

mintural[®]

CATALOGUE

TRANSGLUTAMINASE (TG)

CURDLAN

ϵ -POLYLYSINE



Company Introduction

Located in prosperous east China, Yiming Biotech is the leading high-tech enterprise specializing in fermentation of food-grade enzymes and other enhancers for the food industry for over 30 years. In the faith of consistently providing outstanding products and services, we continuously improve our facilities to meet the highest standard in the industry. The company consists of three manufacturing plants and one advanced laboratory with over 30 researchers. Now we have an extensive sales network in China and look forward to collaborating new sales channels all over the globe.



World-leading Fermentation Technology and Facilities



The First Chinese Company Producing Transglutaminase by Microbial Fermentation



MUI HALAL



ARA HALAL



KOSHER



ISO9001



ISO22000



FSSC



BPJPH HALAL



FDA



DUNS NUMBER

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ϵ -POLYLYSINE

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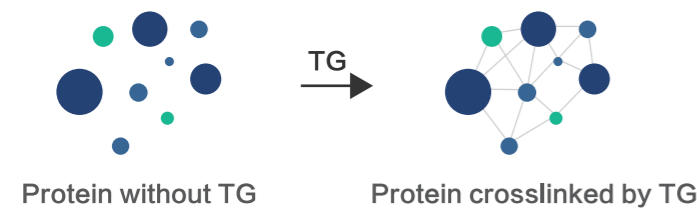
TRANSGLUTAMINASE

INTRODUCTION

Transglutaminase (TG) is a natural enzyme which can be found in humans, animals, plants and microbial sources in various forms. As a natural food additive produced by microbial fermentation, TG has no toxic substances and side effects to human health.

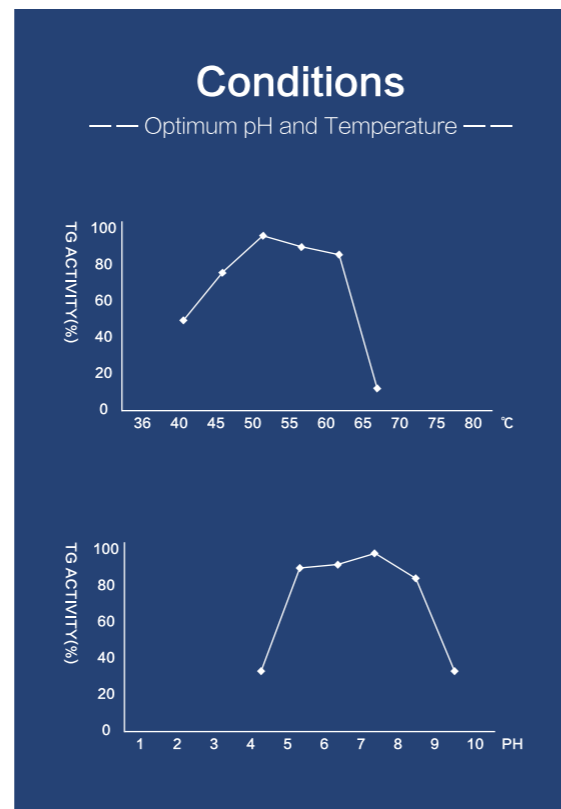
Mechanism

TG can improve protein's characteristics and functions by crosslinking proteins together. In this way, the nutrition, structure and taste of final products will be improved.



Advantages

- Natural and safe
- Thermal stability
- Strong binding force
- Ph** Wide pH range
- Wide application



Product Name: transglutaminase (TG)
Category: food additive
Function: improve protein structure
Molecular Weight: 38kD
CAS No.: 80146-85-6
CNS No.: 18.013

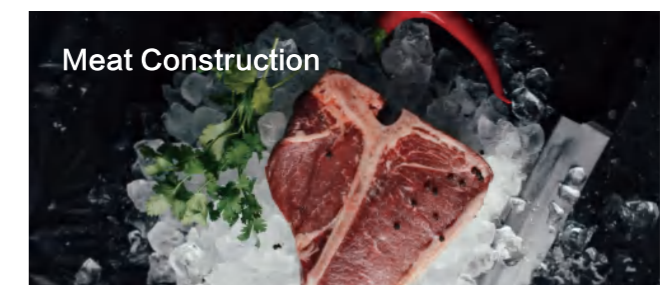
Transglutaminase

SPECIFICATION

TRANSGLUTAMINASE

- Product:** transglutaminase (monomer or compound)
- Model:** TG-B, TG-Y, TG-CK, TG-FN and others
- Appearance:** light yellow powder or liquid
- Specification:** various enzyme activity
- Packing:** 1kg/bag, 1L/bottle
- Storage:** stored in dry and cool place
- Method of Use:** add directly or mix with water
- Shelf Life:** 12 months
- Compliance:** GB26687, FSSC22000, ISO9001, ISO22000, HALAL, KOSHER, FDA, NON-GMO

