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## Medicinal Properties of *Tinospora Cordifolia* (Guduchi): A Review

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### Abstract

*Tinospora Cordifolia* is commonly known as Guduchi or Giloy in India. It is a deciduous climbing shrub commonly found in Asia and Africa. It belongs to Menispermaceae family. Almost all parts of this plant including roots, stem, leaves are used. It is widely used in several medicinal preparations against multiple diseases in Ayurveda system of medicine. It is also called Amrita in Sanskrit due to its several medicinal properties. The present study showed that *Tinospora Cordifolia* has several medicinal properties like Antioxidant, Immuno-modulatory, Anti-diabetic, Anti-cancer, Anti-microbial, Hepato-protective, Anti-inflammatory, Neuro-protective, Anti-HIV activity etc.

**Key words-** Guduchi, Giloy, Medicinal properties, Ayurveda

### Introduction

Plants and their products are always remained as a prime source of medicines from ancient times. There are several types of traditional methods used for treat of various diseases in the world. Ayurveda is an important branch of medicine in Indian subcontinent. It uses natural products for the treatment of several diseases. There are some plants which gives tremendous result against multiple diseases and almost each part of these plants are useful in Ayurveda. *Tinospora Cordifolia* is also a plant of same category. It is an important constituent of several medicinal preparations of ayurveda. In Ayurveda it is considered as a magical plant and commonly used as health promoter.

Guduchi is a deciduous climbing shrub commonly found in Asia and Africa. It belongs to Menispermaceae family. Almost all parts of this plant including roots, stem, leaves are used for medical preparations. It is commonly known as Guduchi or Giloy in India. It is also known as amrita in sanskrit literature.

### Classification

Kingdom	Plante
Divison	Magnoliopsida
Class	Manoliopsida
Order	Ranunculales
Family	Menispermaceae
Genus	Tinospora
Species	T.cordifolia

It is also known by several names in different languages in india, some of them are as follows

S.No.	language	Name
1.	Botanical Name	<i>TinosporaCordifolia</i>
2.	English	Indian Tinospora,Indian Quinine
3.	Hindi	Giloy, Guduchi
4.	Sanskrit	Amrita
5.	Bengali	Gulanca
6.	Marathi	Sindhilakodi
7.	Guajarati	Galo
8.	Tamil	Sindhilakodi
9.	Telugu	Thippateega
10.	Urdu	Gilo

### Methodology

In this study first medicinal properties of Guduchi were recognized. In the next step the literature related to these medicinal properties are collected with the help of organized search. The searches were performed using various data base including PubMed (<http://www.ncbi.nlm.nih.gov/pubmed>), Scopus (<http://www.scopus.com>), Scirus (<http://www.scirus.com>), Science Direct (<http://www.sciencedirect.com>) and Google Scholar (<http://www.scholar.google.com>).

### Medicinal properties of Guduchi

#### Antioxidant

Our body is a chemical reactor in which several biochemical reactions are takes place; Oxidation is one of them which is responsible for ageing and also the prime cause of several diseases. Antioxidants are those chemical substances which decrease the rate oxidation in our body and protect us from several diseases. Guduchi is proved to be a good source of antioxidant by several studies. Study showed the free radical scavenging activity of Guduchi leaves (Paul et al. 2016) and Giloy satva (Onkar et al. 2012) against DPPH. Another study shows that ethanol extract of Giloy stem and roots shows very high antioxidant activity (Prasad et al. 2019). Other studies show the antioxidant property of Giloy fresh juice (Hussain et al. 2017) and Giloy herbal tea (Singh et al. 2017).

#### Immunomodulatory

Our body have natural power to fight against outer spices like virus, bacteria or other infections, this power is called immunity. When immunity is decreased several types of infections can easily attack our body. Immunomodulators are those substances which can increase our immunity naturally. Guduchi is proved to be a good immunity booster by several studies. a study shows that fresh giloy and brahmi juice is a very good immunity booster (Hussain et al. 2017). A study on children shows that guduchi extract works like an immunomodulator which lowered down the morbidity rate in children (Kumar et al. 2018). Another study shows that Guduchi stem contains immunomodulatory protein which can enhance immunity (Aranha et al. 2012).

#### Anti-diabetic

Diabetes is a very common problem which is faced by most of the population of world. It is commonly a life style disease which is responsible to create several other problems in our body. There are several studies which shows that guduchi have ability to manage diabetes. A study shows proved the anti-diabetic action of dried extract of Guduchi and honey in streptozotacin induced diabetic rat (Khadekar et al. 2015). Other studies also show that Guduchisatva (Sharma et al. 2013) and Guduchi Ghana (Sharma et al. 2013) have mild hypoglycemic activity in albino mice.

