

A Review on *Tinospora cordifolia*

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ABSTRACT

Tinospora cordifolia is a climbing deciduous shrub. It is found throughout tropical part of India and also found in China, Bangladesh, Myanmar & Srilanka. This plant belongs to the family Menispermaceae. A variety of constituents have been isolated from different parts of *T.cordifolia*. They belong to different classes such as alkaloids, diterpenoid lactones, steroids, glycosides, aliphatic compounds and polysaccharides. *T.cordifolia* is the best remedy for children suffering from upper respiratory tract infections. The aqueous extract of *T.cordifolia* significantly lowered the serum cholesterol and moves the HDL cholesterol level to basic value. It also possesses antioxidant, anti-hyperglycemic, anti-neoplastic and also it shows hepatoprotective properties. The aim of this article is to give fast review about *T.cordifolia*.

Key words: *Tinospora cordifolia*, antioxidant activity, Medicinal plant, Antihyperglycemic activity.

INTRODUCTION

Among plants of economic importance, medicinal and aromatic plants have played a vital role in alleviating human sufferings. Plants are utilized as therapeutic agents since time immemorial in both organized (Ayurveda, Unani) & Unorganized (folk, tribal, native forms). Demand for medicinal plants is increasing in both developing and developed countries. Research on medicinal plants is one of the leading areas of research globally. Uses of medicinal plants in the industrialized societies have been traced from the extraction and development of several drugs and chemotherapeutic drugs from these plants as well as from traditionally used rural herbal remedies. Among the vast library of important medicinal plants *Tinospora cordifolia*(willd.) Hook.F. & Thomson of family Menispermaceae is immensely



fig.a. Whole plant of *T.cordifolia*

valuable in terms of chemical constituents and in Pharmacology. The plant family Menispermaceae consists of about 70 genus & 450 species that are found in tropical low land regions. They are generally climbing or twinning rarely shrubs. Leaves are alternate or lobed, Flowers are small cymose, Seeds are usually hooked or reniform. This family is rich source of alkaloids and terpenes.

Tinospora genus: *Tinospora* is one of the important genera of the family, consisting of about 15 species. Some medicinally important species includes *T.cordifolia*, *T.malabarica*, *T.tomentosa*, *T.crispa*, *T.uliginosa* etc.

Species: *Tinospora cordifolia*(willd.)Miers exHook and Thomas belonging to the family Menispermaceae, is a large deciduous climbing shrub found throughout India & also in Srilanka, Bangladesh and China. (AV Raghu et al., 2006)

Common names: (Abhimanyu Sharma et al., 2010)

Latin : *Tinospora cordifolia*(willd.) Hook.F. & Thomson

English : Gulancha/ Indian tinospora

Sanskrit : Guduchi, Madhuparni, Amrita, Chinnaruha, Vatsadaani, Tantrika, Kundalini & Chakralakshanika.

Hindi : Giloya, Guduchi

Bengali : Gulancha

Telugu : Tippatiga

Tamil : Shindilakodi

Marathi : Shindilakodi

Gujarathi : Galo

Kannada : Amrita balli

Botanical description: *T.cordifolia* is a large, glabrous, deciduous, climbing shrub. The stem structure is fibrous and the transverse section exhibits a yellowish wood with radially

arranged wedge shaped wood bundles containing large vessels, separated by narrow medullary rays. The bark is creamy white to grey, deeply left spirally and stem contains rosette like lenticles. The leaves are membranous & cordate in shape. Flowers are in axillary position, 2-9cm long raceme on leaflet branches, unisexual, small and yellow in colour. Male flowers are clustered and female are usually solitary. The seeds are curved. Fruits are fleshy and single seeded. Flowers grow during the summer and fruits during the winter (BV Shetty et al., 2010).

