

***Glycyrrhiza glabra* L.**  
Leguminosae (Fabaceae)



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### ■ Morphological Description

**Leaves, stem and root:** The plant is a herbaceous perennial. It is 1 to 2 m high and has a long sturdy primary taproot. The taproot is 15 cm long and subdivides into 3 to 5 subsidiary roots, 1.25 m in length. There are several horizontal woody stolons which may reach 8 m. New stems are produced every year. They are sturdy, erect, branched either from the base or from further up, and are generally rough at the top. The foliage leaves are alternate, odd pinnate and 10 to 20 cm long. The leaflets are in 3 to 8 pairs. The stipules are very small and drooping.

**Flower and fruit:** The axillary inflorescences are upright, spike-like and 10 to 15 cm long. The individual flowers are 1 to 1.5 cm long, bluish to pale violet and short-pedicled. The calyx is short, bell-shaped and glandular-haired. The tips of the calyx are longer than the tube, and are pointed lanceolate. Petals are narrow, the carina petals are not fused, and they are pointed but not beaked. The fruit is a pod, 1.5 to 2.5 cm long, and 4 to 6 mm wide. It is erect and splayed, flat with thick sutures, glabrous, somewhat reticulate-pitted, and usually has 3 to 5 brown, reniform seeds.

### ■ Geographical Distribution

**Local:** Bahariyah and Siwa oases

**Regional:** Mediterranean region and Middle East countries.

**Global:** Native to the Mediterranean region and parts of Asia. It is cultivated worldwide.

### ***Glycyrrhiza glabra* L.**, Sp. Pl.ed 742. 1753

*Radix Glycyrrhizae*, Rad. Glycyrrh., *Glycyrrhiza*, *Liquiritiae Radix*, *Rhizoma Glycyrrhiza nativum*, *Liquiritiae*

#### Names

**Arabic :** Shagaret es-sus شجرة السوس

Erqsus عرق سوس

**Berber:** Azrar azidane

**English:** Liquorice, sweet root

**French:** Reglisse, Reglisse glabre, Reglisse  
Officinale

### ■ Ecology

Liquorice enjoys fertile, sandy or clay soil near a river or stream where enough water is available for the plant to flourish in the wild, or under cultivation where it can be irrigated.

### ■ Status

The plant is naturalized in the oases. However, it is not well used for its therapeutic value. Waste land and slightly saline areas could be used to cultivate this plant and avoid importation.

### ■ Part(s) Used

Roots, underground stem or stolon.

### ■ Collection

Harvesting takes place in autumn after the foliage has dried.

### ■ Preparation

Decoction, powder, liquorice extract.

### ■ Use

Oral, external, local

### ■ Constituents

Triterpenoid saponins: glycyrrhizin is the major active ingredient and is responsible for the sweet taste, being 50 times sweeter than sugar. Other saponins are also present. The concentration of glycyrrhizin in the root depends on the source and

the method of assay and is typically 2-6%. Glycyrrhetic acid and the aglycone of glycyrrhizin are also present in the root.

A wide range of flavonoids (1-1.5%), impart a yellow colour to the root: flavonones, mainly liquiritin, chalcones and isoflavonoids, also sterols and volatile oils are present.

### ■ Pharmacological Action and Toxicity

The major active ingredient is glycyrrhizin. It is the main expectorant ingredient, and an 18-B derivative of glycyrrhetic acid has an antitussive activity comparable to that of codeine. Both glycyrrhizin and glycyrrhetic acid are anti-inflammatory and antiallergic, helping to explain their efficacy in asthma.

They have been shown to be hepatoprotective, mediating their activity through an antioxidative rather than a corticosteroid-like mechanism.

Liquorice is used clinically in China for liver diseases and has produced an improvement in liver function tests in hepatitis, clearing jaundice and alleviating abdominal distension, nausea and vomiting. It has an antiulcer activity and a derivative of glycyrrhetic acid, carboxolone, is used clinically for ulcers, including aphthous ulcers. Liquorice has an oestrogenic activity in animals probably due to the isoflavonoids present. The polysaccharide fraction has immunostimulating activity.

The Commission E advises that liquorice is contraindicated in pregnancy but doses up to 3 g per day are likely to be safe.

Liquorice and its extracts are safe for normal use in moderate amounts - up to about three cups of tea a day-long term use (more than six weeks).

It has a well known pseudoaldosterone effect when large doses are ingested. The symptoms of pseudoaldosterone syndrome include hypertension, hypokalaemia, sodium and water retention, low plasma renin activity, and suppressed urine and serum aldosterone levels.

However, glycyrrhizin and glycyrrhetic acid have mineralocorticoid activity which may result in hypokalaemia, hypertension and oedema when large doses are taken over a long period.

Glycyrrhizin has recently been recorded to have an anticariogenic activity by inhibiting bacterial growth and plaque formation.