Category



APPLICATIONS

— — Texture Improvement



Sausage and meat ball
Model: TG-B



Surimi products
Model: TG-KR

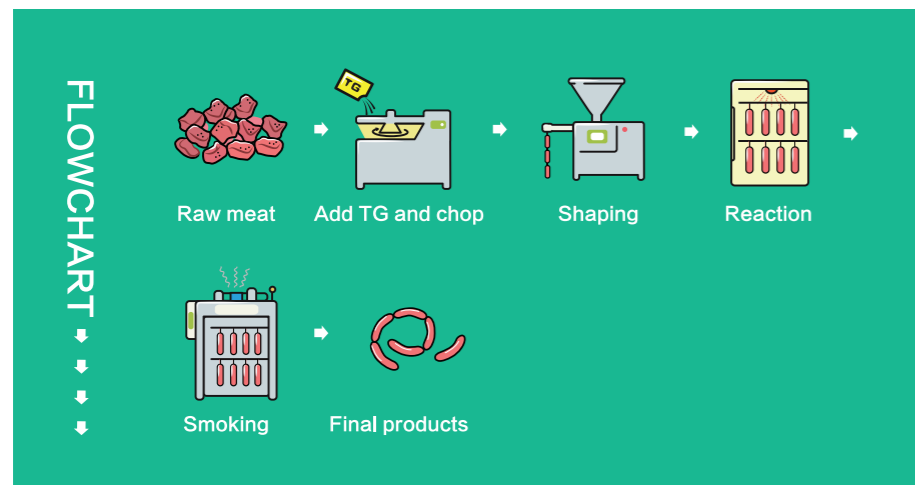


Dosage
0.1-0.2%



Caution
Two-phase heating

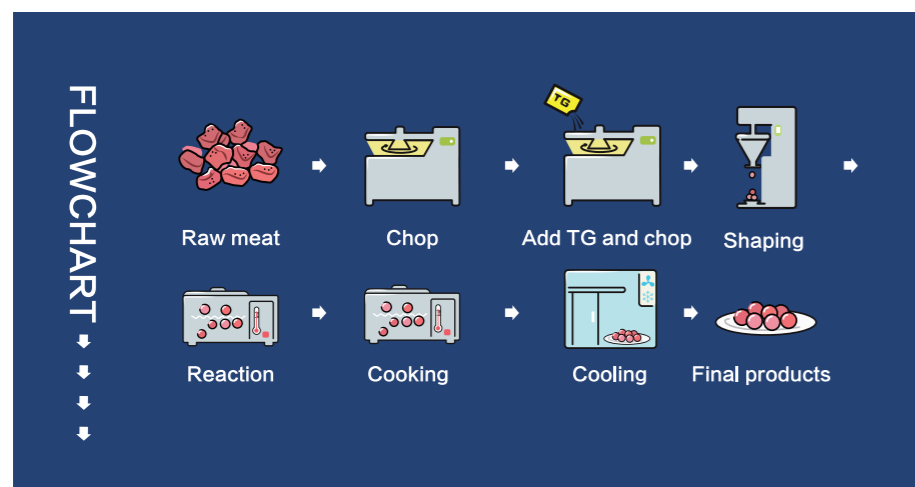
Sausage



Advantages

1. Improve texture and elasticity.
2. Prevent splitting and facilitate slicing.
3. Improve water-holding capacity and yield.
4. Prevent syneresis in storage.
5. Cut cost by reducing the addition of raw meat.

