Tinospora cordifolia

TAXONOMIC CLASSIFICATION:[1]

Kingdom: Plantae

Subkingdom: Tracheobionta

Division: Magnoliophyta

Class: Magnoliopsida

Subclass: Ranunculidae

Order: Ranunculales

Family: Menispermaceae

Genus: *Tinospora*

Species: *cordifolia*

(https://www.healthbenefitstimes.com/gulancha-tinospora/)

INTRODUCTION:

Tinospora cordifolia commonly known as Guduchi or Amrita (Menispermaceae), a traditional herbal medicine, which is used as a remedy for fever, diabetes, dyspepsia, jaundice, and skin diseases.Studies have indicated that certain daily consumed dietary phytochemicals have cancer protective effects mediated by carcinogens.[2] It is also known as Guduchi, Giloya, Gulvel, Gurcha, Heart-Leaved Moonseed, Heavenly Elixir, Indian Tinospora, Jetwatika etc.

Tinospora cordifolia is a shrub that is native to India. Its root, stems, and leaves are used in Ayurvedic medicine. *T. cordifolia* is used in Indian Ayurvedic system of medicine for the treatment of jaundice, diabetes, and rheumatoid arthritis, and is also used as an immunostimulant. Experiments have examined its antineoplastic, antioxidant, hepatoprotective, hypolipidemic, and immunologic properties.[3][4]

It is a large extensively spreading glabrous, perennial deciduous twiner with succulent stems and papery bark. Leaves are simple, alternate, cordate, entire, glabrous, 7-9 nerved. Flowers are yellow in lax racemes, usually solitary. Fruits are drupes, red when ripe. Stem appears to be closely studded with warty tubercles and the surface skin is longitudinally fissured. On removal of the surface skin the dark greenish mucilaginous stem is seen [5]

CHEMICAL COMPOSITION:

It contains tinosporin, columbin, chasmanthin, palmarin, berberine, tinosporon, tinosporic acid, tinosporol, giloin, giloinisin, substituted pyrrolidine, aditerpenoid furanolactone, 18-norclerodane diterpene-O-glucoside, anaryltetrahydrofuranolignan, octacosanol, nonacosan-15-one and beta-sitosterol.[5]

PROPERTIES AND USES:[6][7]

- Immuno modulatory property
- Anti-allergic
- Anti-toxic effects
- Anti-HIV effects
- Anti- Cancer effects
- Anti-arthritic, anti-osteoporotic effects
- Anti-oxidant activity
- Anti- microbial activity
- Adaptogen
- Reduces respiratory problems
- Anti stress and anti anxiety properties
- Anti ageing
- Regulates digestion

(https://www.chhajedgarden.com/tinospora-cordifolia-seeds.html)

SIDE EFFECTS:

Caution & Side Effects

There is not side effect reported using Giloy in recommended dosage. The excess dosage of Giloy Powder may cause feeling of excess heat sensation in the body. Excess dosage of Giloy Satva does not give this type of feeling.

(https://www.ayurtimes.com/tinospora-cordifolia-giloy-guduchi-benefits-medicinal-uses-side-effects/#medicinal-properties)

DOSAGE:

As mentioned in Ayurvedic Pharmacology, 1gm to 3gm of Guduchi powder is safe for consumption[8]

Dosage

Plant Part or Derivative	Dosage
Giloy Stem Powder	1 to 3 grams
Giloy Stem Water	50 ml to 100 ml
Giloy Stem Extract	125 mg to 500 mg
Giloy Stem Juice	1 ml to 5 ml
Giloy Satva	250 mg to 1000 mg
Giloy Leaves Powder	1 to 3 grams
Giloy Leaves Juice	2.5 ml to 10 ml

(https://www.ayurtimes.com/tinospora-cordifolia-giloy-guduchi-benefits-medicinal-uses-side-effects/#medicinal-properties)

RESEARCH:

