

International Journal of Research in Indian Medicine

"Ayurvedic and pharmacological profile of *Guduchi* [*Tinospora cordifolia* Willd.] – A review."

Geeta K. Jadhav^{*1}, D.V. Kulkarni², T. A. Pansare³

1. P. G. Scholar,
2. Professor,
3. Associate Professor,

Dept. of Dravyaguna, Govt . Ayurved College, Osmanabad, Maharashtra, India

***Corresponding author:** gee4914@gmail.com

Abstract

Drugs have a variety of medicinal uses. In ancient times, when Vaidyas prepared some medicines, they all were very conscious about the drug qualities. *Guduchi* [*Tinospora cordifolia*] has been used in the native system of medicine since the Vedic period. It is considered the superlative drug in terms of availability, economy, ease of administration, etc. This plant is used in Ayurveda as single drug in the various form of Swarasa, Kalka, Kwatha, Hima, Churna and also important constituent in many other formulations which are used for treating various disorders. The botanical name of *Guduchi* is *Tinospora cordifolia* of the family Menispermaceae. *Guduchi* is used as Jwarahara, Daahaprashamana, Krimigna, Pitta-Vatahara, Rasayana etc. *Guduchi* is a very important medicinal plant and widely distributed in all over India. It is described as "the herb that protects the body from diseases". "Amrita" means "divine-nectar" which referred as life restoring. *Guduchi* growing up on *Neem*

(*Azadirachta indica*) trees are said to be the best. The present study aims to collect nearly all available information about Ayurvedic aspect Phyto-chemical constituents, medicinal uses as well as pharmacological properties.

Keywords: *Guduchi* [*Tinospora cordifolia*], phytochemistry, Pharmacological activity.

Introduction:

Guduchi is used for their anti-inflammatory, anti-hypersensitive, diuretic, anti-microbial, anti-oxidant, anti-diabetic, anti-hyperlipidemic, anti-neoplastic, antipyretics, anti-ulcer, cardio-protectant and Hepato-protectant activities. The present review is an effort to compile all the previous data on the idea of its phytochemistry, medicinal uses and pharmacology reported within the previous articles.

Aims and Objects:

- Ayurvedic and pharmacological profile of

Guduchi [Tinospora
cordifolia Willd.]

Material and Methods:

Classical text books of Ayurveda

Literature Review:

Vedic kala^[3]

Many herbs have been narrated since Vedic period. In the earliest compendium *Guduchi* is mentioned as “*Kudruchi*”. (*Kaushika sutra* 22-1-50).

Samhita kala^[3]

Charaka Samhita: Acharya Charaka has described five synonyms of *Guduchi* and included it in seven *Dashemani*. According to *charaka*, it has *Sangrahika* as well as *Vibandha-prashamana* properties.

Sushruta Samhita: Description of *Guduchi* is found at 41 places and in 9 Ganas. Other than these, *Guduchi* also is mentioned in *Vallipanchmula*. *Guduchi* is included in many groups, which have diverse specific and nonspecific therapeutic uses.

Astanga Sangraha: *Guduchi* is mentioned alone or in combination with other herbs in the treatment of *Jwara*, *Slipada* and *Prameha* etc.

Nighantu kala^[3]:

Astanga Nighantu: *Guduchi* is described under *Padmakadi* Gana and with various synonyms.

Dhanvantari Nighantu: In *Dhanvantari nighantu*, *Guduchi* was mentioned first in one out of seven Vargas. Two varieties like *Guduchi* and *Kanda Guduchi* are described with different vehicle in harmony of *Doshas* i.e. *Vata*, *Pitta*, *Kapha*. In this *Nighantu*, 34 synonyms of *Guduchi* were mentioned.

Kaidev Nighantu:

Guduchi is mentioned in *Ausadha Varga* with its 19 synonyms and two varieties as *Guduchi* and *Pinda Guduchi* are described.

Bhavaprakash Nighantu:

Guduchi has been described under *Guduchyadi Varga* with its 21 various synonyms and its mythological origin.

Raj Nighantu:

Description of two types of *Guduchi* and *Kanda Guduchi* with their 31 synonyms and therapeutics uses has been given.

Shaligrama Nighantu:

Guduchi has been described in *Guduchyadi gana* with 9 synonyms for *Guduchi* and 6 for *Kanda Guduchi*.

