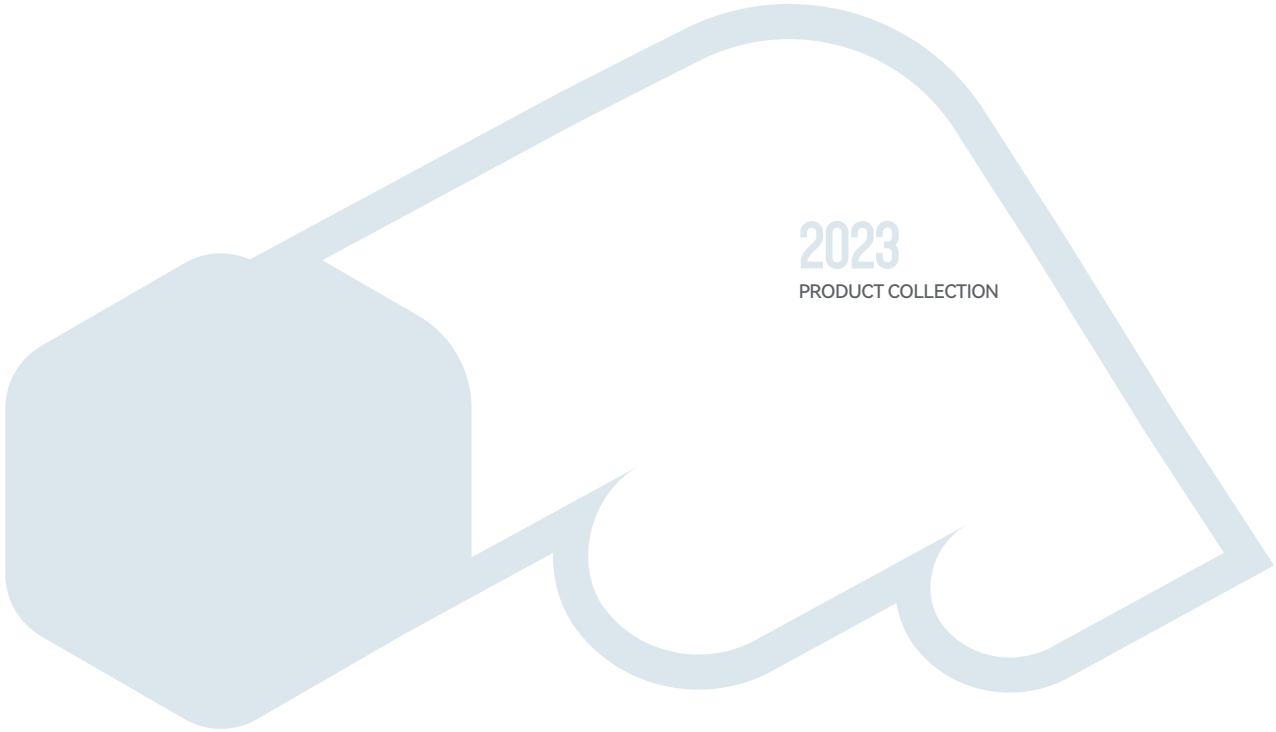
TIDETRON
BIOWORKS

ONE OF THE WORLD'S FIRST SYNTHETIC BIO-MANUFACTURING PLATFORMS TO REALIZE MASS PRODUCTION OF VARIOUS SUBSTANCES



2023

PRODUCT COLLECTION

HOT NEW

CONTENTS

ABOUT TIDETRON

TIDETRON BIOWORKS

One of The World's First Synthetic Bio-Manufacturing Platforms to Realize Mass Production of Various Substances

Tidetron Bioworks Technology Co., Ltd. is one of the world's first synthetic bio-manufacturing platforms to realize mass production of various substances. We adhere to the principle of "It's growing" and are committed to synthetic biotechnology innovation to meet people's new requirements on medicine, food, cosmetics, and safety. Now we have established a chain from R&D to production and built our unique Tidetron Altra platform-based strain library and component library. We have made absolute breakthroughs in mass production and universality. Our factory could provide customized production, with an annual production capacity exceeding 10,000 tons.

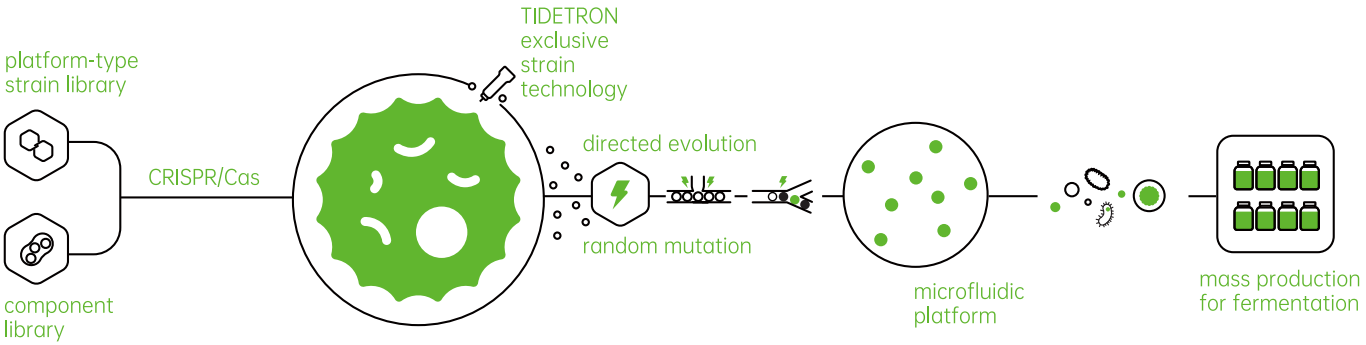
At present, there are more than 50 substances on sale, including peptides, erythritol, and bulk commodities. We also provide integrated enterprise-universities-researches solutions in skin care, food and beverage, household cleaning, biomedicine, etc.

50+
Substances On Sale

N+
Customizable Products

TIDETRON TECHNOLOGY

Synthetic biology has promoted the “third biotechnology revolution”, which can synthesize substances by designing, transforming and even creating a new cell. It is expected to solve the problems of energy shortage, environmental pollution, medical health, food shortage, etc. Tidetron is committed to the innovation of synthetic biology and green production and supply.



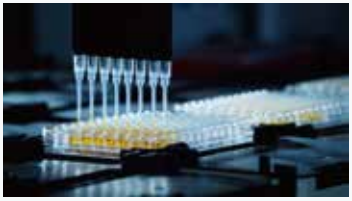
TIDETRON ADVANTAGES

More Pure More Efficient More Green More Safety

	STABILITY	PRODUCT PROPERTIES	PRODUCTIVITY	ENVIRONMENTAL EFFECT
TRADITIONAL CHEMICAL SYNTHESIS	Coincident	More impurities & Low activity	More reaction steps; complex process High difficulty in synthesizing long-chain peptides	Heavy pollutant discharge & High carbon emissions
TRADITIONAL BIOLOGICAL FERMENTATION	Coincident	High activity & High purity	Similar reaction steps Unaffected by the length of the target peptide chain	Low yield; needs to be produced on a large scale; produces a certain amount of carbon emissions
TIDETRON BIOWORKS	Coincident	High activity & High purity	Similar reaction steps Unaffected by the length of the target peptide chain. Innovative technique & High productivity	Low pollution; uses straw and other environmentally-friendly raw materials to partially replace traditional fermentation raw materials to greatly reduce carbon emissions

TIDETRON R&D

Tidetron R&D Centre has an area of 2,000 square meters, and our R&D teams from various industries including biology, medicine, engineering and computer. Tidetron has obtained many research achievements and technical patents in material research, process upgrading, transformation and application in synthetic biology.



TIDETRON MANUFACTURE

TIDETRON factory is located in Jinan, Shangdong Province. Its fermentation workshop has a total area of 10,000 square meters and a production capacity of 20,000 tons per year. There have complete purification and testing equipment, strict QC system. The product quality is highly stable while delivering to customers.

