

A Comprehensive Review on Guduchi (*Tinospora Cordifolia* Willd.) with Special Reference to its Rasayana and Immunomodulatory Properties

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ABSTRACT

Guduchi (*Tinospora Cordifolia* Willd.) is one of the most important medicinal plants described in Ayurveda and is widely known for its Rasayana, Jwaraghna, Tridosahara, Deepana, Pachana, and immune-supportive actions. It is traditionally used for promoting strength, improving resistance against disease, supporting metabolic functions, and maintaining general health. In modern scientific understanding, *Tinospora Cordifolia* has shown immunomodulatory, antioxidant, anti-inflammatory, hepatoprotective, antidiabetic, antimicrobial, and adaptogenic activities. Several experimental and review studies report that its stem and other parts may influence cellular and humoral immunity, macrophage activity, cytokine response, antioxidant defense, and host resistance. In Ayurveda, *Guduchi* is mainly indicated in conditions involving impaired Agni, weak Bala, chronic fever, Pitta disorders, Rakta vitiation, metabolic disturbance, and lowered vitality. Its Rasayana action helps in nourishment of Dhātu, improvement of Ojas, maintenance of Vyadhikshamatva, and prevention of recurrent illness. Modern research also supports its role as an immunomodulatory herb, though proper dose, correct botanical identification, standardization, and safety monitoring are necessary, especially because recent reports have discussed possible liver injury associated with unsupervised or misidentified use.

Keywords: *Guduchi*, *Tinospora Cordifolia*, Rasayana, Vyadhikshamatva, Immunomodulatory, Ojas

INTRODUCTION

Guduchi (*Tinospora Cordifolia* Willd.) is a well-known climbing shrub belonging to the family Menispermaceae. It is commonly known as Giloy in Hindi and is one of the most frequently used herbs in Indian traditional medicine.¹ In classical Ayurvedic texts, *Guduchi* is considered a highly valuable Rasayana Dravya because it helps in promoting longevity, strength, immunity, digestion, tissue nourishment, and disease resistance. The name *Guduchi* itself indicates its protective and nourishing nature.²

In Ayurveda, health depends on proper functioning of Agni, balanced Dosha, well-nourished Dhātu, proper elimination of Mala, and stability of Ojas. When Agni becomes weak, Ama formation occurs, which further blocks Srotas and disturbs tissue nutrition. This condition gradually reduces Bala and Vyadhikshamatva. *Guduchi* is useful in such conditions due to its Deepana, Pachana, Rasayana, Tridosahara, and Ojavaradhaka properties.³

Modern studies describe *Tinospora Cordifolia* as a plant with broad pharmacological activity. Its extracts contain alkaloids, diterpenoid lactones, glycosides, steroids, polysaccharides, and phenolic compounds. These constituents are believed to contribute to its immunomodulatory, antioxidant, anti-inflammatory, hepatoprotective, and metabolic regulatory actions. Research suggests that *Tinospora Cordifolia* may support immune function by modulating macrophages, lymphocytes, antibodies, cytokines, and oxidative stress pathways.⁴

AIM AND OBJECTIVES

Aim

To review *Guduchi* (*Tinospora Cordifolia* Willd.) with special reference to its Rasayana and immunomodulatory properties.

Objectives

- To study the classical *Ayurvedic* properties of *Guduchi*.
- To explain the role of *Guduchi* as a *Rasayana Dravya*.
- To understand the concept of *Vyadhikshamatva* and immune modulation in relation to *Guduchi*.
- To review modern pharmacological evidence related to immunomodulatory activity of *Tinospora Cordifolia*.
- To correlate classical *Ayurvedic* concepts with modern immune-supportive actions.

MATERIAL AND METHODS

The present review article was prepared by collecting information from classical *Ayurvedic* texts such as *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, *Bhavaprakasha Nighantu*, and other standard *Dravyaguna* texts. Modern information was collected from published research articles, review papers, pharmacological studies, and scientific databases related to *Tinospora Cordifolia*, *Rasayana*, immunomodulation, antioxidant activity, and safety profile. The collected material was analyzed conceptually and arranged under classical properties, therapeutic actions, *Rasayana* effect, immunomodulatory role, probable mode of action, findings, discussion, and conclusion.

