PHARMACOGNOSTIC STUDY OF GLYCVRHIZA GLABRA LINN- A REVIEW

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ABSTRACT
Liquorice or Licorice, Latin name Glycyrrhiza glabra, family Leguminosae, sanskrit name Yashtimadhu or Madhuk is a herbaceous perennial legume, native to Southern Europe & parts of Asia such as India. It is a well known plant from vedic kaal which is used not only to treat the disease but also in ritual functions like yagya etc. Almost all nighantus & granthas have described Liquorice & its properties. It is also widely used in Chinese herbs, Unani, Homeopaty treatments. As a herbal medicine it has an impressive list of well documented uses such as anti inflammatory, anti ulcer, anti oxidant, expectorant, memory enhancing etc & it’s probably one of the most over looked of all herbal wonders. The present article is aimed to provide a broad overview of pharmacognosy, phytochemistry of Liquorice. The phytochemical studies revealed the presence of flavonoids, tannins, steroids, saponins, glycosides, proteins & sugars. Keywords: Glycyrrhiza glabra, pharmacognocy,Aurvedic properties.

INTRODUCTION
Now-a-days there is a renewed interest in drugs of natural origin simply because they are considered as green medicine and green medicine is always supposed to be safe. Another factor which emphasizes this attention is the incidences of harmful nature of synthetic drugs which are regarded as harmful to human beings and environment. The advantage of natural drugs is their easy availability, economic and less or no side effects but the disadvantage is that they are the victims of adulteration. The more effective the natural drug more is its demand and the chances of non-availability increases. To meet the growing demand, the natural drug is easily adulterated with low grade material. Adulteration or substitution is nothing but replacement of original plant with another plant material or intentionally adding any foreign substance to increase the weight or potency of the product or to decrease its cost. Therapeutic efficacy of medicinal plants depends upon the quality and quantity of chemical constituents. The misuse of herbal medicine or natural products starts with wrong identification. The most common error is one common vernacular name is given to two or more entirely different species. All these problems can be solved by pharmacognostic studies of medicinal plants. It is very important and in fact essential to lay down pharmacognostic specifications of medicinal plants which are used in various drugs. Pharmacognosy is the study of medicines.
derived from natural sources, mainly from plants. It basically deals with standardization, authentication and study of natural drugs. Glycyrrhiza glabra (Liquorice), a plant which have lots of medicinal properties. So, it may be known as plant for future.

**HABITAT & DISTRIBUTION**
Liquorice is a Herb of 1 to 1.5 meter in height. It (Glycyrrhiza glabra) grows in the sub-tropical and warm temperate regions of the world. Glycyrrhiza glabra, also known as Sweet Wood is part of the Fabaceae or (Leguminosae) plant family. 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. It is native to Arabia, Persian, Gulf, Afghanistan, Turkestan, Asia minor, Siberia etc but the root is cultivated in the Punjab, Sub Himalayan tracts from the Chenab eastwards, Sindh & Peshwar Valley, Burma & Andaman Islands. Dried liquorice roots are found in all the bazaars of India.

**CLASSICAL NAMES**
Atirasa, Jalaja, Klitaka, Klitan, Kliteniyak Klitaka, Klitanaka, Madhuli, Madhulika, Madhu, Madhuk, Madhuyashti, Madhuvalli, Mahuyashti, Madhuparni, Madhurasar, Madhurlata, Madhurstrava, Sosanasi, Rasa, Saumya, Virasa, Yashti.

**VERNACULAR NAMES**

**SCIENTIFIC CLASSIFICATION**
Kingdom-Plantae, Division-Phanerogams, Subdivision-Angiosperms, Class-Dicots, Subclass-Polypetalae, Order-Califlorae, Family-Leguminosae, Subfamily-Papilionaceae, Genus-Glycyrrhiza, Species-Glabra, Authority-Linn

**PARTS USED**
- Root

**TYPES**
According to Ayurveda, 2 types-1. sthalaja (Terrestrial)- originates in desert. 2. jalaja (aquatic) – originates in water. Jalaja is also called madhulika and madhuparni. It is rare. According to Yunani vaidyaka, 3 types 1. Misheya 2. Arabiya 3. Turkiya There sweetness decreases successively

**EXTERNAL MORPHOLOGY OR MACROSCOPIC DESCRIPTION**
Type of plant-A hardy herb or Under shrub, growing to a height of 1.8 m. Roots-thick, manybranched, red or lemon colour outside & yellowish or pale yellow inside. Leaves- Compound, spreading, large stalked with very minute deciduous stipules, imparipinnate leaflets opposite in 4-7 pairs and a terminal one, shortly stalked oblong oval or ovate, obtuse, entire smooth. Flowers axillary spikes, Papilionaceae, lavender to violet in colour (comes in March) Fruits-pods, compressed (comes in August) Seeds- 2-5, reniform, flat, deep grey.