Meat Ball

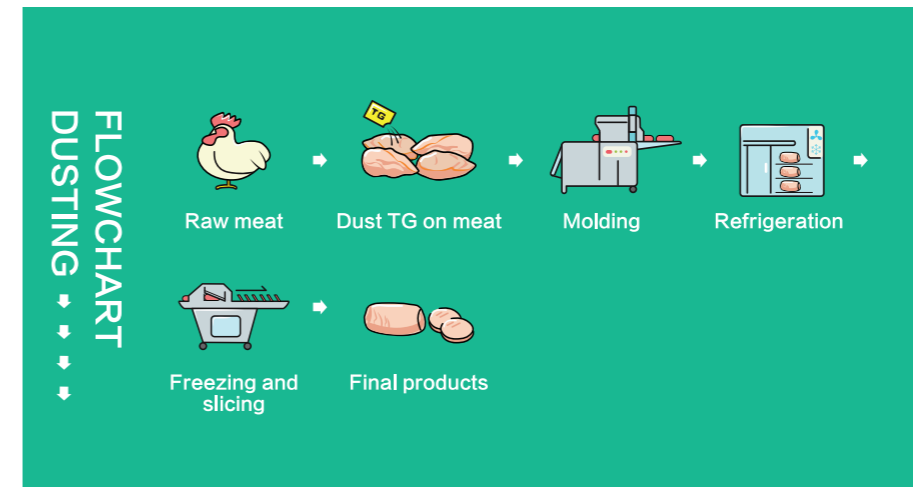


Advantages

1. Improve texture and taste.
2. Prevent splitting.
3. Improve water-holding capacity and yield.
4. Prevent syneresis in storage.
5. Cut cost by reducing the addition of raw meat.

— — Meat Recombination

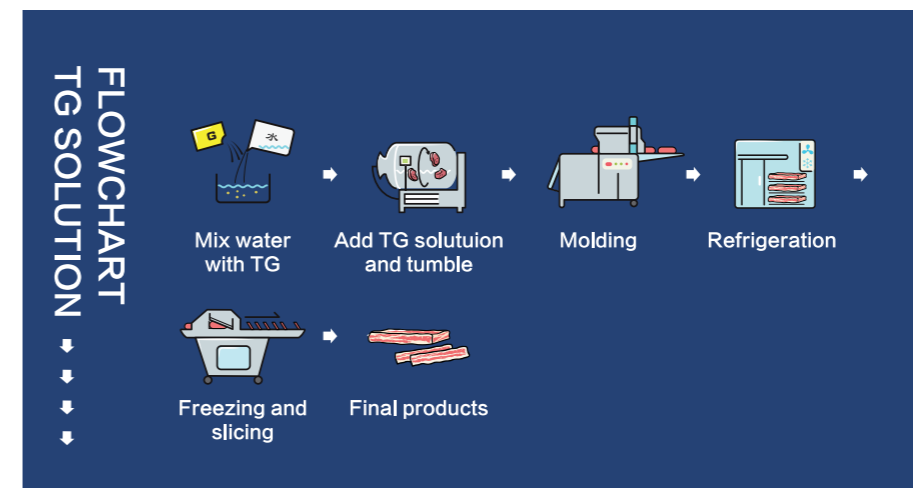
Beef, Pork, Poultry, Seafood



Advantages

1. Meat glue.
2. Increase added value.
3. Transform cuts into uniformed portions.
4. Easy to operate.

Beef, Pork, Poultry, Seafood



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	Dosage	Process	Reaction Time
Deep-sea fish	0.5-1.0%	Dust TG directly	Refrigerate for 4 hrs
Beef/mutton roll	0.8-1.2%	Mix TG with water (1:5)	Refrigerate for 3 hrs
Beef/pork steak	0.8-1.2%	Mix TG with water (1:4)	Refrigerate for 3 hrs
Beef/mutton roll (high water retention)	1.0-1.4%	Mix TG with water (1:5)	Refrigerate for 2 hrs
Chicken/pork roll	2.0-2.5%	Mix TG with water (1:5)	Refrigerate for 3 hrs

Dairy Products

Applications	Dosage	Process
Yoghurt	0.01–0.03%	Add directly during fermentation
Cheese	0.03–0.1%	Add directly during fermentation

Yogurt products



Advantages

1. Reduce syneresis.
2. Enhance gel strength.
3. Improve viscosity and consistency.
4. Reduce or replace emulsifiers or stabilizers.
5. Cut costs by reducing the addition of proteins or other additives.

