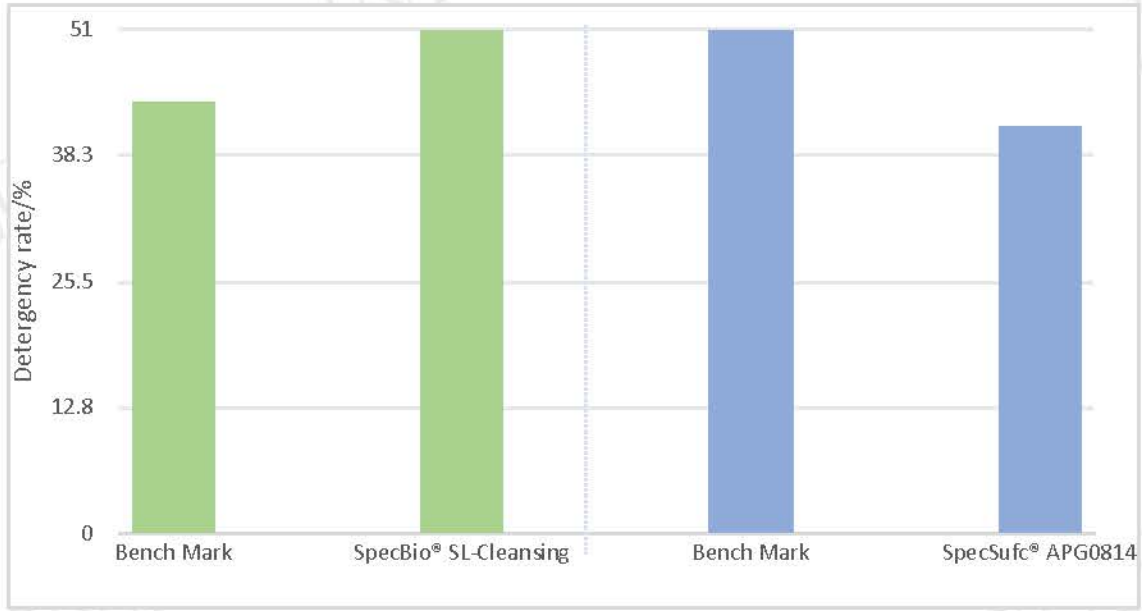
Product Name	INCI Name	① w/w %	② w/w %
Water	Water	To 100	To 100
EDTA 2Na	Disodium EDTA	0.05	0.05
SLES (70%)	Sodium Laureth Sulfate, Water	12.0	12.0
SpecSufc® CAB (30%)	Cocamidopropyl Betaine, Water	5.0	5.0
SpecBio® SL-Cleansing	**Glycolipids, Water**	**5.0**	-
SpecSufc® APG0814	Coco-Glucoside, Water	-	4.0
AOS	Sodium alpha-olefin Sulfonate	3.0	3.0
CMEA	Cocamide MEA	2.0	2.0
ParbFree® PE91	Phenoxyethanol,Ethylhexylglycerin	0.8	0.8
Fragrance	Fragrance	0.15	0.15

Test results: QB/T 1224-2012: Liquid detergent for fabric, 5% SpecBio® SL-Cleansing, Surfactant in total: 17%, test in parallel.

The detergent formula containing 5% SpecBio® SL-Cleansing had better detergence than the standard detergent, SpecBio® SL-Cleansing is suitable for Liquid detergent for fabric.

