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Dipotassium Glycyrrhizate

Product Data Sheet

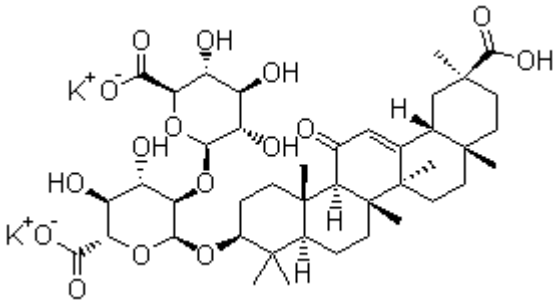
GENERAL INFORMATION

Licorice species are herbs native to the Mediterranean area.The root of licorice is a traditional medicine used mainly for the treatment of peptic ulcer, hepatitis C, and pulmonary and skin diseases. Clinical and experimental studies have shown it to contain pharmacological properties such as anti-inflammatory ,antiviral, antimicrobial, anti-oxidative, anti-cancer activities, immune-modulatory , hepato-protective and cardio-protective effects. The licorice is made up of active constituents such as saponins , flavonoids , chalcones, isoflavones, coumarins, stilbenoids, as well as other compounds such as asparagines, glucose,sucrose, starch, and polysaccharides. It has been used for treating skin eruptions, including dermatitis, eczema , pruritus and cysts**. Dipotassium glycyrrhizinate is a compound obtained by extraction with water from liquorice root. Many clinical reports deal with the application of this product to medicines for external use in the field of dermatology; it is apparently effective in treating acute and chronic dermatitis . Moreover, they are used it in cosmetics product. It's main function as anti-inflammatory ,anti-oxidative and anti-irritant.**

SPECIFICATION

Chemical Name : Dipotassium Glycyrrhizinate

Chemical structure :



Empirical formula	:	$C_{42}H_{60}K_2O_{16}$	**Molecular weight**	:	899.12
Appearance	:	White to slightly yellow powder	**CAS No.**	:	68797-35-3
Odor	:	Practically odorless			

Analytical Specifications

Assay % (Dry basis) Glycyrrhizic Acid	:	96.0% minimum
Loss on Drying	:	8.0 % maximum
pH	:	5.0-6.0
Ash	:	21.0% maximum
Application	:	Anti-inflammatory,
Recommended Dosage	:	0.1 to 1.0%