SUPER INTELLIGENT

The world's first-class customized intelligent production equipment

SUPER DELIVERY

Annual capacity of twenty thousand tons

SUPER QUALITY

A complete quality management system to ensure safe, reliable, sustainable and high-quality products

SUPER GREEN

A green and environmentally friendly production process, along with low carbon emissions

CLEAN BEAUTY

Anti-aging Anti-wrinkle

CODE	TRADE NAME	INCI NAME	VOLUME OF ADDITION SUGGESTED	FUNCTIONS	CORRESPONDING PAGE NUMBER
01 HOT	Creapep® Arginine/Lysine Polypeptide	ARGININE/LYSINE POLYPEPTIDE	0.0005-0.003%	Arginine can relax muscles to quickly remove skin wrinkles such as nasolabial folds, forehead wrinkles, eye wrinkles, and so on, without paralyzing nerve activity and ensuring safety and non-toxic side effects, which makes skin smooth and elastic.	P07
02 HOT	Creapep®Dipeptide Diaminobutyroyl Benzylamide Diacetate	DIPEPTIDE DIAMINOBUTYROYL BENZYLAMIDE DIACETATE	0.01-0.2%	Dipeptide Diaminobutyroyl Benzylamide Diacetate binds nmAchR ε subunit thereby blocking the binding of acetylcholine to the receptor, blockade of excitatory neurotransmitters, and thus muscle relaxation.	P08
03 HOT	Creapep®Acetyl Hexapeptide-8	ACETYL HEXAPEPTIDE-8	0.01-0.2%	Acetyl Hexapeptide-8 mimics the N-terminal end of SNAP-25 and competes with the natural protein for a position in the SNARE complex. The vesicle can not release neurotransmitters efficiently and therefore muscle contraction is attenuated, preventing the formation of lines and wrinkles.	P09
04 NEW	Creapep® Decapeptide-4	DECAPEPTIDE-4	0.01-0.1%	Decapeptide-4 acts can penetrate the dermis to stimulate the synthesis of collagen and elastin, it can stimulate the proliferation of collagen, elastic fibers, and hyaluronic acid, improve the skin's moisture content, increase skin thickness and reduce fine lines.	P10
05	Creapep®Palmitoyl Tripeptide-1	PALMITOYL TRIPEPTIDE-1	0.000625-0.01%	Palmitoyl tripeptide-1 is a matrikine signal peptide. It acts on the dermis and can promote the synthesis of different proteins such as collagen I, collagen II, elastin, laminin, and fibronectin.	P11
06	Creapep®Palmitoyl Tripeptide-5	PALMITOYL TRIPEPTIDE-5	0.001-0.01%	Palmitoyl tripeptide-5 can promote collagen and elastin synthesis in the dermis and repair wrinkles.	P12
07	Creapep®Palmitoyl Pentapeptide-4	PALMITOYL PENTAPEPTIDE-4	0.002-0.01%	Palmitoyl pentapeptide-4 can promote the synthesis of collagen types I and II and fibronectin, which increases skin thickness and reduces wrinkles.	P13

CLEAN BEAUTY

Anti-aging Anti-wrinkle

CODE	TRADE NAME	INCI NAME	VOLUME OF ADDITION SUGGESTED	FUNCTIONS	CORRESPONDING PAGE NUMBER
08 HOT	Creapep® Oligopeptide-1	OLIGOPEPTIDE-1 (TRIPEPTIDE-1)	0.01-0.5%	Tripeptide-1 can promotes the production of collagen, elastin, and hyaluronic acid that achieves anti-aging and anti-wrinkle functions.	P14
09	Creapep® Oligopeptide-3	OLIGOPEPTIDE-3	0.0002-0.03%	Oligopeptide-3 has high compatibility with the skin cell receptor. It strengthens growth factor signal transmission by binding to skin cell receptors.	P15
10	Creapep® Oligopeptide-5	OLIGOPEPTIDE-5	0.0002-0.03%	Oligopeptide-5 prompts the phosphorylation of C-terminal tyrosine residues within the receptor's cell. The receptor possesses tyrosine-protein kinase activity after phosphorylation and interacts with a range of target proteins in the cell, triggering signaling cascades.	P16
11	Creapep® Hexapeptide-9	HEXAPEPTIDE-9	0.001-0.1%	Hexapeptide-9 is a very stable peptide, existing in the structures of collagen IV and collagen XVII (two key collagens in the human basement membrane). It has a significant anti-wrinkle and repairing efficacy.	P17
12	Creapep®Acetyl Tetrapeptide-9	ACETYL TETRAPEP-TIDE-9	0.0007-0.13%	·Improve blood circulation. ·Locally block nerves transmitting muscle contractile information, allowing muscle relaxation. ·Enhance proteoglycan synthesis, promote collagen synthesis, and increase skin firmness.	P18
13	Creapep®Acetyl Tetrapeptide-11	ACETYL TETRAPEP-TIDE-11	0.000105-0.0165%	Acetyl tetrapeptide-11 can promote the synthesis of Syndecan-1 and strengthen epidermal adhesion.	P19
14	Creapep® Hydroxypropyl Tetrahydropyrantriol	HYDROXYPROPYL TETRAHYDROPY-RANTRIOL	0.1-10%	Hydroxypropyl Tetrahydropyrantriol can restore extracellular matrix function, induce the generation of GAGs in the epidermis, promote the accelerated production of collagen IV and VII by dermal cells, • enhance the connectivity between dermis and epidermis, • improve the combination of dermis and epidermis.	P20

HOT

COSMOS APPROVED

CREAPEP® ARGININE/LYSINE POLYPEPTIDE

Product introduction

Alias:	Arginine/Lysine peptide/Conotoxin
CAS No.:	936616-33-0
Purity:	≥98.0%
Production method:	biological fermentation

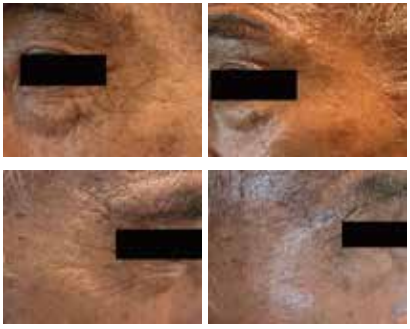
Efficacy Experiments

Apply 30 ppm of TIDETRON· Arginine on subjects' canthi. Compare and observe the changes in skin roughness and the depth of the wrinkles after 15 mins.

It is observed that the subjects' wrinkles were significantly reduced after using arginine. Their skin roughness, skin tone, and conditions of periocular skin were greatly improved.

Result:

Arginine can rapidly improve and smooth wrinkles and has an instant effect on anti-wrinkle.



Before After

Comparison of canthi before and after using TIDETRON· Arginine for 15 mins

After the subjects used a 10 ppm aqueous solution of TIDETRON·Arginine, there was a significant reduction in wrinkles than before, with an average reduction of 30.67%. The average wrinkle score decreased from 9.39 to 4.49.

Furthermore, the subjects' wrinkles were reduced by 23.30% and 23.97% separately after using solutions of 5 ppm and 20 ppm.

Figure1 Effect of 10ppm Arginine Aqueous Solution on Periocular Wrinkles

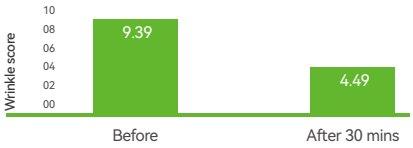
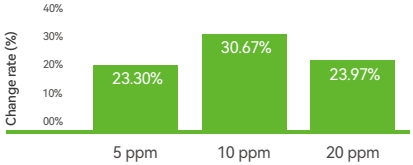


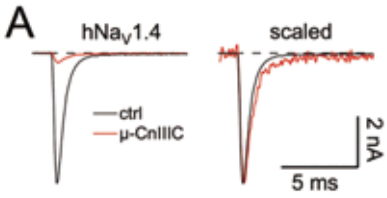
Figure2 Changes of Periocular Wrinkles After Using Different Concentrations of Arginine Aqueous Solutions



Mechanism

After being ordered and synthesized, arginine can provide potent muscle relaxation and an immediate anti-wrinkle effect, specifically blocking the NaV1.4 pathway responsible for Na+ influx in muscle fibers. The formation of end-plate potential is inhibited and then the potential that controls muscle movement is formed. In this way, the mimetic muscle is relaxed and wrinkles are smoothed.

Current track under -20 mV
(Red: μ-conotoxin; Black: normal group)



Applications

Provides anti-wrinkle and anti-aging effects in beauty and care products (e.g., lip balm, lotion, AM/PM cream, eye serum, gel, etc.)

