

## *Tinospora cordifolia* in present era-A review article

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### Abstract

*Tinospora cordifolia* is a large, perennial, deciduous, climbing shrub of weak and fleshy stem which are found throughout India. The chemical constituents include alkaloids, glycosides, steroids, aliphatic compounds and polysaccharides. There are different potential medicinal properties include anti-diabetic, antipyretic, antispasmodic, anti-inflammatory, anti-arthritic, antioxidant, anti-allergic, anti-stress, anti-leprosy, antimalarial, hepatic-protective, immuno-modulatory and anti-neoplastic activities. This review analyze the various properties and medicinal uses of *Tinospora cordifolia*.

**Keywords:** *Tinospora cordifolia*, anti-pyretic, anti-stress

### Introduction

*Tinospora cordifolia* is a large, glabrous, deciduous climbing shrub belonging to the family Menispermaceae. It is distributed throughout the tropical Indian subcontinent and China, which ascends to an altitude of 300 m.

### Morphological Features

*Tinospora cordifolia* is a wide deciduous, glabrous, rapidly ascending shrub with several coiling branches extending approximately 3-4 feet in height and roughly 1 foot long. *Tinospora cordifolia* is a large deciduous, extensively spreading climbing shrub with a number of coiling branches [1].

**Stem:** Quite scrumptious, with long filiform fleshy aerial branch roots [18]. The colour is greyish brown-black in color, bitter in texture, soft wooded, dry, cylindrical, and also in circumference from 5 mm to 25 mm [2].

**Leaves:** Simple, 5-10 cm long, alternating, exstipulated, long petiolate (2.5-7 cm), rounded chordate with multi-coated reticulated midrib. From the branches appear long tentacle-like aerial roots [3].

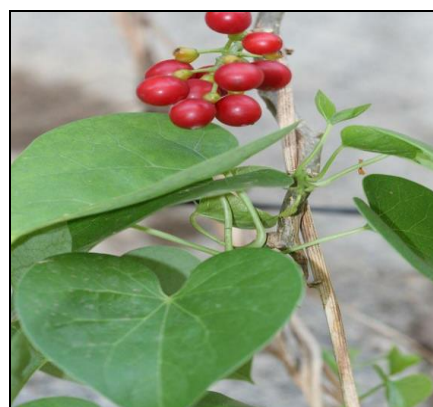
**Bark:** Slender, greyish, or texture creamy when exposed to meticulously peeled stem [4].

**Flowers:** Yellow or yellow-greenish, and tiny. The male flowers are concentrated in adjunct and terminal racemes or racemose panicles, while the females are usually solitary [5].

Fruit: Red, fleshy, with extensive drupelets on a thick stalk with border sub-terminal form, colored scarlet [6].



**Fig 1:** *Tinospora* Stem & Leaf



**Fig 2:** *Tinospora* Fruit & Leaf

**Table 1:** Chemical Constituents of *Tinospora cordifolia* [7].

Type of Chemicals	Parts	Active Principles
Alkaloids	Stem	Berberine, Palmatine
	Root	Tembetarine, Magnofl orine, Choline, Tinosporin, Isocolumbin, Palmatine, Tetrahydropalmatine, Magnofl orine.
Glycosides	Stem	Tinocordifolioside, Cordioside, Cordifolioside A, Cordifolioside B, Syringin, Syringin- apiosylglycoside, Palmatosides C, Palmatosides F, Cordifolioside A, Cordifolioside B, Cordifolioside C, Cordifolioside D, Cordifolioside E
Steroids	Aerial Part	$\beta$ -sitosterol, $\delta$ -sitosterol
	Stem	Hydroxy ecdysone. Stem Ecdysterone, Makisterone A, Giloinsterol.

## Discussion

### 1. Antipyretic Effect

Studies by Ikram *et al.* (1987)<sup>[9]</sup> and Leghari *et al.* (1984) shows the antipyretic effect of *Tinospora cordifolia* in Himalayan rabbits<sup>[8]</sup>. Another study showed water-soluble fractions of a 95% ethanolic extract of *Tinospora cordifolia* possess significant antipyretic activity (when given orally) against yeast-induced pyrexia by Vedavathy and Rao<sup>[9]</sup>. In another study on *Tinospora cordifolia* with medicinal ghee formulations in albino rats shows antipyretic effect in a dose-dependent manner and the observed effect was almost similar to that in the Paracetamol<sup>[10]</sup>.

### 2. Hypoglycemic Effect

A chronic metabolic disorder which affecting carbohydrate, protein, and fat metabolism, damages liver, kidney, and cells of pancreas<sup>[11]</sup>. Administering insulin therapy in insulin dependent diabetes mellitus possess various drawbacks such as insulin resistance, developing anorexia, brain atrophy, and fatty liver after chronic treatment<sup>[12]</sup>. It is proved to be a highly potent anti-diabetic herb<sup>[13]</sup>. It has been showed from different studies that 1, 2-substituted pyrrolidines isolated from the stem is mainly responsible for anti-diabetic activity<sup>[14]</sup>.

### 3. Stress & Memory

During traditional period, the root of *Tinospora cordifolia* has been used as an anti-stress plant<sup>[15]</sup>. *Tinospora cordifolia* has also shown its effect to enhance cognition (learning and memory) in normal rats and reverse cyclosporine-induced memory deficit.

### 4. Hepato-Protective Action

The antihepatotoxic activity of *Tinospora cordifolia* have been observed in CCl<sub>4</sub> induced liver damage, normalizing liver function as assessed by morphological, biochemical (SGPT, SGOT, serum alkaline phosphatase, serum bilirubin)<sup>[16]</sup>. A significant increment in the functional capacities of rat peritoneal macrophages was observed following *T. cordifolia* treatment<sup>[17]</sup>.

## Conclusion

*Tinospora cordifolia* has anti-pyretic, anti-diabetic many other properties. It should have to be consumed on regular basis to maintain healthy and disease-free life.

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