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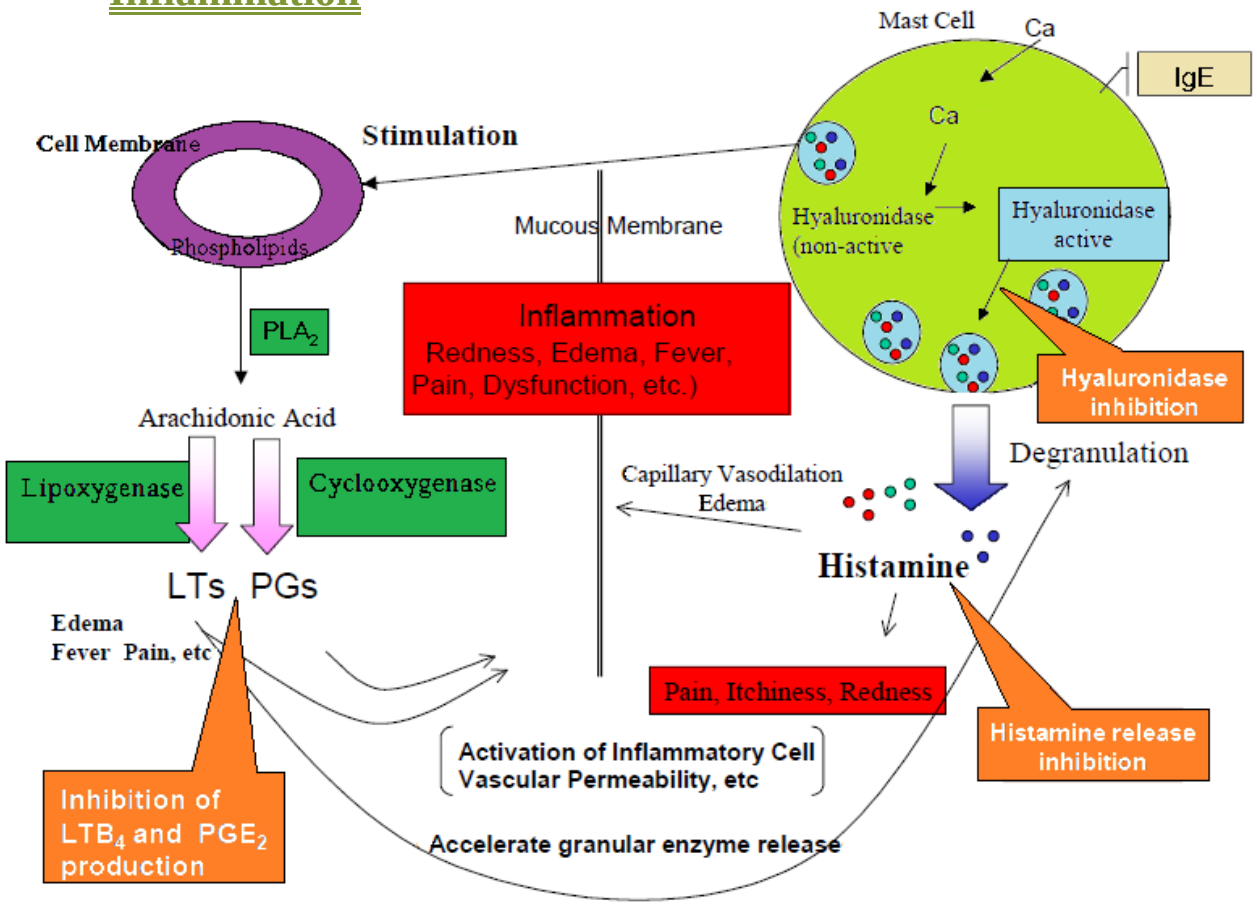
Mode of Action

Inflammation



Anti-inflammation and Hyaluronidase

Inhibition of hyaluronidase plays an important role not only in maintaining the hyaluronic acid level in the body but also in anti-inflammatory and antiallergic activities.

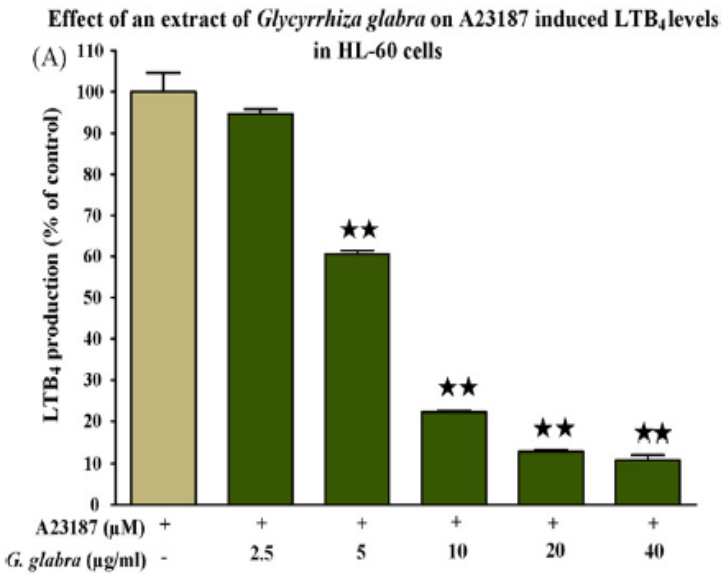
This enzyme is activated during inflammation, plays a role in the destruction of the connective tissue matrix, and increases the permeability of inflammatory cells and blood vessels. Hyaluronidase presents in mast cells in activated by the binding of IgE-antigen complex to receptors, and is involved in the release of histamine granules.

So far anti-inflammatory agents such as indonethacin and antiallergic agents such assodium cromoglicate have been reported as inhibitiors of hyaluronidase.

