GOVERNMENT COLLEGE OF PHARMACY, AMRAVATI MAHARASHTRA, INDIA

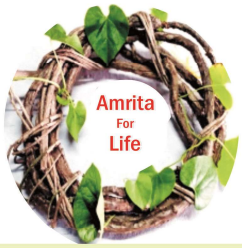
Under National Campaign On "*Tinospora cordifolia* -Amrita for Life"

Theme: *Tinospora cordifolia* (Giloy) for Socioeconomic Empowerment

NMPB, Ministry of AYUSH, India

Sponsored

Information Brochure



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TINOSPORA CORDIFOLIA (GILOY) SAMPLING RAISING

CONTENTS

PREFACE

Due to much importance of the Giloy plant, it is selected by National Medicinal Plants Board (NMPB) for campaign in year 2019. Under this NMPB is promoting cultivation, plantation, conservation, research, value addition awareness programme etc on the *Tinospora* plant throughout the year by the campaign. To aware the local person, the NMPB has sanctioned the budget for booklet on *Tinospora* information. This booklet having all the information about the Tinospora like how to cultivate, research aspects, conservation of plant, therapeutic values, common names in regional languages etc. This booklet also contains the some information in Marathi language also. We GCOPA, Maharashtra deeply appreciate the much needed efforts of the NMPB officials and team to bring out the publication for welfare of general masses, researchers stakeholder, traders, collectors and farmers.

Govt. College of Pharmacy, Amravati, Maharashtra India is organizing NMPB, Ministry of AYUSH, India Sponsored awareness program Under National Campaign On "*Tinospora cordifolia* -Amrita for Life" under Theme: "*Tinospora cordifolia* (Giloy) for Socioeconomic Empowerment" will run A Healthy Campaign For " Every Home Giloy". Giloy is most popular plant from Ayurveda having many health benefits.

Under this campaign Giloy Plants will be freely distributed among students, teachers, government institutes and society along with informative brochure about scientific information of Amrita to create awareness regarding appropriate use and benefits of plant Amrita. Quiz competition will also be arranged to create excitement about plant Amrita among students.

Giloy awareness will be extended to every home though programs in collaboration with Women organizations, NGOs and Professional bodies. Plantlets will be distributed freely to only those who will send selfie with plant on WhatsApp and will take responsibility to grow and care the plant at their home and ready to spread awareness about its benefits in society through social media.

Govt. College of Pharmacy, Amravati Maharashtra highly thankful to NMPB officials and team for sanctioning the project Theme: Tinospora cordifolia (Giloy) for Socioeconomic Empowerment (***Project sanctioned number: Giloe-Campaign/MH-02/2020).***

We extend our sincere gratitude to our patron Honorable Dr. Abhay Wagh, Director, Directorate of Technical Education, Mumbai and Honorable Dr. D. V. Jadhav, Joint director, Regional office-Amravati, Directorate of Technical Education for thier patronage and continued support in GCOPA Activities.

ABOUT COLLEGE:

Govt. College of Pharmacy, Amravati is established in 1996. The beautiful solar passive infrastructure of college building is point of attraction. The building is winner of National Environment awareness award and MEDA award for energy saving infrastructure. College is conducting B.Pharm (60 Seats), Pharm.D (30 Seats), and M.Pharm [Pharmacognosy (15 Seats), and Quality Assurance (15 Seats)] courses. The college has approved research laboratory affiliated to S. G. B. Amravati University for doctoral program (10 Seats). The college is NBA accredited from 2013 to 2016. College library is having best collection of pharmacy and medicine books, national & international journals. Well equipped laboratories are strength of our institute.

ABOUT NMPB

The National Medicinal Plants Board (NMPB) set-up in November 2000 by the Government of India has the primary mandate of coordinating all matters relating to medicinal plants and support policies and programmes for growth of trade, export, conservation and cultivation. The Board is located in the Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy (AYUSH) of the Ministry of Health and Family Welfare.

ACRONYMS AND ABBREVIATIONS

A.D- Anno Domini, API-Ayurvedic Pharmacopoeia of India, AYUSH -Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy; CCRAS - Central Council for Research in Ayurvedic Sciences, FYM -Farm Yard Manure, HPI - Homoeopathic Pharmacopoeia of India , NMPB - National Medicinal Plant Board, SPI - Sidhha Pharmacopoeia of India, TLC - Thin Layer Chromatography, UPI- Unani Pharmacopoeia of India, WHO -Wrold Health Organization

BOTONICAL NAME : *Tinospora Cordifolia (Willd.)* Miers ex Hook. F. & Th.