HOT

CREAPEP® DIPEPTIDE DIAMINOBUTYROYL BENZYLAMIDE DIACETATE

Product Introduction

Alias:	Dipeptide Diaminobutyroyl Benzylamide Diacetate
CAS No.:	823202-99-9
Purity:	≥98.0%
Recommended concentration:	0.01-0.2%
Production method:	biological fermentation

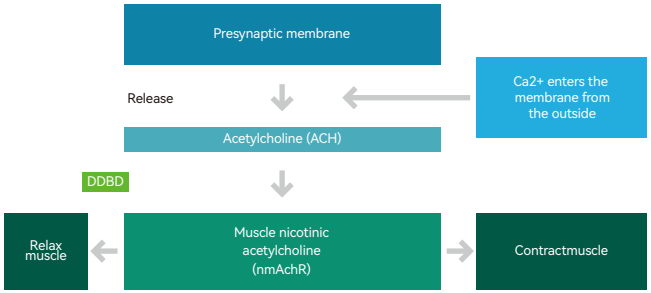
Efficacy Experiments

30 subjects aged between 30 and 50 years old applied lotion containing 0.2% TIDETRON·DDBD solution around their eyes, twice a day, morning and night, for four weeks, and researchers observed the changes in wrinkles around their eyes. Result: TIDETRON·DDBD had a significant efficacy and activity in anti-wrinkle, which reduces the number, perimeter, area, and volume of facial wrinkles effectively.

Parameter	Unit	Group	Item	WO	W4
NUMBER OF WRINKLES	line	Test group	Average	20.5	18.7
			Change rate %	/	-8.78%
		Control group	Average	21.1	21.6
			test group %	/	2.37%
		Test group VS Control group	Change rate %	/	-11.15%
PERIMETER OF WRINKLES	min	Test group	Average	331.15	301.98
			Change rate %	/	-8.81%
		Control group	Average	339.36	347.68
			Change rate %	/	2.45%
		Test group VS Control group	Change rate %	/	-11.26%
AREA OF WRINKLES	mm^2	Test group	Average	46.882	42.967
			Change rate %	/	-8.35%
		Control group	Average	49.303	49.361
			Change rate %	/	0.12%
		Test group VS Control group	Change rate %	/	-8.47%
VOLUME OF WRINKLES	mm^3	Test group	Average	1.4549	1.3542
			Change rate %	/	-6.92%
		Control group	Average	1.5427	1.5138
			Change rate %	/	-1.87%
		Test group VS Control group	Change rate %	/	-5.05%

Mechanism

Dipeptide Diaminobutyroyl Benzylamide Diacetate is the reversible antagonist of nmAchR. It binds nmAchR ε subunit thereby blocking the binding of acetylcholine to the receptor, ultimately leading to receptor closure, blockade of excitatory neurotransmitters, and thus muscle relaxation.



Applications

Provides anti-wrinkle, antioxidative, and skin-firming effects in beauty and care products (e.g., eye serum, lotion, facial cream, etc.)

HOT

CREAPEP® ACETYL HEXAPEPTIDE-8

Product Introduction

Alias:	Argireline; hexapeptide
CAS No. :	616204-22-9
Purity:	≥98.0%
Recommended concentration:	0.01-0.2%
Production method:	biological fermentation

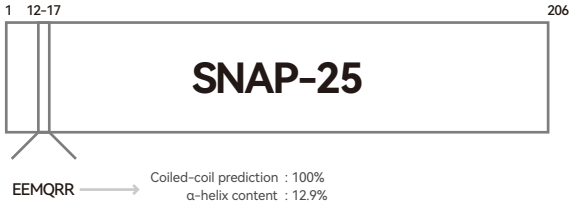
Efficacy Experiments

Subjects from 30 to 50 years old applied lotions with 0.2% acetyl hexapeptide-8 solution around the eyes twice a week, morning and night. After four weeks, observe the changes in the subjects' wrinkles around the eyes.
The result found that acetyl hexapeptide-8 has a certain anti-wrinkle activity and efficacy which can reduce facial wrinkles effectively in terms of number, perimeter, and area.

Parameter	Unit	Group	Item	WO	W4
NUMBER OF WRINKLES	line	Test group	Average	22.6	21.9
			Change rate %	/	-3.10%
		Control group	Average	20.0	20.6
			Change rate %	/	3.00%
		Test group VS Control group	Change rate %	/	-6.10%
PERIMETER OF WRINKLES	min	Test group	Average	328.25	306.35
			Change rate %	/	-6.67%
		Control group	Average	316.54	318.63
			Change rate %	/	2.45%
		Test group VS Control group	Change rate %	/	-7.33%
AREA OF WRINKLES	mm^2	Test group	Average	44.135	42.979
			Change rate %	/	-2.62%
		Control group	Average	43.214	43.740
			Change rate %	/	1.22%
		Test group VS Control group	Change rate %	/	-3.84%
VOLUME OF WRINKLES	mm^3	Test group	Average	1.2294	1.2323
			Change rate %	/	0.24%
		Control group	Average	1.2188	1.2778
			Change rate %	/	4.84%
		Test group VS Control group	Change rate %	/	-4.60%

Mechanism

Acetyl Hexapeptide-8 mimics the N-terminal end of SNAP-25 and competes with the natural protein for a position in the SNARE complex. If the SNARE complex is slightly destabilized, the vesicle can not release neurotransmitters efficiently and therefore muscle contraction is attenuated, preventing the formation of lines and wrinkles.



Applications

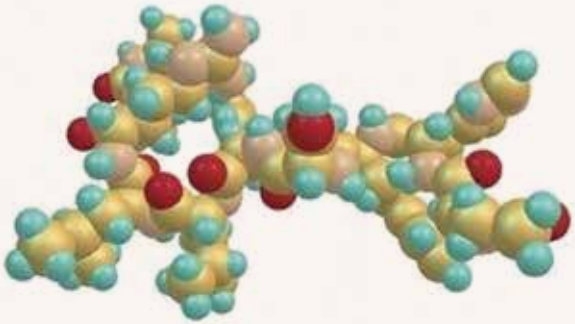
Provides anti-wrinkle, anti-aging, skin repairing, and moisturizing effects in beauty and care products (e.g., pre-essence, lotion, AM/PM cream, eye serum, etc.)

NEW

CREAPEP® DECAPEPTIDE-4

Product Introduction

Alias:	Decapeptide-4
Purity:	≥97.0%
Recommended concentration:	0.01-0.1%
Production method:	biological fermentation



Mechanism

Decapeptide-4 acts as a messenger peptide that can penetrate the dermis. It stimulates the synthesis of collagen and elastin, reversing the skin's aging process by rebuilding it from the inside out. At the same time, it can stimulate the proliferation of collagen, elastic fibers, and hyaluronic acid, improve the skin's moisture content, increase skin thickness and reduce fine lines.

Applications

Used in skin care products with anti-wrinkle and anti-aging, water-locking and moisturizing, repairing skin, brightening skin tone, etc., such as essence milk, essence water, and mud mask.

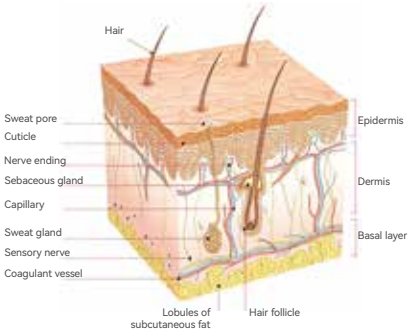
CREAPEP®
PALMITOYL TRIPEPTIDE-1

Product Introduction

CAS No.:	147732-56-7
Purity:	≥98.0%
Recommended concentration:	0.000625-0.01%
Production method:	biological fermentation

Mechanism

Palmitoyl tripeptide-1 is a matrikine signal peptide. It acts on the dermis and can promote the synthesis of different proteins such as collagen I, collagen II, elastin, laminin, and fibronectin.It also can boost wound recovery and tissue renewal reconstruction, strengthen the dermis, and make the skin thicker and tighter. It can soothe wrinkles and strengthen the skin's ability to resist UV irradiation.



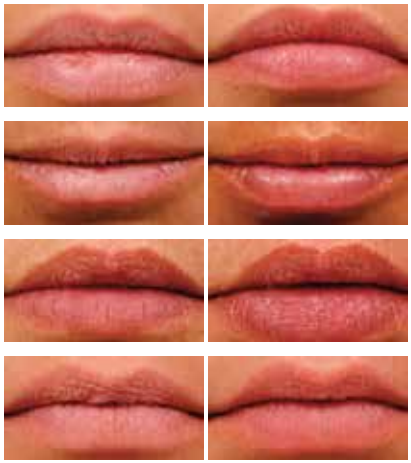
Applications

Provides anti-wrinkle, skin tightening, moisturizing, and other effects in beauty and care products (e.g., lipstick, lotion, AM/PM cream, eye serum, etc.)

Efficacy Experiment

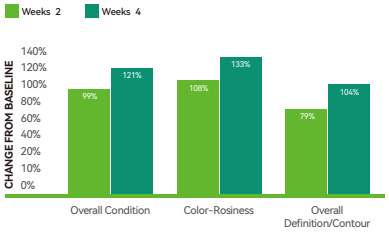
The subjects were healthy women aged between 22 and 40 years old with mild to moderate lower lip dryness. Subjects were treated with a palmitoyl tripeptide-1 formula, used 4 times a week, three times a day, and wore the lipstick for eight hours every day.