Dipotassium Glycyrrhizate

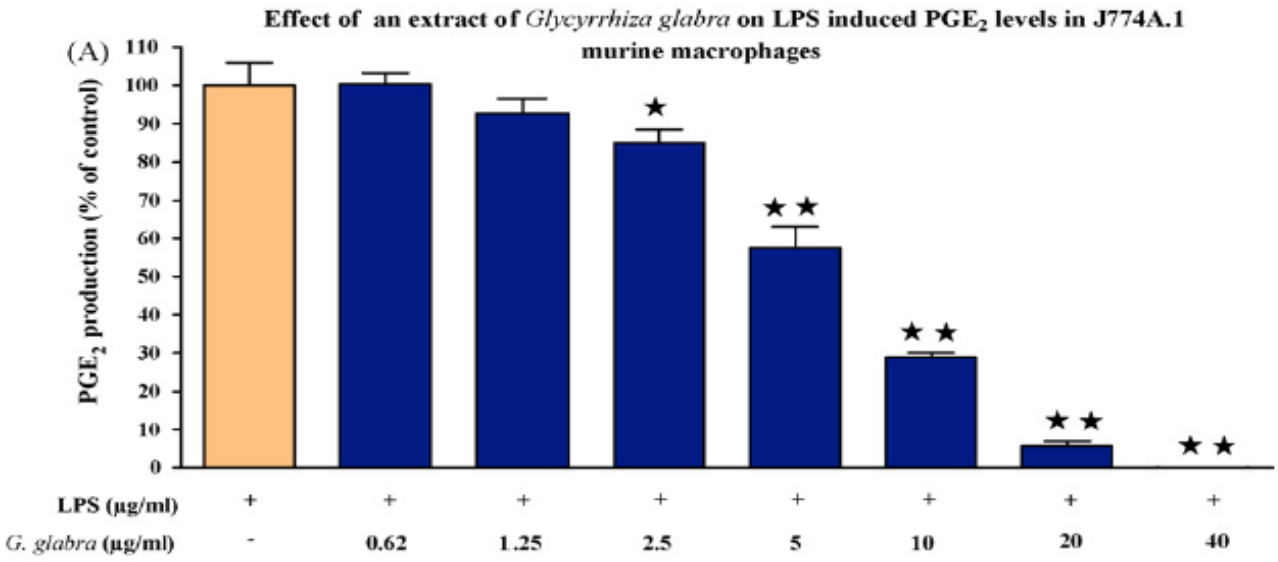
In-vitro Tests

Effects on Arachidonic Cascade



Effect of G. glabra on LTB4 production in A23187 stimulated HL-60 cells. Differentiated HL-60 cells were pretreated with indicated concentrations of G. glabra for 1 h. After stimulation with A23187 (5_M) for 15 min, the levels of LTB4 in the medium were quantified. G. glabra dose-dependently decreased the LTB4 productionand the values are expressed as a percentage of the control (A23187 alone).
Data are represented as mean±S.E.M. **P < 0.01 compared with the A23187 alone.

*** HL-60 cells = human neutrophil cells
A23187 = Antibiotic A23187 ,Calcimycin ,it is a mobile ion-carrier that forms stable complexes with divalent cations



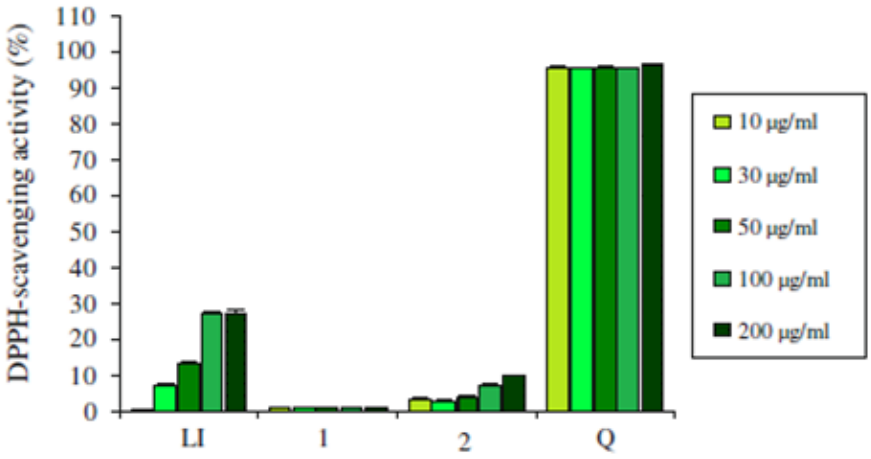
Effect of G. glabra on PGE2 production in LPS stimulated J774A.1 murine macrophages. Cells were pretreated with indicated concentrations of G. glabra for 1 h, and then stimulated with LPS (0.1μg/ml) for 24 h. The PGE2 levels were dose-dependently decreased by G. glabra and the values are expressed as a percentage of the control (LPS alone). Data are represented as mean±S.E.M. **P < 0.01 and *P < 0.05 compared with the LPS alone.