FAMILY : *Menispermaceae*

1. INTRODUCTION

In ayurvedic medicine, *T-Cordifolia* (Willd.) Miers ex Hook.F. & Thomas is known as "Guduchi" and is considered to be one of the most divine herbs. It is distributed throughout tropical Indian subcontinent and China, Ascending of 300 m. in Hindi, the plant is commonly known as Giloy, which is a Hindu mythological term that refers to the heavenly elixir that have saved celestial beings from old age and kept them externally young.

Guduchi is widely used in veterinary folk medicine/ayurvedic system of medicine for its general tonic, antiperiodic, anti-spasmodic, anti-inflammatory, antiarthritic, anti-allergic and anti-diabetic properties. The plant is used in ayurvedic, "Rasayanas" to improve the system and the body resristance against infections hence the plant is a natural immune booster. The root of this plant is known for its antistress, anti-leprotic and anti-malarial activities.

Tinospora is supposed to be the nectar of God Indra, that's why, it is considered as Amrita (pious liquid or nectar). It is used in the treatment and cure of many diseases and known as panacea for all the diseases and disorders. Giloy is useful in the promotion and restoration of health and make you ready for holistic well-being. It is helpful is stress and anxiety and having immunomodulatry effects. Besides, it has many unknown health benefits and uses; it is also very useful in Dengue because it helps to increase the count of platelets.

India is home to diverse range of medicinal plants which have been the mainstay of traditional health care practices across all societies for centuries. Medicinal plants form the major resource base of our indigenous health care tradition or systems across the globe.

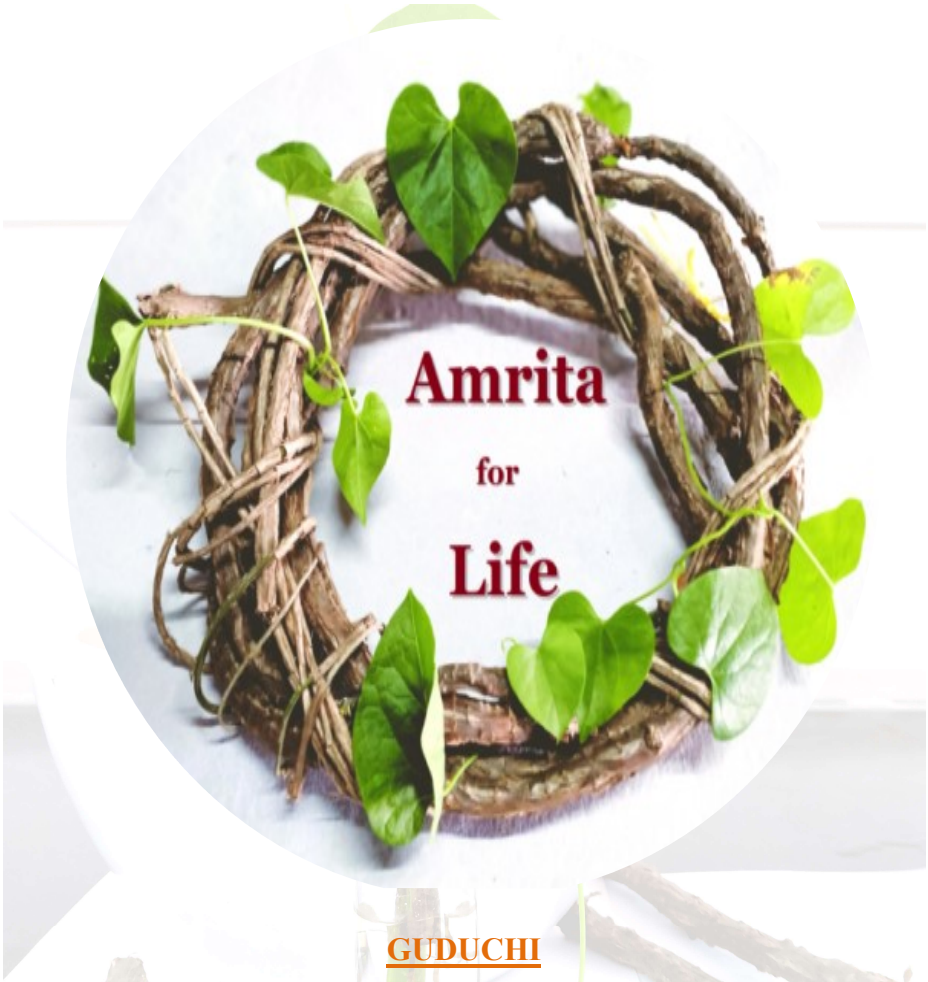
India also has very strong traditional health care practices that are represented by the Indian system of medicine like Ayurveda, Siddha, Unani and Homoeopathy. A very significant population is having the medicinal plants in primary health care as well as source of medicine, so it can be mentioned that the medicinal plants are an integral part of people's life. Also, the plant species which generally used as health promoters are categorized as **'Health Plants'.**