#### Anti-cancer

Cancer is a life threatening disease which is growing now a days very much. There are several studies which prove the anti-cancer activity of Guduchi, A study shows the radio-sensitizing activity of Guduchi in tumour bearing mice which prove that guduchi can be used as a new strategy for cancer in combination

with radiotherapy (Rao et al. 2008). Another study proved that methanol extract of Guduchi can be used against breast cancer cell of human body (Ahmad et al. 2015). A study shows that hexane extract proved to be active against EAT cells in mice (Thippeswamy et al. 2007). Another study showed that polyherbal formulation containing guduchi has anti-cancer activity against human colon, breast and liver cancer (Saravanan et al. 2015).

### Antimicrobial

Anti-microbial are those substances which are used to fight against several micro-organisms like bacteria or fungi, which can cause multiple infections in human body. A study showed SwarasaBhavitaGuduchiChurna has antibacterial property due the presence of chemical compounds like alkaloid; Berberine and a Glucoside; Giloin (Agarwal et al. 2017). Another study showed the anti-microbial activity of aqueous extract of *TinosporaCordifolia* against SKIN DISEASES (ECZEMA) (Sheikh et al. 2018).

### Hepato-protective

Hepato-protective is those substance which shows protective action against liver damage. There are several studies shows the Hepato-protective action of Guduchi. A study shows the protective ability of ethanol extract of Guduchi against carbon tetra chloride induced liver damage in mice (Kavithaetal. 2011). Another study shows that Guduchi stem powder help in reducing high fat diet induced obesity which further related with the renal and liver function (Singh et al. 2010).

### Anti-inflammatory

Anti-inflammatory are those substances which reduce the inflammation and swelling. There are several studies to prove the Anti-inflammatory property of Guduchi. A study shows that aqueous extract of Guduchi stem can reduce inflammation in Edema (Patgiri et al. 2014). Another study prove the Analgesic, anti-inflammatory (Philip et al. 2018) and anti-pyretic property of Guduchi extract (Hussain et al. 2015).

### Neuro- Protective

Guduchi is proved to be Neuro-protective by several studies. A study shows that etahanol extract of *TinosporaCordifolia* have significant Neuro-protective property against dopamine induced Parkinsonism (Kosaraju et al. 2014). Another study proved that butanol extract of *TinosporaCordifolia* has neuroprotective and neuroregenerative potential against catastrophic consequences of glutamate-mediated excitotoxicity (Sharma et al. 2018). Another study shows that *TinosporaCordifolia* can work as therapeutic tool against oxidative stress caused brain damage (Rawal et al. 2014).

### Anti-HIV Activity

HIV is a viral infection which further causes AIDS. It is a lifelong disease and presently there is no treatment available for HIV. There are some studies which show that Guduchi can be used to manage this disease and increase the longevity of patients. A study proved that the leaves of *T. cardifolia* shows anti-HIV 1 activity and this plant has great potential for developing useful drugs against HIV (Estari et al. 2012). Another study shows that alkaloids present in *TinosporaCordifolia* have anti-HIV activity (Sainath et al. 2014).

## Experimental Evidences of Medicinal Properties of *TinosporaCordifolia*

S.No.	Medicinal Properties	Experimental Evidences
1.	Antioxidant Property	Paul et al. 2016, Onkar et al. 2012, Prasad et al. 2019, Hussain et al. 2017, Singh et al. 2017
2.	Immunomodulatory	Hussain et al. 2017, Kumar et al. 2018, Aranha et al. 2012, Sachan et al. 2019
3.	Anti-diabetic	Khadekar et al. 2015, Sharma et al. 2013, Sangeetha et al. 2013, Sharma et al. 2013.
4.	Anti-cancer	Rao et al. 2008, Ahmad et al. 2015, Thippeswamy et al. 2007, Saravanan et al. 2015
5.	Anti-microbial	Agarwal et al. 2017, Sheikh et al. 2018, Pradhan et al.

		2010
6.	Hepato-protective	Kavithaetal. 2011, Singh et al. 2010, Nagarkar et al. 2013.
7.	Anti-inflammatory	Patgiri et al. 2014, Hussain et al. 2015, Philip et al. 2018.
8.	Neuro-protective	Kosaraju et al. 2014, Sharma et al. 2018, Rawal et al. 2014.
9.	Anti- HIV activity	Estari et al. 2012, Sainath et al. 2014.

## Conclusion

The present study shows that *TinosporaCordifolia* have a very wide potential as a medicinal plant. It has several medicinal properties like Antioxidant, Immuno-modulatory, Anti-diabetic, Anti-cancer, Anti-microbial, Hepato-protective, Anti-inflammatory, Neuro-protective, Anti-HIV activity etc. which are proved by different studies. However there is further scope to study the use of the chemicals found in *TinosporaCordifolia* and their practical use in the treatment of several diseases.

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