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Role of Yashtimadhu as a Rasayana in Ayurveda and Modern Science.

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ABSTRACT

Rasayana therapy is a specialized branch of Ayurveda aimed at promoting longevity, enhancing immunity, improving cognitive function, and preserving overall vitality. *Yashtimadhu*, botanically identified as Glycyrrhiza glabra Linn., is one of the prominent *Rasayana* drugs described in classical Ayurvedic literature. Traditionally indicated as Balya, Medhya, and Jivaniya, *Yashtimadhu* is used in respiratory disorders, gastric ailments, debility, and voice-related conditions. Modern scientific research has identified glycyrrhizin and various flavonoids as key bioactive compounds responsible for antioxidant, anti-inflammatory, immunomodulatory, neuroprotective, and hepatoprotective effects. This article explores the *Rasayana* concept of *Yashtimadhu* from classical Ayurvedic texts and correlates it with contemporary biomedical findings. The integrative analysis suggests that *Yashtimadhu* fulfills classical *Rasayana* criteria while demonstrating scientifically validated pharmacological actions.

Keywords: *Yashtimadhu, Glycyrrhiza glabra, Rasayana, Immunomodulation, Antioxidant, Ayurveda, Pharmacological, phytochemical*

INTRODUCTION

समदोषः समाग्निश्च समधातुमलक्रियः।

प्रसन्नात्मेन्द्रियमनाः स्वस्थ इत्यभिधीयते॥[19]

Balanced Doshas:

The three body energies — Vata, Pitta, and Kapha — are in balance.

Proper Digestion (Agni):

The digestive fire (metabolism) is working properly.

Balanced Body Tissues (Dhatus):

All seven body tissues (Rasa, Rakta, Mamsa, Meda, Asthi, Majja, Shukra) are healthy and in proper condition.

Normal Excretion (Malas):

Waste products (stool, urine, and sweat) are eliminated regularly and properly.

Happy Mind, Senses, and Soul:

The person has a calm, happy mind, balanced senses, and a peaceful inner self.

Ayurveda conceptualizes health as a harmonious balance of *Dosha*, *Dhatu*, *Agni*, and *Mala*, supported by stable mental and sensory faculties. *Rasayana Tantra*, one of the eight specialized branches of Ayurveda, is primarily concerned with rejuvenation, longevity, enhancement of immunity, and preservation of youthfulness. The term *Rasayana* literally signifies the optimization of Rasa Dhatu, ensuring superior nourishment to all subsequent tissues and culminating in enhanced Ojas.[15]

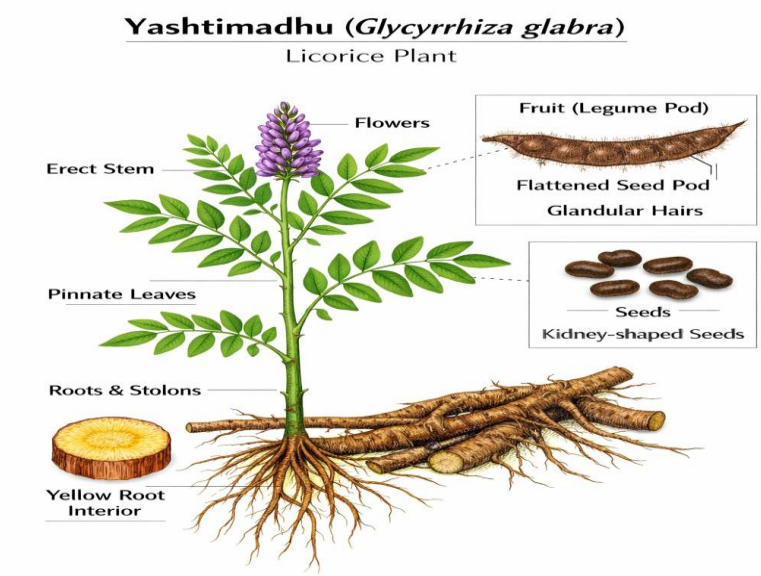
Yashtimadhu (Glycyrrhiza glabra Linn.), commonly known as licorice, is extensively mentioned in *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Hridaya* as a potent *Rasayana*.[16] Its *Madhura Rasa*, *Snigdha and Guru Guna*, *Sheeta Virya*, and *Madhura Vipaka* render it effective in pacifying *Vata* and *Pitta* while nourishing body tissues.[18] Traditionally valued for its soothing, strengthening, and rejuvenating properties, *Yashtimadhu* has now gained global scientific attention due to its bioactive compounds and validated pharmacological actions.[4]