Comparison of subjects' lips before and after 4 weeks of palmitoyl tripeptide-1 treatment.

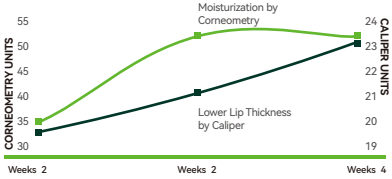


Before 4-Weeks

Subjects' lip condition



Subjects' lip moisturization, and lower lip thickness



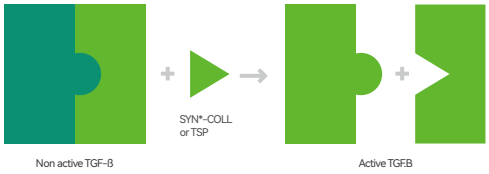
CREAPEP®
PALMITOYL TRIPEPTIDE-5

Product Introduction

CAS No.:	623172-56-5
Purity:	≥98.0%
Recommended concentration:	0.001-0.01%
Production method:	biological fermentation

Mechanism

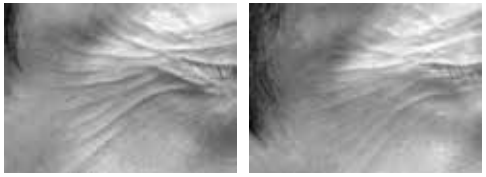
As one of the broadly used beauty peptides, palmitoyl tripeptide-5 can promote collagen and elastin synthesis in the dermis and repair wrinkles. It boosts collagen (types I, II, and IV) and extracellular matrix protein synthesis by increasing stromal cell activity. The special structure of palmitoyl tripeptide-5 can activate the transforming growth factor TGF-β and mimic the body's own process of accelerating the synthesis of collagen and extracellular matrix protein. As a result, it can improve wrinkles, make skin more elastic, and inhibit MMP at the same time.



Stimulates collagen synthesis
in human Fibroblasts

Efficacy Experiment

The subject used a cream containing 20% palmitoyl tripeptide-5 (concentration: 1000ppm) twice a day for two months. Compared with the skin before treatment, a significant improvement in wrinkle depth, roughness, and density was seen.



Before After

Applications

Provides anti-wrinkle, skin tightening, moisturizing, and other effects in beauty and care products (e.g., lotion, AM/PM cream, eye serum, etc.)

CREAPEP®
PALMITOYL PENTAPEPTIDE-4

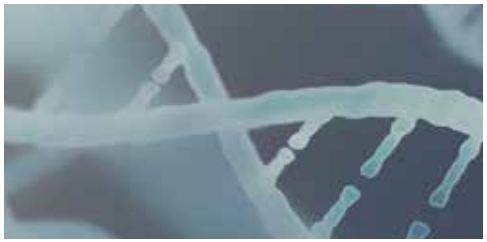
Product Introduction

CAS No.:	214047-00-4
Purity:	≥98.0%
Recommended concentration:	0.002-0.01%
Production method:	biological fermentation

Mechanism

Palmitoyl pentapeptide-4, as a signal peptide, is an accurate mimic of Matrikines (signal peptides), hydrolysates of the A1 chain of procollagen. It promotes the synthesis of collagen types I and II and fibronectin, which increases skin thickness and reduces wrinkles. It achieves this efficacy by activating certain genes involved in the processes of extracellular matrix renewal and cell proliferation, as well as activating the synthesis of extracellular matrix macromolecules.

Palmitoyl Pentapeptide-4

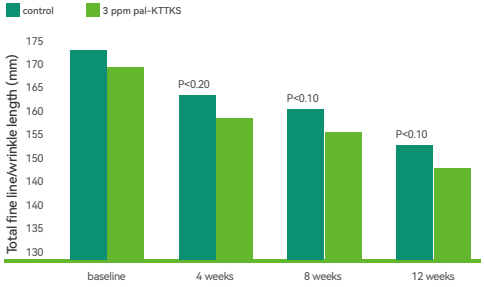


Applications

Provides anti-wrinkle, anti-aging, anti-oxidation, skin tightening, moisturizing, and other effects in beauty and care products (e.g., gel, lotion, AM/PM cream, eye serum, face mask, etc.)

Experiment on anti-wrinkle efficacy

Female subjects aged 35-55 years were randomized for a 12-week double-blind experiment. Placebo and moisturizing products of 3 ppm palmitoyl pentapeptide-4 were applied to any one side of the faces randomly to evaluate the anti-wrinkle effect of palmitoyl pentapeptide-4



Result

Palmitoyl pentapeptide-4 was well tolerated by the subjects' skin, and there was no skin irritation including redness, itching, tangling, etc. Quantitative techniques and graded image analysis showed that compared with placebo, palmitoyl pentapeptide-4 had a significant reduction in facial wrinkles and fine line length.

HOT

Verified by ECOCERT COSMOS APPROVED

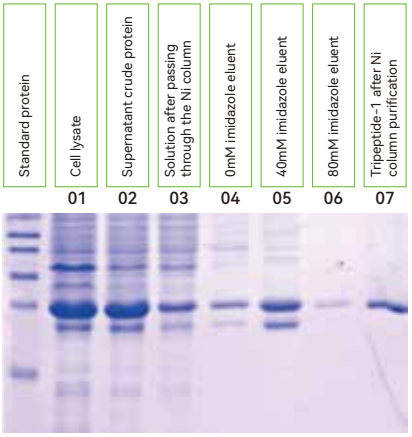
CREAPEP® OLIGOPEPTIDE-1

Product Introduction

Alias:	Oligopeptide-1
Purity:	≥98.0%
Recommended concentration:	0.01-0.5%
Production method:	biological fermentation

Mechanism

Tripeptide-1 is a hybrid peptide composed of 3 amino acids (Glycine G, Histidine H, and Lysine K) with a repairing function. It is a material for anti-aging functional skin care product ingredients. It promotes the production of collagen, elastin, and hyaluronic acid that achieves anti-aging and anti-wrinkle functions. The promotion of mucin production can act as an activator of tissue remodeling and promote the degradation of the large collagen aggregates on the outside of the scar to repair the wound.



Experiment on anti-wrinkle efficacy

The SGS reports indicated that the relative elastin content of the TIDETRON · Tripeptide-1 sample group was significantly elevated compared with that of the model group (P<0.005) at the concentrations of 0.1%, 0.05%, 0.01%, respectively. The result illustrated that TIDETRON · Tripeptide-1 had a good elevating effect on the production of elastin at a certain concentration, thus achieving anti-wrinkle efficacy.

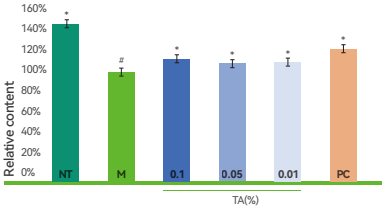


Figure 2.Effect of test substance on the level of cellular elastin(Mean±SD)

\# Indicates that the difference between the test substance and the negative control (NT) was statistically significant (p<0.05)

* Indicates that the difference between the test substance and the model (M) was statistically significant (p<0.05)

The SGS report showed that the relative content of Type I Collagen precursor in the sample group was significantly higher than that in the model group at 0.1% concentration (P<0.005). The result indicated that the TIDETRON · Tripeptide-1 has a good effect on promoting the production of Type I Collagen precursor at a certain concentration, which can achieve anti-wrinkle efficacy.

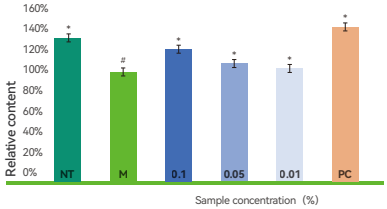


Figure 3.Effect of test substance on the level of cellular Procollagen-1(Mean±SD)

\# Indicates that the difference between the test substance and the negative control (NT) was statistically significant (p<0.05)

* Indicates that the difference between the test substance and the model (M) was statistically significant (p<0.05)

Application

Provides anti-aging, antioxidative, skin-firming, and other effects in beauty and care products (e.g., pre-essence, lotion, AM/PM cream, eye serum, etc.)

CREAPEP® HEXAPEPTIDE-9

Product Introduction

Alias:	Collaxyl
CAS No. :	1228371-11-6
Purity:	≥98.0%
Recommended concentration:	0.001-0.1%
Production method:	biological fermentation

Mechanism

Hexapeptide-9 is a very stable peptide, existing in the structures of collagen IV and collagen XVII (two key collagens in the human basement membrane). It has a significant anti-wrinkle and repairing efficacy.

