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Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 Issue: V Month of publication: May 2021

DOI: <https://doi.org/10.22214/ijraset.2021.34467>

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A Review on Healing Properties of *Tinospora Cordifolia* (Indian Giloy)

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Abstract: *Tinospora Cordifolia* is a scientific name for Indian giloy or gaduchi plant which is native to Indian subcontinent. It is an herbaceous woody climbing vine with rapidly growing stems of the family Menispermaceae and genus *Tinospora*. Commonly known by the name Amarbel in hindi which means it is an everlasting shrub, it can be easily regrown using its stem. Since ancient period it is used as a traditional ayurvedic medicine for building up immunity and treatment of various diseases as it contains various phytochemicals. Giloy plant contains medicinal healing compounds which have shown effective results against viral fever and infections. This study reviews physical, chemical and medicinal properties of the plant along with the treatment procedures for various diseases.

Keywords: *Tinospora cordifolia*, Giloy, ayurvedic medicine, natural remedy.

I. INTRODUCTION

Rapid spreading of this deadliest disease calls obvious need for natural treatment options to prevent crisis from swirling out of control. India's Ayurveda has a long history and traditional medicinal heritage since ancient era. Various plants like *Tinospora cordifolia* (giloy), *Azadirachta indica* (neem), *Withania somnifera* (ashwagandha), *Ocimum tenuiflorum* (tulsi), *Aloevera* etc, have been of medicinal importance since the beginning of human civilization [1]. The presence of secondary metabolites and phytochemicals activates biological pathways which surge in curing diseases naturally. But due to lack of high-quality scientific evidence it has not reached as a prescriptive drug.

Tinospora cordifolia is a woody climber commonly known as giloy or amarbel is used to treat different health conditions since ancient times. Some major phytochemicals like tinosporine, cordifolide, syringin are present in giloy which have shown to be immunomodulatory which in turn would be viable against coronavirus by innating immunity and prevention against viruses. It is a miraculous ancient vine also referred to as root of immortality. This study presents the chemical, physiochemical and medicinal properties of this divine herb in the prevention of various deadly diseases [2].

II. BOTANICAL DESCRIPTION AND DISTRIBUTION



Figure 1: *Tinospora cordifolia* (Giloy) plant (Leaves, stems and root)

Tinospora cordifolia, a semi-evergreen deciduous climbing shrub which is often found on the trunks of large trees like mango and neem. It can survive in different kinds of soils from acidic to basic with average moisture. Stems of the plant are moist and thick, having large aerial roots, emerging from the branches with varying thickness; younger stem are green coloured with smooth surfaces, while older stems being light brown colored The shrub is succulent, twinning, rapid growing vine with green branches turning brown with age and aerial roots, ovate, juicy, acute membranous young leaves with round petiole, 5 to 14 cm in diameter.

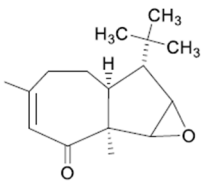
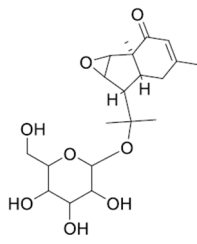
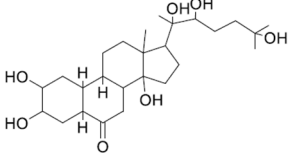
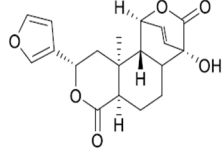
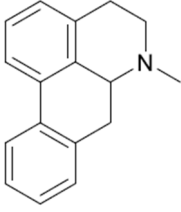
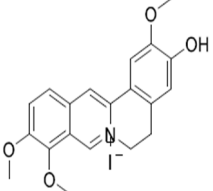
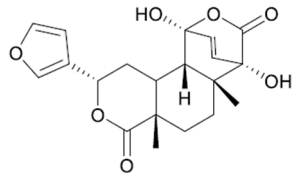
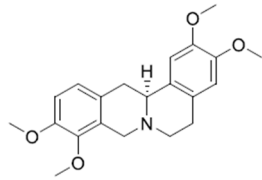
Wood is porous, soft grey-brown or creamy white in colour which peels off easily. The plant blossom during May-June to small unisexual yellow flowers. Male flowers are small yellow-green axillary and female flowers are solitary. Fruits are ovoid, fleshy, reddish having single seed. Fruiting is seen in September-October. The plant is endemic to tropical and subtropical Indian subcontinent, China also in Srilanka and Myanmar. In India, it is a very common plant found from the kumaun to Kanyakumari. It can grow in any temperature and almost all soil types, also has a long lifespan. It is also found in countries such as China, Srilanka and Myanmar ascending upto an altitude of 310 m [3].


