

Plant of Versatile Properties : A Review of *Tinospora Cordifolia* (Guduchi)

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Abstract — *Tinospora cordifolia* belonging to the genus *Tinospora* is commonly known as Guduchi or Giloe. Guduchi is a widely used shrub in folk and ayurvedic system. Though almost all of its parts are used in traditional system of medicines, leaves stem and roots are the most important parts which are used medicinally. The Guduchi Plant is used in ayurvedic, "Rasayanas" to improve the immune system and the body resistance infections. *Tinospora cordifolia* is widely used in ayurvedic medicine for the treatment of various ailments. It contains many different chemicals that affect the body. The notable medicinal properties of Guduchi are antidiabetic, anti-periodic, anti-spasmodic, anti-inflammatory, anti-arthritis, anti-oxidant, anti-allergic, anti-stress, anti-leprotic, anti-malarial, hepato protective, immune modulatory and anti-neoplastic activities. This review presents biological and medicinal properties of *Tinospora cordifolia*.

Keywords — Rasayana, Immunomodulatory, Shrub, Resistance, Immune System, Hepatoprotective, Anti Oxidant, Anti-Arthritic.

I. INTRODUCTION

Guduchi is a large glabrous deciduous climbing shrub belonging to the family menispermaceae. It is distributed throughout tropical Indian subcontinent and China, ascending to an altitude of 300 m. In Hindi the plant is commonly known as Giloya or Amrita which is a Hindu mythological term that refers to the heavenly elixir that have saved celestial beings from old age and kept them externally young. The stem of *Tinospora cordifolia* are rather succulent with long filliform fleshy aerial roots from the branches. The bark is creamy white to grey, deeply left spirally, the space in between being spotted with large rosette like lenticel. The leaves are membranous and cordate. The flowers are small and yellow or greenish yellow. In auxiliary and terminal racemes or racemose panicles, the male flowers are clustered and female are usually solitary. The drupes are ovoid, glossy, succulent, red and pea-sized. The seeds are curved and pea-sized. Fruits are pea-shaped, fleshy, shiny turn red when boiled. Guduchi is used as a rasayana due to its potency of enhancing longevity and vitality. It is widely used in ayurvedic for a variety of purposes associated with inflammation allergies, neurology and glucose metabolism, general debility, fever, diabetes, dyspepsia, urinary infection, jaundice and skin diseases. In the today's world of modern medicine, it is also called as magical herb due to its property of wring of a lot of diseases.

II. AIM AND OBJECTIVE

To explore the biological and medicinal properties of *Tinospora cordifolia*.

III. MATERIAL AND METHOD

Action of Guduchi according to ayurved- Aharya charaka has grouped Guduchi in following groups of herbs-

- *Vayasthapana* - group of rejuvenation herbs (increases longevity)
- *Daha prashamana* - group of herbs that reduce burning sensation.
- *Trishnanigraha* - Group of herbs that mitigate excessive thirst.
- *Triptighna* - Guduchi alleviates anorexia making a person to feel hungry or relive early satiation.
- *Stanyashodhana* - Group of herbs that cleanse breast milk.
- *Rasayani* - Rejuvenator.
- *Sangrahini* - Brings about absorptive nature to stomach and intestines useful in malabsorption syndrome, diarrhea.
- *Balya* - Improve strength.
- *Agni Deepani* - Improve digestive power.
- *Medhya* - Enhances grasping power, memory and recollection ability.
- *Mehahara* - Useful in treatment of diabetes, urinary tract disorder.
- *Jvarahara* - Useful in fever.
- *Krimihara* - Useful to relive intestinal worms.
- *Chakshushya* - Improves vision, good for eyes, useful in eye disorder.
- *Vrushya* - Aphrodisiac.
- *Shwasa* - Kashahara - useful in difficulty in breathing, dyspnoea, cough and cold.
- *Hrudya* - Useful in heart diseases with vata symptoms such pain.
- Effect on Tridosha - Doshatrayahara. Guduchi useful in management of diseases having tridosha origin. when taken with ghruta(ghee), it balances vata with guda(jaggery) pitta, and with honey the kapha.
- *Rasayana* - Ayurveda is one of the most ancient medical science of the world. Rasayana is one of the eight clinical specialties of classical ayurveda. The concept of rasayana therapy is not a single drug treatment but it is a comprehensive and specialized regimen capable of producing healthful longevity

and improved mental facilities. Several medicinal plants have been described as rasayan in ayurved. Guduchi is considered one of the best Rasayans and it is unusual potent versatility. Guduchi is known to be a rich source of trace elements (Zinc & Copper) which act as antioxidants & protects cells from the damaging effects of oxygen radicals generated during immune activation. Rasayan effect of Guduchi can be used to heal & prevent infections. Rasayana used as a universal vaccine for any diseases. Rasayan chikitsa is mainly used for maintain the health of individuals although it can be used for diseased also.

➤ **Ayurvedic Properties**

- *Rasa* - Tikta, Katu.
- *Guna* - Laghu, Snigha.
- *Verrya* - Ushna.
- *Vipaka* - Madhura.
- *Prabhava* - Tridoshanara, Vishaghna, cure
- *Rasa* - Taste appreciation of the substances by chemical receptors on tongue, sweet, sour, salt, bitter, pungent and astringent.
- *Guna* - Ten pairs of opposite or mirror image attributes, attribute or property of any substance.
- *Virya* - Potency, Ushna-hot, Sheeta-cold, Vipaka-intestinal digestion and tissue metabolism, Madhura-neutral, Amla-acidic, Katu-alkaline, Prabhava-specific action through specialized receptors.

