



**FOR  
URBAN  
PHOTO-AGED  
SKIN**



**Ginkgo × Peptide  
Activating Complex**

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**SpecPlex<sup>®</sup> GPS**

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## The Brief Instruction of Spec-Chem Group



National High-tech Enterprise



### Our vision

Explore the infinite of Beauty



Jiangsu Specped Engineering Technology Research Center

### Business philosophy

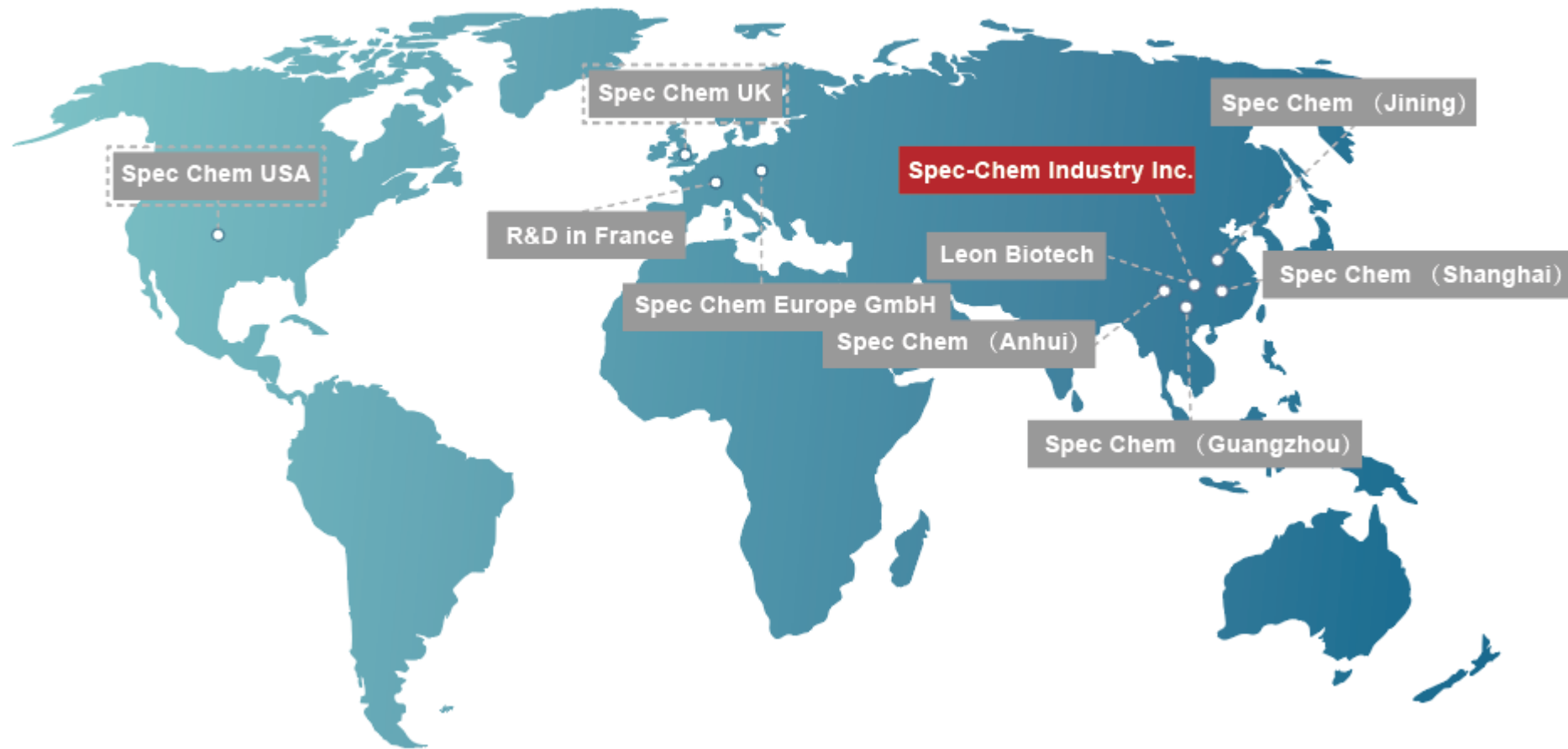
Good quality comes from qualified materials

SKIN-AGING SOLUTION

1

# The Brief Instruction of Spec-Chem Group

## Spec-Chem Group Members



# 1

## The Brief Instruction of Spec-Chem Group

### Four Manufacturing Bases

#### Herb extraction

Xuzhou Aibo



Poria cocos extract (SpecPure® PC),  
Ginkgo biloba extract (SpecPure® GBE),  
Bamboo charcoal powder (SpecKare® BCP),  
Tea seed extract (SpecPure® BTS Saponins)

#### Peptides & synthesis

Leon Biotechnology



Signal, neurotransmitter inhibitory,  
carrier, rhythmic, enzyme inhibitory &  
special functional peptides

#### Chemical synthesis

Spec-Chem (Jining)



Piroctone Olamine (SpecKare® PO),  
Tranexamic acid (SpecWhite® TA),  
3-o-Ethyl ascorbic acid (SpecWhite® VCE),  
etc.

#### Fermentation

Spec-Chem (Anhui)



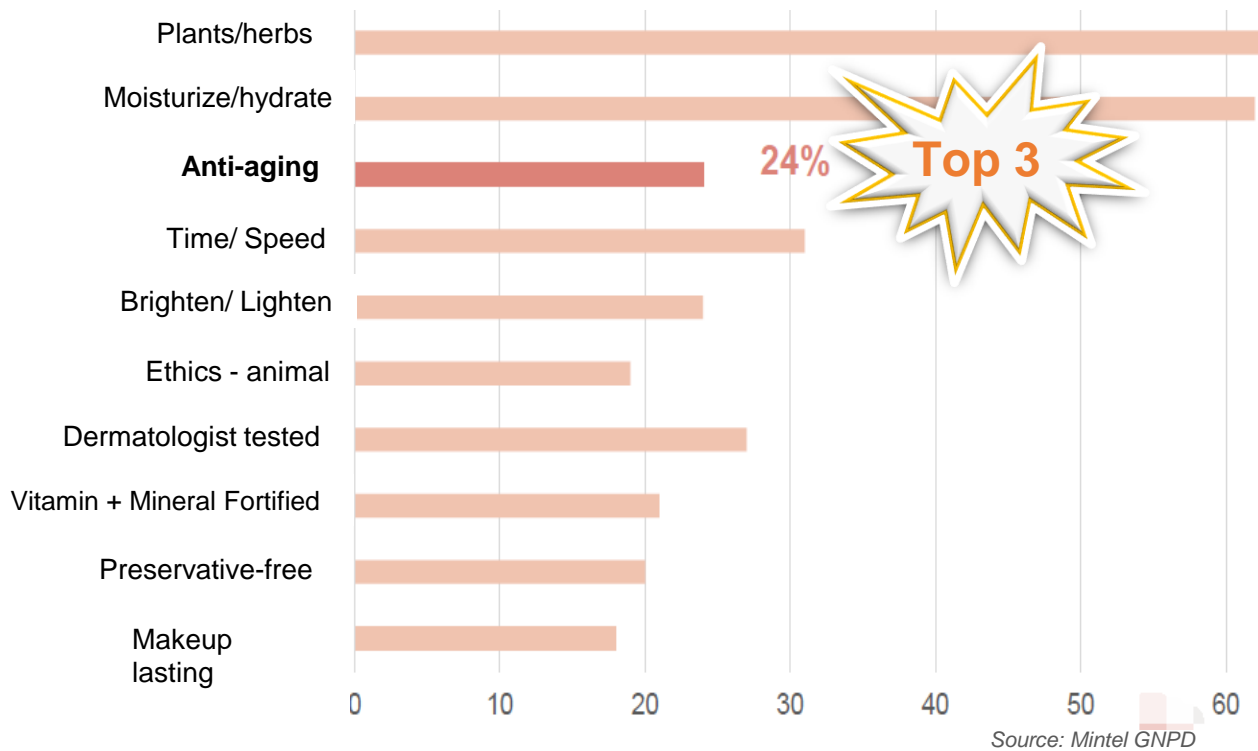
Dihydroxyacetone (Tanbest® DHA),  
Erythulose (Tanbest® DHB),  
Ascorbyl Glucoside (SpecWhite® 02),  
EGF (sh-oligopeptide-1), etc.

## 2

# Peptides Application in Skin Aging

## Market demand for skin aging

Global - Top 10 claims in the 2015-2019 Facial Skincare Launch



Global Anti-aging market size

2015  
**1395** Billions

2021  
**2160** Billions

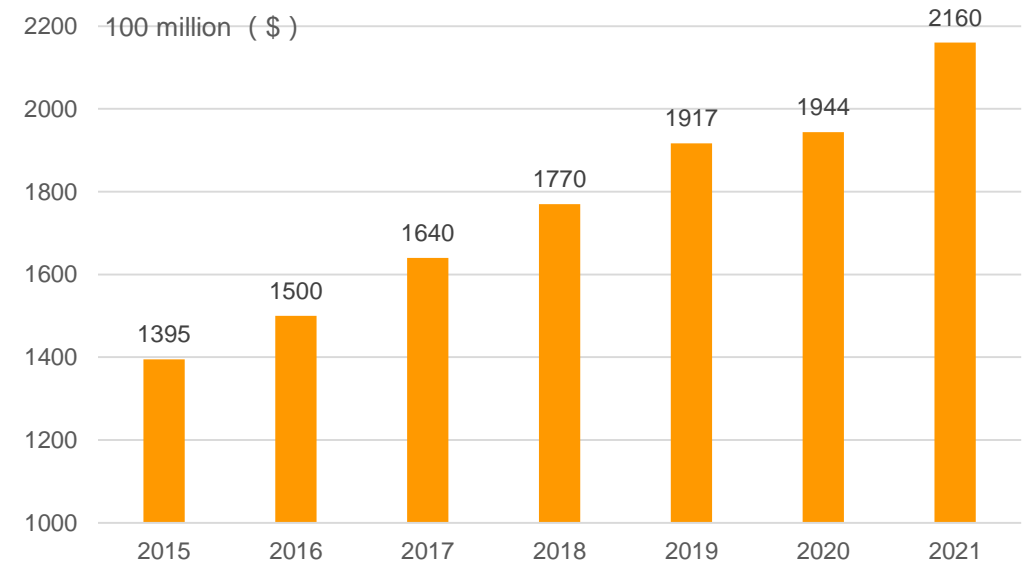


Fig. Global Anti-aging market size and Growth rate from 2015 to 2021

Source: iiMedia Research

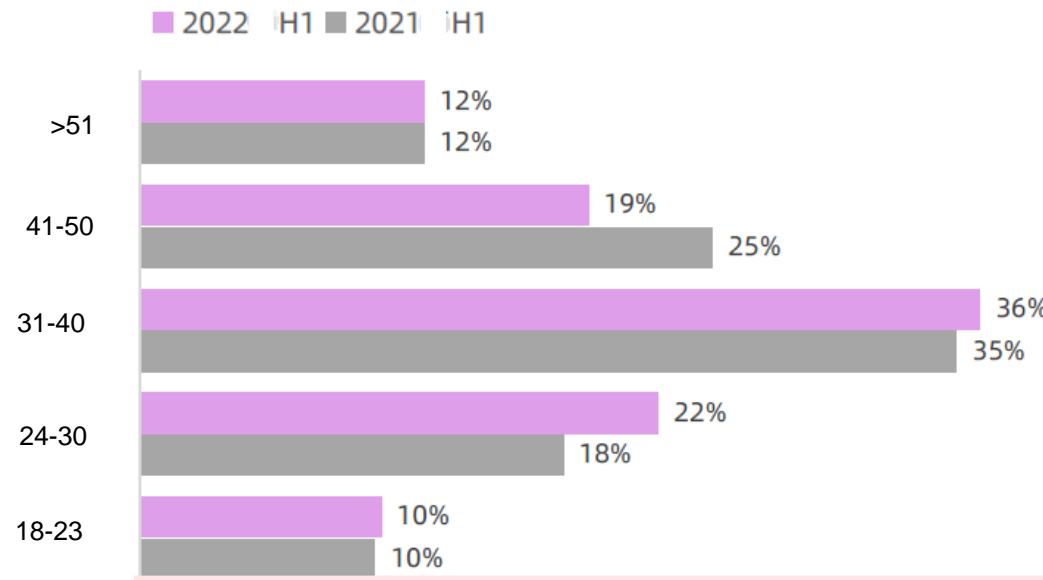
Anti-aging hold an important market share, gradually becomes a rigid skin care demand!