Cheese Products



Advantages

1. Reduce syneresis.
2. Increase yield by 10%–20%.
3. Facilitate slicing process.
4. Provide a better structure.
5. Cut costs by reducing the addition of proteins or other additives.

Rice and Flour Products

TG-HB Baking Products

TG-GM Noodles

Recommendations

Applications	Dosage	Process
Frozen croissant	0.01%	Mix TG with flour
Frozen dough	0.01%	Mix TG with flour
Noodles	0.1–0.3%	Mix with salt or soda
Rice noodles	0.8–1%	Mix with salt or soda



CURDLAN

INTRODUCTION



Curdlan is a kind of neutral and water-insoluble microbial exopolysaccharide with thermal-gelation property. It can be widely applied as a gelling agent in the food industry.

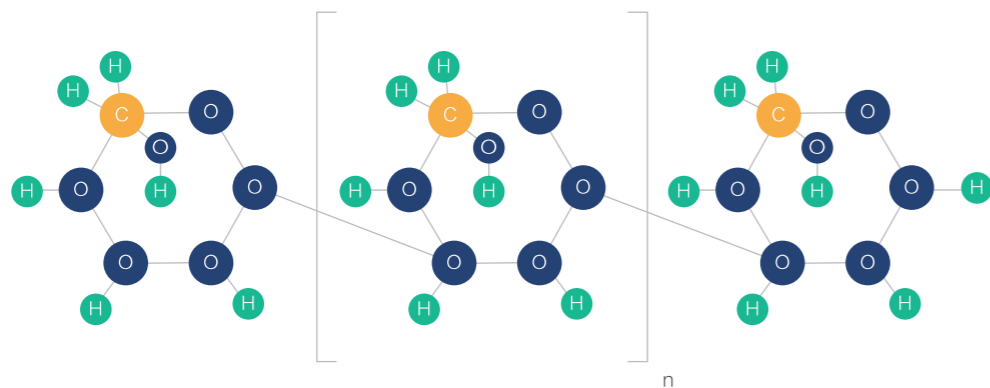


In 1996, FDA approved and allowed curdlan to be added directly in food as a food additive.



In 2006, curdlan got approval from Chinese government as a new food additive.

Molecular Structure



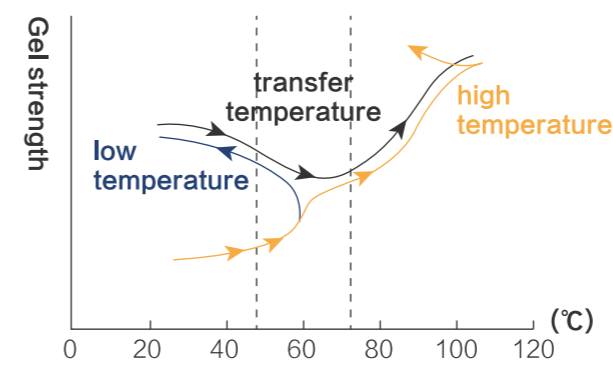
Specification

Product Name: curdlan	CNS No.: 20.042	INS No.: 424
Function: stabilizing agent, coagulating agent, thickening agent		
JECFA Specification: curdlan (Beta-1,3-Glucan; INS No. 424)		

Curdlan

FEATURES

Gelling Ability

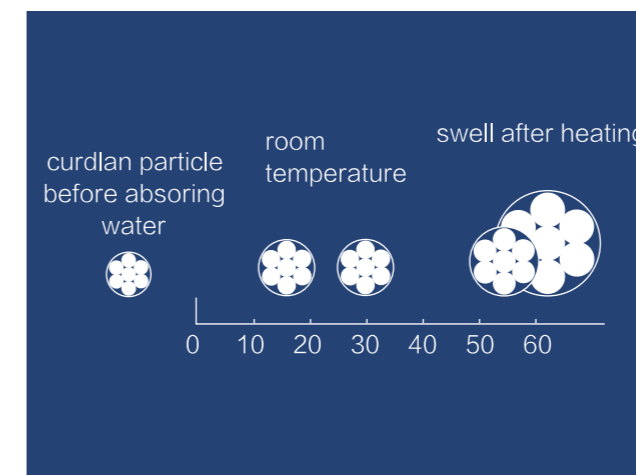


Curdlan can be transformed into various forms under different conditions.

