



# INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X

Impact factor: 4.295

(Volume3, Issue6)

Available online at [www.ijariit.com](http://www.ijariit.com)

## Medicinal Properties of *Tinospora Cordifolia* (Guduchi)

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**Abstract:** *Tinospora cordifolia* is one of the most important medicinal plant commonly known as Giloy belonging to the menispermaceae family is a deciduous climbing shrub described known for its immense application in the treatment of various diseases such as jaundice, fever, diabetes, and skin diseases etc. The chemical constituents of this shrub belong to different classes such as alkaloid, lactones, steroids, phenolics, aliphatic compound, glycosides and polyscharide compounds having medical importance.

**Keywords:** *Tinospora cordifolia*, Alternative Medicine, Antibacterial, Antidiabetic Anti-oxidant.

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### I. INTRODUCTION

*Tinospora cordifolia* (Wild) miers ex Hook.f. & Thoms (family: menispermaceae) commonly known as “amrita “or” Guduchi” climbing shrub found throughout India [1]. *T. cordifolia* is an endangered rasayana herb. In Ayurvedic system of medicine, it has a special place as an effective adaptogen and aphrodisiac. The drug is well known and prescribed for fevers, diabetes, jaundice, urinary problem, skin diseases anemia etc. It is used for antiperiodic, anti pasmodic, anti-inflammatory immunomodulatory, antitumour, anti-allergic and anti-pyretic properties. The extract of stem, bark, roots, leaves shows strong antioxidant activity[2]. The climbing shrub has shown great potential for the development of biopharmaceuticals products for the treatment of various diseases.

### II .CLASSIFICATION

Kingdom: Plante

Division: Magnoliopsida

Class: Manoliopsida

Order: Ranunculales

Family: Menispermaceae

Genus: *Tinospora*

Species: *T.cordifolia*

### III. BOTANICAL DESCRIPTION

The drug guduchi distributed throughout the tropical region of India .it is a large, deciduous extensively spreading climbing shrub.It is a large, deciduous extensively spreading climbing shrub with several elongated twining branches. Leaves simple, alternate, stipulate, long petioles up to 15 cm long, roundish, pulvinate, both at the base and apex with the basal one longer and twisted partially and half way around. Lamina broadly ovate or ovate cordate, 10–20 cm long or 8– 15 cm broad, 7 nerved and deeply cordate at base, membranous, pubescent above, whitish tomentose with a prominent reticulum beneath. Flowers unisexual, small on separate plants and appearing when the plant is leafless, greenish yellow on axillary and terminal racemes. Male flowers clustered, female usually solitary. Sepals 6, free in two series of three each, the outer ones are smaller than the inner. Petals 6 free smaller than sepals, obovate and membranous. Fruits aggregate of 1-3, ovoid smooth drupelets on a thick stalk with sub terminal style scars, scarlet or orange coloured.

#### IV. CHEMISTRY

A variety of constituents have been isolated from *Tinospora cordifolia* plant, terpenoids, alkaloids, di terpenoids lactones, glycosides, steroids, aliphatic compounds.

**TABLE I**

<b>Type of Chemical Alkaloids</b>	<b>Active principle with references present</b> Tinosporine[3],Magnoflorine ,berbeine ,Choline ,Palmatine[4] Tembetarine ,Palmatine ,Jatrorrhizine [5] ,	<b>Part in which Present Stem ,root</b>
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**Table II**

<b>Type of Chemical Glycosides</b>	<b>Active principle with references</b> 18-norclerodane glucoside [6] Furanoid diterpene glucoside [7] , Tinocordiside [8],Tinocordifolioside [9] , Cordioside, Cordifolioside B , Syringin Syringin- apiosylglycoside , Palmatosides c [10], Palmatosides F , Cordifolioside A , Cordiofolioside B , Cordifolioside Cordifolioside D, Cordifolioside E.	<b>Part in which present stem</b>
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**Table III**

