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Asl-us-Sus (Glycyrrhiza glabra L.), a great munzij-i-balgham (concoctive of phlegm) drug of Unani system of medicine: A review

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Abstract

Asl-us-Sus is an incredible leguminous herb belongs to the family Fabaceae, which comprises of the root of *Glycyrrhiza glabra L.* The plant is found world widely. It is commonly known as *Mulethi*, and *Asl-us-Sus* and well known for its *munzij-i-balgham* (concoctive of phlegm) property which makes it useful to evacuate morbid matters produced due to excess or putrefaction of phlegm and which causes so many diseases in human body like, epilepsy, hemiplegia, facial palsy, nightmare, anxiety, sore throat, acute hoarseness of voice, uvulitis, asthma, bronchitis, dry cough, burning micturition, gonorrhoea etc. These actions may be attributed due to the chemical compounds have been isolated from the plant, mainly coumarins, flavonoids, terpenoids, volatile oils and amino acids etc. Many research works have been done for its pharmacological effects which validate the concept of humours, diseases occurs due to the imbalance of humours and treatment of the diseases by evacuating the morbid humour from the body using Unani herbs. This review gives an account of the current knowledge on the morphology, phytochemistry, and pharmacological aspects along with its action and uses in the perspective of Unani Medicine.

Keywords: *Asl-us-Sus, Glycyrrhiza glabra L., Munzij-i-balgham, Humours*

Introduction

Unani System of Medicine is well known and effective health care system among various Traditional System of Medicine which has been in existence from several centuries due to its basic concept of humours (body fluids) and diseases caused by the imbalance of the humours and its cure by the evacuation of morbid or excess humours from the body. A large number of drugs derived from medicinal herbs in the treasure of Unani Medicine make it incredible and it becomes favorite Medicare system day by day in the society due to its safe, efficacious, economical and harmless health care which is provided for humankind. *Asl-us-Sus* is one of the most known drugs of Unani medicine which is obtained from *Glycyrrhiza glabra L.* of the Fabaceae family. Its root (*Bikh-i-Asl-us-Sus*) and extract (*Rub al-Sus-extractum glycyrrhiza*) are widely used medicinally for the treatment of various diseases and especially for the treatment of cold diseases like *amrāz-i-balghamiyā* and *sawdāwīā* (diseases occur due to phlegm and black bile) such as *Sar'* (epilepsy), *Fālij* (hemiplegia), *Laqwa* (facial palsy), *Qabus* (nightmare), *Tawahhush* (anxiety), *Mālikholia* (Melancholia), *Khushunat-i-Halaq* (sore throat), *Bohat-al-Sawt hād* (acute hoarseness of voice), *Warm-i-luhāt* (uvulitis), *Warm-i-Sho'ba al-riyā* (bronchitis), *Diq al-nafas* (asthma), *Su'āl-i-yābis* (dry cough) etc. These effects occur due to the *munzij* (concoctive) effect and hot temperament of its root and due to the chemical constituents which have been isolated from the plant, mainly coumarins, flavonoids, terpenoids, volatile oils and amino acids etc. Though the adverse effects of its constituents on kidney and spleen and elevated in blood pressure and pseudoaldosteronism have prompted Unani physicians to use it judiciously and cautiously as it is advised to be used after peeling of its bark (*Asl-us-Sus muqasshar*) which has toxic effects. Due to the sweet taste and demulcent property, it is largely used in manufacture of syrup to reduce the bitter taste of medicines. According to Ibn Baitar the drug is very beneficial especially in diseases of lungs and urinary bladder such as burning micturition and burning sensation in chest. Its extract produces synergistic effect when added with the medicines of liver diseases.

Distribution: The plant is Native to the Mediterranean regions, cultivated in Europe, Persia, and Afghanistan. None of the liquorice yielding species occurs in India but cultivation of *G. glabra* L. on an experimental scale has been under taken in several places, notably Baramulla, Srinagar in Jammu and Kashmir, Dehradun and Delhi and also in the hilly areas of South India [1, 2, 3, 4].

Botanical description: *Glycyrrhiza glabra* is a hard perennial herb or under shrub attaining a height up to 6ft. leaves compound, alternate, imparipinnate, multifoliate, oblong oval or oblong ovate, obtuse, entire, smooth, except when young, spreading large, stalked with very minute deciduous stipules leaflets opposite in 4-7 pairs; flowers axillary spikes, papilionaceous, lavender to violet in colour, appears in march; pods compressed, appears in August, containing reniform seeds; rootstalk thick passing below into long, straight, cylindrical, slightly tapering, smooth, flexible, slightly branched root about 1.2cm in diameter; colour of the root is red or orange brown on the surface, pale yellow within; taste sweet [4, 5].