Applications

Provides wrinkle-removing, anti-wrinkle, repairing, and other effects in beauty and care products (e.g., eye essence, AM/PM cream, eye cream, facial mask, etc.)

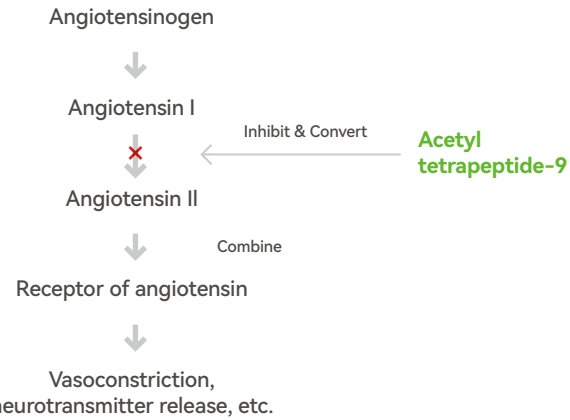
CREAPEP®
ACETYL TETRAPEPTIDE-9

Product Introduction

Alias:	Dermican
CAS No. :	928006-50-2
Purity:	≥98.0%
Recommended concentration:	0.0007-0.13%
Production method:	biological fermentation

Mechanism

Acetyl tetrapeptide-9 can improve blood circulation by inhibiting angiotensin I and converting it to angiotensin II. It can locally block nerves transmitting muscle contractile information, affecting nerve conduction and thus allowing muscle relaxation. It can also enhance proteoglycan synthesis, promote collagen synthesis, and thus increase skin firmness.



Applications

Provides wrinkle-removing, anti-wrinkle, repairing, and other effects in beauty and care products (e.g., eye essence, AM/PM cream, eye cream, facial mask, etc.)

CREAPEP® ACETYL TETRAPEPTIDE-11

Product Introduction

CAS No.:	928006-88-6
Purity:	≥98.0%
Recommended concentration:	0.000105-0.0165%
Production method:	biological fermentation

Mechanism

Acetyl tetrapeptide-11 can promote the synthesis of Syndecan-1 and strengthen epidermal adhesion

Applications

Provides anti-wrinkle, anti-aging,and other effects in beauty and care products (e.g. skin essence, lotion, AM/PM cream, eye serum, etc.)

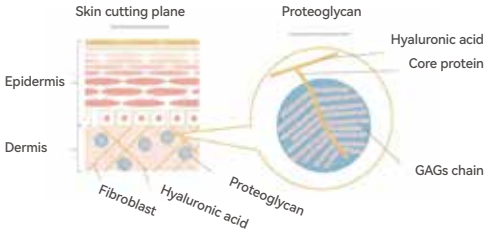
CREAPEP®
HYDROXYPROPYL TETRAHYDROPYRANTRIOL

Product Introduction

CAS No.:	439685-79-7
Purity:	≥98.0%
Recommended concentration:	0.1-10%
Production method:	biological fermentation

Mechanism

By promoting the synthesis of extracellular matrix, hydroxypropyl tetrahydropyrantriol can: restore extracellular matrix function, induce the generation of GAGs in the epidermis, promote the accelerated production of collagen IV and VII by dermal cells, enhance the connectivity between dermis and epidermis, improve the combination of dermis and epidermis.



Efficacy Experiment

According to Hunter Biotech's test report, it was found that the relative expression of col1a1a in the sample group with TIDETRON·Hydroxypropyl Tetrahydropyrantriol was significantly increased compared with that in the normal group, indicating that the sample has anti-wrinkle efficacy.

Concentration of hydroxypropyl tetrahydropyrantriol(%)

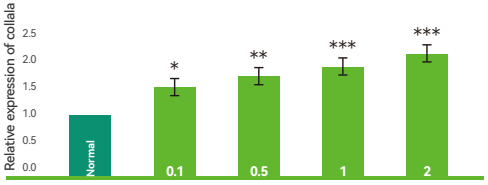


Figure 1. The relative expression of col1a1a

*p <0.05, *p <0.01, ***p<0.001 compared with the normal group

Applications

Provides anti-wrinkle, skin tightening, moisturizing, and other effects in beauty and care products (e.g., lotion, AM/PM cream, eye serum, etc.)

B

CLEAN BEAUTY

Anti-inflammation and Repairing

CODE	TRADE NAME	INCI NAME	VOLUME OF ADDITION SUGGESTED	FUNCTIONS	CORRESPONDING PAGE NUMBER
01 HOT	Creapep® Copper Tripeptide-1	COPPER TRIPEPTIDE-1	0.01-0.1%	Copper tripeptide-1 promote the degradation of large collagen aggregates on the scar and boost skin epithelial tissue regeneration.	P22
02	Creapep® Palmitoyl Tetrapeptide-7	PALMITOYL TETRAPEPTIDE-7	0.002-0.01%	Palmitoyl pentapeptide-7 can reduce inflammatory to achieve the efficacy of improving skin firmness and elasticity.	P23
03	Creapep® Ectoin	ECTOIN	0.5%-3%	Ectoin enhances the association ability of water molecules to form hydrogen bonds with water molecules, which form a hydration layer around proteins. This layer can protect skin, reduce moisture loss, enhance and repair cell function, and stabilize skin barrier.	P24
04	Creapep® Palmitoyl Tripeptide-8	PALMITOYL TRIPEPTIDE-8	0.0005-0.01%	Palmitoyl tripeptide-8 can prevent neurodermatitis induced by chemicals, UV, and other stimuli. And relieve skin dryness and redness and reduce the effect of inflammatory response.	P25
05	Creapep® Acetyl Dipeptide-1 Cetyl Ester	ACETYL DIPEPTIDE-1 CETYL ESTER	0.01-0.025%	Acetyl dipeptide-1 cetyl ester mimics the structure of β-endorphin to soothe stimulation and inhibit the release of CGPR, which reduces the synthesis of inflammatory factors, and relieves inflammation and sting.	P26

HOT

COSMOS APPROVED

CREAPEP® COPPER TRIPEPTIDE-1

Product Introduction

Alias:	Copper Peptide; GHK-Cu; Prezatide Copper Acetate
CAS No.	89030-95-5
Purity:	≥98.0%
Recommended concentration:	0.01-0.1%
Production method:	biological fermentation

Mechanism

Copper tripeptide-1 can serve as an activator and antioxidant of tissue remodeling and is also a load-bearing peptide that promotes the degradation of large collagen aggregates on the scar. It helps to promote the synthesis of normal skin collagen and the production of elastin, proteoglycans, and glycosaminoglycans, which can boost skin epithelial tissue regeneration. It has repairing, anti-inflammatory, and antioxidant effects.

In vitro experiment

Scratch repair test result

The SGS report showed that the relative scratch area of the TIDETRON·Copper Tripeptide-1 sample group was significantly reduced (P<0.05) compared with the model group at the concentration of 0.1% and 0.01% separately. The result demonstrated that TIDETRON·Copper Tripeptide-1 had a relatively good repairing efficacy at a certain concentration.

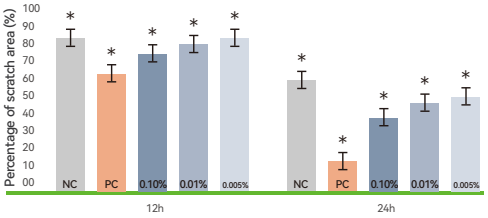


Figure 2. Comparison of the relative area of scratches in different groups

*p <0.05

Applications

Provides anti-wrinkle, anti-aging, skin repairing, and moisturizing effects in beauty and care products (e.g., pre-essence, lotion, AM/PM cream, eye serum, etc.)

CREAPEP®
PALMITOYL TETRAPEPTIDE-7

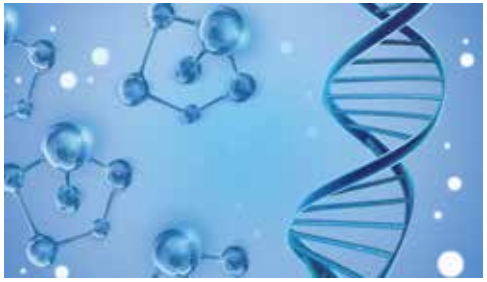
Product Introduction

Former name:	Palmitoyl Tetrapeptide-3
CAS No.	221227-05-0
Purity:	≥98.0%
Recommended concentration:	0.002-0.01%
Production method:	biological fermentation

Mechanism

Palmitoyl pentapeptide-7 reduces the secretion of IL6 by acting on keratinocytes to retain skin cell balance and reduce inflammatory response. Therefore, it can achieve the efficacy of improving skin firmness and elasticity.

