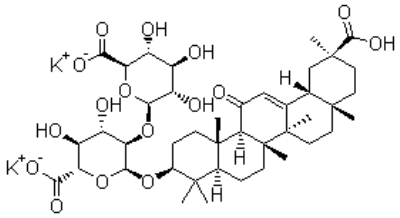
西安绿天生物技术有限公司
Plamed Green Science Group

Introduction of Dipotassium Glycyrrhizinate

1. Dipotassium Glycyrrhizinate Overview

Dipotassium Glycyrrhizinate is a derivative of glycyrrhizic acid. It belongs to the triterpenoid saponin compound. Dipotassium Glycyrrhizinate is extracted from liquorice root. It contains hydrophilic groups and lipophilic groups; so it can reduce surface tension of aqueous solution, and has a strong foaming ability. As an anti-allergy, sunscreen, anti-freckle, whitening cosmetic functional additive, Dipotassium Glycyrrhizinate can effectively prevent skin inflammation; and it has sedative effect on inflammation caused by sunlight. It is widely used in cosmetics industry. Plamed Dipotassium Glycyrrhizinate adopts two detection methods: HPLC (70%) and UV (98%), which ensures the purity of cosmetic grade Dipotassium Glycyrrhizinate, and makes customers relieved, secure and unworried.

Product Name	CAS Number	INCI Name
Dipotassium Glycyrrhizinate	68797-35-3	DIPOTASSIUM GLYCYRRHIZINATE
Molecular Weight	**Molecular Formula**	**Molecular Structure**
899.12g/mol	$C_{42}H_{60}K_2O_{16}$	

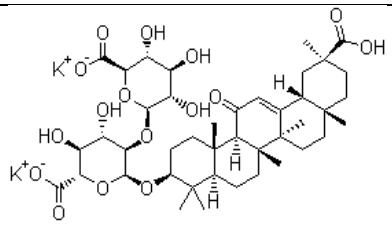
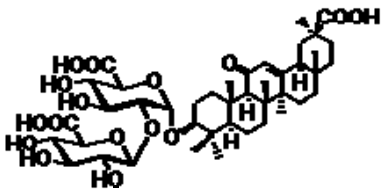
Product ID	Specification	Minimal Package	Minimal Order Quantity
PMB0706	98% UV	1KG	1KG

2. Dipotassium Glycyrrhizinate Source

Liquorice (Scientific names: Glycyrrhiza glabra L., Glycyrrhiza uralensis Fisch) belongs to leguminosae herbaceous perennial. It is also a traditional Chinese herb plant. Liquorice mainly grows in arid, semi-arid sandy soil, desert edge and loess hilly area. Most of wild liquorice in China is distributed in Sinkiang, Inner Mongolia, Ningxia, Gansu, Shanxi, and other places. There are a large number of artificial cultivation liquorice areas in Sinkiang, Gansu, Inner Mongolia and Ningxia provinces. Liquorice contains a variety of effective chemical components, such as liquiritin, glycyrrhizic acid, glycyrrhetinic acid, liquorice flavonoids, liquiritigenin, etc. These components are mainly found in liquorice root and bark. So the thick roots of liquorice are major medicinal source commonly. Liquorice extract is mainly used in the pharmaceutical, health care and cosmetics industries.


3. Dipotassium Glycyrrhizinate VS Glycyrrhizic Acid

	Dipotassium Glycyrrhizinate	Glycyrrhizic Acid
Source	Potassium derivatives of glycyrrhizic acid	Liquorice root
Appearance	White powder	White crystalline powder

Molecular Structure		
Solubility	Easily soluble in water; soluble in dilute ethanol, glycerol, propylene glycol; slightly soluble in anhydrous ethanol, ether.	Hard to be soluble in cold water; easily soluble in hot water; insoluble in grease; its hot water solution is gelatinous after cooling; soluble in propylene glycol.
Application	Whitening cosmetics, teeth care and hair care products	Food additives (Sweeteners, flavorings, flavor enhancers) and pharmaceuticals industry