The universal heath burden of bacterial or bacterial resistance due to the indiscriminate and prudent use of antibiotics, which on the way produce antibiotic resistance, the number of deaths due to thr failure of antibiotic treatment is becoming more nowadays. Global consumption of antibiotics is more than 70 billion doses per year. The WHO's statistics also show that about 490,000 people have been infected with multi-drug-resistant tuberculosis in year 2016. It is estimated that due to multi-drug-resistance tuberculosis in year 2016. It is estimated that due to multi-drug-resistance, by 2050, there is a possibility of more than 10 million deaths per year, more than the cancer related deaths (8.2 million per year) in the same period.

Early research estimates that due to antimicrobial resistance, the financial burden can reach 100 trillion dollars annually by the year 2050. Figures are large but nothing is clear that antibiotic resistance or anti-microbial resistance is one of the major problems of 21st century public health concerns. In such a case, it is very necessary to find effective and reliable options to manage the elimination of multi-drug-resistant pathogens and the malignant fatal infections caused by them. Antibiotic-resistance is a problem across the world, but in India it is more alarming as there is wide indiscriminate use of antibiotics. Statistics of the year 2010 show that India was the world's largest consumer of antibiotics for human health and is still today. In India, there is more consumption due to the poor health indicator of public health, increasing personal income and availability of cheaper antibiotics without any prescription.

India is the most major country affected by viral diseases like dengue, Chikungunya etc. Presently, about 40% of the World's population is at risk of these diseases and there are 50-100 million cases reported every year. An estimated 50000 people with severe dengue require hospitalization every year and about 2.5% of those affected die. Almost 1.3 million suspected Chikungunya fever cases were reported in India. For viral and other infections, there is almost no treatment available and whatever is there have a lot of side effects. In this condition, there is need of hour to introduce a preventive and health promotive substance measure for public.

For this purpose, *'Amrita' or Tinospora cordifolia,* a commonly available and well defined in the ancient texts and well researched medicinal plant in the context of immune-modulator can be established as preventive and health promotive measure. Also, the recent studies shows that the chemical constituents of *Amrita/Guduchi (T.cordifolia)* are having self-antimicrobial properties which are helpful in breaking antibiotic-resistance so, it can be considered as alternate of modern antibiotics and called as **"Herbal Antibiotics".**



GUDUCHI

Amrita *(Tinospora cordifolia)* is one of the most highly valued and common herb in Indian system of medicine. It has a rich history in the Indian Sub-continent where it has been used and written about for thousands of years. It is known universally as *"Guduchi or Giloe"* (one which protects the body). The Sanskrit and Hindi name Amrita is derived from ancient Hindu scripture where Amrita was used to bring the dead back to life and keep away from growing ill and old.

Bhav-prakash Nighantu provides mythological description about the origin of *Guduchi/Amrita* from the drops of Divine nectar *(Amrit)* which was sprinkled on the dead bodies of the monkeys to make them alive who were died during the battle between, *Rama and Ravan.* Few drops of the nectar from the bodies of the monkeys fell on the ground and

from them, *Guduchi* sprouted. As per classical Ayurvedic texts word *Amrita* is referred as:

"अमृताव ली -अमृतबद -त या ...."
(The creeping plant that endows life by destroying disease)
"गुडूची -गुड रक्षणे "(निघन्तू आदर्श)

(It provides protection against many diseases). Many references of *Guduchi* are found in the ancient text in context of promotion of health and treatment of diseases. In order to identify the *Guduchi* plant, *Nighantu* provides clarifications on its identity and also provides its synonyms, properties, actions, indications in various diseases.

"गुडूची मधुपर्णी स्यादमृताऽ मृतवल्लरी
छिन्नI छिन्नरुहा चिन्नोद्भवा वत्सादनीति च ॥६॥
जीवन्ति तन्तिका सोमा सोमवल्ली च कुण्डली ॥
चकलक्षणिका धीरा विशल्या च रसायनी ॥
चंद्रहासा वयस्था च मणडली देवनिर्मिता ॥७॥
गुडूची कटुका तिक्ता स्वादुपाका रसायनी ॥
संग्राहिणी कषायोष्णा लध्वी बल्याऽग्रिदीपनी॥
दोषत्रयामतृडदाहमेहकासांश्र पाण्डुताम् ॥८॥
कमलाकुष्ठवातास्रज्वरकुमिवमी न्हरेत ॥
प्रमेहश्वासकासार्श: कृकृच्छ्रहृद्रोगवातनुत ॥९॥

The above said *Shloka* from *Bhav-prakash Nighantu* provides the description of *Guduchi* in terms of its synonyms like *Maduparni*, *Amruta, Amrtavallari, Chinnaruha, Chinnodabava, Vatsadani, Jivanti, Tantrika, Soma, Kundali, Chakralakshinika* etc. and its properties i.e. Guduchi has *Tikta* (bitter) and *Katu* (Pungent) *Rasa, Madhur Vipaka*, *Sangrahini, Ushna Veerya, Laghu, Balya, Agni-deepana*.