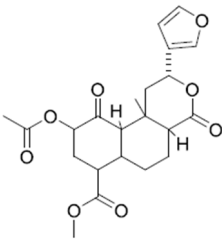
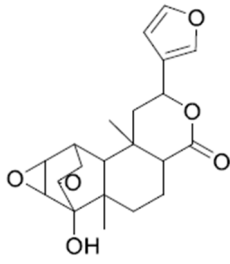
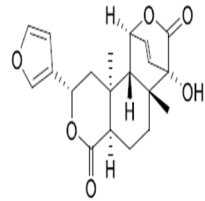
III. BIOLOGICAL AND PHYTOCHEMICAL PROPERTIES

The ayurvedic medicinal significance of *Tinospora* species is ascribed to the presence of various phytochemicals viz, alkaloids, glycosides, diterpenoids, steroids, flavanoids, lignins and various other chemical compounds [4]. Alkaloids like jatrorrhizine in *T. cordifolia* contains antimicrobial properties [5]. The aqueous extract from stem of giloy has revealed the existence of arabinogalactan that possess immunological properties [6]. The alkaloids like Tinocordifolin, Tinosporide and Tinocordifolioside have been identified in stems and leaves which are anti-hypertensive and rich in proteins [7].

T. cordifolia species acts as diuretic and are effective against urinary disorders. Giloy also acts as a memory booster and contain rejuvenating and healing properties. It also helps in liver related problems and prevent hepatic tissue and fibroids. Glycosides like Pregnane and Palmatoside helps in heart related problems. Alkaloids present in giloy reduce glucose level in blood and controls diabetes. It also prevents eye disorders. The stem is rich in Sesquiterpenoids, Alkaloids, Steroids are used as anti-pyretic and antiviral which prevents all kinds of fever and urinary disorders. It is one of the best natural remedy to boost immune system. It helps us fight against various infections and disorders. This plant is useful for treatment of skin related problems, like acne vulgaris, hives, psoriasis and wound healing as it contains anti-bacterial characteristics. A recent research showed that this plant contains alpha-D-glucan which plays a major role in humoral immunity. Its extract also possesses anti-tumor properties which can prevent cancer. This plant extract is diuretic which stimulates bile secretion, prevents digestive disorders, relief burning sensation and jaundice. Its stem contains anti-inflammatory property which is helpful in arthritis. It is said that giloy which grows on neem tree is considered to be double effective as it incorporates remarkable neem healing characteristics. *Tinospora cordifolia* therefore is the immortal elixir of life, it acts as a natural rejuvenator, a potent tonic and can be grown anywhere in any atmosphere.

Table 1: Major phytochemicals present in *Tinospora cordifolia* with their biochemical role.

Plant parts	Active compounds with biological activity and chemical structure			
Stem	<p>Tinocordifolin (Antiseptic)</p> 	<p>Tinocordifolioside (Immunomodulator)</p> 	<p>Ecdysterone (Antiinflammatory)</p> 	<p>Tinosporin (Antiviral)</p> 
Root	<p>Aporphine (Anti-cancer)</p> 	<p>Jatrorrhizine (anti-microbial)</p> 	<p>Isocolumbin (Neurological)</p> 	<p>Tetrahydropalmatine (psychiatric conditions)</p> 

Whole plant	Octacosanol, Heptacosanol (Anti-nociceptive) 	Furanolactone (Vasorelaxant) 	Tinosporide (anti-hypertensive) 	Columbin (Induce apoptosis) 
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IV. MEDICINAL USAGE AND THEUREPETIC PROPERTIES

Ayurveda without this plant may not be possible as it is the main component of various ayurvedic medicines. *Tinospora cordifolia* is beneficial in viral and bacterial fever, diarrhea, jaundice, low immunity, bone weakness, recurrent infections, common flu cold, fatigue, asthma, diabetes, arthritis, cancer, etc. Various parts of the plant are used for medicinal benefits since ancient time by folks and tribals [8].