At the same time, it can stimulate the regeneration of collagen fibers in the skin by acting as a cellular messenger, stimulating the synthesis of collagen (types I, II, IV) and elastin in the dermis.



Palmitoyl Tetrapeptide-7
reduce inflammatory response experiment

Experiment on anti-wrinkle efficacy

Changes in 28 subjects' skin fiber fragments after applying palmitoyl tetrapeptide-7 to their faces. Result: After applying palmitoyl tetrapeptide-7 for two months, skin fiber in the face significantly increased compared with T0.

Data	Fiber length (average depth: 70 μm)	
	TO	Two months later
Changes %	192.9±36.3	194.3±33.7
Changes compared with T0 after adding palmitoyl tetrapeptide-7%	179.1±25.3	204.1±45.4

Applications

Provides anti-aging, anti-wrinkle, anti-inflammation, skin tightening, anti-allergy, and other effects in beauty and care products (e.g., gel, lotion, AM/PM cream, eye serum, facial mask, etc.)

CREAPEP® ECTOIN

Product Introduction

Purity:	≥98.0%
CAS No.:	96702-03-3
Recommended concentration:	0.5-3%
Production method:	biological fermentation

Mechanism

Ectoin enhances the association ability of water molecules to form hydrogen bonds with water molecules, which form a hydration layer around proteins. This layer can protect skin, reduce moisture loss, enhance and repair cell function, and stabilize skin barrier.

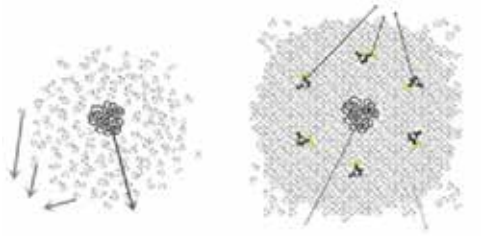


Diagram of Ectoin reacting with water molecules

In vitro experiment

Cell migration assay (wound healing assay)

HaCaT cells were incubated with ectoin solution before a "wound" was created. Cells then migrate from the edge of the "wound" to the center.

Cell migration assay (wound healing assay) reports that ectoin can increase the rate of cell migration. It means Ectoin can speed up wound closure, which suggests great skin repair ability.

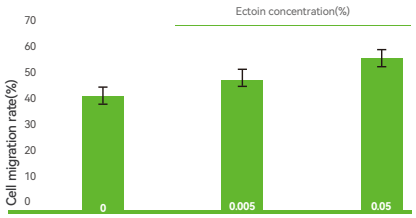


Figure 1 Cell migration assay (wound healing assay)

Applications

Provides protective, repairing, anti-inflammatory, allergy-relieving, anti-aging, moisturizing, and other effects in skincare products (e.g., AM/PM cream, essence, eye cream, facial mask, etc.)

CREAPEP®
PALMITOYL TRIPEPTIDE-8

Product Introduction

CAS No.:	936544-53-5
Purity:	≥98.0%
Recommended concentration:	0.0005-0.01%
Production method:	biological fermentation

Mechanism

Neurodermatitis is a manifestation of skin dysfunction, caused by skin allergy and premature aging. Palmitoyl tripeptide-8 can prevent neurodermatitis induced by chemicals, UV, and other stimuli. By disrupting the generation of inflammatory cells IL-8 (interleukin) and TNF-α (tumor necrosis factor), palmitoyl tripeptide-8 can relieve skin dryness and redness and reduce the effect of inflammatory response.

Applications

Provides skin relieving, anti-inflammation, anti-stimulus, anti-allergy, and other effects in beauty and care products (e.g., gel, lotion, AM/PM cream, eye serum, facial mask, etc.)

Skin

↓

Chemical reaction, thermal stimulus, physiological stimulation

↓ ✕ ← Palmitoyl tripeptide-8

IL-8 and TNF-a increase (inflammatory cells)

↓

inflammatory response

↓

Skin dryness, itch, and redness

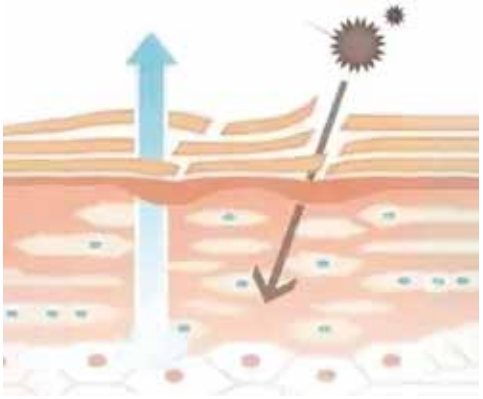
CREAPEP®
ACETYL DIPEPTIDE-1 CETYL ESTER

Product Introduction

Alias:	Tyr-Arg, NATAH
CAS No. :	196604-48-5
Purity:	≥98.0%
Recommended concentration:	0.01-0.025%
Production method:	biological fermentation

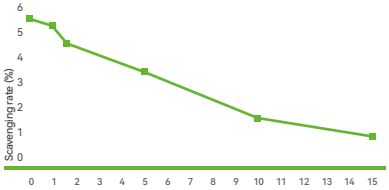
Mechanism

Acetyl dipeptide-1 cetyl ester can stimulate cells to synthesize and secrete collagen, help maintain elastic fiber structure, and improve skin sagging. Its lipid structure provides fat for the skin, reduces water evaporation, and makes the skin soft and radiant.
It can easily penetrate keratoderma and enter the deep layers to function.



In Vivo Experiment

Clinical study on 31 female subjects (mean age of 43.8 years, range 19–65) with self-assessed sensitive indicates that acetyl dipeptide-1 cetyl ester can significantly suppress skin burning sensitivity. Therefore, it’ s fair to say acetyl dipeptide-1 cetyl ester controls skin itch, especially under stimulation.



Burning Intensity

Schoelermann AM, Jung KA, Buck B, Grönniger E, Conzelmann S. Comparison of skin calming effects of cosmetic products containing 4-t-butylcyclohexanol or acetyl dipeptide-1 cetyl ester on capsaicin-induced facial stinging in volunteers with sensitive skin. J Eur Acad Dermatol Venereol. 2016 Feb;30 Suppl 1:18-20. doi: 10.1111/jdv.13530. PMID: 26805418.

Applications

Provides anti-inflammation, anti-allergy, relieving, repairing, and other effects in beauty and care products (e.g., serum, eye cream, facial mask, moisturizing cream, etc.)

CLEAN BEAUTY

Whitening/Antioxidant

CODE	TRADE NAME	INCI NAME	VOLUME OF ADDITION SUGGESTED	FUNCTIONS	CORRESPONDING PAGE NUMBER
01 HOT	Creapep® Nonapeptide-1	NONAPEPTIDE-1	0.1-0.2%	Nonapeptide-1 is a small molecule leupeptin containing nine amino acids that act at the source of melanogenesis to inhibit melanizing activities by blocking the melanocyte gene from receiving signals.	P28
02	Creapep® Carnosine	CARNOSINE	0.01-1%	Carnosine achieves an anti-aging effect by protecting mitochondrial function and reducing ROS production. And react with carbohydrates in the body to protect proteins from glycosylation and have an anti-glycation effect.	P29
03	Creapep® Hexapeptide-2	HEXAPEPTIDE-2	0.0005-1%	Hexapeptide-2 inhibits α-MSH to control the overgeneration of melanin. And inhibit the activity of tyrosine by reducing the level of cAMP, which reduces unnecessary pigment production and pigmentation.	P30
04	Creapep® Ergothioneine	ERGOTHIONEINE	0.0005-1%	Ergothioneine enters the cell and mitochondria via the transporter OCTN-1 in keratinocytes and fibroblasts and directly scavenges ROS, exerting an antioxidant and mitochondrial protectiv	P31

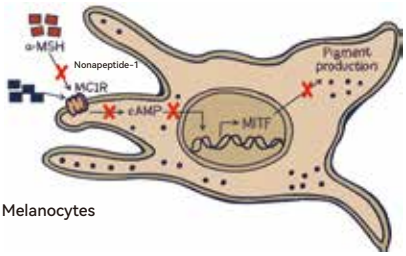
CREAPEP® NONAPEPTIDE-1

Product Introduction

Alias:	Melanostatine-5
CAS No. :	158563-45-2
Purity:	98.0%
Recommended concentration:	0.1-0.2%
Production method:	biological fermentation

Mechanism

Nonapeptide-1 is a small molecule leupeptin containing nine amino acids that act at the source of melanogenesis to inhibit melanizing activities by blocking the melanocyte gene from receiving signals. As a natural biomimetic peptide of α-MSH, nonapeptide-1 has high compatibility with MC1R in melanocytes. Nonapeptide-1 can block and compete with the natural ligand of α-MSH and MC1R to prevent the further activation of tyrosinase which can block melanin generation.