SKIN-AGING SOLUTION

## 2

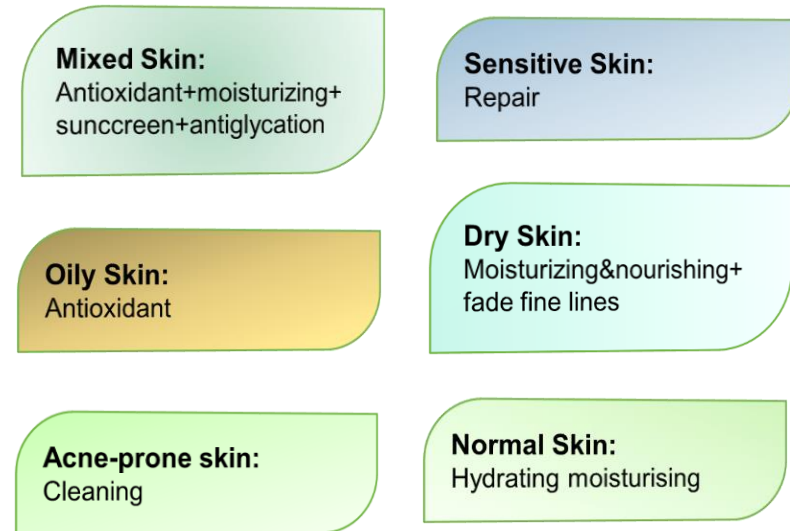
# Peptides Application in Skin Aging

2021 H1 vs.2022 H1 user age distribution



- ◆ The concept of anti-aging is gradually becoming **younger**
- ◆ Age **24 +** users begin to pay attention to anti-aging

Anti-aging focus for different skin types



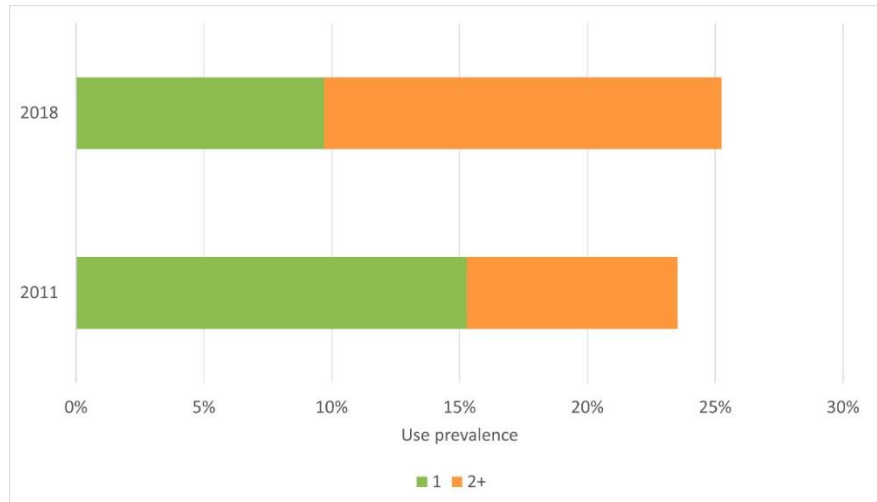
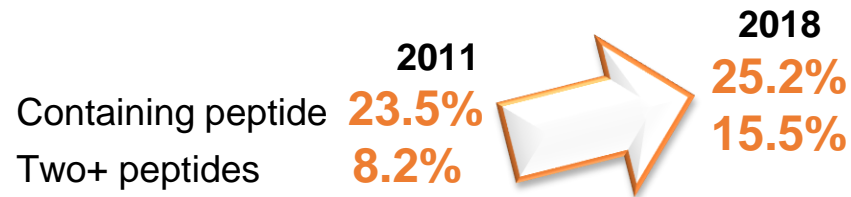
- ◆ **Fine** anti-aging
- ◆ Anti-aging according to **skin type**

Source: iiMedia Research

## 2

# Peptides Application in Skin Aging

## Trending Anti-Aging Peptides

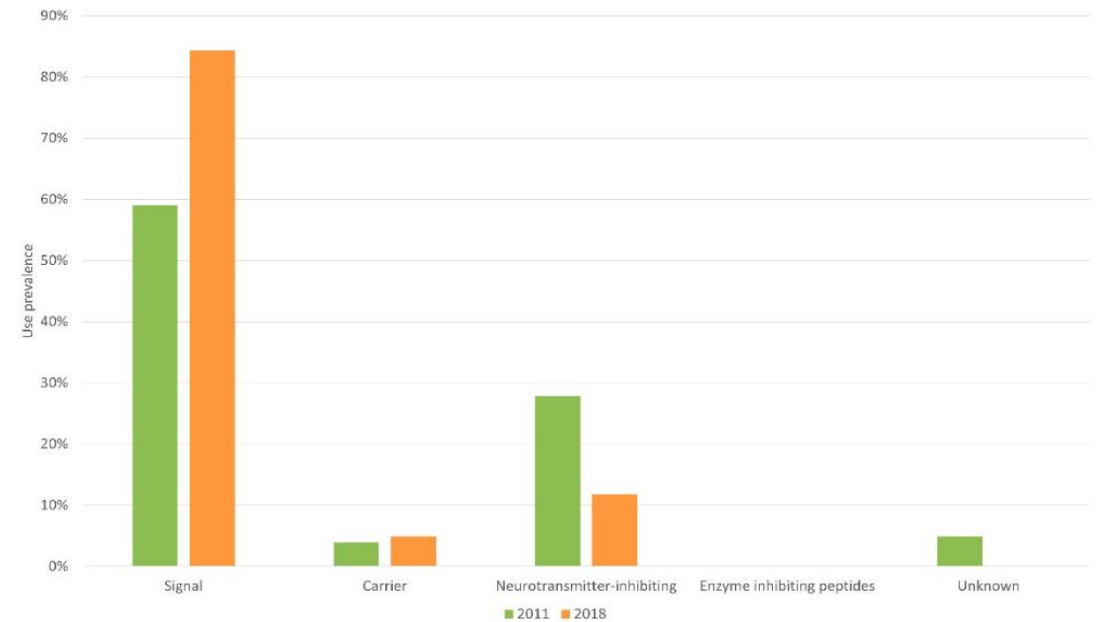


**Figure 1.** The prevalence of products containing peptides on anti-aging products marketed in 2011 and 2018. The percentage of products containing only one peptide (1) is represented in green, and the percentage of products containing two or more peptides (2+) is represented in orange

Ref: Cosmetics **2020**, 7, 91; doi:10.3390/cosmetics7040091

Most commonly used:

**Signal peptides**  
**neurotransmitter-inhibiting**  
**carrier peptides**



**Figure 2.** Mechanisms of action for peptides found in anti-aging products marketed in 2011 and 2018.

## 2

## Peptides Application in Skin Aging



### Neurotransmitter-inhibiting peptide (NIP):

- a safer, non-destructive “Botox-like”, fast anti-wrinkle active ingredient.
- Inhibition of the release of neurotransmitters
- Reduction in facial wrinkles

#### NIPs for personal care products (biomimetic molecular design bioactive anti-wrinkle peptides)

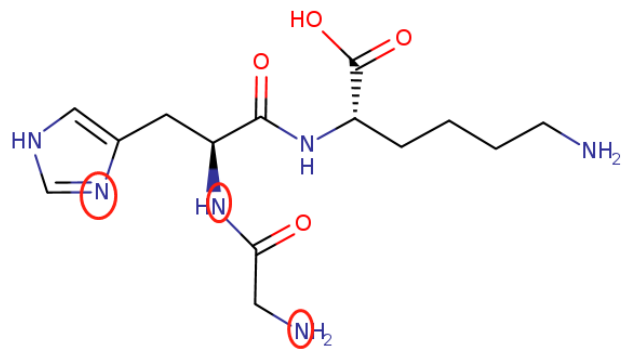
INCI Name	Trade Name	Action mechanism	Effects
Acetyl Hexapeptide-8 (i.e. Hexapeptide)	SpecPed® AH8P	Inhibition of muscle contraction by inhibition of the SNARE complex synthesis	anti-wrinkle
Acetyl octapeptide-3 (i.e. Octapeptide)	SpecPed® AO3P		
Dipeptide diaminobutyroyl benzylamide diacetate (i.e.: Snake venom peptide, Syn-ake)	SpecPed® SKE-P	Inhibition of the binding of acetylcholine to the receptor	smoothing and wrinkle removal
S-Mu-Conotoxin Cniiic (Arginine/Lysine Polypeptide) (i.e. Conopeptide)	SpecPed® MCC21P	Blocking the electrical conduction of neurons in muscle	wrinkle removal

## 2

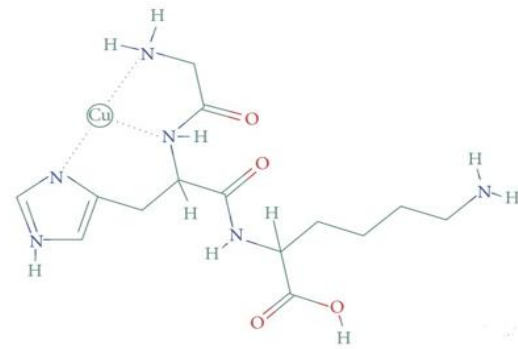
## Peptides Application in Skin Aging

### Carrier Peptides

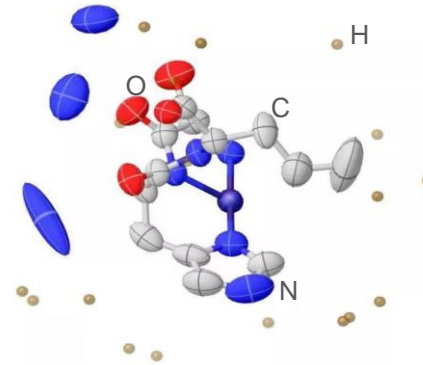
Delivery of trace elements (such as copper and manganese) to the skin to activate enzymatic wound-healing pathways



Tripeptide-1



Copper Tripeptide-1



INCI Name	Trade Name	Action mechanism	Effects
Copper Tripeptide-1 (GHK-Cu)	SpecPed® GCu11P	Carry copper ions into cells, and release them after encountering enzymes. Copper ions can stimulate the synthesis of Glucopolyamine. Therefore, the skin is plumper and firmer, and the facial lines are gradually faded, leaving the skin rejuvenated.	Wound healing and skin repair
Bis(Tripeptide-1) Copper Acetate	SpecPed® GCu21P		

## 2

## Peptides Application in Skin Aging

### Signal peptides

Promote the synthesis of matrix protein, especially collagen, and may also increase the production of elastin

Category	Trade Name	INCI Name	Action mechanism	Effect
Tripeptides	SpecPed® PT1P	Palmitoyl Tripeptide-1	Stimulate synthesis in collagen and glycosaminoglycans via signaling.	Skin texture improvement and wrinkle reduction, particularly on the forehead and the Crow's feet.
	SpecPed® P3T5P	Palmitoyl Tripeptide-5	Induction of collagen synthesis and prevention of collagen degradation via TGF- $\beta$	Relieve wrinkles, and brighten skin tone
Tetrapeptides	SpecPed® P4T7P	Palmitoyl Tetrapeptide-7	Reduction in IL-6 secretion by keratinocytes, with subsequent inhibition of the inflammatory process resulting in the degradation	Skin elasticity, firmness and softness increase.
Pentapeptides	SpecPed® PP4P	Palmitoyl Pentapeptide-4	Stimulation from elastin, fibronectin, glycosaminoglycans as well as types I, III and IV collagen synthesis.	Skin roughness and fine wrinkle reduction
	SpecPed® MP4P	Myristoyl Pentapeptide-4	Stimulate the expression of keratin gene, generate more keratin, and increase the length and thickness of eyelashes	Promote the growth of hair (eyelashes, eyebrows, hair), making hair thicker and tougher
Hexapeptides	SpecPed® POP	Palmitoylhexapeptide-12	Promote the collagen, elastin and hyaluronic acid on proliferation	Improve the skin's water content, increase skin thickness and elasticity, reduce microgroove
	SpecPed® H9P	Hexapeptide-9	Enhance epidermal regeneration, collagen type I and III synthesis as well as the synthesis of other important skin proteins	Effectively soothe and inhibit the forehead lines and crow's feet, help the muscles relax, and restore the skin's elastic tissues to soft and smooth