DRUG REVIEW

*Guduchi*⁵

Guduchi (*Tinospora Cordifolia* Willd.) is an important medicinal plant of *Ayurveda*, commonly used as *Rasayana*, *Jwaraghna*, *Deepana*, *Pachana*, *Tridosahara*, *Balya*, and *Ojavardhaka Dravya*. It is a large deciduous climbing shrub mainly used in the form of stem, although root and leaves are also used in some formulations. Classical texts describe *Guduchi* as *Amrita* because of its rejuvenating, protective, and health-promoting properties. In modern studies, *Tinospora Cordifolia* has been reported to contain alkaloids, glycosides, steroids, diterpenoid lactones, polysaccharides, phenolics, and flavonoids, which are linked with immunomodulatory, antioxidant, anti-inflammatory, antipyretic, hepatoprotective, antidiabetic, and adaptogenic activities.

Taxonomical Classification⁶

Taxonomical Rank	Classification
Kingdom	Plantae
Division	Angiosperms
Class	Dicotyledonae
Order	Ranunculales
Family	Menispermaceae
Genus	<i>Tinospora</i>
Species	<i>Cordifolia</i>
Botanical name	<i>Tinospora Cordifolia</i> Willd.
Common English name	Heart-leaved moonseed
Common Hindi name	Giloy

Vernacular Names

Language / Region	Name
Sanskrit	<i>Guduchi, Amrita, Chinnaruha</i>
Hindi	Giloy, Gurcha
English	Heart-leaved moonseed
Bengali	Gulancha
Marathi	Gulvel
Gujarati	Galo
Tamil	Seenthil Kodi
Telugu	Tippa Teega
Kannada	Amrutha Balli
Malayalam	Chittamruthu
Punjabi	Giloy
Urdu	Gilo

Synonyms of *Guduchi*

Synonym	Meaning / Indication
<i>Amrita</i>	Nectar-like drug, promotes vitality and longevity
<i>Guduchi</i>	Protects the body from disease
<i>Chinnaruha</i>	Regrows even after cutting
<i>Madhuparni</i>	Having nourishing and pleasant properties
<i>Jwarari</i>	Useful in <i>Jwara</i>
<i>Vayastha</i>	Helps in maintaining youthfulness
<i>Kundalini</i>	Creeper-like growth pattern
<i>Tantrika</i>	Spreading climber
<i>Somavalli</i>	Rejuvenating creeper
<i>Chakralakshanika</i>	Stem shows wheel-like appearance in transverse section

Geographical Distribution

Guduchi is widely distributed in tropical and subtropical regions of India. It is commonly found growing over hedges, trees, and forest areas. It is also found in Sri Lanka, Bangladesh, Nepal, Myanmar, and other parts of South and Southeast Asia. In India, it grows throughout the plains and lower hill regions, especially in warm and humid climatic conditions. The plant is commonly seen climbing on trees such as Neem, and such *Guduchi* is traditionally considered therapeutically potent. It can grow in different types of soil and is also cultivated through stem cuttings for medicinal use. ⁷

Morphological Characters

Tinospora Cordifolia is a large, deciduous, climbing shrub with long, spreading, and twining branches. The stem is succulent, fleshy, cylindrical, and covered with a greyish-brown or creamy-white corky bark. The

surface of the stem is rough, warty, and marked with prominent lenticels. Long aerial roots may arise from the branches. Leaves are simple, alternate, heart-shaped, membranous, and long-petioled. The lamina is broadly ovate or cordate with a deeply cordate base and prominent reticulate venation. Flowers are small, unisexual, greenish-yellow, and arranged in axillary or terminal racemes. Male flowers are usually clustered, while female flowers may be solitary. Fruits are smooth, fleshy drupelets, usually red or orange when mature.⁸