Scientific classification

Kingdom	:	Plantae
Subkingdom	:	Tracheobionta
Superdivision	:	Spermatophyta
Division	:	Magnoliophyta
Class	:	Magnoliopsida
Subclass	:	Rosidae
Order	:	Fabales
Family	:	Fabaceae
Genus	:	<i>Glycyrrhiza</i>
Species	:	<i>G. glabra</i>

Cultivation and collection: Seeds or underground stems with roots, rotation from seed source 2-3 years. Division of the crown or rooted cuttings of underground stems are planted 2 ft apart in rows, the distance between rows being 3 ft. irrigation is necessary until the plants are established. The root and underground stem are collected when ripe. These are carefully cut into pieces and dried slowly under cover [3, 4].

Description in Unani Literatures: Asl-ul-Soos consists of dried, peeled or unpeeled, root and stolon of *Glycyrrhiza glabra* L. of Leguminosae family [1]. It reaches up to the two meter high; flowers scarlet blue; leaves resembles with Kasondi (*Cassia occidentalis*); small legumes appear on the branches which bear 4-5 seeds; roots spread one meter in soil; smell faint and characteristic; taste sweet then bitter, unpeeled pieces (Fig. 01) are yellowish brown or dark brown, outer layer longitudinally wrinkled and whitish yellow in depth, peeled pieces are smooth and yellow; the fracture is fibrous in the bark and splintery in the wood In Indian market it is available in unpeeled form but Russian liquorice is imported in peeled form [4, 6, 7].



Fig 1: Unpeeled roots

Vernacular names: *Arabic:* Asl-us-Sus, Irq al-Sus, Ood al Sus, 'Uruq al-Sus; *Assamese:* Jesthimadhu, yeshtamadhu; *Bengali:* Jeshtimadhu, jaishbomadhu; *English:* Licorice, liquorice root, sweetwood; *French:* Boisdoux; *German:* Sussholz; *Greek:* Glycyrrhiza; *Gujarati:* Jethimadha; *Hindi:* Mulethi, mulathi, muleti, jethimadhu, jethimadh, mulhatti; *Kannada:* Atimadhura, yeshtimadhuka; *Kashmiri:* Multhi, shanger; *Malayalam:* Athimadhuram, Irattimadhuram, Yeshtimadhuram; *Marathi:* Jeshtamadha; *Oriya:* Jastimadhu, Jatimadhu; *Persian:* Bikh-i-Mehak, bikh-iribas, 'usara mehak; *Punjabi:* Jethimadh, Mulathi; *Sanskrit:* Madhuka, yashtimadhu; *Sinhale:* Welmi; *Tamil:* Athimadhuram, antimadhuram; *Telegu:* Atimadhuramu, Yashtimadhukam; *Urdu:* Mulethi. Dioscorides coined the name *Glycyrrhiza* which is taken from two Greek words, glucose means sweet and rhiza means root. The specific name *glabra* indicates toward its smooth surface or without hairs [2, 4, 5, 6, 7, 8].

Temperament: Its temperament is Hot and dry [8]; Kirmani and Ibn Sina considered it moderate or murakkb al-Quwa and some told it hot and wet in first degree, but according to Najmul Ghani it is Hot in 2nd degree and dry in 1st degree [7].