Adhunik kala^[3]

Dravyaguna vidnyana: Acharya Priyavata Sharma has described Latin, vernacular name, synonyms of *Guduchi* and botanical description with drug action on different system of human being.

Materia Medica: In this book the author Dr. K.N. Nadkarni has mentioned as above.

Mythological review:^[4]

Ravana, who was king of Lanka overcome with lust abducted *Sita*, the wife of *Rama*, then the mighty *Rama* assisted by the army of monkeys fought *Ravana* and killed him in the battle field. *Indra*, the king of gods was greatly pleased at the death of *Ravana*, the enemy of gods, praised *Rama* and brought back to life all the monkeys who had been killed by sprinkling nectar on them. In all places where drops of nectar form the bodies of monkeys fell on ground, there grew the plant of *Guduchi*.

Synonyms:

In several classical books the various synonyms of *Guduchi* are described which are related with its mythological origin, morphological characters, therapeutic efficacy etc.

Nirukti of synonyms: ^[1,2]

अमृतवल्ली – The creeper of the plant never dies.

न म्रीयते लताऽस्त्याः

छिन्नरुहा- When cut *Guduchi* grows again.

छिन्ना सती पुनः रोहति ।

कुण्डली- *Guduchi* ascends supporting plant in a circular way.

कुण्डलाकारेण वर्धते ।

चक्रलकक्षणा - When cut transversely the stem shows circular structure.

काण्डच्छेदे चक्रेण लक्ष्यते इति ।

ज्वरनाशिनी - Very efficacious drug fever.

ज्वरे हितत्वात् ।

अमृता- *Guduchi* possess the qualities like that of nector.

अमृतवद् गुणकारिणी च ।

जीवन्ती- *Guduchi* protects the life due to its rasayana property.

जीवयतीति रसायनत्वात् ।

मधुपर्णी- When crushed, leaves give viscid juice like that of honey

मधुवत् आकराणि शुभ्रबीजान्यस्याः ।

तन्त्रिका- The stem of *Guduchi* resembles a rope.

रज्ज्वाकारा, विस्तृता च ।

मण्डली- *Guduchi* climbs up the supporting plant in a circular manner.

मण्डलाकारेण वर्धमाना ।

विशल्या - *Guduchi* protects by removing toxins

विगतं शल्यमस्याः ।

रसायनी- *Guduchi* has rejuvenating properties

रसायनफलदात्रि ।

चन्द्रहासा- The seeds are semilunar in shape.

चन्द्रकाराणि शुभ्रबीजान्यस्याः ।

कन्दोद्भवा – *Guduchi* can be propagated with stem

काण्डादुद्भवोऽस्याः ।

Table no.1 Synonyms of *Guduchi* mentioned in Different classical texts

Sr.no	synonyms	R.N	K.N	BP.N	A.R	A.K	N.A	Mau.N	D.N
1.	<i>Amrita</i>	+	+	+	+	+	+	+	+
2.	<i>Amritlata</i>	-	-	-	-	-	-	-	+
3.	<i>Amritkanda</i>	+	+	-	-	-	-	-	+
4.	<i>Amritsambhava</i>	+	+	+	+	+	+	+	+
5.	<i>Amritvallari</i>	+	+	+	-	-	-	-	+
6.	<i>Amritvalli</i>	-	+	+	-	-	-	-	+

7.	<i>Bahuchinna</i>	+	+	-	+	+	+	-	+
8.	<i>Bahuruha</i>	+	+	+	+	-	+	+	+
9.	<i>Bhisagjita</i>	+	+	-	+	-	+	-	+
10.	<i>Bhisagpriya</i>	-	-	-	-	-	-	-	-
11.	<i>Chakralakshana</i>	-	-	-	-	-	-	-	-
12.	<i>Chakralakshinika</i>	-	-	-	-	-	-	-	-
13.	<i>Chakrangi</i>	-	-	-	-	-	-	-	-
14.	<i>Chandrasahsa</i>	-	+	-	-	-	-	+	-
15.	<i>Chadmika</i>	-	+	-	-	-	-	-	-
16.	<i>Chinna</i>	-	+	-	-	-	-	-	-
17.	<i>Chinnangi</i>	-	-	-	-	-	-	+	-
18.	<i>Chinnanga</i>	-	+	-	+	-	-	-	-
19.	<i>Chinnaruha</i>	+	-	+	+	+	+	+	-
20.	<i>Chinnodbhava</i>	-	-	-	-	+	-	-	-
21.	<i>Devnirmita</i>	-	-	+	-	+	+	+	-
22.	<i>Dhara</i>	-	-	-	+	-	-	-	-
23.	<i>Dhira</i>	+	-	-	-	-	-	-	-
24.	<i>Guduchi</i>	+	-	-	-	-	-	-	-
25.	<i>Guduchika</i>	+	-	-	-	-	-	-	-
26.	<i>Jivanti</i>	+	-	-	-	-	-	-	-
27.	<i>Jivantika</i>	+	-	-	-	-	-	-	-
28.	<i>Jvarari</i>	-	-	-	-	-	-	-	-
29.	<i>Jvaranasini</i>	+	-	-	-	-	-	-	-