Macroscopic Study According to API

Part Studied	Macroscopic Characters
Stem	Cylindrical, succulent, long, and slightly twisted pieces
External surface	Greyish-brown to creamy-white, rough, warty, corky, and marked with lenticels
Bark	Thin, papery, exfoliating in mature stem
Fracture	Fibrous and splintery
Odour	Not characteristic
Taste	Bitter
Cut surface	Shows radial or wheel-like arrangement due to medullary rays
Aerial roots	Thin, long, thread-like, hanging from branches
Leaf	Simple, alternate, cordate, membranous, and long-petioled
Fruit	Small, smooth, red or orange drupelets when mature

Microscopic Study According to API

Tissue / Structure	Microscopic Characters
Cork	Several layers of tangentially elongated cork cells are present
Cortex	Broad cortex made of parenchymatous cells
Starch grains	Simple and compound starch grains are present in parenchyma
Calcium oxalate crystals	Present in the form of crystals in cortical and parenchymatous cells
Pericycle	Sclerenchymatous pericyclic fibres arranged in a characteristic ring
Vascular bundles	Open, collateral, and arranged in a ring
Xylem	Well-developed, with large vessels, tracheids, fibres, and parenchyma
Phloem	Present outside xylem, composed of sieve elements and parenchyma
Medullary rays	Broad, prominent, and parenchymatous
Pith	Large, central, parenchymatous pith
Powder microscopy	Shows cork cells, fibres, vessels, starch grains, calcium oxalate crystals, and parenchyma

Chemical Composition

Chemical Group	Important Constituents
Alkaloids	Berberine, palmatine, magnoflorine, tinosporine, choline
Diterpenoid lactones	Tinosporide, cordifolide, clerodane derivatives
Glycosides	Cordifolioside A, cordifolioside B, syringin, tinocordiside
Steroids	Beta-sitosterol, ecdysterone
Polysaccharides	Arabinogalactan-type polysaccharides
Phenolic compounds	Various phenols
Flavonoids	Flavonoid compounds
Essential constituents	Tinosporaside, cordifol, tinosporidine
Tannins and saponins	Reported in phytochemical screening

Ayurvedic Properties

Ayurvedic Parameter	Description
Rasa	Tikta, Kashaya
Guna	Laghu, Snigdha
Veerya	Ushna

<i>Vipaka</i>	<i>Madhura</i>
<i>Prabhava</i>	<i>Rasayana</i>
<i>Dosha Karma</i>	<i>Tridoshahara</i> , especially useful in <i>Pitta</i> and <i>Kapha</i> disorders
<i>Karma</i>	<i>Rasayana</i> , <i>Jwaraghna</i> , <i>Deepana</i> , <i>Pachana</i> , <i>Balya</i> , <i>Dahahara</i> , <i>Pramehaghna</i> , <i>Kushtaghna</i> , <i>Raktashodhaka</i>
<i>Rogaghata</i>	<i>Jwara</i> , <i>Prameha</i> , <i>Kushta</i> , <i>Pandu</i> , <i>Kamala</i> , <i>Daha</i> , <i>Arsha</i> , <i>Kasa</i> , <i>Shwasa</i> , <i>Agnimandya</i>
Useful part	Stem mainly
Main indication	Low immunity, chronic fever, weakness, metabolic disorders, inflammatory conditions

Pharmacological Actions

Immunomodulatory Activity⁹

Guduchi is widely studied for its immunomodulatory activity. Modern studies suggest that *Tinospora Cordifolia* may help in regulating immune response by influencing macrophage activity, phagocytosis, lymphocyte proliferation, antibody production, and cytokine modulation. Its polysaccharide fraction is considered important for immune stimulation. In *Ayurvedic* understanding, this activity can be correlated with improvement of *Vyadhikshamatva*, *Bala*, and *Ojas*.

Antioxidant Activity¹⁰

The antioxidant action of *Tinospora Cordifolia* is mainly related to its phenolic compounds, flavonoids, and other bioactive constituents. These compounds help in reducing oxidative stress by scavenging free radicals and supporting antioxidant defense. In chronic diseases, oxidative stress plays an important role in tissue damage, inflammation, and delayed recovery. Therefore, the antioxidant property of *Guduchi* supports its *Rasayana* action.