It alleviates all three Doshas (Tridosha-shamaka) and Aam. It cures thirst, burning sensations, Urinary diseases including glycosuria, cough, anaemia, jaundice, skin diseases vata-rakta, fever, worm infestation and vomitings. It also cures twenty types of urinary diseases, dyspnea, cough, hemorrhoids, and difficulty in micturition, cardiac problems and vata diseases. *Guduchi/Amrita* is also mentioned as ***Rasayana.***

Rasayana:

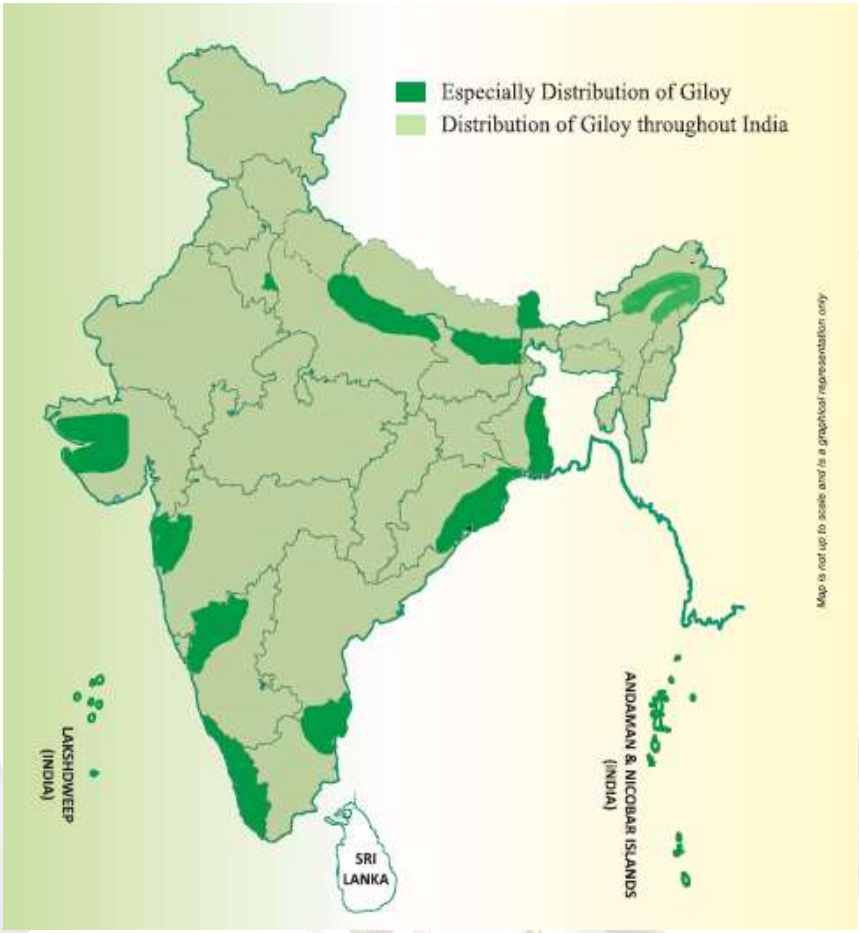
One among the eight branches of *Ayurveda* is *Rasayana.* It augments the concepts and applications of *Rasayana* i.e. which roots out morbidity, destructive of diseases, checks disease process, corrects the various body channels, restores the nourishing and promote the health. Rasayana not only alleviates or cures diseases but also maintains the intactness of body components and enhances the life expectancy.

स्वस्थस्योर्जस्करं यत्तु तद्वृष्यम् तद्रसायनम् ॥
दीर्घमायुः समृतिं मेधामारोग्यां तरुणं वयः ॥
प्रभावर्णस्वरौदार्यं देहेन्द्रियबलं परम् ॥
वाविसद्धि प्रणतिं कान्तिम् लभते ना रसायनात् ॥
लाभोपायो हि शस्तानां रसादीनां रसायनम् ॥
(चरक संहिता)

Rasayana means the way to attain excellent Rasa i.e., to attain longevity, memory, intelligence, youthful age, excellence of lusture, complexion and voice, optimum strength of physique and sense organs, successful words, respects, ability and brilliance along with freedom from ailments. The stem part of the plant is used for medicinal purpose and it is main ingredient of various formulations in different traditional system of Indian medicines or ***Ayurvedic, Siddha & Unani*** (ASU) system of medicines.