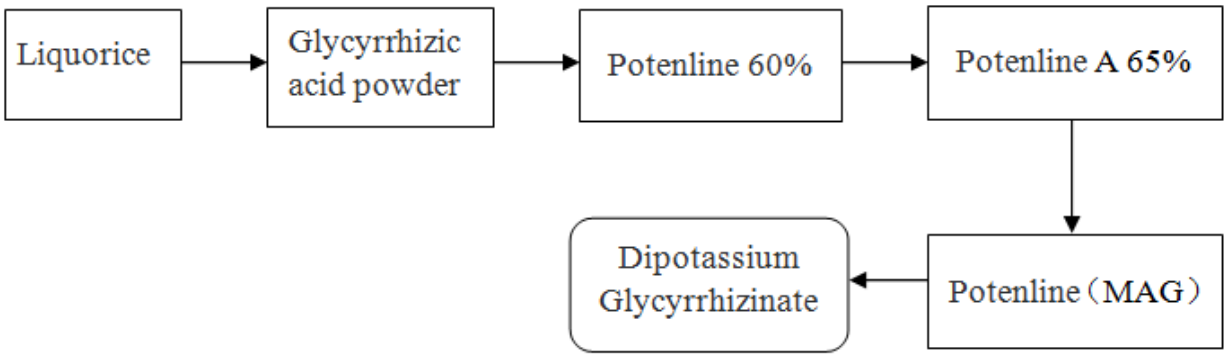
4. Dipotassium Glycyrrhizinate Manufacturer Specifications

Product Name	**Specification**	**Color**
Dipotassium Glycyrrhizinate	98% UV	White powder

Items	**Specifications**
Content	≥98.0% UV
	≥65.0% HPLC
Appearance	White or yellowish powder
Clarity	Clarification
pH value	5.0~6.0
Physical Characteristics	
Loss on drying	≤8.00%
Residue on ignition	18.00~22.00%
Chloride	≤0.014%
Sulfate	≤0.029%
Heavy Metals	
Heavy metals	≤10ppm

Arsenic	≤2ppm
Microbiological Tests	
Total Plate count	≤1000cfu/g
Yeast & mold	≤100cfu/g
Escherichia coli	Negative
Staphylococcus	Negative
Salmonella	Negative

5. Dipotassium Glycyrrhizinate Manufacturer Process Flow Chart



6. Dipotassium Glycyrrhizinate Benefits

- **Whitening**

1) Inhibits active oxygen formation: Dipotassium Glycyrrhizinate is a flavonoid compound with strong antioxidant activity. Experimental study uses superoxide dismutase SOD as a control group, and the result shows that Dipotassium Glycyrrhizinate can effectively inhibit the production of active oxyge. 2) Inhibits tyrosinase: The IC50 of tyrosinase of Dipotassium Glycyrrhizinate is very low compared to the commonly used whitening ingredient. Dipotassium Glycyrrhizinate is a well-recognized strong tyrosinase inhibitor; it is more effective than some commonly used whitening agents. 3) Inhibits melanin production: Test selects the back skin of guinea pigs under UVB irradiation. The result indicates that white coefficient of skin pretreated with 0.5% Dipotassium Glycyrrhizinate is higher than that of the control group's skin, and the effect is obvious. Thus Dipotassium Glycyrrhizinate has a significant inhibitory effect on melanin formation. It can be used to prevent skin pigmentation and melanin production after sun exposure.

➢ **Anti-inflammation**

The result of mouse ear swelling test shows that toothpaste containing Dipotassium Glycyrrhizinate can significantly inhibit xylene-induced ear swelling of mouse. So it has a strong anti-inflammatory effect for acute inflammation. The in vitro anti-inflammatory experiment of Dipotassium Glycyrrhizinate suggests that in a certain concentration range, Dipotassium Glycyrrhizinate inhibits cells from secreting inflammatory mediator NO and inflammatory cytokine IL-6, when it acts on LPS to stimulate RAW264.7 cells. And its inhibition function depends on a certain dosage. Therefore, Dipotassium Glycyrrhizinate has obvious anti-inflammatory activity in vitro.

7. Plamed Dipotassium Glycyrrhizinate Characteristic

★ Plamed owns a foreign planting base, which ensures a stable supply;

★ Through optimizing the process, a complete and thorough reaction is carried out;

★ Plamed adopts Korean cosmetic standard that is more applicable to cosmetics raw material.

8. Dipotassium Glycyrrhizinate Application and Reference Dosage

Dipotassium Glycyrrhizinate can be added into all kinds of cosmetics, such as cream, toner, emulsion, essence, etc. It can neutralize or reduce toxic substances in cosmetics; also it can prevent allergic reactions to some cosmetics. Moreover, Dipotassium Glycyrrhizinatecan can be used in advanced hair care products and teeth care products (toothpaste and mouthwash).