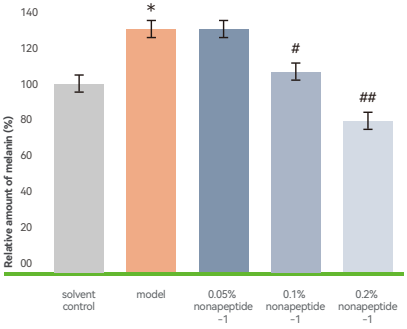


Melanocytes

In vitro experiment

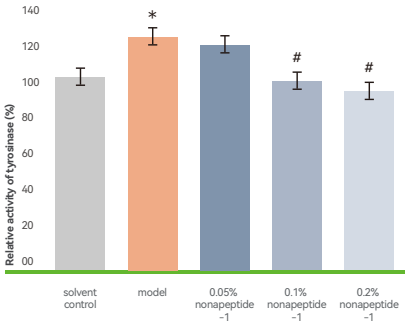
Experiment on the efficacy of reducing melanin

The result showed that TIDETRON· Nonapeptide-1 can reduce melanin effectively.



Experiment on the efficacy of inhibiting tyrosinase activity

The result showed that TIDETRON· Nonapeptide-1 can inhibit the activity of tyrosinase effectively.



Applications

Provides whitening, spots-removing, dark circle-removing, and moisturizing effects in beauty and care products (e.g., pre-essence, lotion, AM/PM cream, eye serum, etc.)

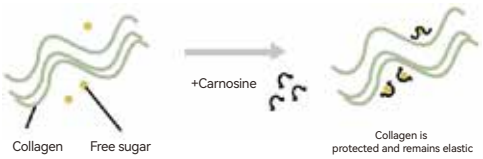
CREAPEP® CARNOSINE

Product Introduction

Alias:	L-carnosine
CAS No. :	305-84-0
Purity:	98.0%
Recommended concentration:	0.1-1%
Production method:	biological fermentation

Mechanism

Carnosine achieves an anti-aging effect by protecting mitochondrial function and reducing ROS production. Scavenges reactive oxygen species (ROS) and α-β unsaturated aldehyde formed by over oxidation of fatty acids in the membrane during oxidative stress. Reacts with active substances in the body to protect proteins from glycosylation. Resists ROS damage and scavenges ROS. By reacting with proteins, carnosine avoids the damage to proteins from sugar to achieve anti-glycation. Besides, amino acid residues on the side chains of carnosine can capture hydroxyl radicals, singlet oxygen, and peroxide radicals. Through reacting with ROS, carnosine can scavenge ROS and prevent skin from oxidation.



Applications

Provides whitening, spots-removing, dark circle-removing, and moisturizing effects in beauty and care products(e.g., pre-essence, lotion, AM/PM cream, eye serum, etc.)

In vitro experiment

Experiment on the efficacy of anti-glycosylation

According to Hunter Biotech's test report, under the conditions of this experiment, TIDETRON· Carnosine has the efficacy of anti-glycosylation.

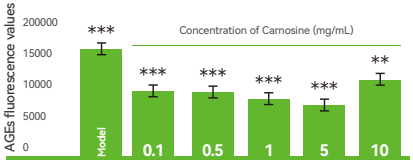
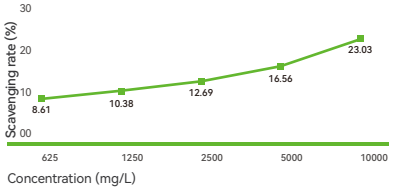


Figure 1. The fluorescence values of AGEs
**p<0.01 and ***p<0.001 compared with the model group

Experiment on antioxidative efficacy

According to Hong Zheng Dao's experiment, under the conditions of this experiment, the TIDETRON· Carnosine sample had a maximum DPPH free radical clearance rate of 23.30% within the detection range.

DPPH Free Radical Scavenging Rate of Carnosine



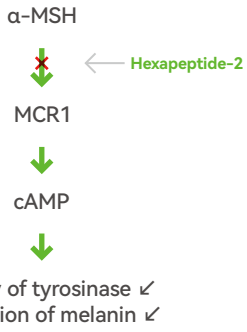
CREAPEP® HEXAPEPTIDE-2

Product Introduction

Alias:	GHRP-Ghrelin-6
CAS No. :	87616-84-0
Purity:	98.0%
Recommended concentration:	0.0005-1%
Production method:	biological fermentation

Mechanism

As an antagonist of α-MSH and a biomimetic beauty polypeptide, hexapeptide-2 inhibits α-MSH to control the overgeneration of melanin. It also can inhibit the activity of tyrosine by reducing the level of cAMP, which reduces unnecessary pigment production and pigmentation. At the same time, hexapeptide-2 can condition the expression of miR-29 miR-218 in miRNA to reduce the gene silencing brought by collagen translation, which enhances collagen generation.



Applications

Provides whitening, spots-removing, skin tone-lightening, and anti-wrinkle effects in beauty and care products (e.g., whitening cream, essence, eye cream, facial mask, etc.)

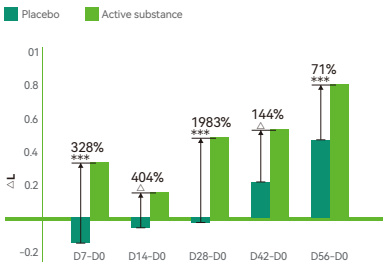
In vitro experiment

Experiment on skin whitening efficacy

Verify hexapeptide-2's whitening efficacy by a double-blind experiment on 35 subjects. The subjects applied the sample containing 1% of hexapeptide-2 (active substance group) or the sample without hexapeptide-2 (placebo group) randomly on their left or right faces in the morning and night.

Result

The faces of the subjects showed a trend in whitening after using the sample with 1% hexapeptide-2 for 7 days. And it also showed different degrees of whitening on the following days.



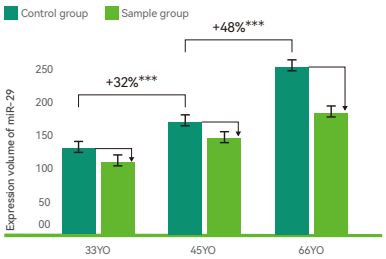
Whitening efficacy of human body tests

experiment on the efficacy of promoting collagen generation

The subjects used the sample containing 1% hexapeptide-2 (sample group) and the sample without hexapeptide-2 (control group separately. Observe the expression condition of miR-29.

Result

Hexapeptide-2 can inhibit the expression of miR-29 in miRNA, which can increase the generation of collagen.



Effect of hexapeptide-2 on the expression of miR-29

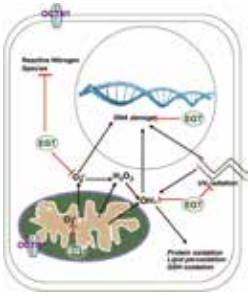
CREAPEP® ERGOTHIONEINE

PRODUCT INTRODUCTION

Alias:	2-mercaptohistidine trimethyl betaine; Ergot Alkaloid; EGT
CAS No. :	497-30-3
Purity:	≥98.0%
Recommended concentration:	0.0005-1%
Production method:	biosynthesis

Mechanism

Ergothioneine enters the cell and mitochondria via the transporter OCTN-1 in keratinocytes and fibroblasts and directly scavenges ROS, exerting an antioxidant and mitochondrial protective effect.



EGT (ergothioneine) involves in protecting mitochondrial DNA from superoxide generated by the electron transport process. Protects aqueous protein from oxidative damage and protects cells from UV- and reactive oxygen-induced damages. Reduces the formation of reactive oxygen to protect cells from radiation damage. Inhibits amino acid oxidation mediated by peroxynitrite anion (e.g., tyrosine nitration) to exert an anti-inflammatory effect. In the UV absorption range, ergothioneine has a similar absorption wavelength to DNA, which can minimize the formation of reactive oxygen, and protect cells from radiation damage. Ergothioneine is just like an umbrella, reducing the UV damage to skin to a greater extent.

Applications

Provides whitening, dark circles removal, anti-aging, and moisturizing effects in beauty and care products (e.g., eye serum, eye cream, lotion, gel, etc.)