➤ **Chemical Constituents**

Tinospora cordifolia belong to different classes of constituents such as alkaloids, diterpenoid, lactones, glycosides, steroids, sesquiterpenoid, phenolics, aliphatic compounds and polysaccharides etc.

➤ **Nutritional Composition:** Calcium, Phosphorous, Iron, Copper, Zinc & Maganese.

Guduchi is a promising drug entity which should enter the world market by evidence based research for therapeutics. Some medicinal properties of *Tinospora Cordifolia* in disease control are as follows:-

➤ **Anti-Diabetic Activity** - Diabetes mellitus is a worldwide chronic disease of humans related with the elevated blood sugar level due to insulin deficiency. *Tinospora cordifolia* is widely used in Indian Ayurvedic medicine for treating Diabetes mellitus. The extract of plant parts decreases the blood sugar level.

➤ **Immunomodulator Activity** - *Tinospora cordifolia* is beneficial for immune system in a variety of ways:

Active compounds 11 hydroxymustakone, N-methyl-2-pyrrolidone, N-formyl-nnonain, cordifolioside A, magnoflorine and tinocordiside have potential immunomodulatory and cytotoxic effects. They enhance the concentration of melatonin in pineal gland and increasing the level of cytokines (like IL2, IL10) T&B cells and antibody which play an important role in immunity. Aqueous *Tinospora* extracts were able to increase cytokine production, mitogenicity stimulation, activation of immune effector cells and significant

increase in the leukocyte count & bone marrow cells significantly indicating stimulatory effect on haemopoetic system, it shows potent immunomodulatory action.

➤ **Anti-oxidant Action** - Methanolic extract of stem of *Tinospora cordifolia* has been reported to anti-oxidant activity, by increasing the erythrocytes membrane lipid peroxide and catalase activity. The direct and indirect anti-oxidant action of *Tinospora cordifolia* probably act in corroboration to manifest the overall radio protective effect.

➤ **Hepato protective Activity-** Effect of *Tinospora cordifolia* extract on modulation of hepatic functions. It helps to prevent fibrosis and stimulates regeneration of hepatic tissue. It immensely helps in fatty liver.

➤ **Anti-cancer/Anti-tumour Activity/Anti-neoplastic Activity** - The extract of *Tinospora cordifolia* was also found to significantly increase humoral immune response, as seen from the increase in plaque forming cells in spleen and circulating antibody titre and to produce an enhancement in macrophage activation. *Tinospora* extract reduced solid tumour growth. Extract of *Tinospora cordifolia* killed the cells very effectively in vitro and deserves attention as an anti-neoplastic agent.

➤ **Anti-Inflammatory Action-***Tinospora cordifolia* is very beneficial in arthritis, gout, oostoarthritis and joint pain. The dried stem of *Tinospora cordifolia* produced significant anti-inflammatory effect in both acute and subacute models of Inflammation. *Tinospora cordifolia* was found to be more effective than acetylsalicyclic acid in acute inflammation. But in subacute inflammation, the drug was inferior to phenyl butazone

➤ **Antispasmodic Activity-** Dry barks of *Tinospora cordifolia* have antispasmodic activity.

➤ **Anti-stress & Tonic Activity-** The plant of *Tinospora Cordifolia* was clinically tested and it was found that it brought about good response in children with moderate degree of behavior disorders and mental deficit. It has also significantly improved the I.Q. levels. In ayurveda it act as Medhya Rasayana or brain tonic by increasing mind power like memory and recollection.

➤ **Anti-Pyretic Activity-** Use of *Tinospora cordifolia* helps in uncontrolled fever. This herb helps to bring down the body temperature when used along with other anti-pyretic.

➤ **Anthelmenthic Activity-** *Tinospora cordifolia* increase the resistance of intestine to intestinal parasites.

➤ **Healing Agent** - The areal roots of Guduchi are so thin yet so strong that sushruta used to this for suturing surgical wounds. This had dual benefits one was the thread were very strong so, there was no chance of wound rupture. Second is Guduchi has potent wound healing property. Hence wound healing used to happen very quickly.

IV. DISCUSSION

Tinospora cordifolia has been one of the versatile and important herbs in the Indian sub-continent since ancient times. An enormous amount of knowledge has been accumulated by thousands of years of direct observation and trial and error. Guduchi may have been favorably used for thousands of years but modern herbal pharmacology appears to have just begun to appreciate "the one who protects the body". *Tinospora cordifolia* has an importance in traditional ayurvedic medicine used for many diseases like fever, jaundice, bone fracture, pain, chronic diarrhoea, dysentery etc. such properties may be exploited for production of new formulations, which may be better and promising over conventional one. Different parts of *Tinospora cordifolia* are used in traditional systems of medicines, leaves, stem, roots and extract are the most important parts which are used medicinally. It contains many different chemical that beneficially effect the body for good health.

V. CONCLUSION

Guduchi or *Tinospora cordifolia* is an important herb in ayurvedic medicine for treatment of various diseases. In Ayurveda Guduchi is best Rasayana. The most important biological properties are anti-oxidant, anti-diabetic, anti-inflammatory, anti-arthritis, anti-stress, hepato protective, immunomodulatory and anti-neoplastic activities. Even though, there are many herbal plants in the world, Guduchi is considered to be having greater medicinal value. For the last few years, there has been an increasing trend and awareness is medicinal plant research. Quite a significant amount of research has already been carried out during the past few decades in exploring the chemistry of different parts of *Tinospora cordifolia*. While *Tinospora cordifolia* has been used successfully in Ayurvedic medicine for centuries, and it is strongly believed that detailed information as presented in this review on biological and medicinal properties of *Tinospora cordifolia* and its products for their better economic and therapeutic utilization.

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