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LITERATURE REVIEW AND PHARMACOLOGICAL ACTIVITIES OF GUDUCHI

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ABSTRACT

Tinospora cardifolia is a medicinal ayurvedic herb having vast benefit to human health. It comes under the climbing shrub, which belongs to the family Menispermaceae and is inherent to india and some extent to china also and some parts of Australia and Africa. The other names used for Tinospora cardifolia are Guduchi or Giloy or Amrita. Not only its single part but whole plant has got its own pharmacological effect for human well being.Tinospora cardifolia has chemical constituents like terpenoids, alkaloids, steroids, lignans, flavonoids and glycosides. It has many pharmacological activities such as immunomodulation, anti-diabetic, anti cancer and hepatoprotective. Guduchi is widely utilized in Ayurvedic therapeutic preparations, both on its own and combination with other herbs. Acharya charaka listed it in the Vayasthapana, Dahaprashamana, Trishna nigrahana group, while Susruta and Vagbhata classified it under the Guduchyadi, Patoladi, Aragwadhadi group. Additionally Guduchi is mentioned in the Guduchyadi varga in Bhavaprakasha Nighantu. It is primarily known for its Rasayana and digestive properties like Deepana, Pachana, and Bhedana. **Materials and methods**: Relevant ayurvedic texts, including the Caraka samhitha,Susrutha samhitha and various Nighantu, as well as modern literature, research works and online sources have been considered. **Results:** Examined the vernacular names and synonyms of Guduchi and Rasa panchaka including the therapeutic properties of Guduchi. **Conclusion:**

Guduchi has anti pyretic, anti diabetic, rejuvenative, anti-inflammatory and many other properties. Guduchi is one among the four drugs of Medhya rasayana which has anxiolytic and tranquilizng effect, which helps to maintain the mental health of human beings.

INTRODUCTION

In Ayurveda introduction about medications with natural origins is obtained from the Vedas, Samhitas and Nighantus. The botanical source of the Guduchi plant is Tinospora cardifolia Linn, a member of the Menispermaceae family. Tinospora cardifolia commonly known as Amrita or Guduchi is an important drug of Indian systems of medicine and used in medicines since times immemorial. Guduchi is a Sanskrit word which means that which protects body from diseases. Giloy i.e. Tinospora cordifolia is known in Ayurveda as *Amrutha*. It is recognized as *Rashtriya aushadhi*. It has best medicinal values and an immunomodulator herb. It is distributed throughout tropical regions of India that are located 1200 meters above from sea level of kumaon to Assam. It is native to India, Myanmar and Srilanka.

Vernacular names of Guduchi[1]

Malayalam- Sittamrytu, Amrytu.

Tamil- Amrutavalli, Cintilikkoti.

Telugu- Tippateega.

Kannada- Amrita balli, ugani balli.

Hindi- Gulanch, Giloy, Amrta.

Taxonomical classification

Kingdom-Plantae

Division -Tracheophyta

Class-Magnoliopsida

0rder-Ranunculales

Family-Menispermaceae

Genus-Tinospora

Species-T. cordifolia

SYNONYMS OF *GUDUCHI*

S.No	Synonyms	D.N[2]	M.N[3]	B.P.N[4]	R.N[5]	K.N[6]	S.N[7]
1.	*Amrutha*	+	+	+	-	+	
2.	*Amrutalatha*	+	-	-	+	+	+
3.	*Amruthasambhava*	+	-	-	+	-	+

4.	*Amruthavalli*	+	-	-	+	-	-
5.	*Bhishakjitha*	+	-	-	-	-	-
6.	*Bhishakpriya*	-	-	-	+	-	-
7.	*Chadmika*	-	-	-	+	-	-
8.	*Chakralakshana*	+	+	-	-	+	-
9.	*Chandrahasa*	+	+	-	-	+	-
10.	*Chinna*	+	+	+	+	+	+
11.	*Chinnaga*	-	-	-	-	-	+
12.	*Chinnangi*	+	-	-	-	-	-
13.	*Chinnaruha*	+	+	+	+	+	-
14.	*Chinnodbhava*	+	+	+	+	+	+

Classifiaction

According to the Samhita

Charaka Samhita- *Vayasthapana, Dahaprasamana, Trishna nigrahana, Sthanyasodhana.*[8]

Susrutha Samhita- *Guduchyadi, Patoladi, Aragwadhadi, Kakolyadi, Valli panchamoola.*[9]

Astanga sangraha- *Guduchyadi, Patoladi, Aragwadhadi, Padmaka.*[10]

According to the *Nighantu*

Dhanawantari Nighantu, Bhavaprakasa Nighantu, Raja Nighantu- *Guduchyadi varga.*[11]

According to Bhavaprakasha Nighantu

Rasa panchaka[12]

Rasa-katu, tikta, Kashaya

Guna-Madhura

Virya-Ushna

Vipaka-Madhura

Karma of Guduchi[13]

Rasayani: A potent rejuvenator that prevents aging and cellular decay.