30.	<i>Jvaravinasini</i>	+	-	-	-	-	-	-	-
31.	<i>Kanda</i>	+	-	-	-	-	-	-	-
32.	<i>Kanya</i>	+	-	-	-	-	-	-	-
33.	<i>Kandamrita</i>	+	-	-	-	-	-	-	-

CLASSIFICATION:

Table no. 2 - Classification of *Guduchi* according to different text

Classical Text	Gana/ Varga
<i>Charaka samhita</i>	<i>Triptighna, Stanyasodhana, Snehapoga, Dahaprashamana, Trishnanigrahana, sandhaniya, Vayasthapana</i>
<i>Ashtanga Hridaya</i>	<i>Shaka-varga, Padmakadi gana, Patoladi gana, Guduchyadi gana, Aragvadhadi gana, Shyamadi gana</i>
<i>Sushruta samhita</i>	<i>Guduchyadi, patoladi, Aragwadahadi, Kakolyadi, Vallipanchamula</i>
<i>Kaiyadeva Nighantu</i>	<i>Aushadiya varga</i>
<i>Madanapal Nighantu</i>	<i>Abhayadi varga</i>
<i>Priya Nighantu</i>	<i>Pippalyadi varga</i>
<i>Bhavprakasha Nighnatu, Dhanvantari Nighantu, Raj-Nighantu, Shaligrama-Nighantu, Nighantu -Adarsha, Shodhala Nighantu</i>	<i>Guduchyadi varga</i>

Species: -

In Raj-nighantu, two species of *Guduchi* has been described. i.e, Padma *Guduchi* or Kanda *Guduchi*. Here, “Pinda or Kanda-*Guduchi*” has mentioned as the variety of *Guduchi*. The synonyms of this variety are *Chinnodbhava*, *Madhuparni*, *Kandamrita*. Among them the former synonym is for growing plant, which is *Guduchi* and the later one is popular by people. Hence, 31 synonyms are available for two types of *Guduchi*.

Rasapanchaka^[5]

- *Rasa (taste): Tikta, Katu, Kasaya*
- *Guna (quality): Laghu,*
- *Virya: Ushna*
- *Vipaka: Madhura*
- *Doshghnta: Tridoshaghna.*

Properties & Action: -

- *Dahaprashamana* - Reduces burning sensations
- *Amanashaka* – Destroys toxins
- *Kushtaghna* - All elevates skin disorders
- *Deepaniya* – Increases appetite

- **Trishnanigrahan** - Quenches thirst
- **Rasayana** - Rejuvenate
- **Balya** - Increases strength
- **Ayushprada** - Promotes life
- **Vayasthapana** - Increases life span
- **Tridosahara** - Reduces all three Dosha
- **Medhya** - Brain tonic
- **Jwarahara** – Reduces fevers
- **Amavataghna** - Reliever of gout/arthritis
- **Raktashodhana** - Blood Purifier
- **Sukrashodhana** - Semen Purifier
- **Vajikarana** - Increases sexual potency

Therapeutic indication:

In our Ayurveda classics, Guduchi is indicated to treat various disorders like Jwara, Kamla, Halimaka, Pravahika, Grahani, Daurbalya, Jirnjwara, Daha, Visamajwara, Kustha, Visharpa, Kandu, Vatarakta, Krimiroga, Pandu, Kshaya, Prameha, Mutrakrichha, Phiranga, Hrididaurbalya, Dhatukshaya.