2. DISTRIBUTION

It is found throughout India especially tropical area, mainly in state of India such as Arunachal Pradesh, Assam, Bihar, Delhi, Gujarat, Goa, Karnataka, Kerala, Maharashtra, Odisha, Sikkim, Tamil Nadu, Uttar Pradesh, and West Bengal.



3. VERNACULAR NAMES

English	*Gulancha tinospora, Indian tinospora, Moon creeper, Heart leaved moon seed, bile killer, Tinospora.*
Hindi	*Gulancha, Giloy, Amrita, Gulneha, Gulbel, Guloh, Gurcha.*
Bengali	*Golancha, Giloe, Gulancha*
Gujrathi	*Gulvel, Galo*
Malyalam	*Amrutavalli, Chitamruthu, chitamrith, Amrtu, Amritavalli, Amrthu, Siddamirth*
Marathi	*Gulvel, Amrita, Gulvel, Amritavalli*
Punjabi	*Gilo, Gilo-gulanch, Garham Palo*
Tamil	*Amrutavalli, Chintilikkoti, Chindil, Seendal, Seendil kodi., Silam, Kunali*
Telgu	*Tippatige, Dussiramu Thippateega, Amruta*
Kannada	*Amaradaballi, Amrutaballi, Amrutaballi, Agniballi*
Sanskrit	*Jivantika, Vatsahani, Guduchi, Amritha Druma*
Arabic	*Gilo*
Assam	*Siddhilata, Amarlata, Shaguni-lata, Geloi, Hoguni-lot, Amar-lata.*
Kashmiri	*Amrita, Gilo*
Oriya	*Gulochi, Gulancha*
Urdu	*Gurch, Guluncha*
Manipuri	*Ningthou Khongli*
Classical Names	*Guduchi, Madhuparni, Amrita, Amritavallari, Chhinna, Chhinnaruha, Chinnobhava, Vatasadani, Tantrika, Kundalini, Chakralakshanika, Somavalli, Dhira, Vishalya, Rasayani, Chandrahasa, Vayastha, Mandali, Devanirmita.*

4. SPECIES OF TINOSPORA

Synonyms:

- *Menispermum crispum* Linn.
- *Menispermum rimosum* Blanco
- *Cocculus cordifolius* Walp.
- *Cocculus villosus* DC.
- *Cocculus crispum*
- *Menispermum tuberculatum*
- *Menispermum verrucosum*
- *Tinospora tuberculata*
- *Tinospora rumphii*
- *Tinospora crispa* (L.) Miers ex Hook. f. & Thoms

The 34 species are distributed in tropical Africa, South –East Asia, Indo Malaya region and Australia of which 3 species have been recorded from India. According to Indian medicinal plant, the following species are used medically.

- *T. bakis* Miers – In Senegal
- *T. Cordifolia* Miers – In Indo – China
- *T. crispa* Miers – In Indo –China
- *T. malabarika* Miers – In Indo – China
- *T. rumphii* Boerl - Java

Out of these, only three species of *Tinospora* found in India namely *Tinospora cordifolia*, *Tinospora sinensis* and *Tinospora crispa*. They are mostly found in tropical and subtropical area of India.

***Tinospora Cordifolia* Miers Syn. Menispermum cordifolium (wild)**
A glaborous climbing, succulent shrub; bark grey, corky, lenticelled, exfoliating in papery peelings. Aerial roots arise from nodal scars of branches. Leaves membranous, broadly cordate, 8-12 cm long, about as broad usually with broad sinuses at base, acute at apex, 6-7 nerved, petioles 3.5 – 9.0 cm long swollen at base. Flowers yellow in slender racemes dropping from axils of the leaves or naked stem. Stem and branches are specked with white vertical lenticels, Male flowers clustured. Female flowers are usually solitary. Drupes crimson colored when ripe, ovoid, succulent with glutinous pulp. Seeds are reniform.

5. PHARMACOGNOSTICAL DESCRIPTION

Morphology:
Drug occurs in pieces of varying thickness ranging from 0.6-5 cm in diameter, young stems green with smooth surfaces and swelling at nodes, older ones show a light brown surface marked with warty protuberances due to circular lenticels; transversely smoothened surface shows a radial structure with conspicuous medullary rays traversing porous tissues, taste bitter.