Product	**Reference Dosage**
Dipotassium Glycyrrhizinate 98% UV	0.5-1%

Attention:

- The recommended dosage of Dipotassium Glycyrrhizinate in toothpaste is 0.1%-0.5%;
- Dipotassium Glycyrrhizinate is suitable for combination with alpha hydroxy acid, which can increases skin defense ability.

Dipotassium Glycyrrhizinate application cases in major cosmetic brands in the world:

Country	Brand	Product
USA	Anjou	Blackhead Removing Nose Strips
	Smiley Berry	Vitamin C Serum
	SENSANOL	Multi EGF Serum
	BodiVéa	Absolute Radiance Corrective Serum
	Andalou Naturals	Make-up Remover
	Aliza Naturals	Retinol Moisturizer Cream
	ZENMED	Anti-Redness Mask
Korea	Dr Eslee	Anti-Sebum Wash Foam, After Skin Ac Lotion
China	BIOAQUA	Premium Facial Peel Mask, Acne Control Spot Essence
	Dr Hsieh（Taiwan）	Mandelic Acid Home-peeling Liquid
	Aliver	Goldren Magnetic Face Mask
Japan	White Conc	Body Lotion
	Dr.Ci:Labo	Aqua Collagen Gel BI HA KU, Basic Black Charcoal Gel
	Jun-mai komenuka bijin	Natural Rice Bran face wash foam

9. Dipotassium Glycyrrhizinate Reference Formula

Anti-allergic emulsion：

Ingredient	Content (%)	Ingredient	Content (%)
Carbopol	0.1	Cetyl stearol polyoxyethylene (2) ether	1.2
Tocopherol	0.5	Cetyl stearol polyoxyethylene (21) ether	1.5
Triglycerides caprylic	3.0	Ethylhexyl palmitate	4.0
Polydimethylsiloxane	2.0	Hydrogenated polyisobutene	5.0
Methylparaben	0.2	Dipotassium Glycyrrhizinate	0.2
Glycerol	5.0	Ophiopogonis japonicus P.E	1.0
Fucose	3.0	Opuntia streptacantha stem extract	2.0
Oatsβ- glucose	3.0	Propylene glycol	3.0
Deionized water	Add to 100.0	Triethanolamine	0.1
Azone	1.0		

Anti-allergic toner：

Ingredient	Content (%)	Ingredient	Content (%)
Propylene glycol	3.0	**Dipotassium Glycyrrhizinate**	**0.5**
Fucose	3.0	Ophiopogonis japonicus P.E	5.0
Glycerol	5.0	Deionized water	Add to100
Hyaluronic acid	0.1	Diazolidiny1 urea	0.2
Azone	1.0		

Shampoo：

Ingredient	Content (%)	Ingredient	Content (%)
Dipotassium Glycyrrhizinate	**0.05**	Oridonin	0.2

1,3- Butanediol	3.0	Berberine	0.1
Ethanol	40.0	Water	Add to100

Skin-repair cream：

Ingredient	Content (%)	Ingredient	Content (%)
Dipotassium Glycyrrhizinate	**0.2**	Glycerin	4.0
Butanediol	3.0	Xanthan gum	0.02
Hyaluronic acid	3.0	Aloe Powder	0.3
Ammonium acryloyldimethyltaurate/VP copolymer	1.2	Fucose	1.0
Phenoxyethanol	0.6	EDTA-Na2	0.03
Ethylene glycol	1.0	Water	Add to 100

10. Dipotassium Glycyrrhizinate Safety

- The FDA includes Dipotassium Glycyrrhizinate on the list of Generally Recognized As Safe (GRAS). It can be directly used as food additives.
- EU Cosmetics Directives and the Cosmetic Ingredient Review (CIR) Expert Panel both believe that Dipotassium Glycyrrhizinate is non-toxic and safe when used in OTC personal care products.
- Clinical trial shows that Dipotassium Glycyrrhizate doesn't penetrate nor irritate the skin.

11. Packing and Storage

Package: Packed in 25kg paper drums with two plastic bags inside.

Storage: Stored in a cool dry place and away from direct sunlight and oxidizing agents.