Doses^[6]:-

- Sattva - 5-15 ratti (1-2g)
- Powder - 1-3 masa (3-6g)
- Decoction - 4-8 tola (50-100ml)

Adjuvants:

- Adjuvants are mentioned in Madanpala Nighantu.
- Vata vikara - Ghrita
- Pitta vikara - Sharkara
- Kapha vikara – Madhu
- Vibandha - Guda
- Vatarakta - Erand taila
- Amavata - Sunthi

Formulation^[7]:-

- **Ghrita** - Guduchi Ghrita, Amritadi Ghrita, Panchatikta Ghrita
- **Taila** - Guduchyadi taila
- **Vati** - Samsamni vati, Chandraprabha vati
- **Lauha** - Guduchyadi lauha
- **Churna** – Rasayan churna, Sudarsana churna
- **Kwatha** – Guduchyadi kwatha, Manjisthadi kwatha,
- **Arista** - Amritarista
- **Rasa-ausadhi** - Gandhak rasayan, Chandrakala rasa

MODERN REVIEW

Botanical Name: *Tinospora cordifolia* (Willd.) Miers ex Hook. F. & Thoms^[8,9]

Vernacular names :

- **English** - Tinospora
- **Marahi** - Ambervel, Gharol, Giroli, Gulavela, Wulavel, Guloe, Oulvel
- **Hindi** - Amrita, Giloe, Gilincha, Gulbel, Guloh, Gulancha, Guracha, Gurudvel,
- **Marawadi** - Gilve
- **Arabian:** - Jullu, Gila
- **Gujarati** - Galo, Gado, Gulo, Gulvel
- **Sindhi** - Sutgilo
- **Bengali** - Gudancha, Giloe, Guluncho, Nimgilo, Guruch, Golvancha,
- **Tamil** - Amudem, Chindilkodi, Ketta-mirtu, Amridavalli, kaipruchindil
- **Telugu** - Gaduchi, Somida, Tippateege, tiyatij, godhuchi

- **Malyalam** - Amrita, Katamrit, Kattamruta, paiyamritam, chidramritam
- **Kachchi** - Gadu
- **Kashmiri** - Bark, Bekhgilo
- **Punjabi** - Batinue, Gilo, Gilogularich, Zakhmihayat
- **Oriya** - Gulochi
- **Kannada** - Amrutball, Madhupurne, Sundar sanbolli

Taxonomical classification:

- Kingdom – Plantae
- Division – Spermatophyta
- Subdivision – Angiospermae
- Class – Dicotyledonae
- Group – Polypetalae
- Natural order - Rannals
- Family – Menispermaceae
- Genus – *Tinospora*
- Species – *Cordifolia*

Distribution & Habitat ^[10]

Guduchi is distributed throughout tropical India from Kumaon to Assam in north extending through Bengal, Bihar, Deccan, Kokan, karnataka and Kerala southwards as far as Cape Comorin. It is occasionally cultivated for its medicinal use in which case the plant is specially trained to grow on *Margosa Strychnos* and mango trees thereby it is supposed, increasing its medicinal virtue.

Macroscopic features

Tinospora cordifolia Mires. is a large glabrous extensively spreading soft wooded perennial shrubby twinned growing over the highest trees. The aerial roots that arise from the mature braches or cut bits of stems grow downward and by continuously lengthening sometimes reach a length of 10 meters or more

before they reach the ground. Then they thicken gradually and finally resemble the stems, except for the absence of the nodal swellings or prominences. They bear simple alternate roundish cordate entire smooth leaves on fairly long petioles. In older stems however the surface appears to densely or closely stud with warty tubercles as result of the development of vertical or longitudinal rows of large rosette like corky lenticels, and the surface skin longitudinally fissured or cracked along these lines. The surface skin in young stems is light gray or cream white, thin, translucent and papery and peels off easily. On its removal a dark greenish mucilaginous tissue is revealed. The flowers are small greenish yellow and dioeciously; the male flowers arise in clusters of 2 to 6 on racemes usually longer than the leaves while the pistil late arise singly from rachises that are shorter than the leaves. The plants can therefore be easily propagated. Twisting a few feet of the stem or branches into one or more coils and hanging the same on the branches of trees or other suitable supports. These at the commencement of the favorable season will produce and send down aerial root which will speedily reach the earth and the buds will develop into tender elongate twinning shoots. The stems if not allowed to sprout may shrink considerably on drying after a lapse of several weeks when the bark turns dull brown and separates from the wood.