Anti-inflammatory Activity¹¹

Guduchi has anti-inflammatory potential due to the presence of alkaloids, diterpenoid lactones, steroids, and phenolic compounds. It may help in reducing inflammatory mediators and tissue irritation. In *Ayurveda*, its use in *Jwara*, *Daha*, *Vatarakta*, *Kushta*, and inflammatory conditions supports this action. The anti-inflammatory effect also helps in reducing chronic tissue damage and improving recovery.

Antipyretic Activity¹²

Guduchi is classically known as *Jwaraghna Dravya*. It is used in acute and chronic fever, especially where *Agni Mandya*, *Ama*, and weakness are present. Its *Deepana* and *Pachana* actions help in correcting digestion and clearing *Ama*, while its *Rasayana* effect helps in post-fever recovery. Modern pharmacological reviews also describe antipyretic and immune-supportive actions of *Tinospora Cordifolia*.

Hepatoprotective Activity¹³

Tinospora Cordifolia has been reported to show hepatoprotective activity in experimental studies. It may support liver function through antioxidant, anti-inflammatory, and metabolic regulatory effects. In *Ayurveda*, *Guduchi* is used in *Kamala*, *Pandu*, *Prameha*, and *Rakta Dushti* conditions, which indicates its importance in metabolic and hepatic disorders. However, unsupervised use and poor-quality preparations should be avoided, as some recent safety discussions have reported liver-related adverse events with *Tinospora* products.

Antidiabetic Activity¹⁴

Guduchi is traditionally used in *Prameha*, which can be correlated with metabolic and urinary disorders. Modern studies suggest that *Tinospora Cordifolia* may help in glucose regulation, insulin sensitivity, and oxidative stress reduction. Its bitter taste, *Deepana*, *Pachana*, and metabolic corrective actions support its use in metabolic imbalance. It may be useful as an adjuvant, but it should not replace standard antidiabetic treatment.

Antimicrobial Activity¹⁵

The antimicrobial action of *Tinospora Cordifolia* has been reported against different microorganisms in experimental studies. The presence of alkaloids, phenolics, and other secondary metabolites may contribute to this activity. In *Ayurveda*, its use in *Jwara*, *Kushta*, *Vrana*, and recurrent illness supports its role in conditions where infection and impaired immunity may be involved.

Adaptogenic and Anti-stress Activity¹⁶

As a *Rasayana Dravya*, *Guduchi* helps the body adapt to stress, weakness, fatigue, and chronic disease states. Modern pharmacological interpretation considers this action as adaptogenic, where the plant may help improve physiological resistance and recovery. Its role in improving *Bala*, *Ojas*, and *Dhatu Poshana* supports this action.

Anti-allergic Activity¹⁷

Guduchi has been studied for anti-allergic and immune-regulating effects. It may help in reducing hypersensitivity reactions by modulating immune response. In *Ayurvedic* terms, this can be understood through balancing of *Dosha*, correction of *Agni*, reduction of *Ama*, and improvement of *Vyadhikshamatva*.

Neuroprotective and Memory-supportive Activity¹⁸

Some studies and traditional uses suggest that *Tinospora Cordifolia* may support cognitive function, memory, and nervous system health. Its antioxidant and anti-inflammatory effects may contribute to neuroprotective activity. In *Ayurveda*, *Rasayana Dravya* are also known to support mental strength, clarity, and stability.

Drug and Dosage

Form of Drug	Dose	Mode of Use / Anupana
<i>Guduchi Churna</i>	3 to 6 g per day	With warm water or honey
<i>Guduchi Kwatha</i>	40 to 50 ml per day	Usually after food or as directed
<i>Guduchi Satva</i>	500 mg to 1 g per day	With honey, water, or milk
<i>Guduchi Ghana Vati</i>	250 mg to 500 mg, 1 to 2 tablets twice daily	With water
Fresh stem juice	10 to 20 ml per day	With water or honey
Stem decoction	40 to 50 ml	Useful in fever and metabolic disorders
External use	As paste or decoction wash	In selected skin and wound conditions

