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A literary study on *Yashtimadhu (Glycyrrhiza glabra*): A brief review

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Abstract
A potent medicinal herb mentioned in Ayurveda, *Yashtimadhu* (*Glycyrrhiza glabra*), treats varied diseases from basic cough to more complicated diseases such as hepatitis, cancer, etc. Significant phytoconstituents including glycyrrhizin, glycyrrhetine acid, glycyrrheic acid, asparagine, liquirtin, glabrine, A & B, and flavonoids have been recorded to be present. The organisation has numerous drugs such as anti-tussive, anti-inflammatory, anti-ulcer, Anti-oxidant and antispasmodic, spasmodic, antibiotic and anti-viral. In this article, the key pharmacological activities are compiled and the function flavonoids and isoflavonoids play in pain alleviation is emphasised. This may be helpful in the detection and development for future medicinal results.

Keywords: *Yashtimadhu*, *Glycyrrhiza glabra*, glycyrrhizin, etc

Introduction
Ayurveda is an ancient medical science which deals with disease diagnosis and herbal drug treatment. *Glycyrrhiza glabra* is the name of the sweet healer in Sanskrit *Yashtimadhu* and the modern language *Mulathi*. In many ancient civilizations, Liquorice was used as a medicine and still today is a common herb worldwide [1]. It grows wild but is growing in several parts of the world including India, even in subtropical and warm areas.
The ancient Greek word glycos means sweet, rhizes, which means root, is derived from glycyrrhize. The wellbeing of individuals and populations is characterised by medicinal plants. The medicinal value of these plants is present in certain chemical compounds that give the human body some physiological influence. Triterspenic saponin, flavonoids, tannins, alkaloids and phenolic compounds are the most essential bioactive compounds of plants.

Aim and Objectives
To evaluate the study of Yashtimadhu in human body

Methodology
The material is collected from various articles, textbooks, *Samhitas*, internet or authentic website sources, etc.

Geography
Glycyrrhiza glabra is native to the Mediterranean and some areas of Asia, also known as liquorice and sweet wood. The Jammu and Kashmir, Punjab and the sub- Himalayan tracts in Indian have their ecosystems. The dried root of this plant was historically used as an expectorant and carminative by the Egyptians, the Chinese, the Greeks, the Indians and the Romans [2].

Morphologic Studies
A barely annual shrub, the *Glycyrrhiza glabra* linn reaches up to a height of 2.5 m. The leaves are compound, mutated, and are oblong, elliptical or lanceolate 4-7-pair. The flowers are narrow, usually papillon, with axilla spikes and a violet lavender. The calyx is small, bellish, with tips and glandular hairs. The fruit is a mildly reticulating pulled legume or pod, with lengths of up to 1.5 cm, upright, glabrous. The fruit usually has 3-5 brown reniform seeds. The taproot is approx. 1.5cm long and has a subsidiary roots of 3-5 [3].

Classification
Kingdom: Plantae
Division: Angiospermae
Class: Dicotyledoneae
Order: Rosales
Family: Leguminosae
Genus: *Glycyrrhiza*
Species: *Glabra* Linn
Binomial Name: *Glycyrrhiza glabra L.*

Properties of Yastimadhu [4]
Rasa: *Madhura*
Guna: *Guru, Snigdha*
Veerya: *Sheeta*
Vipaka: *Madhura*
Karma: *Vatapittahara, Vranaropana, Sothahara, Vedanasthapana, Balavarnakara, Chakshushyam, Trishnanigraha, Chardinigraha.*

Phytochemicals Constituents
Glycyrrhizin, a saponin glycoside present in the roots of *Glycyrrhiza glabra* Linn, is the main active ingredient, responsible for 10-25 percent of liquorice. It has a sweetness of 60 times that of cane sugar. Liquirtin, isoliquertin, liquiritigenin, and rhamnoliquirilin are among the flavonoid-rich fractions, and five new flavanoids have been isolated from dried roots. Kanzonol R, a new prenylated isoflavan analogue, was also discovered [5, 6].

Ayurvedic Uses
Glycyrrhizin's effectiveness in the treatment of chronic hepatitis and liver cirrhosis has been shown [nine]. *Glycyrrhiza glabra* is one of the most powerful treatments

for pain and other conditions such as gastrointestinal irritation caused by acrid matter. It is more effective than alkalies at reducing the irritating effects of acids [7]. Its a great tonic and even works as a demulcent for genitourinary catarrh. Liquorice is used to treat bronchitis, chronic gastritis, peptic ulcer, rheumatism and arthritis, adreno corticoid insufficiency, and liver toxicity, according to the British Herbal Compendium. Glycyrrhizin has been used in Japan for more than 60 years as a medication for chronic hepatitis under the name Stronger Neo-Minophagen C (SNMC). It is also used as an anti-allergic and anti-hepatitis agent in clinical trials [8]. Herpes, eczema, and psoriasis are treated with topical preparations containing glycyrrhetinic acid [Source: Indian Medicinal Plants]. Its aspirin-like activity helps to ease fevers and soothe discomfort such as headaches and stomach pain.