Taxonomic description: The *T.cordifolia* comes under the Class- Magnoliopsida, Order- Ranunculaceae and belongs to the family – Menispermaceae. The species is widely distributed in India, extending from the Himalayas down to the southern part of Peninsular India. It is also found in neighbouring countries like Bangladesh, Pakistan and Srilanka. The plant is also reported from South East Asian continent such as Malaysia, Indonesia and Tamilnadu etc.

Habitat: *T.cordifolia* prefers wide range of soil, acid to alkaline and it needs moderate level of soil moisture. Found throughout tropical India, ascending to an altitude of 1000 feet and in South Asia, Indonesia, Phillipians, Thailand, Myanmar, China and in Srilanka worldwide.

Chemical Composition: A variety of constituents have been isolated from different parts of *Tinospora cordifolia*. They belong to different classes such as alkaloids, diterpenoid lactones, steroids, glycosides aliphatic compounds, polysaccharides. Some constituents have been isolated from plant mainly they are tinosporone, tinosporic acid, cordifolisides A to E, syringen, berberine, giloin, gilenin, crude giloininand, arabinogalactan polysaccharide, picrotene, bergenin, gilosterol, tinosporol, tinosporidine, sitosterol, cordifol, heptacosanol, octacosonal, tinosporide, columbin, chasmanthin, palmarin, palmatosides C and F,



fig.b. Leaves of *T.cordifolia*

4.	Aerial Part		<p>(P Stanley et al., 1999), (D Sarma et al., 1998), (R Veena Desai et al., 2012) Anti-stress activity(J Singh et al., 2003)</p>
5.	Whole Plant	<p>-sitosterol, -sitosterol, 20 - Hydroxy ecdysone. Furanolactone,Clerodane derivatives and[(5R,10R)-4R-8R-dihydroxy-2S-3R:15,16-diepoxy-cleroda-13 (16), 14-dieno-17,12S:18,1S-dilactone] and Tinosporon,Tinosporides, and,Jateorine, Columbin, Octacosanol, Heptacosanol,MiscellaneousNon acosan-15-one3,(,4-di hydroxy-3-methoxy-benzyl)-4-(4-hydroxy-3-methoxy-benzyl)-tetrahydrofuran, Tinosporidine, Cordifol, Cordifellone,N-trans-feruloyl tyramine as diacetate,Giloin, Giloinin, Tinosporic acid.</p>	<p>Antidote to snake bite and scorpion sting (KM Nadkarni et al., 1976), (TF Zhao et al., 1991) Analgesic and Neuropharmacological activities. (Md Mokarram Hossain et al., 2009) Diabetis, Rheumatoid arthritis, Gout, Cancer, high cholesterol content (K Avnish Upadhyay et al., 2010) Anti-asthmatic & chronic cough treatment (K Spelman et al., 2001) Antipyretic and anti-inflammatory activity(R Jeyachandran et al., 2003) (KC Gupta et al., 1956) Anaemia,jaundice,normalization of altered liver functions (YR Karkal et al., 2007) Cardiac disorders (PR Rao et al., 2005) Anti-leprotic (JG Asthana et al., 2001)</p>

			Gastro intestinal and anti-ulcer activity (PA Bafna et al., 2005)
			Anti-fertility activity (RS Gupta et al., 2003)
			Hepatoprotective activity (BT Kavitha et al., 2011)

amritosides, cordioside, tinosponone, ecdysterone, makisterone A, hydroxyecdysone, magnoflorine, tembetarine, syringine, glucan polysaccharide, syringine apiosylglycoside, isocolumbin, palmatine, tetrahydropalmatine, jatrorrhizine respectively(SS Singh et al., 2003).

Medicinal property: The plant possesses anti-oxidant, anti-hyperglycemic, anti-neoplastic, anti-stress, anti-dote, anti-spasmodic, anti-pyretic, antiallergic, anti-leprotic, anti-inflammatory, anti-hyperlipidaemia, Immunomodulatory properties. Various parts of the plant contain immense medicinal property.

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