AYURVEDIC REVIEW

Guduchi as *Rasayana Dravya*¹⁹

Rasayana is one of the important branches of *Ayurveda*, mainly concerned with rejuvenation, longevity, immunity, strength, memory, complexion, and prevention of disease. *Guduchi* is considered a powerful *Rasayana Dravya* because it supports tissue nourishment and maintains the quality of *Dhatu*. It improves body strength by correcting *Agni*, reducing *Ama*, clearing *Srotas*, and promoting proper nutrition of tissues. The *Rasayana* effect of *Guduchi* can be understood through its action on *Agni*, *Dhatu*, *Srotas*, and *Ojas*. When *Agni* becomes balanced, food is properly digested and transformed into healthy *Rasa Dhatu*. Proper formation of *Rasa Dhatu* further nourishes other *Dhatu*, leading to better strength and immunity. In this way, *Guduchi* acts not only as a disease-relieving drug but also as a health-promoting drug.

Role of *Guduchi* in *Vyadhikshamatva*

Vyadhikshamatva means the ability of the body to resist disease and prevent recurrence. It is closely related to *Bala*, *Ojas*, proper *Agni*, balanced *Dosha*, and healthy *Dhatu*. *Guduchi* improves *Vyadhikshamatva* by enhancing *Ojas*, correcting digestion, reducing metabolic toxins, and supporting internal strength. In modern terms, *Vyadhikshamatva* may be correlated with immune defense, immune regulation, tissue resistance, and recovery capacity. Studies suggest that *Tinospora Cordifolia* may enhance phagocytic activity, stimulate macrophages, regulate cytokines, and support antibody response. This shows a useful correlation between the classical concept of *Vyadhikshamatva* and modern immunomodulation.

Guduchi and *Ojas*

Ojas is considered the essence of all *Dhatu* and the basis of strength, stability, immunity, and vitality. Depletion of *Ojas* leads to weakness, fatigue, recurrent infection, poor healing, mental instability, and reduced resistance. *Guduchi* supports *Ojas* through its *Madhura Vipaka*, *Rasayana* effect, and *Balya* action. The relationship between *Guduchi* and *Ojas* is important in chronic diseases, post-febrile weakness, recurrent illness, and low immunity. By improving digestion and tissue nourishment, *Guduchi* helps

maintain the quality of Ojas. This explains its traditional use in chronic fever, debility, and immune weakness.

Guduchi as Jwaraghna Dravya

Guduchi is widely used in *Jwara* because of its *Jwaraghna*, *Deepana*, *Pachana*, and *Rasayana* actions. In *Ayurveda*, many types of *Jwara* are associated with *Ama*, impaired *Agni*, and *Dosha* imbalance. *Guduchi* helps digest *Ama*, restores *Agni*, reduces feverish state, and improves post-fever weakness. Its antipyretic and anti-inflammatory actions are also described in modern pharmacological studies. These effects support its use in fever, inflammatory conditions, and recovery phase after illness. However, it should be used rationally and under professional guidance, especially in chronic liver disease, autoimmune disorders, or patients taking multiple medicines.

Guduchi and Agni Deepana

Weak *Agni* is one of the major causes of disease in *Ayurveda*. When *Agni* becomes low, *Ama* is produced and it circulates in the body through *Srotas*. This causes heaviness, fatigue, poor appetite, recurrent illness, inflammation, and reduced immunity. *Guduchi* has *Deepana* and *Pachana* properties, so it helps in improving digestion and clearing *Ama*. By improving *Agni*, *Guduchi* supports proper transformation of food into healthy *Dhatu*. This is the base of its *Rasayana* action. A good *Rasayana* effect cannot occur without proper digestion and metabolism. Therefore, the role of *Guduchi* in *Agni* correction is very important.