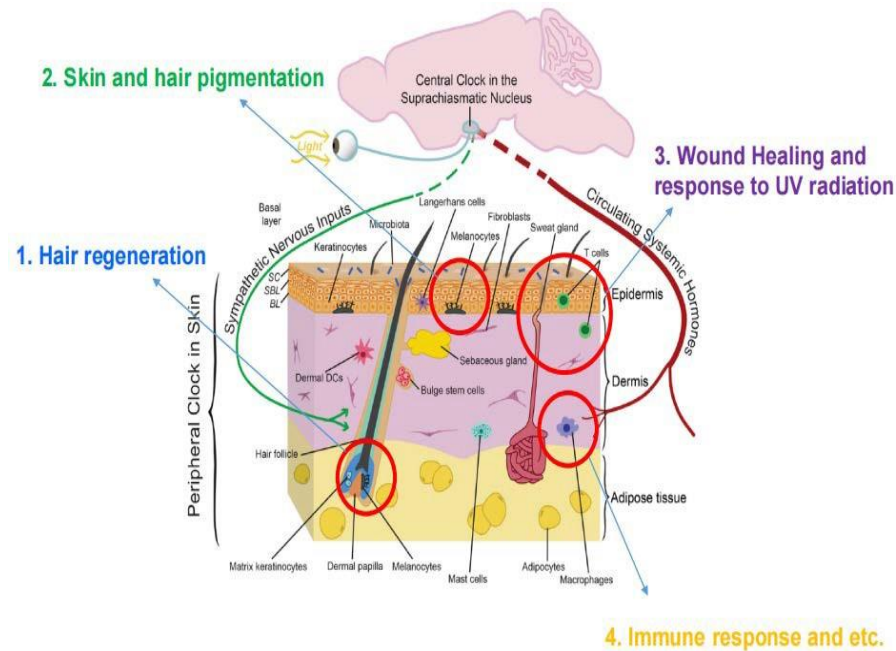
## 2

# Peptides Application in Skin Aging

## Rhythm Peptides

Regulate the biological clock of skin by activating skin gene (**CLOCK, PERIOD1**), strengthen cell rhythm, repair skin damage & anti-aging

### The effect of circadian clock in skin



INCI Name	Trade Name	Action mechanism
Tripeptide-32	SpecPed® TR32P	Regulate the biological clock of skin by activating skin gene ( <b>CLOCK, PERIOD1</b> ), strengthen cell rhythm, enhance cell vitality, prolong cell life, prevent cell damage caused by environmental factors such as ultraviolet rays, and improve the repair of DNA damage.
Glutamylamidoethyl Imidazole	SpecPed® GAI	Deeply penetrate into the cells, enhance the expression capacity of rhythm genes <b>PERIOD1</b> and <b>CLOCK</b> , act on the skin to generate wake-up signals similar to sunlight, restore the biological clock to the normal mechanism, optimize the renewal and regeneration of keratinocytes, stabilize the skin barrier system, optimize the physiological activity of cells, help the skin gradually recover its core function, better cope with the pressure generated during the day, and thus delay the aging process

Ref: PlikusMV, Van SpykEN, Pham K, GeyfmanM, Kumar V, Takahashi JS, Andersen B. (2015) The Circadian Clock in Skin: Implications for Adult Stem Cells, Tissue Regeneration, Cancer, Aging, and Immunity. *J BiolRhythms*. 30:163-182.

## 3

## Skin-Aging Solution - SpecPlex® GPS

### What cause skin aging?

Aging changes in the skin are a group of common conditions and developments that occur as people grow older.

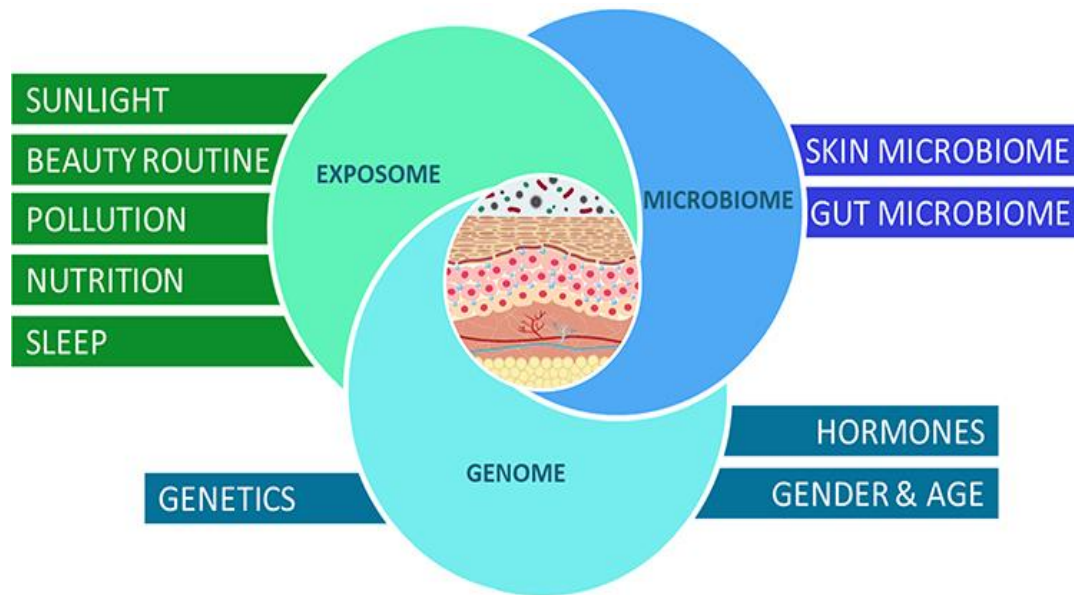


Fig. Skin interactome (Schematic view combining the various factors affecting skin health and skin aging in relation to the “genome-microbiome-exposome” (GME) interfaces. Abbreviations: G, genome; M, microbiome; E, exposome.)

<The Skin Interactome: A Holistic “Genome-Microbiome-Exposome” Approach to Understand and Modulate Skin Health and Aging>

### Intrinsic Factors: 20%

**Intrinsic aging** reflects the genetic background and depends on time.

Naturally occur, Skin becomes:

- Rougher.
- Slack: loss of the elastic tissue (elastin) in the skin with age
- More transparent: thinning of the epidermis
- More fragile: a flattening of the area where the epidermis and dermis come together.
- More easily bruised: thinner blood vessel walls

### Extrinsic Factors: 80%

**Extrinsic aging** is caused by environmental factors such as:

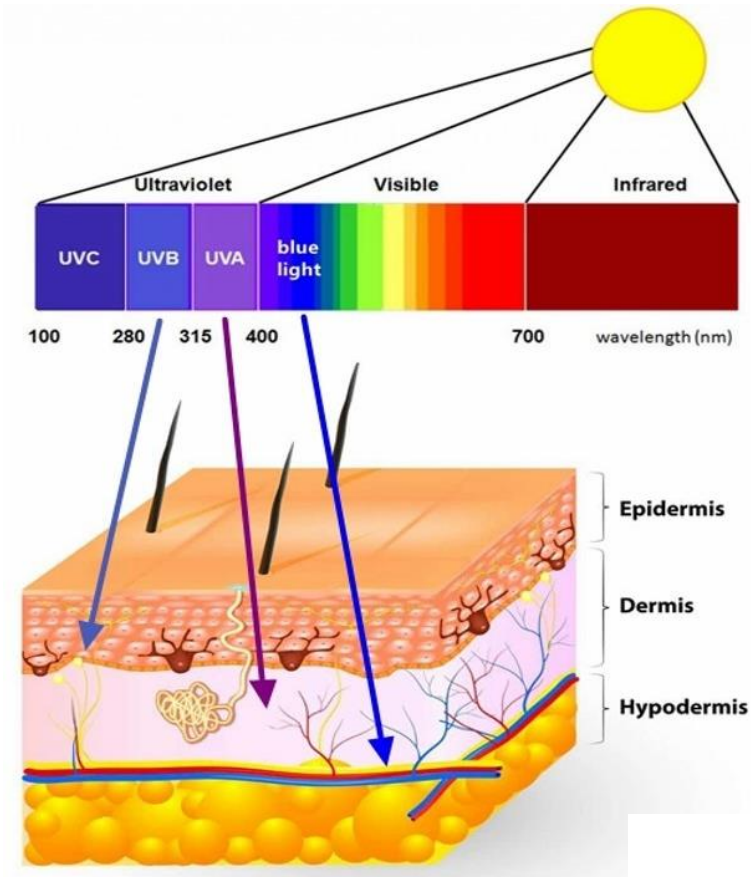
- **sun exposure**: biggest factor
- air pollution, smoking, physical and psychological stress, urban lifestyle, etc.

Extrinsically aged skin is characterized by **photo damage** as wrinkles, pigmented lesions, patchy hypopigmentations, and actinic keratosis

### 3

## Skin-Aging Solution - SpecPlex® GPS

### What cause skin aging?



Blue Light causes deeper skin damage!

### Photoaging

- Traditional Photoaging or photoaging is a term used for the characteristic changes to skin induced by chronic UVA and UVB exposure.
- If you are serious about preventing premature aging, protection of UVA & UVB rays is not enough, Blue light (400~500 nm)-emitted from the sun and digital devices is the one you need take serious consideration into account.
- UV light only makes up about 2 to 5% of the spectrum of light emitted by the sun. More than 50% of the spectrum of light emitted by the sun is visible light (1/3 Blue light).
- Exposure to blue light can have adverse biological effects on skin in as little as one hour.

#### Type of light & its impacts

LIGHT	SOURCE	Action Site	IMPACT
UVA	Sun	Epidermis+Dermis	Aging + skin cancer
UVB	Sun	Epidermis	Sunburn + skin cancer
HEV (Blue light)	Sun + Screens	Epidermis+Dermis+Hypodermis	Aging + hyperpigmentation