AIM AND OBJECTIVES

1. To evaluate the role of *Yashtimadhu* as a *Rasayana* in Ayurveda and correlate its classical properties with modern scientific evidence.
2. To review its Ayurvedic pharmacological attributes and its phytochemical profile, describe detailed mechanisms of action from a biomedical perspective, and assess its therapeutic relevance in contemporary healthcare.

MATERIAL AND METHODOLOGY

This review is based on classical Ayurvedic literature and modern scientific databases. Foundational Ayurvedic texts were studied to understand the *Rasayana* concept and the therapeutic description of *Yashtimadhu*. Modern literature was reviewed through databases such as PubMed and Scopus using keywords including Glycyrrhiza glabra, licorice, Rasayana, antioxidant, and immunomodulatory. Peer-reviewed articles focusing on pharmacological, experimental, and clinical evidence were analyzed to establish correlations between traditional knowledge and biomedical findings.



Morphology of Yashtimadhu (Glycyrrhiza glabra Linn.)

Glycyrrhiza glabra, commonly known as Yashtimadhu or Licorice, is a perennial herb belonging to the family Fabaceae (Leguminosae) and widely used in Ayurveda as a Rasayana drug. The plant generally grows up to 1–2 meters in height and possesses a well-developed underground root system, which constitutes the primary medicinal part.

The roots and stolons are long, cylindrical, and fibrous, externally brownish and internally yellow, with a characteristic sweet taste due to the presence of glycyrrhizin. The roots are tough yet flexible and may extend several centimeters in length with a diameter of about 1–2 cm.[14]

The stem is erect, herbaceous, cylindrical, and branched, with a slightly pubescent surface. Young stems are green and soft, while older stems become somewhat woody at the base. The leaves are alternate and pinnately compound, usually consisting of 9–17 oval to elliptic

leaflets. The leaflets measure approximately 2–5 cm in length, have entire margins, and are often sticky due to glandular secretions.

The flowers are small, papilionaceous, and arranged in axillary racemes. They are typically pale blue to violet or purplish in color and resemble the typical floral structure of the Fabaceae family. The fruit is a small, flattened legume (pod) about 2–3 cm long, containing several kidney-shaped brown seeds. [3]

Pharmacodynamics of Yashtimadhu (*Glycyrrhiza glabra*)

Yashtimadhu exhibits a wide spectrum of pharmacodynamic actions due to its rich phytochemical composition, primarily including glycyrrhizin, liquiritin, flavonoids, saponins, and chalcones. Its effects can be explained through both Ayurvedic principles and modern pharmacology.

यष्टि हिमा गुरु स्वाद्वी चक्षुष्या बलवर्णकृत् ।
सुस्निग्धा शुक्रला केश्या स्वर्या पित्तानिलास्रजित् ।।
व्रणशोथविषच्छर्दितृष्णाग्लानिक्षयापहा । भा. प्र.

Ayurvedic Pharmacodynamics

- **Rasa (Taste):** Madhura
- **Guna (Qualities):** Guru, Snigdha
- **Virya (Potency):** Sheeta
- **Vipaka (Post-digestive effect):** Madhura
- **Prabhava:** Varnya, Keshya, Balya, Rasayana

Mode of Action

- **Tridosha Shamana:** Primarily pacifies *Vata* and *Pitta* due to its Madhura rasa and Sheeta virya.
- **Rasayana Effect**: Promotes tissue nourishment (*Dhatu poshana*) and enhances *Ojas*.
- **Vranaropana**: Accelerates wound healing through Snigdha and Sheeta properties.
- **Kantya & Kasahara:** Beneficial in respiratory disorders by soothing mucosa and reducing irritation.
- **Medhya Karma:** Enhances cognitive functions and supports nervous system stability.