Wood: White soft and porous the pores rather scanty small too large and irregularly arranged between the few broad medullary rays. Every part of the plant particularly the stem is intensely bitter.

External Morphology

Leaves: simple, alternate, estipulate, fairly, long petiolate and arise from and are articulated to short tumid nodal projections on the stem. They are short lived and fall off soon. Petiole-slender, rounded, 3.5 to 7.5 cm. Long, its basal part is pulvinate for a short length and this thickened portion is slightly twisted. There is also a similar but not usually twisted swelling at the top or distal end of the petiole. Blade-broadly ovate to roundish-cordate, 5 to 10 cm. In diameter, thin entire, quite glabrous on both surfaces, sub Glaucus beneath, the tip acute or shortly and sharply acuminate and base with a broad sinus and five to seven nerved.

Inflorescence: The plants are dioecious, the male and female flowers developing on separate plants. The staminate inflorescences are usually drooping or pendulous. Longer than the leaves and bear the flowers in fascicles of two to six. The pistillate inflorescence is scarcely as long as the leaf, more often shorter with the flowers mostly born singly but densely packed on the rachis.

Flowers: small, numerous, very early deciduous, precocious bracteates, greenish-yellow and timorous with short slender pedicels, subulate, the lower ones occasionally somewhat leafy. Sepals six, free, deciduous, in two series of which the outer are small ovate oblong and acute and the inner three larger and membranous.

Staminate flowers – stamens six, filaments free, spreading, slightly longer than and wrapped in the petals, other cells oblong connivent immersed in the thickened fleshy tip of the filament, dehiscing longitudinally by an oblique almost marginal slit.

Pistillate flowers – They have six caeveat staminodes in addition to the gynoecium. Gynoecium-superior of three free carpels the ovaries of which are placed on a tumid prominence of the receptacle; styles very short, simple; stigma dilated and forked or laciniate.

Fruit: An aggregate of one to three sessile drupelets: only rarely do all the three carpels ripen. These when ripe are smooth, of a bright red or scarlet color roundish to somewhat ovoid or oblong, about the size of a large pea, apiculate ventrally flat, dorsally convex with the styles carsub-basal and rest on a tumid projection of the receptacle, they have a very glutinous pulpy mesocarp. Endocarp dorsally keeled ventrally concave smooth or somewhat rogues on account of the presence of a few isolated tubercles, Seed-solitary in each fruit let meniscoid or kidney-shaped, deeply grooved ventrally and curved round as lightly two lobed intrusion of the endocarp; endospermic; the endosperm being ruminant on the ventral side; embryo-slightly cuted with ovate, spreading or divaricated foliaceous cotyledons.

Transverse Section of stem in Details:

(1) Cork:

It is the outermost tissue consisting of 5-6 layers of thick-walled cork cells, which are elliptic, and containing a brownish pigment in their wall. This layer is loosely attached to the cortex. Lenticels with vertical orientation are also seen.

(2) Cork-cambium:

Immediately within the cork layer are 4-5 layers of thin-walled rectangular cells of cork cambium.

(3) Cortex:

At the periphery of the cortex is a zone of chlorenchyma of 3 - 5 rows of regularly arranged thin walled tangentially elongated cells and the subsequent 6-7 inner layers be formed of parenchyma. Scattered in the cortex are several secretory cells, which in T.S. appear circular. These are larger than the adjacent cortical cells with their diameter varying from 45 to 80 μ . The cells adjacent to or surrounding these secretory cells are usually devoid of starch contents.

(4) Pericycle:

The pericycle consisting of sclerenchyma cells forms a characteristic layer of tissue, having a peculiar design distinguishable by the naked eye. It forms a continuous circle of small crescent shaped arches outlining the vascular bundles and touching the adjoining arches of similar design.

(5) Vascular zones:

The vascular zone present between the pith and cortex is composed of ten and twelve or more wedge shaped radial strips of xylem (wood) crowned at their distal border ends by semicircular strips of phloem the two together radially alternating with broad medullary rays that start from the pith and extend to the cortex. Within each patch of older phloem may be made out three or more tangential strips of collapsed cells which alternate with similar bands composed of few rows of large sized thin walled cells containing starch grains.