### 3

## Skin-Aging Solution - SpecPlex® GPS

### What cause skin aging?

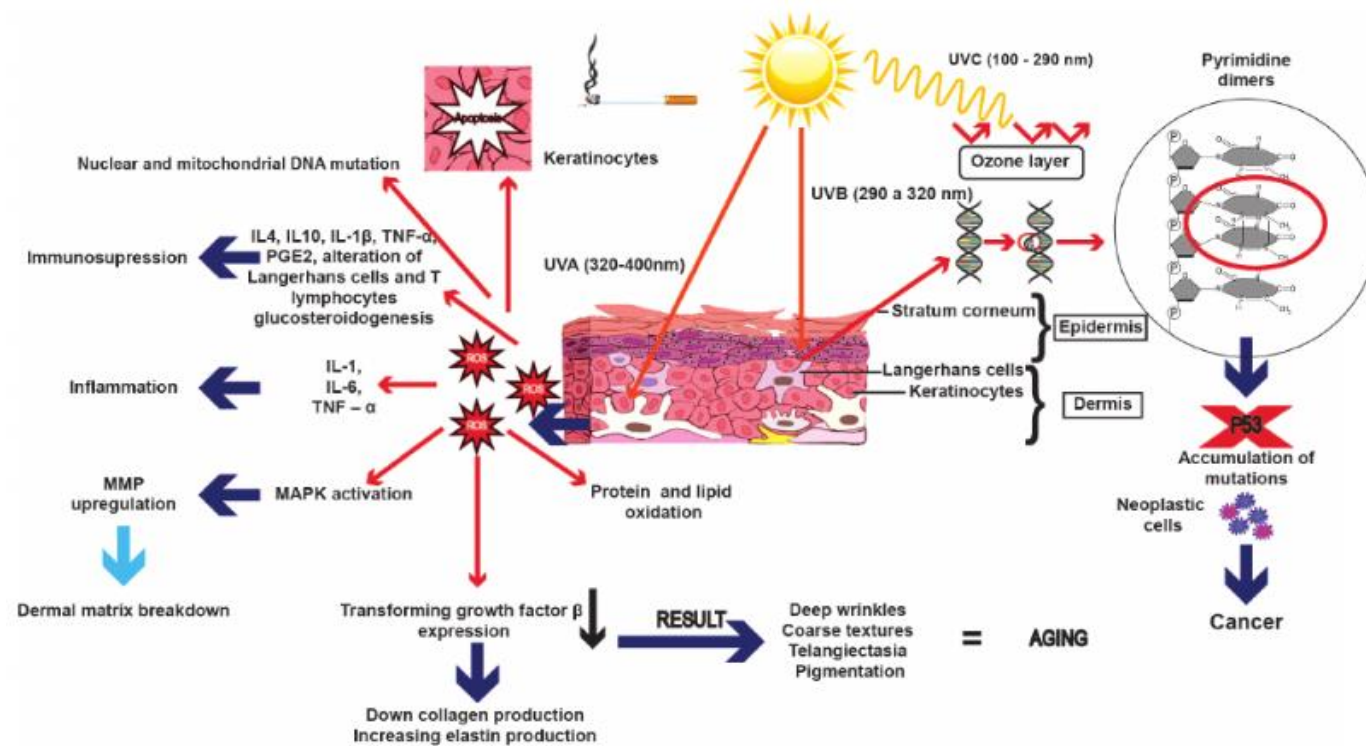


Fig 1. The molecular Mechanisms of skin damage induced by sunlight

- UVA (320-400 nm): larger role, 20-30% reach dermis, damage DNA indirectly through the generation of ROS
- UVB (290-320 nm): Epidermis, direct DNA damage

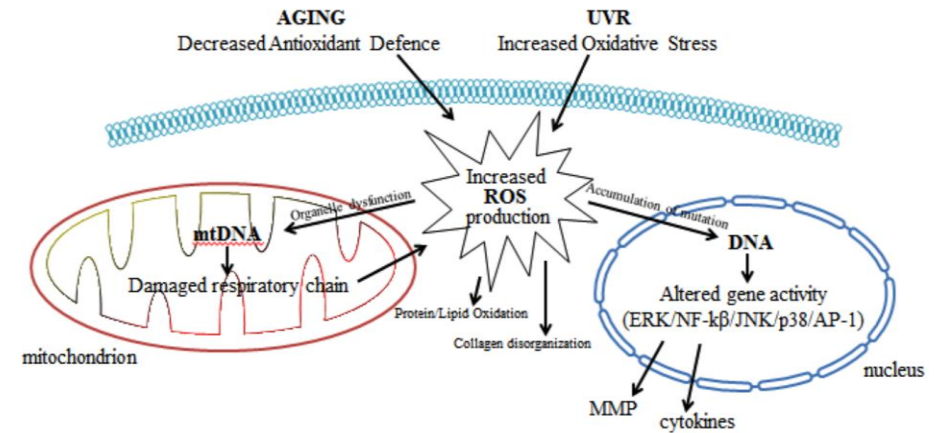


Fig 2. Connection between excessive production of ROS and skin aging

1) <Mechanisms of skin aging>, 5IATREIA Vol 30(2): 160-170 abril-junio 2017

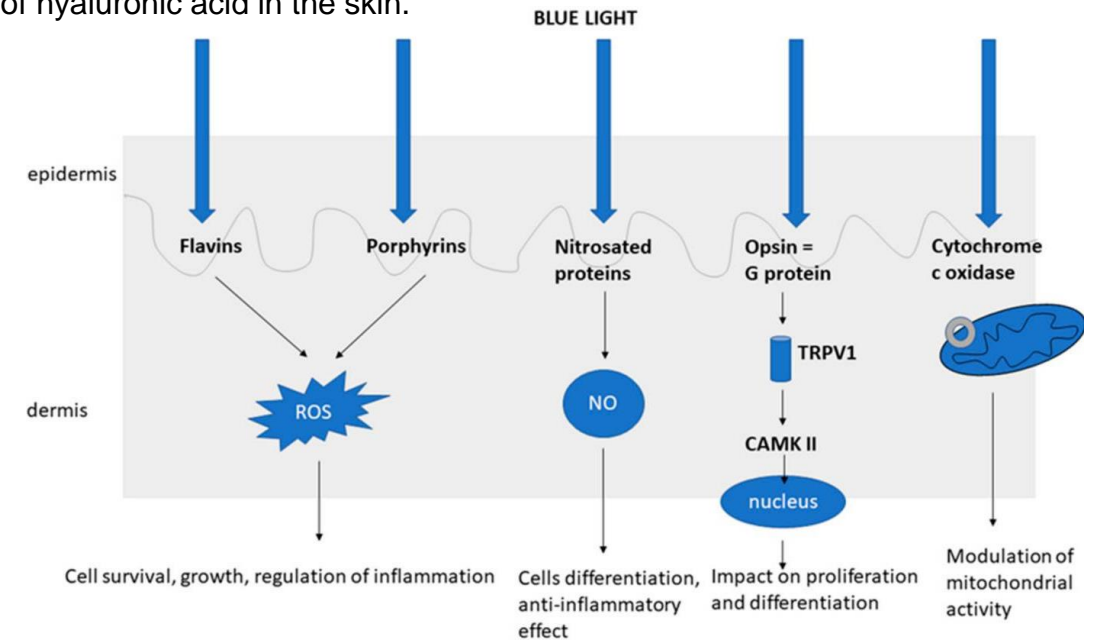
2) Reactive Oxygen Species (ROS); Nuclear Factor-κβ (NF-κβ); Activator Protein 1 (AP-1); mitochondrial DNA (mtDNA); Matrix Metalloproteinase (MMP); Extracellular Signal-Regulated Kinases (ERK); c-Jun Amino-Terminal Kinase (JNK).

## 3

## Skin-Aging Solution - SpecPlex® GPS

### Blue light (i.e. high-energy visible (HEV) light)

- ◆ Main source: sunlight, digital screens, light-emitting diodes (LEDs), and fluorescent lighting, etc.
- ◆ Cause skin damage similar to ultraviolet light, generate reactive oxygen species (ROS) and induce oxidative damage in the skin
- ◆ Penetrate deeper into the skin layers, induce cellular dysfunction, and DNA damage, negatively impact photoaging and inflammatory skin conditions
- ◆ Promote melanin production, induces hyperpigmentation
- ◆ Disrupt the circadian rhythm and create damage in skin cells
- ◆ Long-term exposure to blue light can accelerate skin aging by reducing levels of hyaluronic acid in the skin.



The mechanism of action of blue light

### 3

## Skin-Aging Solution - SpecPlex<sup>®</sup> GPS

### How to repair and resist skin aging?

Invention Patent No.: ZL202010696663.7-- A compound of ginkgo biloba extract and polypeptides and its application

- ◆ Scientific combination of **Ginkgo Biloba Leaf Extract** and **small molecule beauty peptides**
- ◆ Solve the tensed, stressed and dull skin, particularly occurred in urban life.
- ◆ Excellent **anti-photoaging**, **free radical inhibition** and **skin elasticity improvement** effects.

#### Prevent Skin Aging

**A**  
Anti-oxidant, resist the dullness and senility brought by free radical to skin

**B**  
Inhibit inflammatory factors and reduce inflammatory damage

#### Repair Skin Aging

**C**  
Relieve and relax skin, reduce skin wrinkles

**D**  
Promote the production of collagen and restore skin elasticity

## 3

## Skin-Aging Solution - SpecPlex® GPS

### Ginkgo-peptide Activating Complex — Exclusive 4 in 1 Complex Product

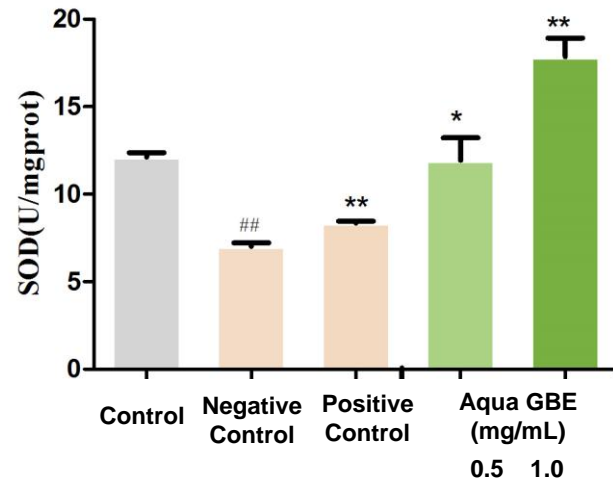
Objects	ACTIVE INGREDIENTS	MECHANISM of ACTION	EFFICACY
For <b>Exogenous aging</b> : deteriorated epidermal skin barrier capacity and inflammatory symptoms	Ginkgo Biloba Leaf Extract (Content: ≥ 0.5%)	<ul style="list-style-type: none"> <li>• Scavengers of free radicals</li> <li>• Protect dermal cells</li> <li>• Prevent the formation and deposition of pigment</li> </ul>	<ul style="list-style-type: none"> <li>✓ Potent antioxidant protection</li> <li>✓ Skin-soothing effects</li> <li>✓ Reduced signs of aging</li> <li>✓ Anti-photo aging (UV &amp; blue light)</li> </ul>
For <b>Endogenous aging</b> : collagen and elastin decreases	Palmitoyl pentapeptide-4 (Content: ≥ 0.05%)	<ul style="list-style-type: none"> <li>• Stimulate the growth of fibroblasts</li> <li>• Stimulate the synthesis of type I and III collagen</li> <li>• Stimulate the synthesis of hyaluronic acid</li> </ul>	<ul style="list-style-type: none"> <li>✓ Tightening skin</li> <li>✓ Smooth and improve skin elasticity</li> <li>✓ A long-lasting effect on static fine lines</li> </ul>
	Palmitoyl tetrapeptide-7 (Content: ≥ 0.005%)	<ul style="list-style-type: none"> <li>• Slow or suppress the production of excess interleukins</li> <li>• Inhibiting inflammatory responses and glycation damage</li> <li>• Boost the growth of the connective tissues</li> <li>• Increasing the production of collagen</li> </ul>	<ul style="list-style-type: none"> <li>✓ May help treat rosacea.</li> <li>✓ Reduce the appearance of uneven skin tones</li> <li>✓ Lighten skin</li> <li>✓ Improve skin elasticity</li> </ul>
	Acetyl Hexapeptide-8 (Content: ≥ 0.1%)	<ul style="list-style-type: none"> <li>• A classical Neurotransmitter Inhibitor Peptide (NIP)</li> <li>• Inhibit the release of neurotransmitter</li> <li>• Weakening the muscle contraction and the skin nerve conduction</li> </ul>	<ul style="list-style-type: none"> <li>✓ Reduce muscle contraction and relax muscles</li> <li>✓ Reduce the occurrence of dynamic fine lines</li> <li>✓ Increase elastin activity and smooth wrinkles</li> </ul>

## 3

## Skin-Aging Solution - SpecPlex® GPS

### Spec-Chem Skin-aging Solution——

#### **Aspect 1 Repair skin damage caused by light, remove free radicals and make skin youthful**



The level of SOD activity of each sample (##p < 0.01, compared with blank control; \* p < 0.05, compared with negative control; \*\*p < 0.01, compared with negative control)

**Ginkgo Biloba Leaf Extract (Aqua GBE)** - water soluble, Patented Extraction Technology

- Light (UV & Blue light) could caused oxidative damage in tissue and cells: **reactive oxygen species (ROS) content increase, superoxide dismutase (SOD) activity decrease.**
- **In vitro anti blue light efficacy:** assessed using EpiKutis blue light damage model by detecting the activity of superoxide dismutase (SOD)
- The SOD activity were **significantly increased**↑ after treatment with Aqua GBE, indicating that it had an inhibitory effect on the level of oxidative stress induced by blue light irradiation at the exposure dose of 0.5 mg/mL, 1mg/mL and 5 mg/mL.