*** J774A.1 = murine macrophages
LPS = lipopolysaccharide

Dipotassium Glycyrrhizate

Antioxidant of Dipotassium Glycyrrhizinate

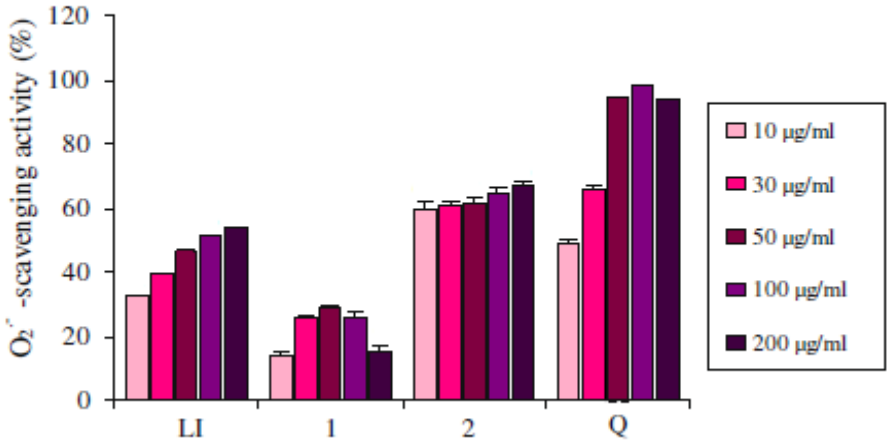
- **DPPH radical Test**



This assay is based on the ability of DPPH to react with H-donors.The change in absorbance produced by reduced DPPH is used to evaluate the antiradical ability of the samples. The DPPH – scavenging activities of LI, 1, 2 and Q .

*** LI = liquiritin
1 = glycyrrhizin
2 = Quercetin
Q = Rreference compound

- **Superoxide radical Test**



The superoxide anion radical is the most common reactive oxygen species formed in vivo. It is known to be very harmful to cellular components as a precursor of more reactive oxygen species,contributing to tissue damage and various diseases. The O2 scavenging activities of LI, 1, 2 and Q .

*** LI = liquiritin
1 = glycyrrhizin
2 = Quercetin
Q = Rreference compound

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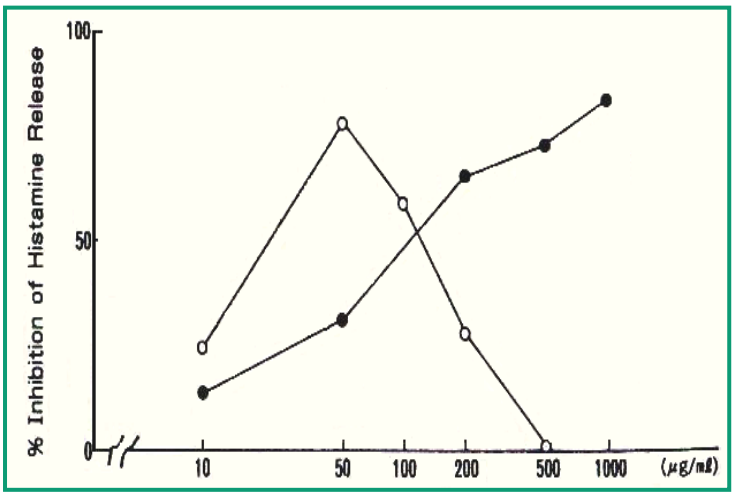
In-vivo Tests