03 SpecBio® SL-Cleansing Detergency Performance

➢ **Oil removal performance in dish detergent**



Product Name	INCI Name	① w/w %	② w/w %
Water	Water	To 100	To 100
EDTA 2Na	Disodium EDTA	0.05	0.05
SLES (70%)	Sodium Laureth Sulfate, Water	11.0	11.0
SpecSufc® CAB	Cocamidopropyl Betaine, Water	5.0	5.0
SpecBio® SL-Cleansing	**Glycolipids, Water**	**10.0**	-
SpecSufc® APG0814	Coco-Glucoside, Water	-	8.0
AOS	Sodium alpha-olefin Sulfonate	5.0	5.0
DOE-120	PEG-120 Methyl Glucose Triisostearate	1.0	1.0
Sodium Benzoate	Sodium Benzoate	0.3	0.3
otassium Sorbate	Potassium Sorbate	0.3	0.3
Fragrance	Fragrance	0.15	0.15

☐ **Test results:** GB/T 9985-2000: Detergents for hand dishwashing, 10% SpecBio® SL-Cleansing, Surfactant in total:18%, parallel

- The detergency ability of dish detergent containing 10% SpecBio® SL-Cleansing was better than standard dishwashing detergent and APG system (Alkyl Polyglycoside). SpecBio® SL-Cleansing is suitable for hand washing dishwashing detergent.

03 SpecBio® SL-Cleansing Application

Reference Formula

Cleansing Mousse SC-AC2504009

W/W %	Product Name	INCI Name
Part A		
To 100	Water	Water
0.05	Disodium EDTA	Disodium EDTA
2.0	Glycerin	Glycerin
3.0	Butylene Glycol	Butylene Glycol
6.0	SpecSufc® APG0814	Coco-Glucoside, Water
8.0	SpecSufc® CAB	Cocamidopropyl Betaine, Water
5.0	SpecSufc® LS30	Sodium Lauroyl Sarcosinate, Water
Part B		
10.0	**SpecBio® SL-Cleansing**	**Glycolipids, Water**
3.0	SpecPlex® PCalm	Poria Cocos Sclerotium Extract, Portulaca Oleracea Extract, Palmitoyl Tripeptide-8, Dipotassium Glycyrrhizate, Glycerin, Caprylyl Glycol, Ethylhexylglycerin, Water
Part C		
0.5	PrzvFree® CE85	Caprylyl Glycol, Ethylhexylglycerin
0.05	Fragrance	Fragrance
q.s	SpecPure® CAD	Citric Acid

➢ **Procedure:**

1. Mix Part A and heat to 85°C, stir until the system is uniform.
2. Cool down to 40°C, add Part B, stir until completely uniform.
3. Add Part C, stir until completely uniform.
4. Cool down to room temperature.

➢ **Properties:**

Appearance: Yellow transparent liquid

pH: 6.0±0.5

03 SpecBio® SL-Cleansing Application

Reference Formula

Cleansing Cream SC-AC2411005

W/W%	Product Name	INCI Name
Part A		
To 100	Water	Water
0.05	EDTA 2Na	Disodium EDTA
3.0	Glycerin	Glycerin
2.0	SpecSufc® SLG	Sodium Lauroyl Glutamate
5.0	SpecSufc® CAB	Cocamidopropyl Betaine
1.0	SpecSufc® APG1214	Lauryl Glucoside, Water
40.0	Disodiuml Lauryl Sulfosuccinate	Disodiuml Lauryl Sulfosuccinate
3.0	Sodium Methyl Cocoyl Taurate	Sodium Methyl Cocoyl Taurate
2.5	Carbopol® Aqua SF-1	Acrylates Copolymer
Part B		
2.5	NaCL	Sodium Chloride
0.5	Glucamate™ DOE-120	PEG-120 Methyl Glucose Triisostearate
Part C		
2.0	**SpecBio® SL-Cleansing**	**Glycolipids, Water**
0.2	Fragrance	Fragrance
0.7	ParbFree® PE91	Phenoxyethanol, Ethylhexylglycerin

Procedure:

1) Mix Part A and heat to 85°C, stir until the system is uniform.
2) Add Part B, stir until the system is uniform.
3) Cool down to 45°C, Add Part C, stir until the system is uniform.
4) Cooling until the liquid forms a paste, and discharging after the paste is formed.