The herb extract in SpecPlex® GPS can effectively inhibit peroxidation, improve the activity of superoxide dismutase, increase the antioxidant effect and prevent light damage.

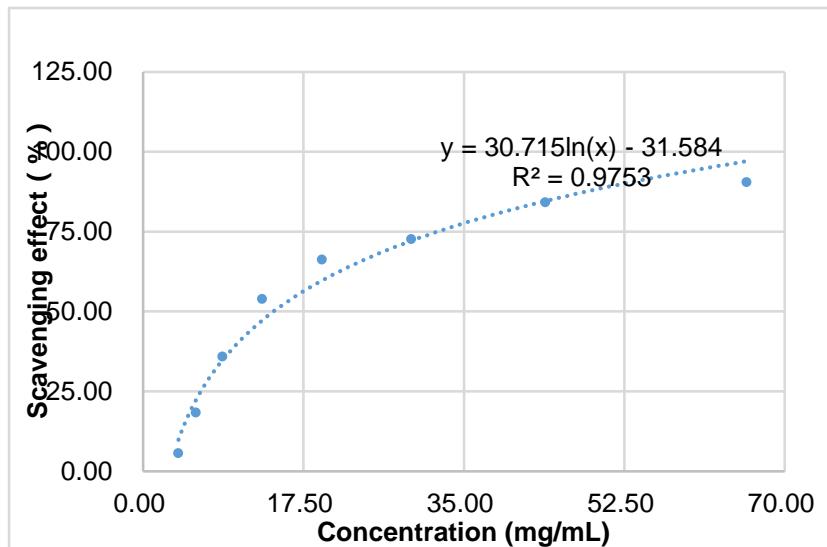
## 3

## Skin-Aging Solution - SpecPlex® GPS

### Spec-Chem Skin-aging Solution——

**Aspect 1** Repair skin damage caused by light, remove free radicals and make skin youthful

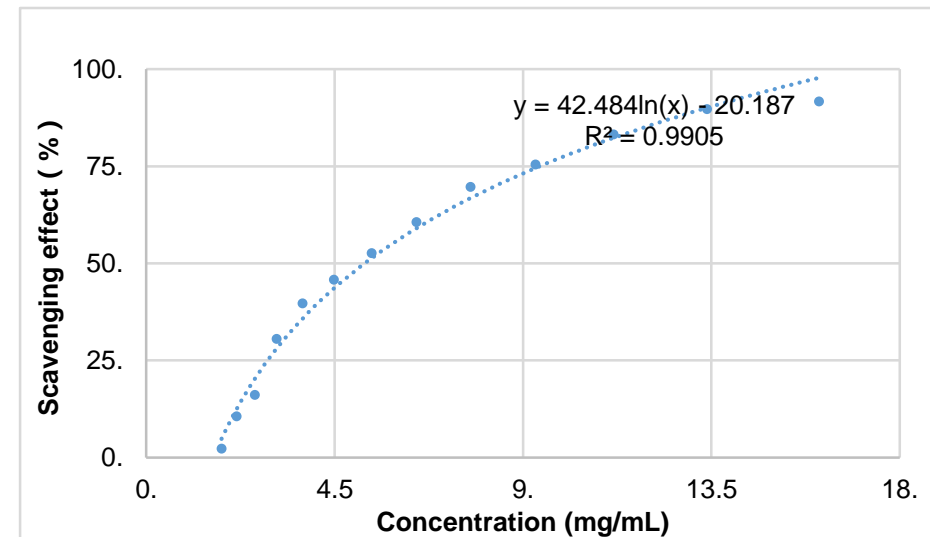
#### Hydroxyl radical scavenging



Antioxidant effect ( $\cdot\text{OH}$  scavenging) of SpecPlex® GPS

Scavenge hydroxyl radicals up to **90.53 %** at 65.84 mg/mL;  
EC<sub>50</sub> value is **14.24** mg/mL.

#### DPPH free radical scavenging



Antioxidant effect (DPPH $\cdot$  scavenging) of SpecPlex® GPS

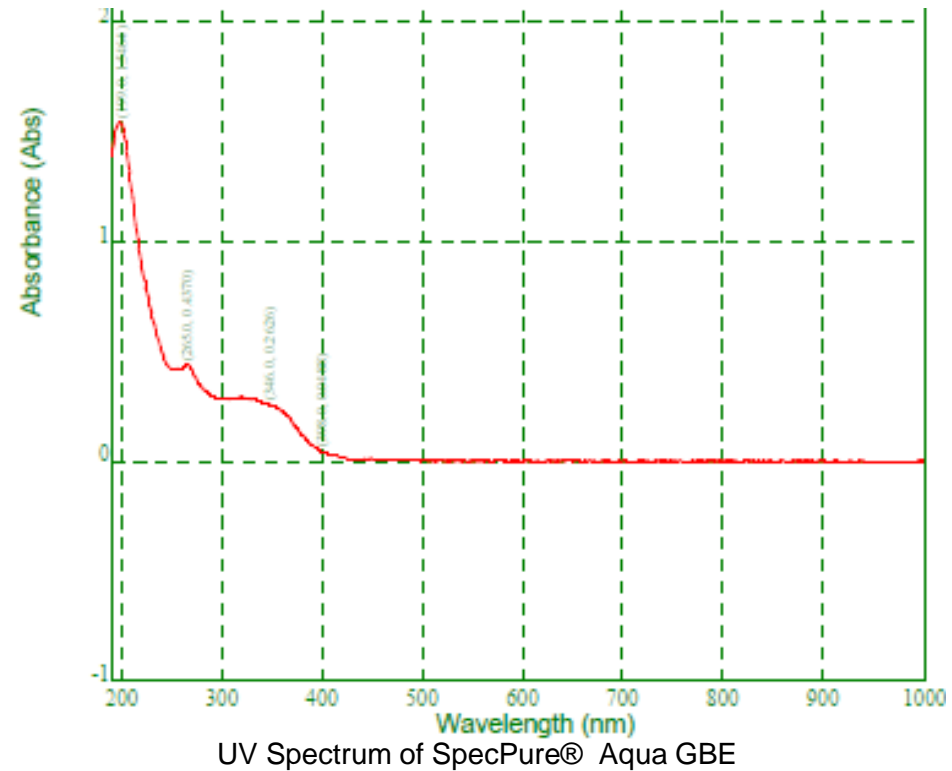
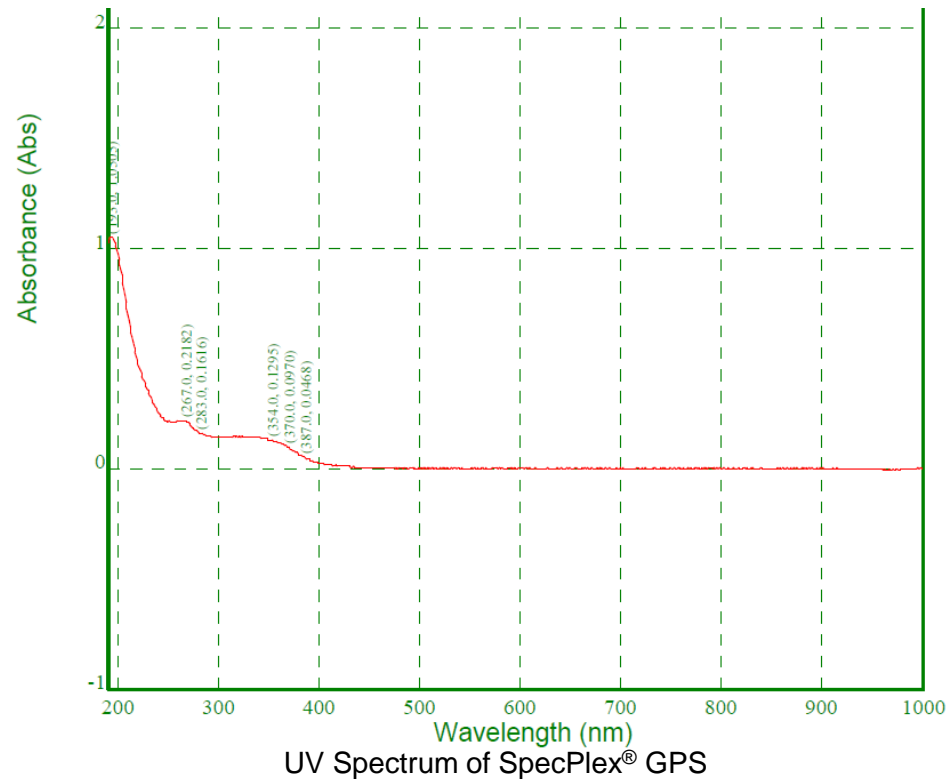
Scavenge DPPH free radicals up to **91.66 %** at 16.08 mg/mL; EC<sub>50</sub>  
value is **5.22** mg/mL.

## 3

# Skin-Aging Solution - SpecPlex® GPS

## Spec-Chem Skin-aging Solution——

**Aspect 1** Repair skin damage caused by light, remove free radicals and make skin youthful



SpecPlex® GPS has absorption peak during 300-400 nm (UV range)

SKIN-AGING SOLUTION

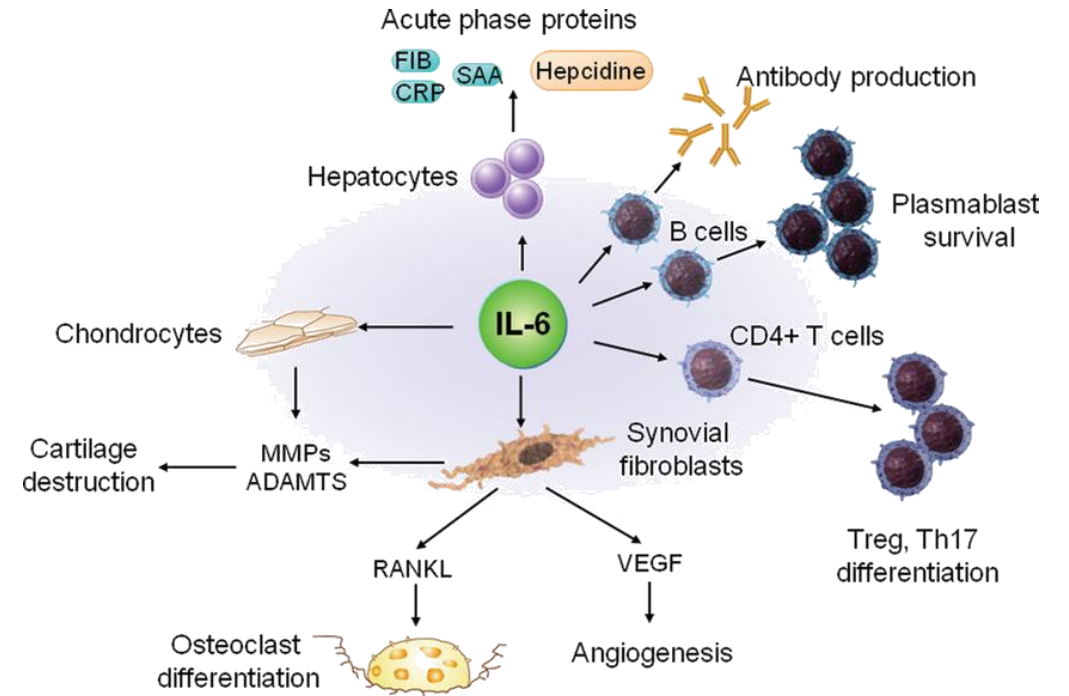
## Spec-Chem Skin-aging Solution——

### **Aspect 2** Decrease IL-6 secretion and promote the recovery of damaged skin

Table 4. Biological Activity

Test Substance	Test Concentration(s)	Procedure	Results
Palmitoyl Tetrapeptide-7	Not stated	Assay to evaluate ability of oligopeptide to down-regulate IL-6 in resting and inflamed cells <i>in vitro</i> .	Results for palmitoyl oligopeptide and DHEA were comparable in terms of the ability of each to down-regulate IL-6 in resting and inflamed cells <sup>20</sup>
Palmitoyl Tetrapeptide-7	Not stated	Keratinocytes and fibroblasts exposed to oligopeptide in the presence and absence of UVB irradiation	Palmitoyl tetrapeptide-7 caused decrease in IL-6 secretion in the presence and absence of UVB <sup>5</sup>

- **Interleukin** is a chemical often associated with inflammation, as the body creates it in response to damage. By blocking this chemical, Palmitoyl tetrapeptide-7 relieves some of the chemical pressure on the skin and allows it to heal faster.
- **Palmitoyl Tetrapeptide-7** is a fragment of immunoglobulin G. It can effectively reduce external damage and UV-induced interleukin IL-6 production in keratinocytes and fibroblasts, thereby **reducing inflammatory response and glycosylation damage**.