Guduchi as Tridosahara

Guduchi is considered useful in balancing all three *Dosha*. Its *Tikta Rasa* and *Kashaya Rasa* help pacify *Pitta* and *Kapha*. Its *Madhura Vipaka* and *Snigdha Guna* help control aggravated *Vata*. Due to this balanced action, it is used in many diseases where multiple *Dosha* are involved. This *Tridosahara* nature makes *Guduchi* suitable in chronic diseases, fever, inflammatory disorders, metabolic imbalance, and general weakness. It does not act only on one system but supports multiple physiological functions.

IMMUNOMODULATORY²⁰ PROPERTIES OF GUDUCHI

Classical View

In *Ayurveda*, immunity is not explained by one single term. It is understood through *Vyadhikshamatva*, *Bala*, *Ojas*, *Agni*, *Dhatu Sara*, and proper functioning of *Srotas*. *Guduchi* supports these factors and therefore acts as an immune-supportive herb. It helps the body resist disease, recover faster, and maintain internal strength.

Modern View

Modern research suggests that *Tinospora Cordifolia* has immunomodulatory properties. Different extracts and isolated constituents have shown effects on macrophage activation, phagocytosis, lymphocyte proliferation, antibody production, cytokine regulation, oxidative stress reduction, and host defense. A polysaccharide fraction from *Tinospora Cordifolia* has been studied for immune-stimulating properties, and other studies have reported cellular-level immunomodulatory action of stem extracts.

MODE OF ACTION

Flow Chart:1 *Samprapti* of Low Immunity or Reduced *Vyadhikshamatva*

Nidana Sevana

↓

Improper diet, stress, irregular lifestyle, infection, chronic disease

↓

Agni Mandya

↓

Improper digestion and metabolism

↓

Ama Utpatti

↓

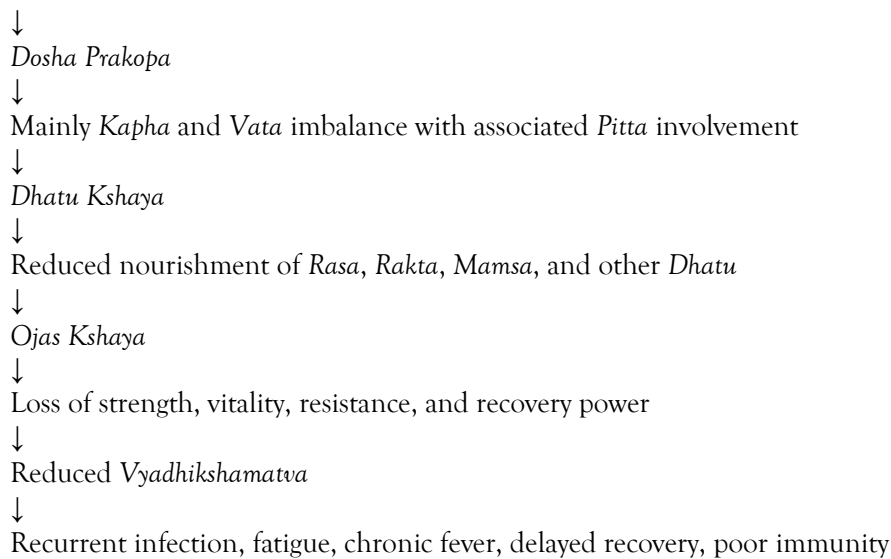
Formation of toxic and undigested metabolic products