<b>Type of Chemical Diterpenoid</b>	<b>Active principle with references</b> Furanolactone [11] , Whole plant Lactones Clerodane derivatives , [12] , (5R,10R)-4R-8R-dihydroxy-2S-3R, diepoxy-cleroda-[13] , 14-dieno-17,12S: 18,1S-dilactone] [14] and Tinosporon[15] , Tinosporides , [16] and , Jateorine , Columbin .	<b>Part of which present the Whole plant</b>
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**Table IV**

<b>Type of Chemical Steroids</b>	<b>Active principle with references</b> $\beta$ -sitosterol [17] ,[18] , $\delta$ -sitostero, 20 $\beta$ - Aerial part hydroxy ecdysone , .Ecdysterone [19] ,[20] Makisterone A	<b>Part of which present Aerial plant stem</b>
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TABLE -V

Type of Chemical	Active principle with references	Part of which present
Sesquiterpenoid	Tinocordifolin [21]	Stem
Aliphatic Compound	Octacosanol [22], Heptacosanol, Whole plant compound Nonacosan-15-one Miscellaneous 3, (α, 4-di hydroxy-3-methoxy-benzyl)-4-(4- hydroxy-3-methoxy-benzyl)-tetrahydrofuran. Jatrorrhizine [23].	Whole plant
Miscellaneous compound	Root ,Tinosporidine, Cordifol [24] , Whole plant Cordifellone , N-trans-feruloyl tyramine as diacetate, Giloin, Giloinin, Tinosporic acid [25].	Whole plant Root whole plant

## VI. MEDICINAL PROPERTIES

The stem of *Tinospora cordifolia* is one of the constituents of several Ayurveda preparations used in general debility, dyspepsia, fever and urinary diseases. The stem is bitter, stomachic, diuretic, stimulates bile secretion, causes constipation, allays thirst, burning sensation, vomiting, enriches the blood and cures jaundice. The extract of its stem is useful in skin diseases.

Bark of *T. cordifolia* has anti –spasmodic, anti-pyretic, anti-allergic and anti –leprotic properties

The aqueous extract of *T. cordifolia* root has anti-oxidant property. It successfully experiments on diabetic male albino rats [26]

It has been observed that polyherbal formulation of *T. cordifolia* possesses favourable effect in patient with HIV infection [27]

Anti-inflammatory- The water extract of the stem of *Tinospora cordifolia* has been checked for anti-inflammatory activity in albino rats. It has significantly inhibited acute inflammatory response evoked by carrageenin when administered orally and intraperitoneally [28].

It also works as immunomodulatory in diseases like obstructive jaundice, hepatic fibrosis, peritonitis, and sepsis. In Urinary disorder, the juice of the roots is very much effective.

This plant has great potential for developing useful drugs. The leaves extract have shown anti-HIV 1 activity. Thus it can be said that biological extract from this plant will certainly be helpful in protecting and treating various viral diseases in humans [29]. Role of *Tinospora cordifolia* can be seen in tumor suppression also. Studies have shown that the polysaccharide fraction of *T. cordifolia*, when injected intraperitoneally in mice, resulted in the inhibition of lung metastatic colonies [30].

Giloy (*Tinospora cordifolia*) is widely used against monkey malaria. Studies have shown that giloy juice which is a mixture of Giloy herb and Tulsi leaves increases body resistance up to 3 times and serves as a powerful counter of Plasmodium virus attacks [31].

This plant has great potential for developing useful drugs. The leaves extract have shown anti-HIV 1 activity. Thus it can be said that biological extract from this plant will certainly be helpful in protecting and treating various viral diseases in humans [32].

Guduchi is also used for soothing inflamed and injured mucous membranes in the digestive tract. It protects the stomach and duodenum by increasing the production of mucin.

For treatment of cancer, the powder root and stem is used along with milk [33].

## CONCLUSION

*Tinospora cordifolia* is an endangered rasayana herb of India and holds a special position as a potent adaptogen and aphrodisiac in Ayurvedic System of Medicine. The plant is rich in many phyto-constituents that are useful in drug designing. These studies place this indigenous drug a novel candidate for bioprospection and drug development for the treatment of such diseases as cancer, liver disorders, ulcers, diabetes, heart diseases and postmeno-pausal syndrome, etc. where satisfactory cure managements are still not available.

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