1. Thermal-reversible gel (low gel strength): cool the curdlan suspension after heating it to 55°C
2. Thermal-reversible and pH-reversible gel (medium gel strength): add acid after dissolving curdlan in alkaline solution
3. Thermal-irreversible gel (high gel strength): cool the curdlan suspension after heating it to 85°C

Strong Water-holding Capacity

The unique molecular structure can contain water molecules.



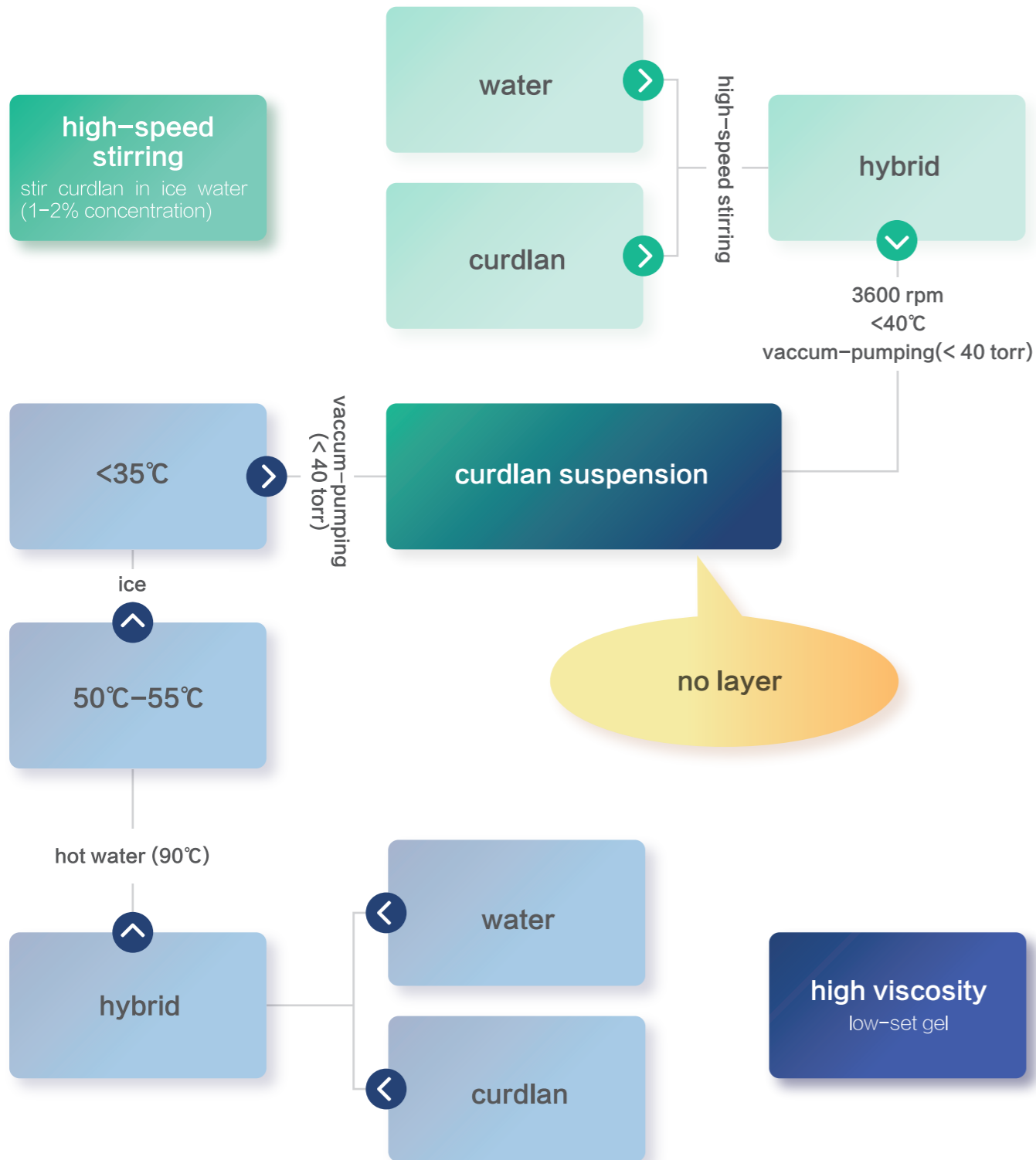
Freeze-thaw Resistance

Once the gel is formed, the gel strength and dehydration rate will not be affected by freezing and thawing process.