- **Stem:** The stem of *T cordifolia* is rather succulent with long filiform. Fleshy aerial roots from the branches with a thick, soft, warted bark.
- **Bark:** The bark is creamy white to grey, deeply left spirally, the space in between being spotted with large rosette like lenticels.
- **Leaf:** The leaves are membranous and cordate at the base. Leaves alternate, on long flexnose petioles, spreading 2-4 inches long, roundish oval, entire, acute at the apex, quite smooth and thin. The leaves have bitter taste and distinct odour, when the leaves seen in bulk, they look intensely green, mature leaves show yellowish to green colour.
- **Flower:** The flowers are small and yellow or greenish in colour. In auxiliary and terminal racemes or racemose panicles, the male flowers are clustered and female are usually solitary.
- **Fruits:** 3 or less usually less by abortion shortly, stalked, subglobose drupes. The drupes are ovoid, glossy, succulent, red and pea sized. Flowers grow during the summer and Fruits during the winter and fruits are fleshy.

Microscopy (Male and Female Plants)

- Though it is well known that the plant is dioecious no information on macromicroscopical features associated with gender is available in literature. Observations on plant morphology showed that leaf shape and petiole length can be used to distinguish male and female plants even in vegetative state. As far the number of flowers are concerned female flowers are few and sparse and male flowers are profuse and numerous.

- Anatomical investigations revealed other features to distinguish between male and female plants. The outer margin of petiole of male plant is circular with one side flattened but reniform in female plants.

- Thus it is possible to differentiate between male and female plants of *T. cordifolia*, on the basis of certain morphological characters. These can also be differentiated microscopically on the basis of distribution pattern of tissues in cortical region of stem where male cell with more angular thickening than female and hypodermal regions is very broad in male (approx. 3000-3200) than female (approx. 2000-2500).

- Quantitative surface study of leaves also showed significant variation like in female plant there were wavy epidermal cells on lower surface but absent in male plant, however number of trichome, stomatal number, epidermal cells, vein termination and vein islets numbers are more in female plants. Transverse section of stem also highlighted the differences between male and female plants which are also supported by quantitative anatomical data. Female plant having more mucilage canals (8-15/mm2) than male (2-4/mm2) and also starch grains in female (30 µm) are large in size than male (10 µm).

- The difference in the level of tinosporoside in male and female was significant. It is also noteworthy that the yield of extract was also more in female plant than male.

Identity, Purity and Strength

- For dried drug
- Total ash : Not more than 2 %
- Acid-insoluble ash : Not more than 16 %
- Acid-insoluble ash : Not more than 3 %
- Alcohol-sol. extractive: Not less than 3 %
- Water-sol. extractive: Not less than 11 %

For fresh drug

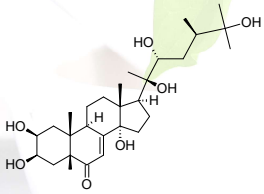
- Foreign matter: Nil
- Moisture content: 75%

6. ACTIONS AND CHEMICAL CONSTITUENTS

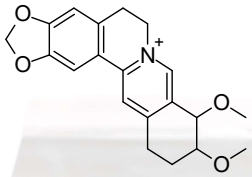
Actions The stem is bitter, astringent, sweet, thermogenic, anodyne, anthelmintic, alterant, antiperiodic, antispasmodic, antiinflammatory, antipyretic, antiemetic, digestive, carmiative, appetiser, stomachic, constipating, cardiotonic, depurative, haematinic, expectorant, aphrodisiac, rejuvenating, galacto-purifier and tonic.

UsesIt is useful in burning sensation, hyperdipsia, helminthiasis, dyspepsia, vomiting, flatulence, acid gastritis, jaundice, hemorrhoids, meno-metrorrhagia, intermittent fevers, viral fevers, inflammations, gout, cardiac debility, skin diseases, leprosy, erysipelas, anaemia, cough, asthma, general debility, seminal weakness, urinary disorders, spenomegaly, rheumatoid arhritis, filaria, eye diseases,. The whole plant, well ground, is applied on fractures and skin disorders.

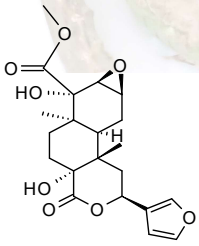
Chemical Constituents Tinosporine, tinosporon, tinosporic acid, tinosporol, tinosporide, tinosporidine, columbin, chasmanthin, palmarin, berberine, giloin, giloinisin, 1,2- substituted pyrrolidine, a diterpenoid furanolactone, 18-norclerodancediterpene-O-glucoside, aryltetrahydrofuranolignan, octacosanol, nonacosan-15-one and –sitosterol. Cordifolide, unosporin, heptacosanol, cordifol, cordifolon, meganoflorine, tembertarine, cardiofoliosides A and B, phenolic lignan-3-(, 4-dihydroxy-3-methoxybenzyl)-4-(4-hydroxy-3-methoxybenzyl)-tetrahydrofuran, arabinogalactan (various parts)