Phloem

The more recently formed or functioning phloem which occupies only a smaller area is composed mostly of thin walled polygonal to slightly tangentially

elongated parenchyma cells presenting a diagrammatic appearance like caps over the metaxylem some of which contain many small micro-crystals of calcium oxalate and a limited number of sieve tubes with their companion cells.

Cambium

The fascicular cambium is distinct in each vascular strip and is composed of one or two rows of narrow tangentially elongated thin walled cells measuring 30 μ x 10 μ to 21 μ x 7 μ .

Xylem

Each strand of wood or xylem is wedge-shaped in T.S. and consists of several wide or large sized vessels, thick-walled xylem parenchyma and wood fibers. The diameter of the vessels varies from 65 to 190 μ .

Xylem parenchyma

The xylem parenchyma cells are nearly as thick-walled as the xylem fibers. Several of the parenchyma cells of the border rows on either side of each xylem strand situated adjacent to the medullary rays contain small rhomboidal crystals of calcium oxalate.

(6) Medullary rays:

The medullary rays number 10 to 12 and most of them extend from the pith to the cortex. They are very broad being composed of 15 to 20 or more rows of cells. In each ray stretching radially along its middle up to the cortex is a strip of compressed collapsed cells. Each such strip is broader towards the center and composed of a larger number of highly compressed cells but narrower with lesser number of rows of slightly comprised cells towards the periphery.

(7) Pith:

The pith occupies the center of the stem. The pith in the center is composed of large thin walled cells, most of which

contain a sprinkling of starch grains. Collapsed cells in the form of wavy often-anatomizing strips occur in the pith and these are connected with the similar strips present within the medullary rays. The quantity of starch present within the pith is much less than in the medullary rays and cortex.

Chemical Constituents:^[11]

Diterpenoid of columbin type-tinosporin, Tinosporide, cordifolide Tinosporidine and α & β sistrosterol, Cordifol, heptasanol, octacosanol.

Furanoid diterpene- tinosporide, Five diterpene furan glycoside, cordifolisides A-E and two phenyl propane glycosides. Leaves of this plant are rich in protein (11.2%) and are fairly rich in calcium and phosphorus.

Cultivation^[12]: -

The plant is cultivated for ornament and propagated by cuttings. It is specially trailing to grow on *Margosa* and *Mangotrees*, there it is supposed to possess increased medicinal virtue. It grows well in any type of soil and climatic conditions.

Collection:^[13] -

The stem and roots are collected in summer when the bitter principle in most concentrated and abundant form (Indian pharmacopoeia). For Sattva preparation fresh stem should be collected at the flowering time to get both quantitative and qualitative starch.

Amayeka prayoga^[14,15]:

The stem is bitter stomachic; stimulates bile secretion; causes constipation; tonic; allay thirst, fever, burning sensation, vomiting; diuretic;

enriches the blood cures jaundice; useful in skin diseases; the juice is useful in vaginal and urethral discharges, diabetes and enlarged spleen. Stem bitter; appetizer, tonic, antipyretic, expectorant; good in cough, jaundice, giddiness, vomiting, piles, *anaemia*, chronic fever; blood purifier; mixed with sesame oil it is useful for massaging the body. The root and the stem are prescribed in combination with other drugs as an antidote to snake-bite. An infusion of the powdered stem is used as an alternative and tonic and has enjoyed the reputation among Hindu writers of being an aphrodisiac. Fumigations are recommended in ulcerated wounds and piles. In liver complaints it is used to medicate the bath.

Pharmacological activity:

Many research works done on *Tinospora cordifolia* with its different activities i.e. anti-neoplastic, anti-diabetic, anti-bacterial, etc.

Immunomodulating activity

Tinospora cordifolia was found to have immunomodulating activity^[16].

Cordiol, Syringin, Cordioside and cordifoliside were found to have immune potentiating activity^[17].

Anti-inflammatory activity

Singh et al. have shown that the aqueous suspension of the alcoholic extract of the stem of *T. cordifolia* provided protection to liver damage induced by administration of carbon tetrachloride in mice, rats, and rabbits^[18]. The aqueous extract of *Tinospora cordifolia* showed significant anti-inflammatory activity in rats against acute and chronic type of

inflammation induced by carrageenin and the activity resembles that of NSAIDS^[19]. The decoction of *Tinospora cordifolia* showed anti-inflammatory activity on carrageenan induced hind paw edema in rats^[20].