Table 2: *Tinospora cordifolia* as an Ayurveda medicine for various diseases.

Diseases	Application	Properties
Periodic fever	Giloy stem juice	anti-pyretic, increases platelet count [3]
Diarrhea	Giloy stem juice	enhances the activity of macrophages [9]
Jaundice	Giloy stem juice	Antioxidant [3]
Emaciation	Wearing clothes soaked in giloy juice	hypolipidemic immunomodulatory [10]
Leukorrhoea	Paste of giloy with seeds of piper nigrum	anti-inflammatory [11]
Asthma	Chewing on giloy root or drinking giloy juice	anti-allergic [3]
Skin infections	Giloy leaves paste and drinking juice	anti-aging, anti-bacterial [12]
Insects bite	Giloy leaves paste and drinking juice	anti-inflammatory [3]
Diabetes	Giloy Juice	hypoglycemic agent [13]
Improves digestion	Giloy stem powder	rejuvenating and appetizing properties [14]
Arthritis	Giloy stem powder	anti-inflammatory, anti-arthritic [15]
Cancer	Giloy stem juice	anti-proliferative [16]
Wounds	Paste of giloy leaves	astringent and healing properties [12]

A. Fever

Tinospora cordifolia is beneficial in all kinds of fever including viral and bacterial infections. It has immunomodulatory action which reduces the span of fever and prevents further infections. When it is combined with Ashwagandha and Tulsi, its anti-pyretic action improves and maintains physical and mental strength of patients. For this 6cm giloy stem along with few ashwagandha and tulsi leaves must be boiled in water. When water becomes one-fourth of original, it should be drained and consumed for one week. The prepared extract will boost up the immunity which will help in fighting with microbes.

B. Skin Disorders

Tinospora species is considered good for treating skin conditions like acne, urticaria, scabies, wounds, ringworm infection etc. In some diseases giloy may not work alone so it is then combined with Neem and turmeric for topical application. In Sajawal Sindh district of India, paste of *Tinospora* leaves is applied daily for scabies whereas in District Nawabshah it is taken orally for one week. *Tinospora* leaves are tied as a bandage for ringworm infections in District Thatta (Sindh)

C. Urinary and Digestive Disorders

The juice of roots of *Tinospora cordifolia* is effective in Urinary problems. Its stem juice is stomachic and stimulate bile secretion, prevents burning sensation and vomiting. The juice is also useful in vaginal discharges and diabetes. For ear pain its leaf juice is instilled in ear.

D. Arthritis

In ancient texts of ayurvedic science, *Tinospora* powder along with dry ginger powder is shown to be effective in the treatment of arthritis. The dosage of ginger should be reduced if the person has acidity problems.

There is no side effect reported using *Tinospora cordifolia* in above written dosage. However, the excess dosage of may cause heat sensation in the body or different people can experience different kind of effects according to their body type. In that case it is not advised to continue with these remedies.

In India, *Tinospora cordifolia* is considered as a boon for folks and tribal people because it is effective in fever, jaundice and diarrhea. The Gujjar, Muslim and tribal people of District Jammu use this herb for bone pain [17]. The double effectiveness of giloy on neem tree has also been reported in the Bengal Pharmacopoeia of 18686 when people noticed the effectiveness of this plant as a tonic for its diuretic properties[18]. It is also used in the Unani system of medicine. Giloy is also acknowledged in folk and tribal medicine in different parts of the country {18-22}. It is a miraculous plant which possess anti-allergic, anti-diabetic, anti-pyretic, anti-pasmodic, hepatoprotective, anti-inflammatory, antioxidant, antistressor, antileprotic, antimalarial, antiarthritic, immunomodulatory and anti-neoplastic activities [23-24]

V. CONCLUSION

It can be concluded that *Tinospora cordifolia* (Giloy) can be effective in breaking the chain of viruses that causes infection due to its multiple miraculous properties mentioned above in the paper. It is believed since ages that Ayurveda has the power to treat deadly diseases naturally. These herbs do play a role in boosting up immunity and eliminating virus from the body and significantly treat viral infections. This plant is a powerhouse of various phytochemicals which purify blood, boost immunity and flushes toxins from the body. Consuming it can induce anti-inflammatory and anti-bacterial properties which can cure breathing problems and fever. The compounds present in the herb can block the novel virus from replicating and could be a potent tonic in the treatment process.

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