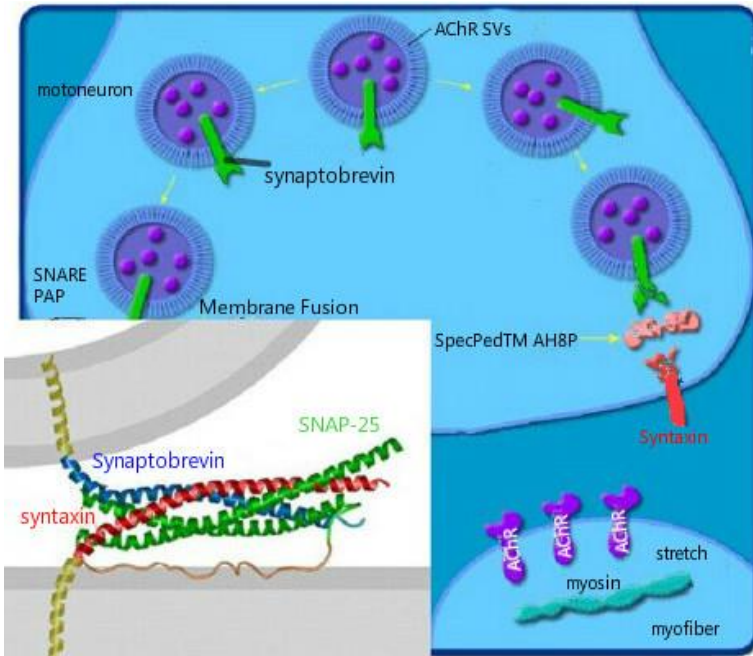


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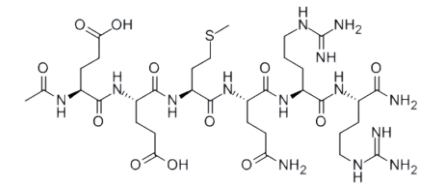
## Skin-Aging Solution - SpecPlex® GPS

### Spec-Chem Skin-aging Solution——

#### Aspect 3 Inhibiting the formation of SNARE complexes to relax the muscles



The structure of SpecPed® AH8P is similar to SNAP-25



Acetyl Hexapeptide-8

SNARE is formed by the combination of three proteins VAMP, Syntaxin and SNAP-25\*.

SpecPed® AH8P competes with SNAP-25 to occupy its position in the SNARE combination, thereby inhibiting the formation of SNARE, making muscles unable to receive neurotransmitters effectively, thus muscle contraction is inhibited

Excessive release of Catecholamines can also cause wrinkles, SpecPed® AH8P can inhibit the release of Catecholamines

SpecPlex® GPS reduces muscle contraction (i.e. relax muscle), consequently it effectively inhibits dynamic fine lines.

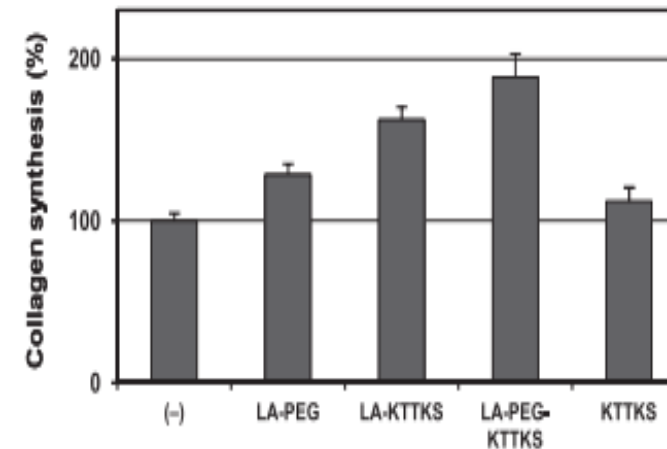
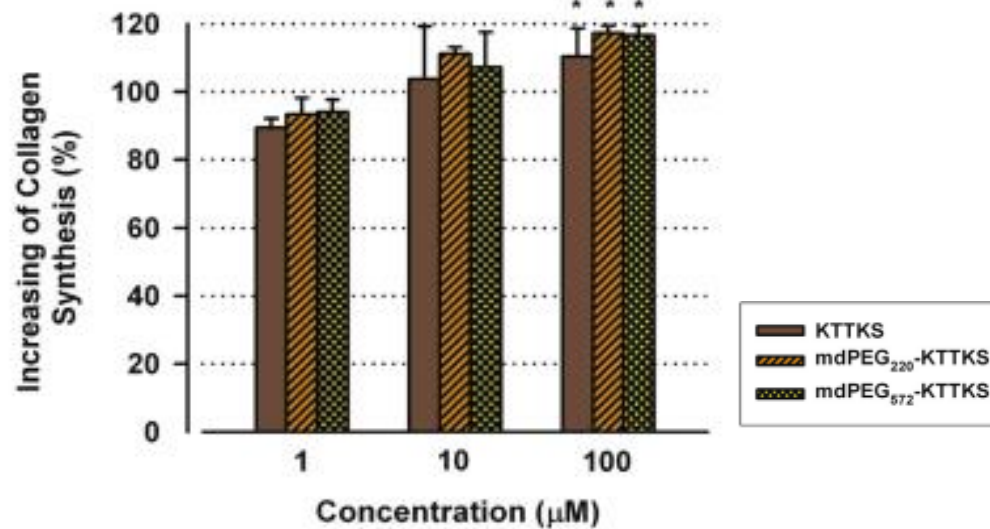
\*SNAP-25: Synaptosomal-associated protein; VAMP : Vesicle-Associated Membrane Protein, Syntaxin : synaptic membrane protein

## 3

## Skin-Aging Solution - SpecPlex<sup>®</sup> GPS

### Spec-Chem Skin-aging Solution——

#### Aspect 4 Promote collagen production and increase skin elasticity



**Palmitoyl pentapeptide-4 , pal-KTKS** combining Collagen I fragments with Palmitic Acid, more skin-friendly and hydrophilic, and can effectively promote **collagen, hyaluronic acid and elastin production**, benefits skin moisture content, increases skin thickness, reduces skin fine lines, and enhances skin firmness and radiance.

**Reference:**

- 1) Chichong Lu, et al .Synthesis of lipoic acideptide conjugates and their effect on collagen and melanogenesis [J].European Journal of Medicinal Chemistry. 69(2013) 449-454
- 2) Myung Sun Kim, et al. Synthesis and characterization of monodisperse poly(ethylene glycol)-conjugated collagen pentapeptideswith collagen biosynthesis-stimulating activity[J].Bioorganic & Medicinal Chemistry Letters. 25 ( 2015 ) 38-42.

## 3

## Skin-Aging Solution - SpecPlex® GPS

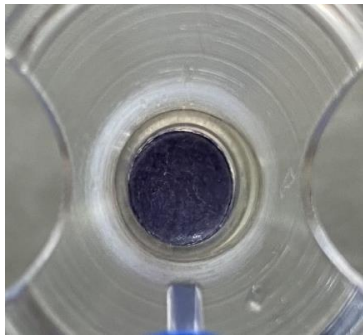
**In-vitro Skin irritation** - reconstruction of human epidermal skin 3D model, OECD TG439

### Evaluation criteria

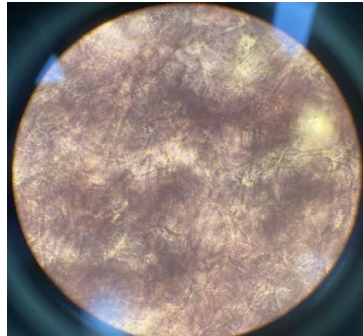
Tissue viability ( % )	Irritation
≤ 50	skin irritation
> 50	no skin irritation

### Results of tissue activity of skin model

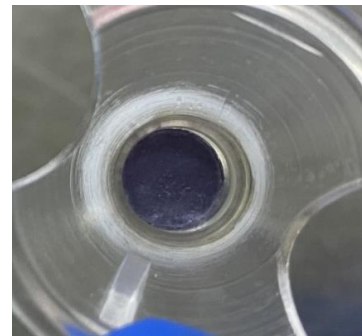
Group	Positive control	Negative control	SpecPlex® GPS
Mean OD±SD	0.140±0.044	0.731±0.019	0.661±0.044
Viability (%)	14.84±6.34	100.00±2.81	89.96±6.32



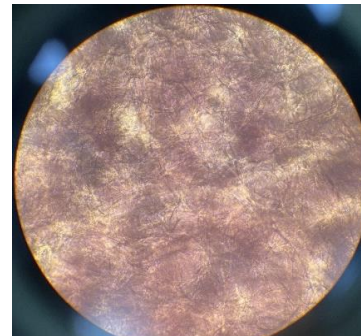
A: Model diagram of negative group after MTT treatment



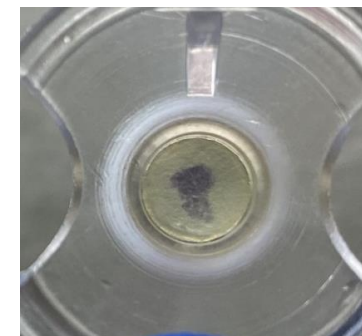
B: Microscopic diagram of negative group after MTT treatment



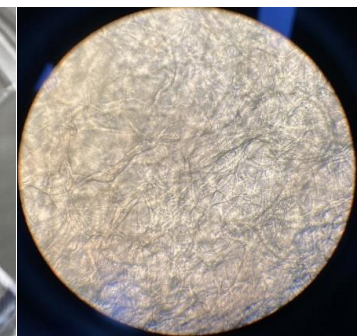
C: Model diagram of sample group after MTT treatment



D: Microscopic diagram of sample group after MTT treatment



E: Model diagram of positive group after MTT treatment



F: Microscopic diagram of positive group after MTT treatment

**Conclusion:** The tissue viability of "SpecPlex® GPS" is **89.96%** (viability >50% ) and it is considered as **no skin irritation**.