SUSPENSION PREPARATION

Curdlan



COMPARISON AND APPLICATIONS

Curdlan

Comparison

	Water-solubility	Conditions of forming gel				Reversibility
		heating only	heating and cooling	adding ion	PH	
curdlan	x	●	●		2-10	both
1-cbrrageenan	✓		●		5-8	✓
k-cbrrageenan	✓		● ¹⁾		>3.2	✓
agar	✓		●		5-8	✓
high methoxyl pectin	✓				2.7-3.2	✓
low methoxyl pectin	✓			● Ca ⁺	3.2-6.8	✓
sodium alginate	✓			● Ca ⁺	>4.3	✓
gellan gum	✓		● ²⁾		3.5-8	✓
gelatin	✓		●		5-8	✓
albumen powder	✓	●			6-8	x
whey protein	✓	●			7-8	x
soy protein isolate	✓	●			6-8	x
konjac flour	✓				10-13	x

● form gel * soluble in cold water 1) add sugar 2) add ion (Na⁺, K⁺, Ca⁺ or Mg⁺)

Application

- Meat Products
- Aquatic Products
- Wheaten Food
- Snacks
- Vegetarian Food

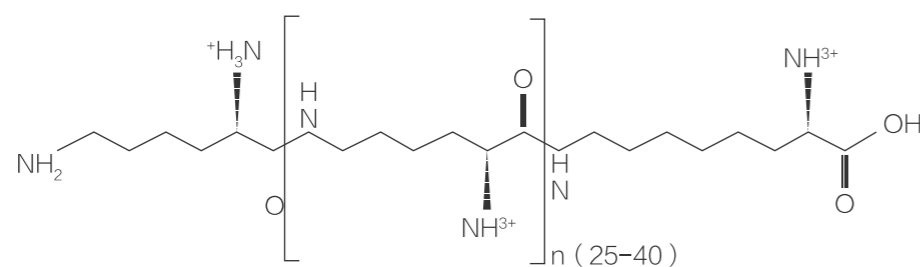
	Advantages	Dosage	Method
sausage	improve taste and prevent burst	0.3-0.5%	add directly
meat ball	improve taste	0.3-0.5%	add directly
ham	improve taste and yield	0.5-0.8%	inject
plant-based meat	improve taste	0.5-0.8%	add directly
rice and flour products	improve boiling resistance	0.1-0.3%	stir curdlan in raw material
instant coffee	improve stability of milk foam	2%	stir curdlan in raw material

ε-POLYLYSINE






Introduction and Applications

ε-Polylysine is a natural and safe antibacterial food preservative produced from microbial fermentation. It can inhibit gram-positive bacteria and gram-negative bacteria and yeasts.

Molecular Formula



Advantages

 Natural and safe	 Wide antibacterial spectrum	 Wide application	 Good water solubility and thermal stability	 Friendly blend with other preservatives
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Product Category

ε-Polylysine (PL-00)	ε-Polylysine · citrate (PL-L0)	ε-Poly-L-lysine · HCl (PL-01)	ε-Polylysine compound (PL-02, PL-03) (PL-04, PL-05)
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ε-POLYLYSINE

PH Parameter Table

	International Standard	PH
ε-Polylysine	International standard	9
ε-Poly-L-lysine · HCl	2.5-5.5	subject to COA
ε-Polylysine · citrate	2.5-5.5	subject to COA

Dissolubility detection

Yiming Bio commissioned Standard Technical Service (Shanghai) Co., LTD. (SGS) to test the solubility of ε-polylysine, and the test results are shown in the following table:






Physical and chemical testing:

Test items	unit	Test method	detection result 1	limit of quantitation
solubility	-	Chinese Pharmacopoeia 2020 edition 1	Very Soluble	-

Test results: 1g of the sample can be dissolved in less than 1 mL of the solvent.

Solubility test according to the insoluble in the Chinese Pharmacopoeia, the results of the test results. Standard term: easy dissolution: 1g (ml) of solute can dissolve in less than 1ml of solvent.