Glycyrrhiza should be prescribed in neutral or alka-

line solution. It is more effective when taken before food. The potassium intake should be increased.

### ■ Pharmacopoeia

Egyptian Pharmacopoeia, 1972

German Rote Liste, 1987

French Dictionnaire Vidal, 1986

European Pharmacopoeia, 1997

British Pharmacopoeia, 1998

British Herbal Pharmacopoeia, 1983, 1990.

Chinese Pharmacopoeia, English edition 1997

Japanese Pharmacopoeia, English edition 1996

Indian Pharmacopoeia, 1996

Liquorice is covered by a positive Commission E monograph and can be used for:

i) Catarrh of the upper respiratory tract.

ii) Gastric and duodenal ulcers.

Liquorice is on the UK General sale list.

Liquorice natural extractive and ammoniated glycyrrhizin have GRAS status. Liquorice is also freely available as a "dietary supplement" in the USA under DSHEA legislation (1994 Dietary Supplement Health and Education Act). It has been present in the following OTC drug products and as an ingredient in products offered for use as an aphrodisiac and as a smoking deterrent. The FDA, however, advises that: "based on evidence currently available, there is inadequate data to establish general recognition of the safety and effectiveness of these ingredients for the specified uses".

### ■ Pharmaceutical Products

Broncho "Cough Syrup" (Mepaco)

Shefa tone "effervescent" (Nile Co.)

Sekem Renal Herbs (Sekem)

Sekem Laxative Herbs (Sekem)

Sekem Slimming Herbs (Sekem)

Sekem Anticough Herbs (Sekem)

Sekem Hepatic Herbs (Sekem)

Baby Calm (Sekem)

Compound Powder of Liquorice: 15 g / 100 g (Kahira)

Glucafene syrup Extract Glycyrrhizae 5 g/180 ml (Memphis)

7 Herbs, 20 mg liquorice/400mg capsule (Misr Co.)

Sweets sold in the market are called Rub sous.

Biogastrone, Duogastrone (Biorex)

Cavid-S (Cidona, Holand)

## ■ Traditional Medicine and Indigenous Knowledge

**History:** Archaeological evidence reveals that liquorice roots were mentioned in some ancient Assyrian tablets dating from the third millennium before the present. In old Egyptian pyramids, tombs of the pharaohs yielded liquorice roots; large amounts were found among the valuables in the tomb of King Tut (1345 BC).

Paul Twitchell, in his book, "Herbs: The Magic Healers" (1971), states that liquorice root was introduced into Egypt as medicine by one of Eckankar's ancient masters, Gopal Das. Eckankar is the ancient science of soul travel. Almost all ancient civilizations knew and used liquorice root, including the ancient Hindus of India, Greece, Rome, Babylon, and older civilizations of Europe and Asia. The therapeutic value of the herb varied from expectorant to restorer of sexual vigor.

Dioscorides, a herbal physician and writer on the medicinal value of over 500 plants who travelled with the army of Alexander the Great, advised the troops to carry and chew liquorice root in order to allay their thirst when water was scarce on long marching campaigns.

Liquorice is mentioned by the Roman writers Oribasius and Marcellus in the fourth century BC.

Hippocrates, during the 5th century BC, writes about the uses of liquorice for prevention of thirst in dropsy and diabetes. Theophrastus, known as "The Father of Botany" for his work on plants, says that "the sweet Scythian root is good for asthma, dry cough, and all pectoral diseases". The Scythians were an ancient nomadic people who travelled on horseback in the steeps of Central Asia.

Theophrastus, a student of Plato and Aristotle, reported that the Scythians were able to go as long as 12 days without water because they chewed liquorice root and ate mare's cheese.

Liquorice root was essential to the Arabic alchemists of the Middle Ages.

The sweet root has been cultivated for centuries in England near Pontefract Castle beginning with the reign of Henry III.

Both Chaucer and Shakespeare mentioned liquorice in their works. Later English herbalists refer to liquorice quite often, including the well known herbalist of the 16th century, M. Gerard, and another of the 17th century, Nicolas Culpeper.

Gerard states that liquorice grew plentifully in the famous "Physic Garden" in London.

Nineteenth century botanic physicians, both European and American, knew the virtues of the liquorice root, and used it extensively in their practices. Liquorice as a medicine was included in the early U.S. pharmacopoeias and *Materia Medica*, and still is today. It is very commonly used in Egypt for its several curative properties.

## ■ Traditional Medicinal Uses

- Bowel and urinary tract complaints.
- Chest diseases and bronchial diseases.
- Constipation
- Inflammatory diseases.
- Rheumatic diseases.
- Tumours.
- Ulcer

**Other uses of the plant:** for food poisoning mixed with black or mung beans. It is also used as a flavouring food and as a refreshing drink. It is added to beer to increase foaminess.

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