## 3

## Skin-Aging Solution - SpecPlex® GPS

### Human repeat patch test

**Test sample:** 10%SpecPlex® GPS serum

**Test subjects:** 2 males and 6 females

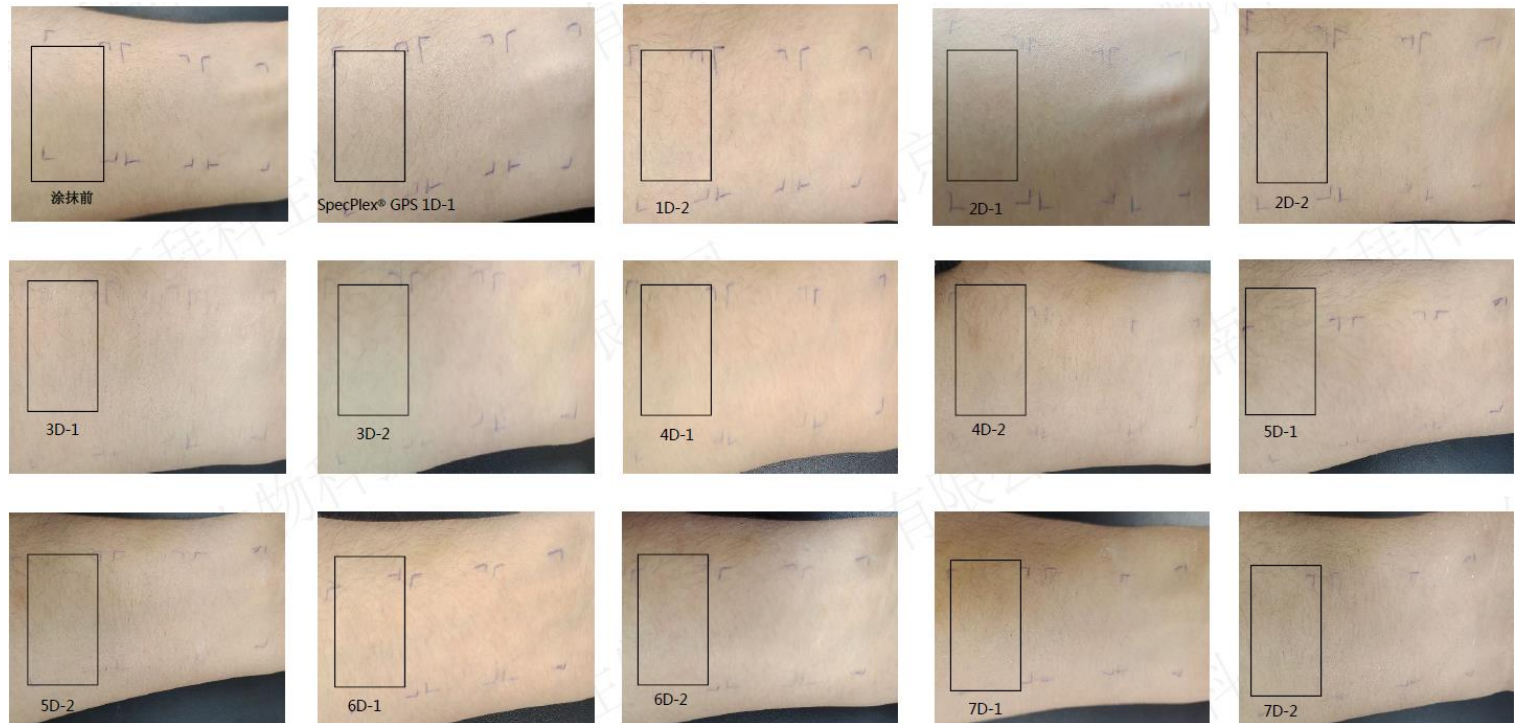
**Test site:** inside the forearm

**Test period:** 7 days

**Test procedure:** Apply the sample twice a day for 7 days while observing the skin reaction

**Conclusion:** Negative, no adverse effects observed

#### Typical subject images



## 3

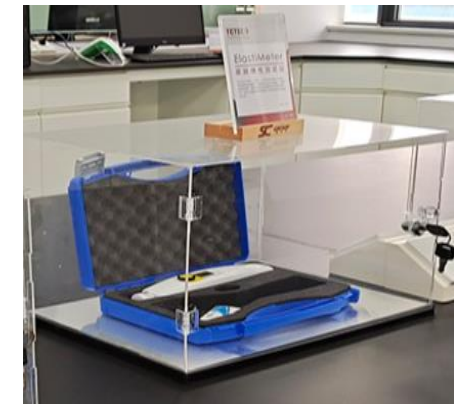
## Skin-Aging Solution - SpecPlex® GPS

### Elasticity & Wrinkle Improvement: in vivo

Product	10% SpecPlex® GPS Essence Cream
Instrument	ElastiMeter (ELM1128) , VisioFace 1000D
Subject	33 Females
Age	25 – 55 years old
Test Site	Facial
Cycle	0 , 7, 14, 28 days
Parameter	<ul style="list-style-type: none"> <li>•Skin Elasticity: ISE (Instant skin elasticity) (N/m)</li> <li>•Skin Wrinkle: <ul style="list-style-type: none"> <li>•Volume: used to indicate the size and depth of wrinkles;</li> <li>•Area: used to indicate width and length of wrinkles;</li> <li>•Area ratio: Used to indicate the ratio of wrinkles.</li> </ul> </li> </ul>
Frequency	Twice a day after cleansing in the morning & evening



VisioFace 1000D



ElastiMeter (ELM1128)

## Wrinkle Improvements

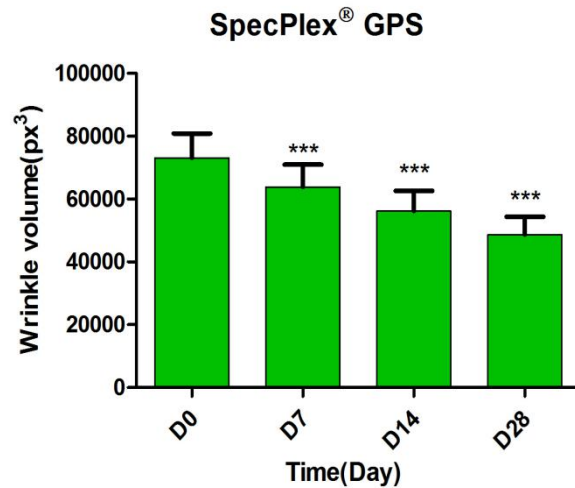


Fig. 1 Wrinkle volume at different times  
(\*\*\*p<0.0001 vs D0)

★ Wrinkle volume:

- ↓ **12.62%** @ Day 7,
- ↓ **23.13%** @ Day 14,
- ↓ **33.39%** @ Day 28;

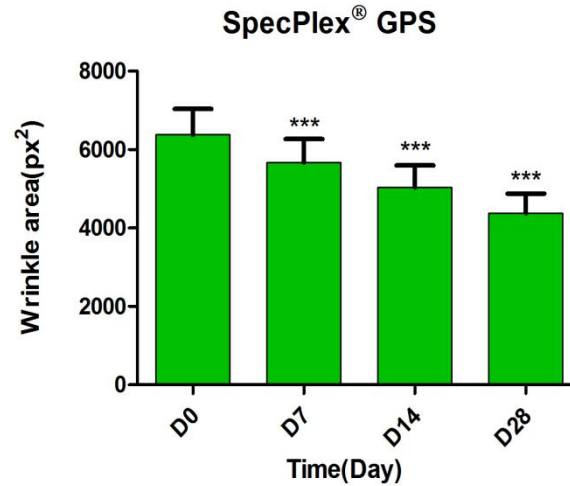


Fig. 2 Wrinkle area at different times  
(\*\*\*p<0.0001 vs D0)

★ Wrinkle area:

- ↓ **11.10%** @ Day 7,
- ↓ **20.96%** @ Day 14,
- ↓ **31.34%** @ Day 28;

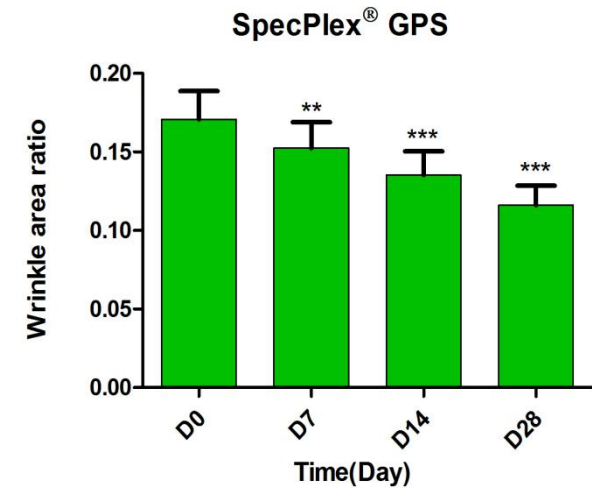


Fig. 3 Wrinkle area ratio at different times  
(\*\*p<0.01 vs D0 , \*\*\*p<0.0001 vs D0 )

★ Wrinkle area ratio:

- ↓ **10.72%** @ Day 7,
- ↓ **20.78%** @ Day 14,
- ↓ **32.08%** @ Day 28;

SpecPlex® GPS can effectively fade facial wrinkles.

## 3

## Skin-Aging Solution - SpecPlex® GPS

### Elasticity Improvements



The skin elasticity with time after applying SpecPlex® GPS  
 (\*\*\*) $p < 0.0001$  vs D0)

After using Essence Cream containing 10% SpecPlex® GPS

Instant skin elasticity increased by  $\uparrow$  9.39%, 16.92%, 27.51% after 7, 14, 28 days

It can significantly improve skin elasticity.