Inhibitory Effects on Histamine Release

- **Effects of glycyrrhizin and glycyrrhetinic acid on histamine release from rat mast cells by antigen IgE antibody reaction**



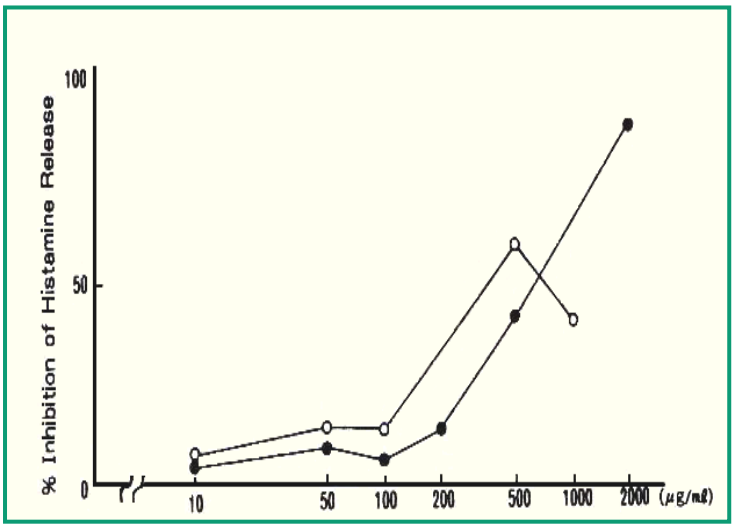
Effects of glycyrrhizin and glycyrrhetinic acid on histamine release from rat mast cells by antigen IgE antibody reaction

Concentration of antigen (DNP-As) was 100 μg/ml (%HR:33.3) . Each point represents the mean of duplicate.

***•-• = glycyrrhizin
○-○ = glycyrrhetinic acid

DPG:Inhibition 83.4% (Conc. at 1mg/mL)

- **Effects of glycyrrhizin and glycyrrhetinic acid on histamine release from rat mast cells by compound 48/80**



Effects of glycyrrhizin and glycyrrhetinic acid on histamine release from rat mast cells by compound 48/80.

Concentration of compound 48/80 was 1 μg/ml (%HR;74.0) .Each point represents the mean of duplicate.

***•-• = glycyrrhizin
○-○ = glycyrrhetinic acid

DPG:Inhibition 86.4% (Conc. at 2mg/mL)

Dipotassium Glycyrrhizate

Acute and Chronic Toxicity

The LD50 of various Glycyrrhizin Salts administered to mice has been determined by Klosa (1957) and Fujimura, with results as shown in Table I

TABLE I

Acute Toxicity of Glycyrrhizin Salts in Mice

Route	Glycyrrhizin salt	LD_{50} (mg / kg)
Oral	ammonium (crude)	12,700
	diammonium	9,600
	potassium (crude)	12,400
	monopotassium	1,220
	dipotassium	8,100
Intraperitoneal	ammonium (crude)	1,050
	monoammonium	1,070
	diammonium	1,250
	potassium (crude)	1,260
	dipotassium	1,400

References :

1. Cheel J.,Antwerpen P.V.,Tůmová L.,Onofre G., et al.(2010). Free radical-scavenging, antioxidant and immunostimulating effectsof a licorice infusion (Glycyrrhiza glabra L.).Journal of Food Chemistry .122,508–517.
2. Chandrasekaran C.V., Deepak H.B., Thiyagarajan P., Kathiresan S., Sangli G.K., Deepak M., and Agarwal A.(2011). Dual inhibitory effect of Glycyrrhiza glabra (GutGardTM) on COX and LOX products. Journal of Phytomedicine ,18,278-284.
3. Armanini, D., Fiore, C., Bielenberg, J., Ragazzi, E., (2005). Licorice (Glycyrrhiza glabra). In Encyclopedia of Dietary Supplements, 371–399.
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