**MACROSCOPY OF ROOT (Dried sample of Root)**
Length: 5 cm – 9.4 cm, Diameter: 1.2 cm – 3 cm, Colour: brownish grey to brown with longitudinal striations, Fracture: smooth, Odour: none, Taste: sweet

**AYURVEDIC PROPERTIES**
**CLASSICAL CATEGORISATION**
Acharya Charak-
Jeevaniya, Sandhaniya, Varnya, Kanthya, Kandugna, Snehopaga, Vamanopaga, Asthanapanopa, Mutravirajaniya, Dahapra shaman, Angamardaprashtaman, Shonitsthapan.
Acharya Sushrut-
Haridradi, Kakolyadi, Nyagrodhadi, Bruddadi, Utpalad.
Acharya Vaghat-
Haridradi, Ambashtadi, Nyagrodhadi

RASAPANCHAK

According to API-

ROGAGNATA
In ayurveda, it is used extensively as a demulcent, mild expectorant and anti-inflammatory agent. It relieves ‘Vata’ and ‘Pitta’ inflammations; it is also used in eye diseases, throat infections, symptomatic relief in peptic ulcer, and as an antiarthritic agent

PHARMACOTHERAPEUTIC (TRADITIONAL USES)
It can be used in many ways such as externally, internally, in single form or in combination with other drugs.

External uses- Decoction is used for eye bath in timir and conjunctivitis, In stomatitis, Yashtimadhu decoction is used for mouth rinsing. In hair fall and graying of hair Yashtimadhu decoction is used for rinsing hair. In summer and autumn, liquorice powder long with other herbs is used as a face pack. It makes skin smooth and reddish like red lotus. It is applied locally in poisoning and ulcerated wounds. Surgical wounds are healed with local application of Yashtimadhu and ghee and pain is relieved.

Internal uses-

1. Raktajacchardi (haematemesis)- In rak-taja & pittaja cchardi, Yashtimadhu & Chandana paste in milk is given orally.
2. Aadhaman – Yashtimadhu & sugar is given with water.
3. Yashtimadhuphanta is given in dyspepsia, belching, gas stomach ache, intestinal & liver colics & gastritis.
4. Trushna - In Pittajtrushna, yashtimadhu decoction is given.
5. Yashtimadhu&Katukrohini rasa with sugar and water is beneficial in Rudrog.
6. The decoction or churnaaf Yashtimadhu is effective in Pandu.
7. In Raktapitta, Yashtimadhu & Chandana decoction is given.
8. Adhoga Raktapitta – In per anal bleeding decoction of Yashtimadhu with sugar is given for Vamana.
9. In treatment of Vatarakta, oil is prepared by Yashtimadhu & Gambhari root.
10. Lactation- churnaof Yashtimadhu & sugar in similar quantities taken with cow’s milk enhances lactation.
11. Churnaof Yashtimadhusugar given with milk is a good Rasayana yoga.
12. In IUGR as well as in underweight babies, Yashtimadhuchurna given with sugar & milk proves to be very effective bruha-na yoga.
13. For granulation tissue in proper wound healing, yashtimadhuchuruma should be given with ghee & honey. It enhances the nutrition of Rasadidhatu particularly increasing bruhana of maansdhatu, thus heals wound properly.
14. Churna of Yashtimadhu given with milk acts as a good brain tonic.
15. In Apasmar, it is advised to give Yashtimadhuchurna with Shweta Kushanand juice for 3 days.
16. 10 mg churna of Yashtimadhu with ghee and honey is given with milk for Va-jikarana.
17. In *Mutrakrucca*, milk prepared with *Yashtimadhu* is given.
18. In *Leucorrhoea*, *churna* of *Yashtimadhu* & sugar is given with *tandulodaka*.