Application

Current Products		Our Prospects		
 MT-SJ wet wipe	 MT-XF baby shampoo	 MT-YG toothpaste	 MT-SK mouthwash	 MT-SH care for private parts

As a natural preservative, ε-polylysine gains attention in the field of chemicals for daily use. For now, Yiming Biotech's bacteriostatic solutions covering baby wipes and shampoo have entered the market and gained recognition.

Catalogue of Cosmetic Raw Materials Released by Chinese Medical Products Administration

No.	Name	INCI Name	Highest Dosage for Rinsing Products	Highest Dosage for Products Linger on Skin
03964	ε-Polylysine	POLYLYSINE	0.435	0.05

DATA SHEET

— — Raw material submission code — —

Yiming Biotech has always been committed to providing safe and legal raw materials. At present, the company has completed the submission of ϵ -polylysine cosmetic raw materials and obtained the exclusive submission code of National Medical Products Administration, which is 003964-04987-5666.

	Raw material submission code	Raw material name	Raw material coding	Manufacturer	Manufacturer code	Condition	Modification time
1	003964-04987-5666	ϵ -Polylysine (version 1)	003964	Jiangsu Yiming Biological Technology Co., Ltd.	04987	Success	2022-07-19 15:41:31

— — Preservatives effectiveness test — —

Yiming Biotech entrusted SGS to conduct the cosmetic antiseptic efficacy test on ϵ -polylysine, and the test results are shown in the following table.

Culture	Logarithmic value of bacterial number of bacterial liquid for inoculation	Reduction of Logarithmic value	
		14days	28days
Culture	Escherichia coli	7.7	>4.7
	Staphylococcus aureus	7.3	>4.3
	Pseudomonas aeruginosa	7.6	>4.6
Fungus	Candida albicans	7.6	>4.6
	Aspergillus brasiliensis	7.1	>4.1

Detection method: refer to the antibacterial effect test of USP-NF <51 > of the United States Pharmacopoeia, and the effective date is May 1, 2018.

Conclusion: ϵ -polylysine has a significant inhibitory effect on bacteria (Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa) and fungi (Candida albicans, Aspergillus brasiliensis) commonly found in cosmetics, and it still has a good bacteriostatic effect 28 days after the start of the experiment.

— — Products and Applications — —

Applications	product	Method	Effective on
sauce storage	Sauce Fresh Treasure	add directly	bacteria, yeast, mold
Pickled vegetables Fresh-keeping	Pickled vegetables Fresh Treasure	spray and soak	bacteria, yeast, mold
marinated meat Fresh-keeping	marinated meat Fresh Treasure	spray	bacteria, yeast, mold
fruit and vegetable Fresh-keeping	fruit and vegetable Fresh Treasure	add directly	bacteria, mold

— — MIC of ϵ -Poly-L-lysine · HCl — —

Microbes	Strains	MIC (mg/kg)
gram-positive bacteria	Staphylococcus aureus	78
	Micrococcus luteus	2.5
	Bacillus subtilis	2.5
gram-negative bacteria	Escherichia coli	10
	Pseudomonas aeruginosa	39
yeast	Saccharomyces cerevisiae	10
mold	Aspergillus nige	250

— — GB2760 Standard for Use of ϵ -Poly-L-lysine · HCl — —

No.	Food Name	Maxmium Usage (g/kg)	No.	Food Name	Maxmium Usage (g/kg)
04.0	beans, edible fungi, algae, nuts, seeds	0.3	12.0	condiments	0.5
4.01	fruits	0.3	12.02	flavor enhancer	0.5
4.02	vegetables	0.3	12.03	vinegar	0.5
4.03	edible fungi, algae	0.3	12.04	soy sauce	0.5
4.04	bean products	0.3	12.05	sauce	0.5
4.05	nuts, seeds	0.3	12.07	cooking wine	0.5
6.02	rice, rice products	0.25	12.10	compound condiment	0.5
6.03	wheat flour, flour products	0.3	14.0	beverages	
6.04	miscellaneous grain products	0.4	14.04	carbonated drinks	0.2
08.0	meat products	0.3	14.05	tea, coffee, plant-based drinks	0.2
8.02	processed meat	0.3	14.06	solid drinks	0.2
8.03	cooked meat	0.3	14.07	beverage for special purpose	0.2
8.04	edible animal casings	0.3	14.08	flavor drinks	0.2
10.02	marinated eggs	0.5	14.09	other beverages	0.2