↓

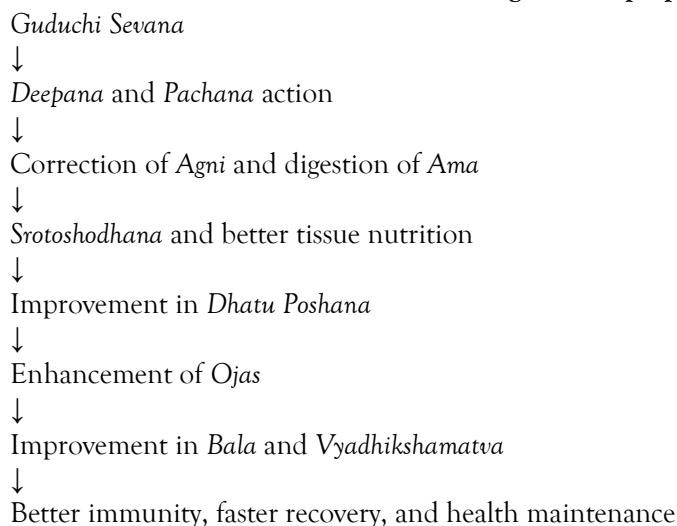
Srotorodha

↓

Obstruction in channels and poor tissue nutrition



Flow Chart:2 Role of *Guduchi* in Breaking the *Samprapti*



FINDINGS OF STUDY

- *Guduchi* is described in classical *Ayurvedic* texts as an important *Rasayana Dravya*.
- It supports *Vyadhikshamatva* by improving *Agni*, reducing *Ama*, nourishing *Dhatu*, and enhancing *Ojas*.
- Its *Tikta Rasa*, *Kashaya Rasa*, *Madhura Vipaka*, and *Rasayana Prabhava* make it useful in chronic and immune-related conditions.
- *Guduchi* is useful in *Jwara*, weakness, metabolic disorders, inflammatory conditions, liver disorders, skin diseases, and recurrent illness.
- Modern studies suggest that *Tinospora Cordifolia* has immunomodulatory, antioxidant, anti-inflammatory, hepatoprotective, antimicrobial, and adaptogenic activities.
- Experimental studies report possible effects on macrophage activation, phagocytic activity, lymphocyte response, antibody formation, and cytokine modulation.
- Polysaccharide fractions of *Tinospora Cordifolia* are considered important for immune-stimulating activity.
- The classical concept of *Rasayana* can be correlated with adaptogenic, antioxidant, tissue-protective, and immune-supportive properties.
- Proper identification, dose regulation, and standardization are necessary for safe therapeutic use.
- Recent safety literature highlights the need for caution in unsupervised use, liver disease, autoimmune conditions, and possible misidentification with related species.

DISCUSSION

Guduchi holds an important place in *Ayurveda* because it acts at multiple levels of health. It improves *Agni*, digests *Ama*, clears *Srotas*, nourishes *Dhatu*, and enhances *Ojas*. These actions together explain its *Rasayana* and immune-supportive effects. In classical understanding, immunity is not only resistance against infection but also the ability of the body to maintain strength, stability, tissue quality, and recovery after disease.²¹

The immunomodulatory effect of *Tinospora Cordifolia* can be understood through both classical and modern perspectives. From the *Ayurvedic* view, it improves *Vyadhikshamatva* by strengthening *Bala* and *Ojas*. From the modern view, studies suggest that it may influence macrophage function, phagocytosis, lymphocyte proliferation, antioxidant enzymes, and inflammatory mediators. This shows that *Guduchi* does not simply stimulate immunity blindly, but may help regulate immune response according to the body's need.²²

At the same time, rational use is very important. The popularity of *Guduchi* has increased, but self-medication, high doses, improper duration, poor-quality products, and wrong plant identification may create safety concerns. Recent medical literature has discussed possible liver injury associated with *Tinospora* use, although causality and species identification remain important issues in many reports. Therefore, classical principles such as proper *Rogi Pariksha*, *Roga Pariksha*, *Matra*, *Kala*, *Anupana*, and physician-guided use should be followed.²³

CONCLUSION

Guduchi (*Tinospora Cordifolia* Willd.) is a highly valuable *Ayurvedic Rasayana Dravya* with significant immune-supportive potential. Its classical actions such as *Deepana*, *Pachana*, *Tridosahara*, *Balya*, *Jwaraghna*, *Ojavaradhaka*, and *Rasayana* explain its role in improving strength, tissue nourishment, recovery, and *Vyadhikshamatva*. Modern studies also support its immunomodulatory, antioxidant, anti-inflammatory, and adaptogenic properties. Thus, *Guduchi* may be considered an important bridge between classical *Rasayana Chikitsa* and modern immunomodulatory therapy. However, its use should be based on proper identification, standardization, suitable dose, and clinical judgment.

CONFLICT OF INTEREST - Nil.

SOURCE OF SUPPORT -None.

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