In vitro experiment

Physicochemical test on antioxidative efficacy

According to Hong Zheng Dao's experiment, the TIDETRON·

Ergothioneine sample had an AO of 0.04 within the detection range, having a relatively good antioxidative ability.

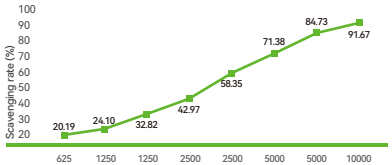
Result of ergothioneine's antioxidative ability test	
Glutathione ECo (mg/L)	565.84
Ergothioneine ECo (mg/L)	24.10
AO	0.04

Annotation*

AO=1: The sample has a similar anti-DPPH ability to glutathione,
AO<1: The sample has a stronger anti-DPPH ability than glutathione.
AO>1: The sample has a weaker anti-DPPH ability than glutathione.

Physicochemical test on antioxidative efficacy

According to Hong Zheng Dao's experiment, under the conditions of this experiment, the TIDETRON· Ergothioneine sample had a maximum DPPH free radical clearance rate of 91.67% within the detection range.



DPPH Free Radical Scavenging Rate of Ergothioneine
Concentration (mg/L)

D

CLEAN BEAUTY

Brighten your eyes

CODE	TRADE NAME	INCI NAME	VOLUME OF ADDITION SUGGESTED	FUNCTIONS	CORRESPONDING PAGE NUMBER
01	Creapep® Dipeptide-2	DIPEPTIDE-2	0.1%-0.2%	Dipeptide-2 can improve blood circulation, reduce vasoconstriction around eyes, and enhances lymphatic circulation.	P33
02	Creapep®Acetyl Tetrapeptide-5	ACETYL TETRAPEPTIDE-5	0.01-1%	Acetyl tetrapeptide-5 can increase the activity of superoxide dismutase (SOD), inhibits its glycosylation, and prevents protein crosslinking to improve skin elasticity. It also can reduce the permeability of blood vessels and moisture loss.	P34

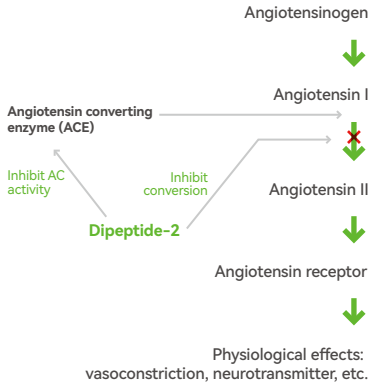
CREAPEP® DIPEPTIDE-2

PRODUCT INTRODUCTION

Alias:	VW, Val-Trp
CAS No. :	24587-37-9
Purity:	≥98.0%
Recommended concentration:	0.1%-0.2%
Production method:	biological fermentation

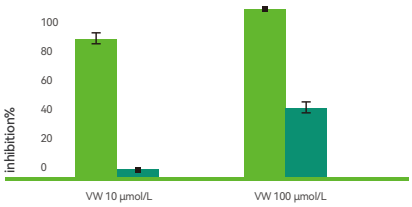
Mechanism

Dipeptide-2 is an effective inhibitor of ACE conversion. By inhibiting the conversion from ACE I to ACE II and the activity of ACE, Dipeptide-2 can improve blood circulation, reduce vasoconstriction around eyes, and enhances lymphatic circulation.



Efficacy Experiment

Fluorescence analysis shows that dipeptide-2(VW) can combine with angiotensin converting enzyme(ACE) on C and N domains. Therefore, it can inhibit the function of ACE, which constricts capillaries and causes eye bags.



Lunow D, Kaiser S, Rückriemen J, Pohl C, Henle T. Tryptophan-containing dipeptides are C-domain selective inhibitors of angiotensin converting enzyme. Food Chem. 2015 Jan 1;166:596-602. doi: 10.1016/j.foodchem.2014.06.059. Epub 2014 Jun 18. PMID: 25053098.

Applications

Provides anti-aging, anti-wrinkle, anti-inflammation, skin tightening, anti-allergy, and other effects in beauty and care products (e.g., gel, lotion, AM/PM cream, eye serum, facial mask, etc.)

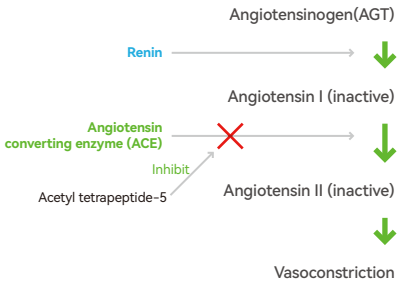
CREAPEP®
ACETYL TETRAPEPTIDE-5

PRODUCT INTRODUCTION

Alias:	Eyeseryl
CAS No. :	820959-17-9
Purity:	98.0%
Recommended concentration:	0.001-0.25%
Production method:	biological fermentation

Mechanism

Acetyl tetrapeptide-5 improves microcirculation in ocular skin by inhibiting angiotensin I converting enzyme. It increases the activity of superoxide dismutase (SOD), inhibits its glycosylation, and prevents protein crosslinking to improve skin elasticity. It also can reduce the permeability of blood vessels and moisture loss.



In vitro experiment

Lipotec, the original manufacturer of Eyeseryl® did an in-vivo experiment of Eyeseryl® on 20 female volunteers from 18-65 years old and evaluated the efficacy of Eyeseryl®. The subjects used cream containing 0.01% Eyeseryl® twice a day for 60 days. Pictures of their eyes were taken on days 0, 15, 30, 45, and 60 to compare the efficacy.

Result

70% of the subjects' bagginess improved on day 15. The area of puffiness was significantly reduced. 95% of the subjects had improved their eye bagginess and puffiness at the end of the experiment (day 60).

Applications

Provides anti-aging, anti-wrinkle, anti-inflammation, skin tightening, anti-allergy, and other effects in beauty and care products (e.g., gel, lotion, AM/PM cream, eye serum, facial mask, etc.)

HEALTHY FOOD

TIDETRON®ERYTHRITO

Product Introduction

Alias:	(R,S)-1,2,3,4-butantetraol
CAS No. :	49-32-6
Purity:	≥99.5%
Production method:	biological fermentation

Mechanism

Erythritol is butantetraol, which is easily absorbed in the small intestine, most of which can enter the blood circulation, and only a small amount can enter the large intestine directly as a carbon source for fermentation. However, because the human body lacks the enzyme system to metabolize erythritol, the erythritol entering the blood cannot be digested and degraded, and can only be discharged from the body through the kidney from the urine. This unique metabolic feature determines the low calorific value of erythritol.

Applications

It is used in products with low calorie, high tolerance, anti caries and other effects, such as: 0 card drinks, toothpaste, functional food or drinks for people with diabetes.

COSMOS APPROVED

The COSMOS-standard signature is a consumer guarantee for organic and natural cosmetics that you can trust. To date over 32,000 products in 71 countries carry COSMOS ORGANIC or COSMOS NATURAL signature. Over 13,000 raw materials carry COSMOS CERTIFIED signature. Over 8,000 raw materials carry COSMOS APPROVED signature.

The COSMOS-standard defines the criteria that companies must meet to ensure consumers that their products are genuine organic or natural cosmetics produced to the highest feasible sustainability practices.

There are 7 raw materials of Tidetron have acquired the COSMOS APPROVED certification to date, including Arginine/Lysine Polypeptide, Oligopeptide-1, Copper Tripeptide-1, Ectoin, Nonapeptide-1, Carnosine, Ergothioneine.


Carnosine


Nonapeptide-1


Copper Tripeptide-1


Oligopeptide-1


Ergothioneine


Arginine/Lysine Polypeptide


Ectoin

PLATFORM SERVICES

TIDETRON SERVICES

Raw material supply
Supply of high-quality raw materials for various industries

R&D
Design and develop new biosynthetics and screen new formulation

Customized active
Customize and transform unique potent actives

Customized liquid
Customize the concentration of various active substances

Deep cooperation
Joint patent applications and joint-efficacy assessment

Sharing platform
Open cooperation of Tidetron Altra strain library and component library



PLATFORM ADVANTAGES

01
Synthetic biology R&D platform

Realize the implementation of cross-field and various substances from R&D to mass production

Raw materials' biosynthesis

Strain transformation as required

02
Leading application experiment capability

Own application laboratory, which can provide customized application services for our products

Compounding customization - skin care and food

Microfluidic liposome encapsulation technology-skin care

CONTACT US

www.tidetronbio.com/en

tidetronbio.en.alibaba.com

+86-18664872043

mkt@tidetronbio.com

Building 7, 4th Street, Topchain South Area,
No. 40 Shangchong South Road
Haizhu District, Guangzhou, PRC. Zip code: 510290

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