Properties:

Appearance: White pearly Cream

pH: 6.0 ± 0.5

03 SpecBio® SL-Cleansing Application

Reference Formula

Anti-dandruff and Smoothing Shampoo SC-AC2504008

W/W%	Product Name	INCI Name
Part A		
To 100	Water	Water
0.05	EDTA 2Na	Disodium EDTA
14.0	SpecSufc® SLES	Sodium Laureth Sulfate, Water
10.0	SpecSufc® CAB	Cocamidopropyl Betaine, Water
0.5	DM638	PEG-150 Distearate
1.5	CMEA	Cocamide MEA
Part B		
8.0	**SpecBio® SL-Cleansing**	**Glycolipids, Water**
2.0	SpecKare® PQ-7	Polyquaternium-7
0.1	SpecPure® HK	Hydrolyzed Keratin
0.1	SpecKare® PO	Piroctone Olamine
0.8	ParbFree® PE91	Phenoxyethanol, Ethylhexylglycerin
Part C		
0.05	Fragrance	Fragrance
q.s	SpecPure® CAD	Citric Acid
q.s	Sodium Chloride	Sodium Chloride

➢ **Procedure:**

1. Heat Part A to 85 °C, stir until completely uniform
2. Cool down to 40°C, add Part B, stir until completely uniform
3. Add Part C, stir until completely uniform
4. Cool down to room temperature

➢ **Properties:**

Appearance: Yellow viscosity liquid

pH: 6.5±0.5

Viscosity (25°C, 2#, 30 rpm, mPa·s): 2000±500

03 SpecBio® SL-Cleansing Application

Reference Formula

Mild Hand Sanitizer SC-AC2504010

W/W%	Product Name	INCI Name
Part A		
To 100	Water	Water
0.05	Disodium EDTA	Disodium EDTA
5.0	SpecSufc® SLES	Sodium Laureth Sulfate, Water
10.0	SpecSufc® CAB	Cocamidopropyl Betaine, Water
3.0	SpecSufc® LS30	Sodium Lauroyl Sarcosinate, Water
6.0	SpecSufc® APG0814	Coco-Glucoside, Water
1.5	PEG-120 Methyl Glucose Dioleate	PEG-120 Methyl Glucose Dioleate
1.0	Cocamide MEA	Cocamide MEA
Part B		
5.0	**SpecBio® SL-Cleansing**	**Glycolipids, Water**
1.0	SpecKare® DPA 98	Panthenol
3.0	Glycerin	Glycerin
Part C		
1.0	PrzvFree® HE91	1,2-Hexanediol, Ethylhexylglycerin
0.05	Fragrance	Fragrance
q.s	SpecPure® CAD	Citric Acid
q.s	Sodium Chloride	Sodium Chloride

Procedure:

1) Mix Part A and heat to 85°C, stir until the system is uniform.
2) Cool down to 45°C, add Part B, stir until the system is uniform.
3) Add Part C, stir until the system is uniform
4) Cool down to room temperature.

Properties:

Appearance: Yellow transparent liquid

pH: 6.5±0.5

Viscosity (25°C, 2#, 30 rpm, mPa·s): 2500±500

03 SpecBio® SL-Cleansing Application

Reference Formula

Dishwashing Liquid SC-AC2504011

W/W%	Product Name	INCI Name
Part A		
To 100	Water	Water
0.05	Disodium EDTA	Disodium EDTA
5.0	SpecSufc® SLES	Sodium Laureth Sulfate, Water
10.0	SpecSufc® CAB	Cocamidopropyl Betaine, Water
6.0	SpecSufc® APG0814	Coco-Glucoside, Water
1.5	PEG-120 Methyl Glucose Dioleate	PEG-120 Methyl Glucose Dioleate
1.0	Cocamide MEA	Cocamide MEA
Part B		
7.0	**SpecBio® SL-Cleansing**	**Glycolipids, Water**
Part C		
1.0	PrzvFree® HE91	1,2-Hexanediol, Ethylhexylglycerin
0.05	Fragrance	Fragrance
q.s	SpecPure® CAD	Citric Acid
q.s	Sodium Chloride	Sodium Chloride

➢ **Procedure:**

1. Mix Part A and heat to 85°C, stir until the system is uniform.
2. Cool down to 40°C, add Part B, stir until completely uniform.
3. Add Part C, stir until completely uniform.
4. Cool down to room temperature.