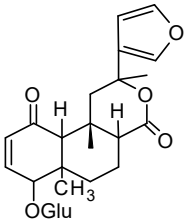
Makisterone A



Berberine



Tinosporin A



Tinosporide

Active components	Compounds	Source	Reported biological effects in animals	In human cell lines
Alkaloids	Berberine, Choline Palmatine, Tembetarine Magnoflorine Tetrahydropalmatine Tinosporin Isocolumbin Tetrahydropalmatine Jatrorrhizine Aporphine alkaloids, N-formylasimilobine 2-O-β-D-glucopyranosyl-(1 2)-β-D-glucopyranoside (tinoscorside A, 1) Aporphine alkaloids, N-acetylasimilobine 2-O-β-D-glucopyranosyl- (1 2)- β-D-glucopyranoside (tinoscorside B, 2)	Stem root	Isoquinoline alkaloids have anti-cataract potential in rats. Anti-oxidant activity in mice, anti cancer in ehrlich ascites carcinoma (EAC) mice, hypoglycemic activity in RINm5F rat insulinoma cell line	Anti – cancer, anti-viral infections, inflammation and immuno-modulatory roles. Neurological, psychiatric conditions, anti dibetes
Glycosides	18- norclerodane glucoside Furanoid diterpene glucoside Tinocordiside Tinocordifolioside Cordioside Palmatosides	Stem	Cytotoxic action, protection against iron-mediated lipid peroxidation of rat brain homogenate, anti-oxidant and hydroxyl radical scavanging activities in Swiss albino mice	Treats neurological disorders like ALS, Parkinson's dementia, motor and cognitive deficits and neuron loss in spine and hypothalamus. Immunomodulation: IgG increase and macrophage activation. Inhibits NFκB and act as nitric oxide scavengers to show anti-cancer activities
Diterpenoid lactones	Furanolactone Clerodane derivatives [(5R, 10R)-4R-8R-dihydroxy-2S-3R: 15,16-diepoxy-cleroda-13(16), 14-dieno-17,12S: 18,1S –	Whole plant	Chemopreventive potential in diethylnitrosamine (DEN) induced hepatocellular carcinoma (HCC) in rats	Vasorelaxant: relaxes Norepinephrine induced contractions. Inhibits Ca^{++} influx. Anti-inflammatory,

	dilactone] Tinosporides			anti-microbial, anti-hypertensive, anti-viral. Induce apoptosis in leukemia by activating caspase -3 and bax, inhibits bcl-2
Steroids	B – sitosterol Hydroxy ecdysone Ecdysterone Giloinsterol	Stem aerial parts	Beta – Ecdysone shows anabolic and anti-osteoporotic effects in mammals	IgA neuropathy glucocorticoid induced osteoporosis in early inflammatory arthritis, induce cell cycle arrest in G2/M phase and apoptosis through c-Myc supression. Inhibits TNF-α, IL-1β, IL-6 and COX-2. Activities NF-κB
Aliphatic compounds	Octacosanol Heptacosanol Nonacosan -15 –one dichloromethane	Whole plant	Radiosensitizing activity in ehrlich ascites carcinoma mice. Modulating the pro – inflammatory cytokines. Inhibits proliferation of endothelial cells and Ehrlich ascites tumor cells	Anti-nociceptive and anti-inflammatory. Protection against 6-hydroxydopamine induced parkinsonism in rats. Down – regulate VEGF and inhibits TNF-α from binding to the DNA
Others	3 (a,4-di hydroxy-3-methoxy-benzyl)-4-(4-hydroxy-3-methoxy-benzyl)-tetrahydrofuran Jatrorrhizine N-trans-feruloyl tyramine Giloin Tinosporic acid	Root whole	Insulin-mimicking and insulin releasing effect. Enhanced phagocytic activity of milk polymorphonuclear cells in bovine subclinical mastitis	Protease inhibitors for HIV and drug resistant HIV. Tyramine is a neuro – modulator. Used to treat anxiety and depression by inactivating neurotransmitters

7. RESEARCH ASPECTS/ACTIVITIES

Many research works have been carried out on *T. cordifolia* with different activities i.e. adaptogenic, antineoplastic, antidiabetic, anti-bacterial, miscellaneous. But here some research works have been mentioned which are related to this study.