Therapeutic action and uses: Mainly the root is used for its *munzij-i-balgham* (concoctive of phlegm), *mulattif* (demulcent), *jāli* (detergent), *muqawwi-i-ā'sāb* (nervine tonic), *mugharri* (mucilaginous), *muḥallil-i-warm* (anti-inflammatory), *munaffith-i-balgham* (expectorant), *kāsir-i-reyāḥ* (carminative), *daf-i-humudat-i-mi'da* (antacid), *mudirr-i-bawl* (diuretic), *muddirr-i-ḥayḍ* (emmenagogue), *muqawwi-i-'asāb* (nervine tonic), *muqawwi-i-dimāgh* (brain tonic), *muqawwi-i-bāh* (aphrodisiac), *mulayyen* (laxative), *musakkin* (sedative), *musakkin 'utāsh* (sedative of thirst), *daf-i-hummā* (antipyretic), and *daf-i-tawahhush* (anti-anxiety) activities (1,8). Due to the *munzij* (concoctive) effect it is used in *amraze balghamiya* and *sawdavia* (diseases occur due to phlegm and black bile) like *Sar'* (epilepsy), *Fālij* (hemiplegia), *Laqwa* (facial palsy), *Qābūs* (nightmare), *Tawahhush* (anxiety), *Mālikholiā* (Melancholia) etc. Due to its expectorant and mucilaginous properties it is used for *Khushūnā al-Halaq* (sore throat), *Buhha al-Ṣawt ḥād* (acute hoarseness of voice), *Warm-i-luhāt* (uvulitis), *Diq al-Nafas* (asthma), *Warm-i-Sho'ba al-riyā* (bronchitis), *Suāl-i-yābis* (dry cough), *Qulā'* (stomatitis). Its diuretic and mucilaginous properties attribute to its *Hurqa al-bawl* (burning micturition), *Suzāk* (gonorrhoea), *Sozish-i-bawl* (urinary tract infections) etc. It is also very effectively used for the treatment of *Waja al-mi'da* (abdominal pain), *Qarḥa-i-mi'da* (gastric ulcers), *Qarḥa-i-Ashnā-i-Ashri* (duodenal ulcers), *Warm-i-Mi'da* (gastritis), *Bawāsir* (haemorrhoides) etc. [1, 6, 7, 8, 9, 10, 11]. The mode of administration of drug for the treatment of various diseases is as follows:

Nakhuna (pterygium): According to Dioscorides its powder is used as salve to treat pterygium [11].

Zof-i-basr (low eye vision): Its decoction is used to wash eyes to increase eye sight [7].

Khushunat-i-Qasba al-riya (dryness in trachea): Its extract ('*Usara Asl us Sus*) is used to suck to remove the dryness and irritation in trachea [11].

Qerha (wound): Externally its powder is sprinkled on wounds to heal them quickly^[11].

Buhha al-Sawt (hoarseness of voice): It makes voice clear when the root is used to suck^[11].

Mailan-i-rangat: Asl us Sus 2 ¼ gm is taken along with badiyan (*Foeniculum vulgare*) 2 ¼ and sugar for improving the colour of face^[7].

Qabz (constipation): It is useful in case of constipation when used with hot water and honey^[7].

Da' al Sa'lab (alopecia areata): Local application of the drug mixed with honey or wax is effective in case of Da' al-Sa'lab^[7].

Folk medicinal uses in Kashmir: The villagers near the forest area dig out the fresh stem to get relief from cough, influenza, headache and thirst^[3]. A qahwa known as "Shangri-kahwa" prepared using Shanger (Asl-us-Sus) along with other drugs like clove, cinnamomum and cardamom in water adding some sugar is used as old age home remedy by Kashmiri peoples to cure respiratory problems and various other diseases^[12].

Toxicity and adverse effect (Mazarrat): It produces adverse effect when used in diseases of kidney, liver and spleen^[7, 13, 14].

Caution: The intake of higher doses (above 50g/day) over an extended period (>6 weeks) may cause sodium retention, potassium depletion, hyper tension, cardiac complaints, kidney disease, obesity, disorders associated with pregnancy and hypo kalaemic alkalosis. It should not be taken concomitantly with cortico-steroid treatment. The drug is contra indicated in patients with a history of renal failure, hyper tension, and using digitalis preparations. It should not be used for longer than 4-6 weeks without medical advice.

Drug interaction: Because it increases potassium loss, it should not be administered for prolonged use with thiazide and loop diuretics or cardiac glycosides. Because it reduces sodium and water excretion, the effectiveness of drugs used in the treatment of hypertension may be reduced. It should not be administered in conjunction with spiranolactone or amiloride.

Corrective (Musleh): Gul-e-Surkh (*Rosa damascena*) is corrective for its toxic effect on spleen and *Samagh-i-Katira* (Gum tragacantha) for kidney. Unnab is also used as used as corrective^[7, 14].

Alternative or substitute (Badal): Rubb-us-Sus (extract of *Glycyrrhiza glabra*-made from the extract of the root of *G. glabra*), Turbud (*Ipomia terpthum*) and Zanjabil (*Zingiber officinale*) and Khulanjan (*Alpinia galanga*) are used as substitute^[8, 14], in case of headache *Samagh-i-Katira* (Gum tragacantha) is used as substitute^[14]. Manchurian licorice is obtained from *Glycyrrhiza uralensis*. Being a substitute it does contain glycyrrhizin the active principle but very little of free sugars. The common adulterant is wild licorice also called Indian licorice, derived from the roots of *Abrus precatorious* (Leguminosae)^[16]. Microscopically the adulterant is characterized by stone cells.