➢ **Properties:**

Appearance: Yellow transparent liquid

pH: 7.0±0.5

Viscosity (25°C, 2#, 30 rpm, mPa·s): 2500±500

03 SpecBio® SL-Cleansing Application

Reference Formula

Laundry Detergent SC-AC2504012

W/W%	Product Name	INCI Name
Part A		
To 100	Water	Water
0.05	Disodium EDTA	Disodium EDTA
10.0	SpecSufc® CAB	Cocamidopropyl Betaine, Water
3.5	C14-16 Olefin Sulfonate	C14-16 Olefin Sulfonate
8.0	SpecSufc® APG0814	Coco-Glucoside, Water
4.0	SpecSufc® APG1214	Lauryl Glucoside, Water
3.5	PEG-120 Methyl Glucose Dioleate	PEG-120 Methyl Glucose Dioleate
3.0	PEG-150 Distearate	PEG-150 Distearate
Part B		
8.0	**SpecBio® SL-Cleansing**	**Glycolipids, Water**
0.1	SpecKare® PQ-7	Polyquaternium-7
0.25	SpecPure® PPN20	Papain, Glucose
Part C		
0.15	Sodium Metabisulfite	Sodium Metabisulfite
0.05	Fragrance	Fragrance
0.7	ParbFree® PE91	Phenoxyethanol, Ethylhexylglycerin
q.s	SpecPure® CAD	Citric Acid

➢ **Procedure:**

1. Mix Part A and heat to 85°C, stir until the system is uniform.
2. Cool down to 40°C, add Part B, stir until completely uniform.
3. Add Part C, stir until completely uniform.
4. Cool down to room temperature.

➢ **Properties:**

Appearance: Yellow transparent liquid

pH: 7.0±0.5

Viscosity (25°C, 2#, 30 rpm, mPa·s): 4000±500

03 PrzvFree® SL 415 Application

Reference Formula

Moisturizing Nourishing Cleansing Mousse SC-AC2506018

Trade Name	INCI Name	Function	w/w%
Part A			
Water	Water	Solvent	To 100
Disodium EDTA	Disodium EDTA	Chelating Agent	0.05
Glycerin	Glycerin	Humectant	2.0
Butylene Glycol	Butylene Glycol	Humectant	3.0
Glycereth-26	Glycereth-26	Humectant	4.0
SpecKare® HAL	Sodium Hyaluronate, Water, Sodium Hydroxymethylglycinate, Propylene Glycol	Humectant	3.0
SpecKare® DPA 98	Panthenol	Humectant	0.5
SpecSufc® CAB	Cocamidopropyl Betaine, Water	Surfactant	5.0
Sodium Cocoyl Alaninate	Sodium Cocoyl Alaninate, Water	Surfactant	10.0
SpecSufc® LS30	Sodium Lauroyl Sarcosinate, Water	Surfactant	10.0
Part B			
PrzvFree® SL 415	**Yeast Ferment Extract, Water, Keihi Yu, Pentylene Glycol**	**Preservative**	**0.5**
SpecPure® CAD	Citric Acid	pH Adjuster	q.s