Hepato-protective activity

Tinospora cordifolia appears to improve surgical outcome in patient with malignant obstructive jaundice by strengthening the host defenses.^[21]

A study of hepato-protective activity of *T. cordifolia* on Kupffer cell function using carbon clearance test as a parameter showed significant improvement in kupffer cell function and a trend towards normalization^[22].

Anti- stress activity

Sharma and Khosla have reported that the alcoholic extract of *Tinospora cordifolia* roots possessed normalizing activity against stress induced changes in norepinephrine, dopamine, 5- HT and 5-hydroxyindoleacetic acid levels of experimental rats^[23].

The ethanolic extract of *Tinospora cordifolia* exhibited significant anti-stress activity at 100 ml/kg compared with diazepam at 2.5 mg/kg^[24].

The ethanolic extract of *Tinospora cordifolia* at a dose 100 mg/kg was shown to induced a marked protective action against 8 hr. restraint stress induced ulceration^[25].

Anti-histaminic activity

Extract of *Tinospora cordifolia* stem significantly decreased broncho spasm induced by 5 % histamine aerosol in Guinea pig. It also reduced the no. of disrupted mast cell in rats^[26].

Toxicological study:

Reddy et.al. (1993) Studied the anti hepatotoxic activity of *Tinospora cordifolia* Miers in albino rats intoxicated with ccl4. Liver functions were assessed based on morphological, biochemical, SGPT, SGOT, Serum alkaline phosphate, Serum bilirubin and functional tests which were statistically non-significant. No significant information on side effects is available so far^[27].

Conclusion

According to *Bhavaprakash, Guduchi* is in possession of *Rasa Katu – Tikta - kashaya*. The Vipaka is described as *Madhura* and *Veerya* is *Ushana*. The *Guna* in *Guduchi* is mainly *Laghu* and *Snigdha*. *Kapha* dominating *Vata doshas* are involved in the pathogenesis of the *Granthi*, *Dushyas* are Rakta, Mamsa and Meda. *Guduchi* have Balya, Agni-deepana properties which stimulate *Jatharagni* along with *Dhatvagni* as well as it digests Ama (undigested food), clears *Srotorodha*. As *Guduchi* balances *Tridosha*, helps to improve Immune system. Internally, *Guduchi* is most effective *Rasayana- Rejuvenative* herb. It works well on the seven Dhatus – Tissues and keeps the system balanced. Ultimately helps in immune stimulation, enhances cellular detoxification mechanism and repair damaged non-proliferating cell, which breaks the pathogenesis of various diseases. Different parts of the plants contain number of important phyto-constituents and therefore, *Guduchi* is used for their anti-inflammatory, anti-hypersensitive, diuretic, anti-microbial, anti-oxidant,

anti-diabetic, anti-hyperlipidemic, anti-neoplastic, antipyretics, anti-ulcer, cardio-protectant and Hepato-protectant activities. The present review is an effort to compile all the previous data on the idea of its phytochemistry, medicinal uses and pharmacology reported within the previous articles.