Dosage: 3-7 gm^[8]; 5-10gm^[14]

Compound formulations: Various compound formulations are prepared in which Asl-us-Sus is one of the most effective drugs, those compounds are *Dayaquza*, *Habb-i-Ghariqun*, *Habb-i-baqila*, *Habb-i-Nazla*, *Habb-i-Su'al Musakkin*, *Habb-i-Surfa*, *Habb-i-Surfa Qawi*; *Jawarish aslussus*; *Joshandah munzij (moghli hulu)*; *Lauq sapistan*, *Lauq amaltas*, *Lauq Hulba*, *Lauq Khiyar Shmabar*, *Lauq Nazli*, *Lauq Sapistan Lauq Shamoon*, *Lauq Khayarshambar*, *Lauq Ziqun Nafas*, *Majun Mughalliz Jawaharwali*, *Majun Mundi*, *Marham Kafoor*, *Namak Sulemani*, *Qabzeen*, *Qairuti Aarad Karsana*, *Qurs-i-Gul*, *Qurs-i-Mullayyin*, *Qurs-i-Su'al*, *Qurs-i-Sartan-Kafoori*, *Qurs-i-Zarishk*, *Roghan Sanan*, *Satawari*, *Sharbat Sadar*, *Sharbat Aijaz*^[15, 17, 18].

Phytochemistry: The main chemical constituents of liquorice are coumarins (glycyrin, heniarin, liqcoumarin, umbelliferone, GU-7); flavonoids (flavonols and isoflavones including formononetin, glyzarin, glabrone, glabrin, glabrol, glabridin, glycyrol, and derivatives, kumatakenin, licoflavonol, licoisoflavanone, licoisoflavones A and B, licoricone, liquiritin and derivatives, phaseollinisoflavan; neo-licuroside, chalcones including isoliquiritigenin, licuraside, echinatin, licochalcones A and B; *terpenoids* (glycyrrhizin glycoside also known as glycyrrhizic acid or glycyrrhizic yielding glycyrrhetic (orglycyrrhetic) acid and glucuronic acid following hydrolysis; glabrolide, glycyrrhetol, liquiritic acid, licoric acid, and b-amyryn); volatile oils (more than 80 components of volatile oils are identified including anethole, eugenol, benzaldehyde, oestragole, butyrolactone, cumic alcohol, fenchone, propionic acid, furfuryl alcohol, linalool, hexanol, gnonalactone, indole, a-terpineol and thujone). Other active constituents of liquorice include isoflavonoids, amino acids, chalcones, sterols, lignans, amines, gums, asparagine, sugar, wax, resin and starch etc. in addition, it contains phytosterol and oestrogen, the female sex hormone. The yellow colour is due to the anthoxanthin glycoside^[1, 2, 4, 5].

Pharmacological studies: *Glycyrrhiza* has experimentally proved for the following activities like, anti-asthmatic, anti-bacterial, anti-fungal, anti-hemorrhoid, anti-hepatotoxic, anti-hyper-glycemic, anti-malarial, antioxidant, anti-viral, anti-ulcer, anti diuretic, anti hepatotoxic, estrogenic, Immuno stimulant. The drug also found effective for eczema, psoriasis and herpes simplex. Glycyrrhizin, a triterpene saponin, possesses antiviral activity^[19]. Shirish, *et al.*^[20] have reported its anticonvulsant effect in PTZ and Lithium, pilocarpine induced seizure in rats. The extracts of the roots of *Glycyrrhiza glabra* has shown significant antibacterial effect^[21].

Conclusion

Glycyrriza glabra L. root and its extract has been used in Unani System of Medicine since long period of time for the treatment of various ailments like pulmonary diseases, hepatitis, ulcers, skin diseases etc. It is used as common ingredient in many Unani compound formulations. Traditionally it is used as mild laxative, anti-arthritis, anti-inflammatory, anti-ulcer, anti-tussive, aphoridisiac, anti-oxidant, anti-diuretic etc. Pharmacological studies have proved its efficacy in various ailments as claimed by the

Unani physicians in the past. Though the adverse effects like elevated blood pressure and pseudoaldosteronism has prompted Unani physicians to use it judiciously and cautiously. Still it is used as one of the important herbal medicine in Unani System of Medicine.

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