Balya: Strength promoting and immunity boosting.

Agni Deepana: Stimulates the digestive fire and corrects metabolic errors.

Roga ghanta of Guduchi[14]

Jwara-Apaha: Eradicate acute, chronic and stubborn fevers

Trut-Daha apaha: Alleviates excessive thirst and burning sensations

Meha-apaha: Specifically targets prameha

Arsha-apaha-Alleviates hemorrohids/piles

Kasa apaha-Treats chronic cough and respiratory irritation.

Pandu-apaha-cures anaemia and blood disorders by stimulating liver function and iron assimilation.

Brahma apaka-Relives dizziness and vertigo and nervous.

Varieties

In classical texts only one variety of *Guduchi* is described. Two varieties, *Guduchi* and *Pinda guduchi* are said in ***Dhanwantari Nighantu***.[15]

Botanical Description[16]

Morphology: A large glabrous climber with succulent, corky and ground stems.

Leaves: Membranous, 5-10 cm long, roundish or subdeltoid, cordate with a broad sinus and large basal lobes, obtuse or more or less cuspidate, 7-9 nerved, reticulately veined with microscopic glistening glands beneath; petiole is 2.5 cm to 7cm long.

Flowers: Male flowers- Clustered in the axils of small subulate bracts, Sepals and petals are 6 in number. Female flowers- Solitary, similar to male Carpels 1 to 3 widely separated on the short fleshy gynophore, dorsally convex.

Fruit: Red on ripening, size of a large pea.

Seeds: Broadly ellipsoid with a slender dorsal ridge and a ventral depression, slightly muricate.

Chemical composition[17]

Total plant contains Tinosporide, Cordifolide, Unosporin, Tinosporin, Tinosporic acid, Cordifol, Hepatocosanol, Tinosporidine, Beta- Sitosterol, Berberine Leaves- octacosanol, Beta- Sitosterol, Heptacosanol, Cardifolone, Magnoflorine, Tembetarine.

Part Used[18]

Stem, Leaf, Aerial roots.

Dose[19]

Svarasa: 10-20 ml

kwatha: 50-100 ml

churna: 3-6 mg

Guduchi Satva: 1-2 g

Infusion: 30-60 ml

Important Formulations[20]

Amrutarista, Amritadikashaya, Amritadi guggulu, Bala guduchyadi tailam, Pancha tikta guggulu ghritam, Chandraprabha vati.

PHARMACOLOGICAL EFFECT

1. Anti inflammatory activity of guduchi

In a study it has been observed that Guduchi Ghana prepared by classical method produced significant suppression of carrageenan-induced oedema indicating that it inhibits fluid exudation and thus acute inflammation. It may be attributed to the ability of Guduchi Ghana to modify the role of various chemical mediators of inflammation like histamine and 5 HT during the initial phase of inflammation dry up through attenuation of their formation or through activity at the receptor levels.[21]

2. Antipyretic effect of guduchi

The antipyretic properties of Tinospora cardifolia are due to the presence of berberine or other bitter substances.[22]

In a study on Guduchi ghrita formulations in albino rats it has been observed that Guduchi ghrta samples produced very good antipyretic effect in a dose dependent manner and the observed effect was almost similar to that in the paracetamol.[23]

3. Anti stress effect

A modest degree of behaviour abnormalities and mental impairment reaction is produced by the plant extract. Patients I Q levels improved as a result of the clinical investigation. It functions as a Medhya rasayana or brain tonic in Ayurveda, by improving mental abilities for example memory and recall.[24]

4. Analgesic effect

Analgesics effects of Guduchi have been scientifically proven. Both a peripheral and a centrally mediated mechanism has been shown to be responsible for analgesic effect.[25]

5. Immunomodulator Activity

Guduchi has Immunomodulatory properties because it stimulates non-specific immune mechanisms.[26]