➢ **Procedure:**

➢ 1. Mix Part A and heat to 85°C, stir until the system is uniform

➢ 2. Cool down to 40°C, add Part B, stir until completely uniform

➢ 3. Cool down to room temperature

➢

➢ **Properties:**

➢ Appearance: Light yellow transparent liquid

➢ pH: 6.0±0.5

03 PrzvFree® SL 415 Application

Reference Formula

Moisturizing Smoothing Shampoo SC-AC2506019

Trade Name	INCI Name	Function	w/w%
Part A			
Water	Water	Solvent	To 100
Disodium EDTA	Disodium EDTA	Chelating Agent	0.05
SpecSufc® SLES	Sodium Laureth Sulfate, Water	Surfactant	12.0
SpecSufc® CAB	Cocamidopropyl Betaine, Water	Surfactant	10.0
SpecSufc® APG0814	Coco-Glucoside, Water	Surfactant	5.0
Cocamide MEA	Cocamide MEA	Thickening Agent	1.5
Part B			
SpecKare® PQ-7	Polyquaternium-7	Softener	2.0
SpecPure® HK	Hydrolyzed Keratin	Humectant	0.1
Part C			
PrzvFree® SL 415	**Yeast Ferment Extract, Water, Keihi Yu, Pentylene Glycol**	**Preservative**	**0.5**
Fragrance	Fragrance	Flavoring Agent	0.15
SpecPure® CAD	Citric Acid	pH Adjuster	q.s
Sodium Chloride	Sodium Chloride	Thickening Agent	q.s

- **Procedure:**
- 1. Mix Part A and heat to 85°C, stir until the system is uniform
- 2. Cool down to 40°C, add Part B, stir until completely uniform
- 3. Add Part C, stir until completely uniform
- 4. Cool down to room temperature
-
- **Properties:**
- Appearance: Light yellow viscosity liquid
- pH: 6.5±0.5
- Viscosity (25°C, 2#, 30 rpm, mPa·s): 3500±500

04 SpecBio® SL Series Market Application

➢ **Personal care and Cosmetics**

- **Skin** care/cleaning (face/body/hands), **makeup** remover**, hair/scalp** cleaning/care, **mouth** cleaning/care, **female, baby and child** cleaning/care, **pet** cleaning/care, some **household** products cleaning/care, suitable for **sensitive skin**.
- Both **Yeast Ferment Extract** and **Glycolipids** are listed in China Oral Care Industry Association **Draft list of toothpaste ingredients** (Association version).
- According to China GB 9985 and GB14930, theoretically, **SpecBio® SL-Cleansing** can be used in hand dishwashing detergents and detergents for washing food, tableware, drinking utensils, and tools, equipment, or food packaging materials and containers that come into direct contact with food.

04 Spec-Chem – A leader of Chinese Sophorolipid manufacturer

SC GROUP
Good Quality Comes From Qualified Materials
SINCE 1995

---Advanced Process Engineering

- **Multi-Types 多品种小批量**
  - Launching multi-types/small-batches product to expand service scales and meet market diversities
  - 实现多品种小批量生产，满足市场的多样性需要
- **Pilot Development 产品开发放大验证**
  - Integrating process research and product development to support business growth
  - 实现和总部研发验证和生产放大的无缝联接，支持业务需求
- **Customized Solution 客户定制化解决方案**
  - Consistently providing customized solution to enhance the strategic partnership
  - 整合客户特殊需求，提供定制化产品开发并建立长期的合作

04 Spec-Chem – A leader of Chinese Sophorolipid manufacturer

SC GROUP
Good Quality Comes From Qualified Materials
30 SINCE 1995

---Certificate and Awards

EU EFfCI Certificate

EU GMP Standard

EcoVadis

Environment Friendly
Sustainable Development
Social Responsibility

RSPO member

Reducing the negative environmental and social impacts of palm oil crop cultivation

ISO9001

Quality Management System

ISO14001

Environment Management System

SA8000

Social Accountability Management System

04 Spec-Chem – A leader of Chinese Sophorolipid manufacturer

Our Corporate Social Responsibility policies to guarantee our sustainable development

THANK YOU

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SILVER | Top 15%
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Sustainability Rating
OCT 2024

Website