1. This study determined the deleterious effects of sub lethal gamma radiation on tests and their possible inhibition by *Tinospora cordifolia* extract (TCE). One group of male Swiss albino mice was exposed to 7.5 Gy gamma radiation to serve as the irradiated control, while the other group received TCE (75 mg/kg b. wt./day) orally for 5 consecutive days half an hr before irradiation to serve as experimental. Exposure of animals to 7.5 Gy gamma radiation resulted into significant decrease in body weight, tissue weight, testes-body weight ratio and tubular diameter up to 15 days of irradiation. TCE pretreatment rendered significant increase in body weight, tissue weight, testes- body weight ratio and tubular diameter at various intervals as compared to irradiated group. Radiation induced histological lesions in testicular architecture were observed more severe in irradiated control then the experimental. TCE administration before irradiation significantly ameliorated radiation induced elevation in lipid peroxidation and decline in glutathione concentration in testes. These observations indicated that radio- protective potential of *Tinospora cordifolia* root extract in testicular constituents against gamma irradiation in mice.[9]
2. This study was developed to assess the safety and efficacy of TCE in human immuno-deficiency virus positive patients. Efficacy of *Tinospora cordifolia* extract (TCE) in HIV

positive patients was assessed in randomized double blind placebo controlled trial. 68 HIV positive participants were randomly assigned to two groups to receive either TCE or placebo for six months. Results concluded that TCE treatment caused significant reduction in eosinophil count and hemoglobin percentage. 60% patients receiving TCE and 20% on placebo reported decrease in the incidence of various symptoms associated with disease. Some of the common complaints reported by patients on TCE were anorexia, nausea, vomiting and weakness. *Tinospora cordifolia* extract, significantly affected the symptoms of HIV. However not all of the objective parameters studied. Hence, *Tinospora cordifolia* could be used as an adjunct to HIV/AIDS management.[10]

3. Exposure of HeLa cells to TCE (dichloromethane extract of Tinospora cordifolia) for 4 hours before exposure to 2-Gy γ-radiation caused a significant decrease in the cell viability (approximately 50%). The surviving fraction (SF) was reduced to 0.52 after 4 hours of TCE treatment. Also, clonogenecity of HeLa cells declined negligibly with treatment duration up to 6 hours posttreatment. Exposure of HeLa cells to different doses of γ-radiation resulted in a dose-dependent decline in the viability of HeLa cells, whereas treatment of HeLa cells with various doses of TCE further decreased the cell viability depending not only on the irradiation dose but also on the concentration of TCE. Treatment of HeLa cells with various doses of TCE caused a significant decline in cell viability after exposure to 1 to 4 Gy γ-radiation. The increase in TCE concentration before irradiation caused a concentration-dependent reduction in the SF, and a lowest SF was observed for 4 μg/mL TCE for all exposure doses. HeLa cells treated with TCE showed an increase in lactate dehydrogenase and decrease in glutathioneS-transferase activity at all post irradiation times. Also, Lipid peroxidation increased up to 4 hours post irradiation and declined gradually up to 12 hours post irradiation.[11]

SPECIAL PRECAUTIONS & WARNINGS:[4]

Pregnancy and breast-feeding: It is recommended to avoid Tinospora consumption durng preganancy

Diabetes: Tinospora cordifolia might lower blood sugar levels. The doses of diabetes medications might need to be adjusted.

Autoimmune diseases such as multiple sclerosis (MS), lupus (systemic lupus erythematosus, SLE), rheumatoid arthritis (RA), or other conditions: Tinospora cordifolia might cause the immune system to become more active, and this could increase the symptoms of autoimmune diseases.

Surgery: Tinospora cordifolia might affect blood sugar levels, so there is a concern that it might interfere with blood sugar control during and after surgery. Hence one should stop taking Tinospora cordifolia at least 2 weeks before a scheduled surgery.

INTERACTION WITH MEDICATION:[4]

- **Antidiabetes drugs interacts with *Tinospora cordifolia***

Tinospora cordifolia might decrease blood sugar. Diabetes medications are also used to lower blood sugar. Taking Tinospora cordifolia along with diabetes medications might cause hypoglycemia. Some medications used for diabetes include glimepiride (Amaryl), glyburide (DiaBeta, Glynase PresTab, Micronase), insulin, pioglitazone (Actos), rosiglitazone (Avandia), chlorpropamide (Diabinese), glipizide (Glucotrol), tolbutamide (Orinase), and others.

- **Immunosuppressants interacts with *Tinospora cordifolia***

Tinospora cordifolia might increase the immune system. Taking it along with some medications that decrease the immune system might decrease the effectiveness of these medications. Some medications that decrease the immune system include azathioprine (Imuran), basiliximab (Simulect), cyclosporine (Neoral, Sandimmune), daclizumab (Zenapax), muromonab-CD3 (OKT3, Orthoclone OKT3), mycophenolate (CellCept), tacrolimus (FK506, Prograf), sirolimus (Rapamune), prednisone (Deltasone, Orasone), corticosteroids (glucocorticoids), and others.

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