Day 0



Day 7



Day 14



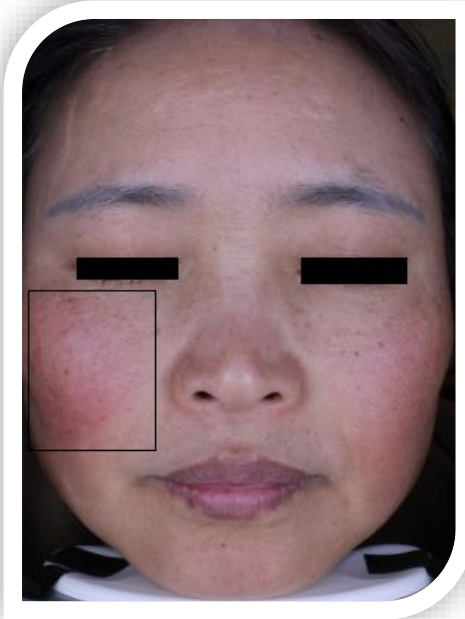
Day 28

Typical facial pictures of subjects

3

## Skin-Aging Solution - SpecPlex® GPS

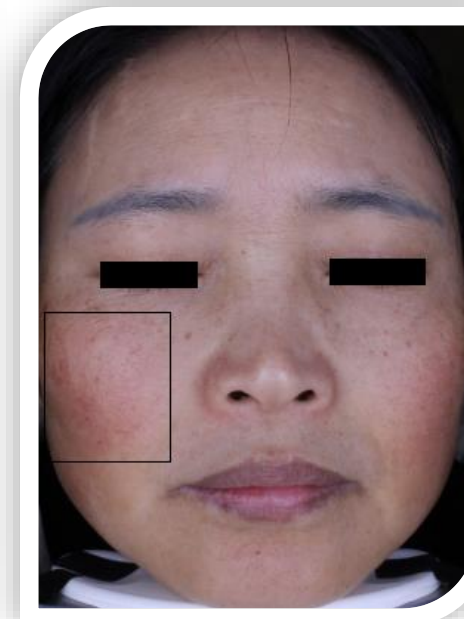
### Soothing results



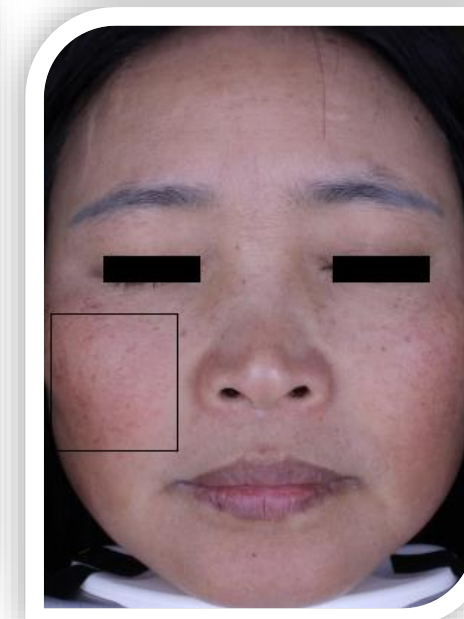
Day 0



Day 7



Day 14



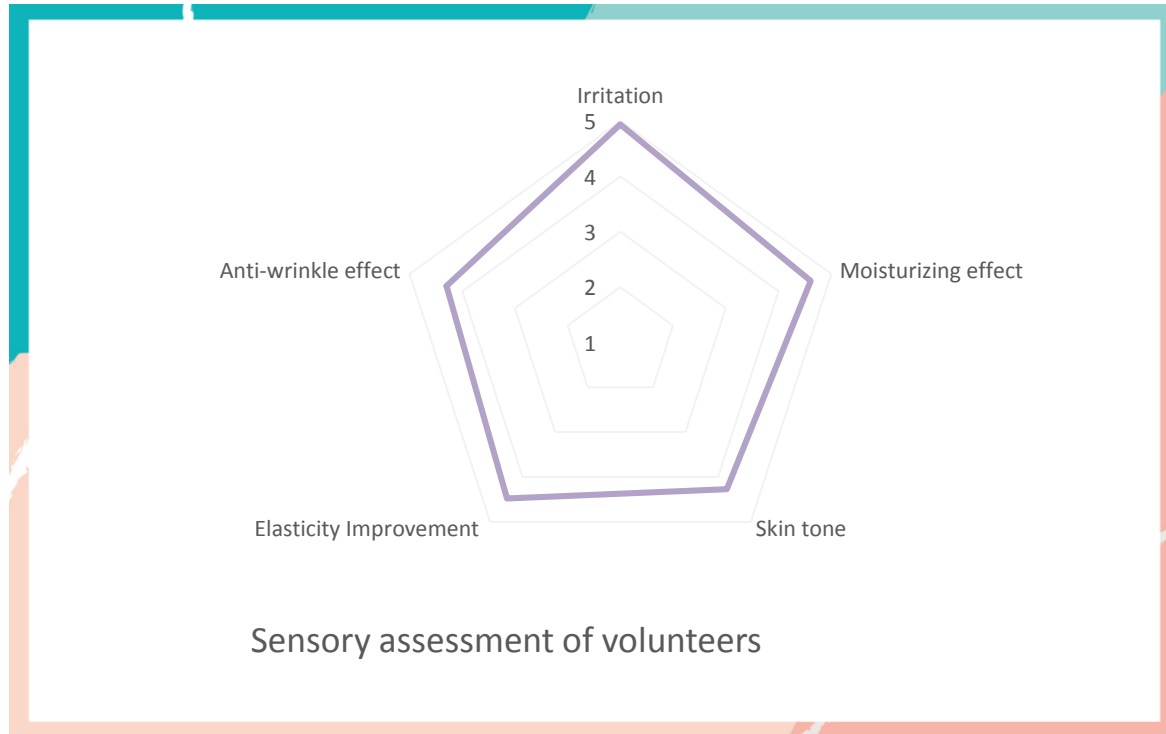
Day 28

After 28 days of using the product, the **red areas** on both sides of the subjects' cheeks clearly improved, indicating the soothing effects of SpecPlex® GPS.

## 3

## Skin-Aging Solution - SpecPlex® GPS

### Sensory Evaluation



Items	Standards	Average Score
Irritation	0 represents a strong stimulus, 5 represents no irritation	4.94
Moisturizing effect	0 represents no moisturizing, 5 represents high moisturizing	4.61
Skin tone	0 represents skin dull, 5 represents radiance	4.27
Elasticity Improvement	0 represents no effect, 5 represents very well	4.48
Anti-wrinkle effect	0 represents no effect, 5 represents very well	4.3

➤ **90%** volunteers thought that their skin were improved after applying the product for 4 weeks.

➤ **No incompatibility** was observed in or reported by any of the volunteers.

### 3

## Skin-Aging Solution - SpecPlex® GPS

### Summary & Features

Solve skin aging problems from both **internal** and **external**, and provide an overall **solution** for urban skin **problems** caused by pressure, environmental & light pollution, light damage, etc

1  
Remove dynamic & static lines

2  
Enhance skin elasticity

3  
Inhibit inflammatory factor

4  
Increase SOD activity, scavenge free radical and anti-oxidation, anti-blue light

5  
Repair skin barrier function, reduce skin redness and renew sensitive Skin

6  
Suitable for various formulations such as toner, lotion, essence, freeze-dried powder, etc. pH suggestion: 3-7. Add it at the end of the formulation (< 40°C).



SKIN-AGING SOLUTION

## 3

# Skin-Aging Solution - SpecPlex® GPS

## Reference Formula: Anti-Aging gels

Formula code: SC-AC2210009/SC-AC2210010/SC-AC2210011

w/w%	Trade name	INCI Name	Supplier	Function
<b>Part A</b>				
<b>To 100</b>	H <sub>2</sub> O	Water		
<b>3</b>	Glycerol	Glycerin		Humectant
<b>5</b>	Butylene Glycol	Butylene Glycol		Humectant
<b>0.18</b>	SpecThem® XTG200	Xanthan Gum (200 mesh)	SC	Thickener
<b>0.25</b>	SpecThem® SCB21	Acrylates/C10-30 Alkyl Acrylate Crosspolymer, Water	SC	Thickener
<b>Part B</b>				
<b>0.3</b>	PrzvFree® PE91	Phenoxyethanol, Ethylhexylglycerin	SC	Preservatives
<b>0.5</b>	PrzvFree® 4HAP	Hydroxyacetophenone	SC	Preservatives
<b>q.s.</b>	Sodium hydroxide (10%)	Sodium hydroxide		
<b>Part C</b>				
<b>0.1</b>	SpecKare® NK2	Hydroxyacetophenone	SC	Anti-Inflammatory Agent
<b>0.1</b>	SpecKare® ALLA	Allantoin	SC	Anti-Inflammatory Agent
<b>2</b>	SpecKare® TRHL02	Trehalose	SC	Humectant
<b>5</b>	SpecKare® HAL	Sodium Hyaluronate, Water, Sodium Hydroxymethylglycinate, Propylene Glycol	SC	Humectant
<b>Part D</b>				
<b>0.2</b>	Soluclear LRI	PEG-40 Hydrogenated castor oil, PPG-26-Buteth-26, Water		Solubilizer
<b>0.05</b>	Fragrance	Fragrance		Flavoring Agents
<b>1/5/10</b>	SpecPlex® GPS	Water, Glycerin, Steareth-20, Palmitoyl pentapeptide-4, Palmitoyl tetrapeptide-7, Acetyl Hexapeptide-8, Ginkgo Biloba Leaf Extract, Caprylyl Glycol, Ethylhexylglycerin	SC	Skin conditioner

### Description:

1. Improves skin roughness, as well as hole and various microgrooves caused by weakened skin repair ability due to out of collagen protein.
2. Relaxes skin, shrinks, continues to use for a while, fine lines begin to fade, skin begins to tighten.
3. Prevents the increase of wrinkles, makes skin more elastic, and allows skin to reproduce its brilliance.

### Procedure:

1. Stir and heat the Part A to 85°C until completely dissolved.
2. Cool down to 75°C and then add the part B until completely dissolved
3. Cool down to 40°C and then add the part C and part D
4. Cool down to room temperature under stirring.

### Properties:

Appearance: Light Yellow Transparent Gel

pH: 6.0±0.5

Viscosity(25°C,mPa·s): 5000±500

## Reference Formula: Brightening Firming Recovery Serum

Formula code: SC-AC2210013/SC-AC2210014

	w/w%	Trade Name	INCI Name	Supplier	Function
Part A	TO 100	Water	Water		Solvent
	0.02	EDTA2Na	Disodium EDTA		Chelating Agent
	3.0	Glycerin	Glycerin		Humectant
	0.5	PrzvFree® 4HAP	Hydroxyacetophenone	SC	Preservative
	5.0	SpecKare® HAL	Sodium Hyaluronate, Water, Sodium Hydroxymethylglycinate, Propylene Glycol	SC	Humectant
	0.5	SpecKare® DPA 98	Panthenol	SC	Humectant
	1.0	SpecKare® NMF50	Betaine	SC	Humectant
	2.0	SpecKare® TRHL02	Trehalose	SC	Humectant
	0.1	SpecKare® ALLA	Allantoin	SC	Skin - Conditioning Agent
Part B	6.0	Butylene Glycol	Butylene Glycol		Humectant
	0.12	SpecThem® XTG200	Xanthan Gum (200 mesh)	SC	Thickening agent
Part C	0.5	SpecPure® Aqua PC (5%)	Poria Cocos Sclerotium Extract, Glycerin, Water	SC	Skin - Conditioning Agent
	0.8	PrzvFree® CHP	Caprylhydroxamic Acid, 1,2-Hexanediol, Propanediol	SC	Preservative
	0.12	Solubilisant LRI	PPG-26-Buteth-26, PEG-40 Hydrogenated castor oil, Water		Solubilizing Agents
	0.03	Fragrance	Fragrance		Fragrance
	1.0	SpecWhite® VB3	Niacinamide	SC	Skin - Conditioning Agent
Part D	1.0/5.0	SpecPlex® GPS	Water, Glycerin, Steareth-20, Palmitoyl pentapeptide-4, Palmitoyl tetrapeptide-7, Acetyl Hexapeptide-8, Ginkgo Biloba Leaf Extract, Caprylyl Glycol, Ethylhexylglycerin	SC	Skin - Conditioning Agent

### Description:

- 1 Fresh and supple texture, easily absorbed
- 2 Firm and Tone Serum
- 3 Enhance the natural regeneration of skin
- 4 Re-establish the skin's brightness and vitality

### Procedure:

1. Mix Part A, heat to 85°C, keep stir until completely uniform.
2. Add Part B
3. Cool down to 40°C, add part C and part D
4. Cool down to room temperature under stirring.

### Properties:

Appearance	Light yellow transparent fluid
pH	6.0±0.5
Viscous	1000±500 mPa.s

## Reference Formula: Anti-Aging Cream

Formula code: SC-AC2210019/SC-AC2210020/SC-AC2210021

	w/w %	Trade Name	INCI Name	Supplier	Function
Part A	To 100	Water	Water		Solvent
	3.0	Glycerin	Glycerin		Humectant
	0.2	SpecThem® XTG200	Xanthan Gum	SC	Thickening agent
	0.03	EDTA 2Na	Disodium EDTA		Chelating agent
	2.0	SpecKare® TRHL02	Trehalose	SC	Humectant
	0.1	SpecKare® ALLA	Allantoin	SC	Humectant
Part B	2.0	Cetiol CC	Dicaprylyl Carbonate		Emollient
	2.0	SpecKare® BTS Oils	Camellia Sinensis Seed Oil	SC	Emollient
	2.5	SpecSufc® SC-M68	Cetearyl Glucoside, Cetearyl Alcohol, Water	SC	Emulsifying Agent
	1.5	SpecThem® C1618	Cetearyl Alcohol	SC	Emulsifying Agent
	1.0	SpecThem® GMS	Glyceryl Stearate	SC	Emulsifying Agent
	2.0	SpecKare® SQA	Squalane	SC	Emulsifying Agent
	3.0	SpecPure® MGS	Mangifera Indica (Mango) Seed Butter	SC	Emulsifying Agent
	0.3	SpecKare® VEA	Tocopheryl Acetate	SC	Emulsifying Agent
Part C	0.8	SEPINOV™ EMT-10	Hydroxyethyl Acrylate/Sodium Acryloyldimethyl Taurate Copolymer		Thickening agent
	3.0	Butylene Glycol	Butylene Glycol		Humectant
Part D	0.6	PrzvFree® CCP	Caprylyl Glycol, Caprylhydroxamic acid, Propanediol	SC	Preservative
	0.4	ParbFree® PE91	Phenoxyethanol, Ethylhexylglycerin	SC	Preservative
	0.15	Fragrance	Fragrance		Fragrance
	1.0/5.0/10.0	SpecPlex® GPS	Water, Glycerin, Steareth-20, Palmitoyl pentapeptide-4, Palmitoyl tetrapeptide-7, Acetyl Hexapeptide-8, Ginkgo Biloba Leaf Extract, Caprylyl Glycol, Ethylhexylglycerin	SC	Skin - Conditioning Agent

### Description:

1. promote the renewal of cells in the basal layer of epidermis,
2. protect the supporting fibers of cutaneous tissue, collagen and elastin
3. maintain the moisture balance of the skin
4. smoother facial features, reduce wrinkles, and reduced line depths across your skin shortly after beginning use.

### Procedure:

1. Mix Part A, heat to 85°C, keep stirring until uniform.
2. Mix part B, heat to 85°C, keep stirring until uniform.
3. Add Part B to Part A, add Part C, keep homogenize for 5 mins.
4. Cool down to 40°C, add part D.
5. Cool down to room temperature under stirring.

### Properties:

Appearance: Off-white Cream

pH: 6.0±0.5

Viscosity(25°C,mPa.s): 20000±5000

*Thank you  
for your attention!*



**Spec-Chem Group**

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