**IMPORTANT FORMULATIONS**

*Yashtimadhu* is more effective drug when used in combination than that of single drug therapy. Hence it is one of the ingredients of no. of formulations such as *Yashtyadi churna*, *Lavangadi churna*, *Kapuradi churna*, *Yashtimadhvadya tail*, *Yashtyadi kwath* etc.

**CHEMICAL CONSTITUENTS**

Root contains glycyrrhizic acid, glycyrrhizin, a yellow amorphous powder, saponin, sugar, asparagin, starch, resin, gum, mucilage, phosphoric, sulphuric & malic acids, calcium & magnesium salts. Bark contains a small quantity of Tanin.

**CONTRAINDICATIONS**

*Liquorice* contains small amounts of a steroid substance, which stimulates the suprarenal glands. So when consumed in high doses or for long period time, it can produce symptoms of hyperaldosteronism, fluid retention (oedema) in joints (especially the ankles) or in face, nausea, headache, muscle cramps & high blood pressure. These side effects are caused by a decrease of the level of potassium in blood as well as an increase of the sodium level. They quickly disappear when treatment is stopped. Prolonged consumption of liquorice is not recommended in the case of arterial hypertension, pregnancy or when corticoid based treatment is followed.

**PHARMACOGNOSY**

**MICROSCOPY OF ROOT**

**Root**- Transverse section of root shows Cork, of many layers of cork cells with reddish brown contents. **Primary cortex**, a very narrow zone of cortical parenchyma, some of the cells containing ellipsoidal or oval starch grains, others monoclinic prisms of calcium oxalate. **Phloem**, a broad zone of elongated, radially arranged phloem patches separated from one another by prominent medullary rays of the phloem. Each phloem patch consists of a matrix of soft bast in which are found groups of thick walled bastfibers, adhering to which are cells of crystal fibers containing monoclinic prisms of calcium oxalate. **Xylem**, a broad zone of numerous, elongated, radially arranged xylem patches, separated from each other by medullary rays which are continuous through the cambium, with those of the phloem. Each xylem patch consists of a matrix of starch and crystal containing wood parenchyma imbedded in which are broad tracheae with yellowish walls and compact groups of thick, yellow walled wood fibers that are partially surrounded by the cells of crystal fibers containing monoclinic prisms of calcium oxalate. Each trachea is surrounded by a ring of yellow tracheids and wood fibers. **No medulla** is present.

**Powder study**

The powder is light yellow to faintly white. The powder shows fragments of yellow thick walled fibers, prisms of calcium oxalate. The walls of the large vessels are yellow; the vessels are thick & lignified and have numerous bordered pits Fragments of cork consisting of thin walled cells and isolated prisms of calcium oxalate occur as well as fragments of paren-
chymatous tissue. The powder shows simple, round or oval starch granules.

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<th>Physicochemical standards</th>
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<tr>
<td>Total ash</td>
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<tr>
<td>Acid insoluble ash</td>
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<td>Water soluble ash</td>
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<td>Aqueous extractive value</td>
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<td>Ethanolic extractive value</td>
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<tr>
<td>Chloroform extractive value</td>
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<tr>
<td>Moisture content</td>
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<td>Not more than 4.5%</td>
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<td>Not more than 1.5%</td>
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<td>Not more than 1%</td>
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<td>Not less than 20%</td>
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<td>Not less than 15%</td>
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<td>Not less than 5%</td>
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<td>Not more than 7.45%</td>
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Phytochemistry
- Phytochemical study shows presence of Flavonoids, Tannins, Steroids, saponins, glycosides Proteins and sugar in Chloroform, Ethanol and Aqueous extracts.

CONCLUSION
Liquorice has been used in medicine for more than 4000 years. Liquorice was one of the most widely known medicines in ancient history. The vast range of biological effects like anti inflammatory, anti allergic, anti oxidant, anti viral of the phytochemicals present in extract have been of immense importance in phytotherapeutic. Thus there is an immense need to modify the natural Glycyrrhizagalbra constituents like glycyrrhizin etc thereby generating the advanced versions of the bioactive compounds to be used as drug in future. Thus the pharmacological activities are reported in this review.

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IMAGES OF POWDER MICROCOPY OF ROOT OF GLYCYRRHIZA GLABRA

Section of the root showing periderm, crushed primary cortex, starch filled cells

Secondary vessel

Primary vessel

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