Ayurvedic Conceptual Understanding of Yashtimadhu as Rasayana

In classical Ayurveda, *Rasayana* drugs enhance *Dhatu Poshana*, strengthen *Ojas*, and improve *Vyadhikshamatva*, or disease resistance. *Yashtimadhu* is described as *Jivaniya*, meaning life-

promoting; Balya, meaning strength-enhancing; *Medhya*, meaning intellect-promoting; and *Varnya*, meaning complexion-enhancing. Its *Madhura Rasa* supports anabolic tissue-building processes. *Sheeta Virya* contributes to anti-inflammatory and cooling effects, while *Madhura Vipaka* ensures long-term tissue stability.[5]

Through its influence on *Rasa* and *Rakta Dhatu*, *Yashtimadhu* enhances systemic nourishment and vitality. Its *Medhya* action suggests beneficial effects on *Majja Dhatu* and higher cognitive functions. Thus, from an Ayurvedic perspective, *Yashtimadhu* functions as both a physical and psychological rejuvenator.[6]

Phytochemical Composition

Modern phytochemical investigations of Glycyrrhiza glabra have identified glycyrrhizin as the principal bioactive compound. Glycyrrhizin is a triterpenoid saponin glycoside responsible for many systemic effects. Other important constituents include glabridin, liquiritigenin, isoliquiritigenin, and various flavonoids and coumarins. These compounds collectively contribute to antioxidant, anti-inflammatory, antimicrobial, and neuroprotective properties.[7]

Modes of Action: Scientific Correlation of Rasayana Effect

स्वस्थस्योर्जस्करं यत्तु तदृष्यं तद्रसायनम् ।[20]

A substance or medicine that improves strength, energy, and overall vitality in a healthy person, and helps in living a longer life, is called Rasayana and Vrishya.

The word Rasayana is made from two parts:

Rasa = body fluids / nutrition / first dhatu ,Ayana = movement, circulation, or enhancement

Here, Rasa does not only mean one tissue (Rasa Dhatu), but includes all body tissues (Dhatus). Ayana means nourishment, circulation, and growth.

Therefore, Rasayana = a process that enhances the formation, nourishment, and proper functioning of all body tissue.

Is primarily aimed at:

Promoting longevity,Preventing ageing,Enhancing immunity and vitality,Improving mental and physical health .Classical texts state that Rasayana provides not only disease prevention but also overall excellence of body and mind.

: Methods (Conceptual Approach of Rasayana Therapy)

Rasayana therapy works through the following principles:

A. Dhatu Nourishment

- Enhances formation and quality of all Dhatus
- Improves tissue strength and stability

B. Srotas (Channels) Improvement

- Maintains proper circulation and transport of nutrients
- Removes defects in body channels

C. Prevention-Oriented Approach

- Acts mainly as preventive therapy
- Stops disease before manifestation

D. Use of Mild and Nourishing Substances

- Rasayana drugs are:
- Mild (Saumya)
- Nourishing
- Safe for long-term use

Examples:

Suvarna (Gold)

Ashwagandha

Guduchi

Shilajit

Given along with:

Milk

Ghee

Nutritious diet

दीर्घमायुः स्मृतिं मेधामारोग्यं तरुणं वयः ।

प्रभावर्णस्वरौदार्य देहेन्द्रियवलं परम् ॥ ७ ॥

वाक्सिद्धिं प्रणतिं कान्ति लभते ना रसायनात् ।

लाभोपायो हि शस्तानां रसादीनां रसायनम् [1]

According to classical description, Rasayana provides the following benefits:

A. Physical Benefits

- Long life (Dirghayu)
- Strength of body (Deha Bala)
- Strength of sense organs (Indriya Bala)
- Improved complexion and glow (Varna, Kanti)
- Pleasant voice (Swara)
- Youthfulness (Taruṇa Vaya)

B. Mental Benefits

- Improved memory (Smriti)
- Enhanced intelligence (Medha)
- Mental stability and calmness

C. Immunity and Disease Prevention

- Increases Vyadhikshamatva (immunity)
- Reduces disease occurrence

D. Behavioral and Social Benefits

- Better speech (Vak Siddhi)
- Humility and good conduct (Pranati / Vinaya)
- Improved personality

E. Reproductive Benefits

- Increases Shukra Dhatu
- Enhances fertility and vitality
- Supports Vajikarana effects

The *Rasayana* effect of *Yashtimadhu* can be explained through multiple physiological mechanisms.