Immune-modulatory active components discovered in amrita include 11hydroxymustakone, N-methyl-2-pyrrolidone, N formylannonain, cordifolioside A, magnoflorine, tinocordiside, and syringin.[27]

6. Protective effect on cvs

This plant contains berberine which enhances vascular health by lowering endothelial inflammation.[28] Its antioxidant characteristics can defend the heart from infarction which is induced by ischemia reperfusion injury, which is most commonly caused by oxidative stress.[29]

7. Anti cancer effect

Liver cells carcinoma induced by chemicals and MCF-7 breast cancer in human both can be prevented with ECD present in Tinospora cordifolia.[30]

ECD regulates the expression of Cdkn2A, p53, and the mdm2 gene in cancer cells, causing them to die.[31]

This plant's octacosanol is an antiangiogenic drug that inhibits tumour growth and metastasis.[32]

8. Anti-Ulcer and Anti-Diarrheal Effect

This activity was tried in rodents, which showed a portion subordinate enemy of diarrheal impact just as a decrease in ulcer record. There was likewise a decline in stomach volume and an ascent in stomach pH.[33]

PGE2, mitigating cytokines (IL-4, IL-10) and proangiogenic factors (VEGF, EGF) are totally expanded by epoxyclerodane-diterpene got from amrita.[34]

Its concentrate gave defensive impacts in an 8-hour immobilization stress prompted ulceration mouse model, with results comparable to diazepam.[35]

9. Hepatoprotective Effect

The separated root of T. cordifolia have additionally been exhibited to shield the liver from rifampicin and pyrazinamide-incited liver damage.[36]

T. cordifolia likewise showed against CCL4 impacts by bringing down the statement of liver catalysts AST, ALP and ALT just like complete bilirubin forestalling stringy multiplication, and enacting tissue recovery.[37]

Tinospora cordifolia leaf and stem watery concentrates have solid hepatoprotective properties against lead nitrate poisoning.[38-39]

As per the investigations, lead nitrate harming incited a reduction in SOD and catalase levels while expanding ALT, AST, and ALP levels Simultaneous dosing of T. cordifolia stem and leaf watery concentrate improved these boundaries.[40]

10. Anti-diabetic effect

Anti-diabetic activities are attributed to alkaloids (Magnoflorine, Palmetine, and Jatrorrhizine), saponins, cardiac glycosides, tannins, saponins, and other substances. Giloy was added into the everyday diet of a pregnant rat with diabetes (model used: streptozocin-induced diabetes) and by lowering the oxidative load, it has a protective impact, limiting the relative occurrence of illnesses and any birth defect.[41]

Guduchi root extract had an effect in an antihyperglycemic alloxan-induced diabetes animal, lowering extra glucose levels in urine along with in normal blood.[42]

DISCUSSION

Guduchi is one among the Medhya rasayana when consumed regularly is life promoting, disease alleviating, promoter of strength, Agni, complexion, voice, and are intellect promoting. on regular consumption with proper quantity. By intake of guduchi one attains longevity, memory, intelligence freedom from illness, youthfulness, excellence of lustre, complexion. Rasayana is the means of attaining excellent qualities of rasa etc. dhatus i.e body cells and tissues and all the properties of rasayana is present in guduchi which is one of the most potential drugs of ayurveda.

Fever is one of the disease which effect every person at least once in a year. Antipyretic effect of guduchi helps the treatment of fever. Guduchi is highly valued in ayurveda for its detoxifying, rejuvenating, immune supporting and anti ama properties.

it is now being studied by reasearchers for cold and flu prevention, immune support skin disorders, arthritis, liver disorders, gout and rheumatic disorders. Among the benefits of

guduchi attributed to the herb in the classical texts, Guduchi, primarily is a rejuvenative its supports immunity, helps the body to fight endogenous toxins, supports natural function of liver, anti pyretic anti inflammatory and anti diabetic as well.

CONCLUSION

Guduchi has anti pyretic, anti diabetic, rejuvenative, anti-inflammatory and many other properties. Guduchi is one among the four drugs of Medhya rasayana which has anxiolytic and tranquilizng effect, which helps to maintain the mental health of human beings. It should be consumed in regular basis to get all the benefits of rasayana and further studies should be done to know more about this potential drug, Guduchi is a miracle drug in the field of pharmaceuticals and hence to be consumed on regular basis to maintain healthy and disease free life.

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