Pharmacological actions: Its use as an anti-inflammatory and antiulcer agent is known by the Indian Herbal Pharmacopoeia [9].

Anti-Ulcerant

Peptic ulcers can be treated with a special liquorice extract called DGL (deglycyrrhizinated liquorice). *Glycyrrhiza glabra* has an essential function in the healing of peptic ulcers associated with Helicobacter pylori [10].

Expectorant and Anti-Tussive

The use of liquorice powder and extract to treat sore throats, coughs, and bronchial catarrh was discovered to be beneficial. The precise method by which it operates is unclear. Liquorice relieves irritability and has expectorant properties. Gastric mucus production is stimulated by carbenoxolone, a semi-synthetic compound obtained from Glycyrrhiza. Liquorice extract can also induce mucus secretions in the trachea, resulting in demulcent and expectorant symptoms [11].

Anti-Inflammatory Effect

Glycyrrhetinic acid in liquorice extract has been shown to have anti-inflammatory properties similar to glucocorticoids and mineralocorticoids [12]. Carbenoxolone (Biogastron), a glycyrrhetinic acid analogue, has been shown to inhibit two enzymes involved in prostaglandin synthesis, 15-hydroxyprostaglandin dehydrogenase and 13 prostaglandin, resulting in increased prostaglandin amounts. Mucous secretion and cell proliferation are stimulated by prostaglandins. As a consequence, ulcer recovery is helped [13].

Anti- Carcinogenic

Current research on the use of PC-SPES as a dietary supplement in the care of people with prostate cancer can be found in the PDQ cancer information review. PC-SPES is a blend of eight plants. All of them is *Glycyrrhiza glabra*. Clinical studies have revealed that PC-SPES reduces PSA and testosterone levels in humans [14].

Hepatoprotective

In the treatment of chronic hepatitis C. *Glycyrrhiza glabra* as a complementary and alternative therapy demonstrated substantial changes in virological and/or biochemical response [15]

Antimicrobial

The hydro-methanolic root extract of *Glycyrrhiza glabra* has potent antibacterial activity due to the existence of secondary metabolites such as saponins, alkaloids, and flavonoids [16]

Memory Boosting

In mice, the effects of *Glycyrrhiza glabra* on learning and memory were studied. Learning and memory were tested using an elevated plus-maze and a passive avoidance paradigm. The aqueous extract of liquorice was given in three doses [75, 150, and 300 mg/kg p.o]. The experiment was carried out in different groups of animals for seven days in a row. At a dosage of 150 mg/kg, mice showed significant improvements in learning and memory. However, the precise mechanism of action is unclear, and further research is required [17].

The enhancement of hair growth

Liquorice hydro-alcoholic extract has been shown to promote hair development. When liquorice extract was compared to the normal drug (2% Minoxidil), it was discovered that the 2% concentration of liquorice extract stimulated hair growth more effectively than the 2% Minoxidil.

Analgesic activity mode

According to a report on Anthocephalus chinensis (Lam), the plasma membrane of cells mediates a number of stimuli such as discomfort, hotness, and coldness, and the TRP and TRPV1 receptors on the cell membrane are responsible for pain transduction. Flavonoids and their analogues found in Anthocephalus chinensis function as TRPV1 antagonists, preventing signalling through the cell membrane [18]. Flavonoids and isoflavonoids are also used in *Glycyrrhiza glabra*.

Toxicity and Side Effects

The effect of *liquorice* on the rennin-angiotensin-aldosterone pathway causes increased blood pressure, which is one of the most often recorded side effects of *liquorice* supplementation. Additionally, the patient can develop hypokalemia and sodium retention, leading to edoema. When treatment is stopped, the signs normally go down [19]. Many tests show that there are no side effects during therapy [20, 21]. Specific sensitivity, as well as the dosage and length of *liquorice* ingestion, affect the occurrence and intensity of symptoms. Patients with a longer gastrointestinal processing time could be more prone to these side effects due to enterohepatic cycling and re-absorption of *liquorice* metabolites. Patients with mineral-corticoid overload syndromes eat anywhere from 1.5g to 250g of liquorice on a daily basis [22].

Dosing

A normal dosage of 1-10 mg glycyrrhizin, equal to 1-5 grammes of *liquorice*, has been determined to be effective for most stable adults [23]

Conclusion

Yashtimadhu (*Glycyrrhiza glabra* Linn) is an ethno pharmacologically significant herb. The current study focused on the pharmacological properties of liquorice, especially its ability to relieve pain. In teenagers,

Yashtimadhu tablet type is an appropriate form of medication that can be investigated for memory enhancement and memory dysfunction. Furthermore, thorough analysis is needed to establish the precise mechanism of action as a potent and effective neuroprotective agent by isolating the active compound. The study will aid future research into *Glycyrrhiza glabra* Linn's potential as a disease treatment.

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