One of the fundamental mechanisms is antioxidant activity. Oxidative stress plays a central role in aging and chronic diseases. *Yashtimadhu* flavonoids neutralize reactive oxygen species and enhance endogenous antioxidant enzymes such as superoxide dismutase and catalase. This protective mechanism aligns with the Ayurvedic concept of preserving *Dhatu* integrity and maintaining *Ojas*.[13]

Immunomodulation represents another important mechanism. Glycyrrhizin regulates cytokine expression and modulates immune cell activity. It enhances macrophage function and supports balanced immune responses, thereby improving *Vyadhikshamatva*. This corresponds directly with the *Rasayana* objective of strengthening disease resistance.

The anti-inflammatory effect is mediated by inhibition of nuclear transcription factors such as NF-κB and reduction of pro-inflammatory mediators. This explains its traditional use in respiratory conditions like *Kasa* and *Shwasa*, as well as inflammatory gastrointestinal disorders.[8]

Neuroprotective and adaptogenic actions further strengthen its *Rasayana* profile. Experimental models suggest improvement in cognitive performance and protection against stress-induced neuronal damage. These findings support its classification as Medhya *Rasayana*.[12]

Additionally, *Yashtimadhu* demonstrates hepatoprotective effects by preventing lipid peroxidation and stabilizing hepatocellular membranes. This contributes to metabolic balance and detoxification, which in Ayurvedic terms reflects optimized Agni and Dhatu metabolism.

Clinical Relevance

Results (Rasayana Karma of Yashtimadhu)

Regular use of Yashtimadhu as Rasayana provides:

A. Physical Benefits

- Improves strength (Balya)
- Enhances complexion and glow (Varna, Kanti)
- Maintains youthfulness
- Improves voice quality (Swara)

B. Mental Benefits

- Enhances memory (Smriti)
- Improves intelligence (Medha)
- Provides calming effect on mind

C. Respiratory Benefits

- Acts as expectorant
- Useful in cough, cold, asthma

D. Gastrointestinal Benefits

- Heals gastric mucosa
- Useful in ulcers and hyperacidity

E. Reproductive Benefits

- Improves Shukra Dhatu
- Enhances fertility and vitality

Clinically, *Yashtimadhu* has shown promising results in allergic respiratory disorders, gastritis, peptic ulcer disease, stress-related conditions, and hepatic dysfunction. Its demulcent and soothing properties provide mucosal protection, while its systemic antioxidant action supports chronic disease management.

However, prolonged excessive intake of glycyrrhizin may cause pseudoaldosteronism, leading to hypertension and hypokalemia. Therefore, appropriate dosage and supervision are essential.[9]

DISCUSSION

A. Yashtimadhu as Preventive Rasayana

- Works mainly as preventive therapy
- Prevents tissue degeneration and disease occurrence

B. Anti-ageing Effect

- Delays ageing (Jara)
- Maintains youthfulness for longer duration

C. Modern Correlation

- Yashtimadhu contains:
- Glycyrrhizin
- Flavonoids
- Saponins

These show:

- Anti-inflammatory action
- Antioxidant effect
- Immunomodulatory action

The *Rasayana* concept extends beyond symptomatic relief; it emphasizes systemic rejuvenation and enhancement of intrinsic vitality. *Yashtimadhu* exemplifies this holistic approach. The convergence of Ayurvedic pharmacodynamics with modern molecular biology demonstrates that *Rasayana* therapy may function through antioxidant defense, immune modulation, and cellular protection.[10]

Despite substantial preclinical evidence, large-scale randomized controlled trials remain limited. Standardization of extracts and long-term safety assessment are necessary for broader global acceptance. Nevertheless, the available data strongly supports *Yashtimadhu* as a scientifically relevant *Rasayana* drug.[11]

CONCLUSION

Yashtimadhu (Glycyrrhiza glabra Linn.) plays a significant role as a *Rasayana* drug in Ayurveda, promoting longevity, immunity, cognitive function, and systemic balance. Modern scientific evidence substantiates its antioxidant, immunomodulatory, anti-inflammatory, neuroprotective, and hepatoprotective properties. The integration of classical knowledge with contemporary research reinforces its relevance in preventive and integrative medicine. With further rigorous clinical validation, *Yashtimadhu* can be effectively positioned as a scientifically grounded *Rasayana* in modern healthcare.

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