References

1. Raja Radhakantadev. Shabdha kalpadruma, vol 3 edition, Delhi: Naga Publishers, 3rd reprint 2006. pg 33-39
2. Vachaspathyam, Choukhamba Publication: A comprehensive Sanskrit series. First ed. pub. Calcutta, 1873-84, 17
3. Radakant dev. Varada Prasad, editor. Shabdakalpadruma. Vol 3. ed. Delhi: Naga Publishers; 1987. Pp, 315. Page no 28.
4. Gupte Satish, The short text book of Medical microbiology, New Delhi: Jaypee brothers Medical Publishers(P) Ltd., ninth edition, 2006, pp. 509, page no. 233
5. Vagbhata. Harisadasivasastri Paradakara Bhis agacarya, editor. Ashtanga Hrudaya with Sarvangasundari of Arunadatta & Ayurveda Rasayana of Hemadri. Varanasi: Choukhamba Surbharathi Prakashan; 2007. Pp 956. Page no 655.
6. J.L.N. Shastry, Dravyaguna vijnana Vol- II. Ist ed. Varanasi: Chowkhamba Orientalia; 2004. Pg 123-124.
7. J.L.N. Shastry, Dravyaguna vijnana Vol- II. Ist ed. Varanasi: Chowkhamba Orientalia ; 2004. Pg 124.
8. Dhanvantari, Dhanvantari Nighantu Guduchyadi varga 28-29 sloka. P.V. Sharma editor. 1st ed. Varanasi: Chowkhamba Orientalia; 1982. Pg 21.
9. Madanapala, Madanapala Nighantu Abhyabi varga sloka 37-40. Ramprasad patiyala editor. 1st ed. Bombay: Khemaraj Shrikrishnadas Prakashan; 1988. Pg 25.
10. Pandit Narahari, Raj Nighantu pippalyadi varga sloka 7-12. Indradeo Tripathi editor. 2nd ed. Varanasi: Krishnadas Academy; 1998. Pg 266.
11. Sharma P.C, Yelne M.B, Dennis T.J, Database on medicinal plants used in Ayurveda , vol 3, CCRAS, New Delhi, 2001 , pg 256.
12. P.V. Sharma, Dravyaguna vijnana Vol-II. 16th ed. Varanasi: Chowkhamba Bharati Academy; 1983. Pg 149-152.
13. Ramsushil sinha Vanousadhi Nirdeshika 2nd ed. Lucknow Uttar Pradesh Hindi Samsthana 1983. Pg. 217-219.
14. Kirtikar and Basu. Indian Medicinal Plants with illustration, second edition, Orientalia enterprises 2001, edited revised by Blatter.E, Caries J.F and Mhaskar K.S, pg 104-112
15. Dr. Prakash L. Hegde , A textbook of Dravyaguna Vijnana , Choukhamba Publications, New Delhi: Vol 2. pg 309
16. K.M. Nadakaranis, Indian Materia Medica Vol-I. A.K. Nadakarni ed.

- 3rd ed. Bombay: Popular Prakashan; 1908. Pg 776-784.
17. Ramsushil sinha Vanousadhi Nirdeshika 2nd ed. Lucknow Uttar Pradesh Hindi Samsthana 1983. Pg. 217-219.
 18. Nagoba BS, Asha P., Medical microbiology, second edition, New Delhi: Elsevier Pvt.Ltd. reprint 2013, pp.716, page no. 341
 19. K.R. Kirtikar B.D. Basu, Indian Medicinal Plants Vol-I. 2nd ed. Dehra Dun: International
 20. Gupte Satish, The short text book of Medical microbiology, New Delhi: Jaypee brothers Medical Publishers(P) Ltd., ninth edition, 2006, pp.509, page no.233
 21. Jump up to: a b c Sue E. Huether (2014). Pathophysiology: The Biologic Basis for Disease in Adults and Children (7th ed.). Elsevier Health Sciences. p. 498. ISBN 9780323293754.
 22. Section on Clinical Pharmacology and, Therapeutics; Committee on, Drugs; Sullivan, JE; Farrar, HC (March 2011). "Fever and antipyretic use in children". Pediatrics. 127 (3): 580– 7. doi:10.1542/peds.2010-3852. PMID 21357332.
 23. Garmel, Gus M. (2012). "Fever in adults". In Mahadevan, S.V.; Garmel, Gus M. An introduction to clinical emergency medicine (2nd ed.). Cambridge: Cambridge University Press. p. 375. ISBN 0521747767.
 24. "Taking Care of Someone Who is Sick". August 13, 2010. Archived from the original on 24 March 2015. Retrieved 8 May 2015.
 25. Kluger, Matthew J. (2015). Fever: Its Biology, Evolution, and Function. Princeton University Press. p. 57. ISBN 9781400869831.
 26. Axelrod YK, Diringer MN (May 2008). "Temperature management in acute neurologic disorders".
 27. Neurol. Clin. 26 (2): 585–603, xi. doi: 10.1016/j.ncl.2008.02.005. PMID 18514828.

Conflict of Interest: Non

Source of funding: Nil

Cite this article:

"Ayurvedic and pharmacological profile of Guduchi [*Tinospora cordifolia* Willd.] – A review."
Geeta K. Jadhav, D.V. Kulkarni, T. A. Pansare

Ayurline: International Journal of Research In Indian Medicine 2022; 6(2):01-13