- **Immunomodulating Activity:** Syringin, Cordiol, Cordioside and Cordifoliside were found to possess immunopotentiating activity. *Tinospora cordifolia* was found to have immunomodulating activity

- **Anti-inflammatory Activity:** The aqueous extract of *Tinospora cordifolia* showed significant antiinflammatory activity in rats against acute and chronic type of inflammation induced by carrageenin and the activity resembles that of NSAIDS. Singh et al. have shown that the aqueous suspension of the alcoholic extract of the stem of *T. cordifolia* provided protection to liver damage induced by administration of carbon tetrachloride in mice, rats and rabbits. The decoction of *T. cordifolia* showed anti-inflammatory activity on carrageenin induced hind pawedema in rats

- **Hepato-protective activity:** A study of hepato-protective activity *T. cordifolia* on kupffer cell function using carbon clearance test as a parameter showed significant improvement in kupffer cell function and a tremd towards normalization. *Tinospora cordifolia* appears to improve surgical outcome, in patients with malignant obstructive jaundice by strengthening the host defences. Thus the Ayurvedic use of the plant in liver ailments is justified although the active principle is yet to be isolated and identified.

- **Antistress activity:** The ethanolic extract of *T. cordifolia* exhibited significant anti stress activity at 100 ml/kg comared with diazepam at 2.5 mg/kg. The ethanolic extract of *Tinospora cordifolia* at a dose 100 mg/kg was shown to induce a marked protective action against 8 hour restraint stress induced ulcerization. Sharma and Khosla have reported that alcoholic extract of *T. cordifolia* roots possessed normalizing activity against stress induced changes in nor epinephrine, dopamine, 5-HT and 5 hydroxyindolacetic acid levels of experimental rats

- **Anti histsaminic activity:** *T. cordifolia* stem extract significantly decreased bronchospasm induced by 5% histamine aerosol in Guinea pig and permeability in mice. It also reduced the no. of disrupted mast cell in rats.

Therapeutic Evaluation

- A composite herbal drug containing *Tinospora cordifolia, Withania somnifera, Myristica fragrans, Eclipta alba, Bergenia ligulata, Asparagus racemosus* and *Tribulus terestris* has been found to be efficacious in 30 patients of calculi. It has been reported that the calculi were discharged through urine as calcium carbonate or calcium oxalate crystals within 15-30 days. Other symptoms associated with calculi were also releived of.

- A compound preparation composed of *Cinnamommum tamala, Aegle marmelos, Gymnema sylvestre, Pterocarpus marsupium, Azadirachta indica, Tinospora cordifolia* and *Trigonella foenum – graecum* was tried in 20 patients of diabetes. Dose was determined on the basis of conditions of patients as 2 capsules t.d.s to insulin dependent cases, 2 capsules b.d to moderate cases and 1 capsules t.d.s to mild diabetes for at lease 3 weeks. It was concluded that the drug provides a total beneficial therapy in all types of diabetes and tends to increase insulin secretion from islets of pancreas.

- A compound proprietary medicine containing *Mucuna prureins* (seeds), *Tinospora cordifolia* (stem), *Withania somnifera* (stem), *Glycyerriza glabra* (stem), *Myristica fragrans* (fruit) and *Tribulus terrestris* (fruit) was administered orally (2 tablets b.d.) to 56 patients of sexual dysfunction for 4 weeks. An excellent improvement in errection, duration of coitus and ejaculation and post-coital satisfaction has been reported. In another trial sixty cases with specific sexual problems were treated with the same medicine in dose of 2 tablets twice a day and its effects on sexial performance of two third cases showed subjective improvement ranging from 25% to 100%. The remaining one third was refractory to the treatment.

- Efficacy of a proprietary herbal preparation consisting of *Eugenia jambolana, Tinospora cordifolia, Pterocarpous marsupium, Ficus glomerata, Momordica charantia* and *Occimum sanctum* was evaluated on 28 cases of persistant post prandial blood glucose levels was recorded. A clinical trial was taken on 25 patients of type II diabetes to study the adjuvant effect of a herbo-mineral proprietary preparation in which *T. cordifolia* was one of the constituents.

The drug contained 19 ingredients in which 13 were minerals and 6 were herbal. The drug was administered in the doses of 1-2 tablet t.d.s in addition to the regular sulphylureas over a period of 6 weeks. The herbo-mineral preparation showed improvement in glycaemic parameters, Viz., fasting food sugar levels, post lunch blood sugar levels and Fructosamine levels. It also improved fasting and post prandial hyperglycaemic control. This indicates that the proprietary medicine is useful adjuvent in poorly controlled type II diabetes.

- In a clinical trial of 20 patients of infective hepatitis were treated with tablets prepared from stem of *T. cordifolia.* Four tablets (500 mg each) were administered thrice daily with fresh water for 4 weeks. The majority of the cases i.e 15 cases (75%) were cured and 5 cases (25%) were improved.

- 34 cases suffering from amvata (rheumatoid arthritis) were treated with Suddha guggulu and Guduchyadi kwatha for 6 weeks at Regional Center, CCRAS, Jaipur. The cases were assesed weekly and clinical observations made by the physicians. The results noted after 6 weeks showed that 27 cases had marked relief and 4 cases moderate relief.

8. TRADE AND COMMERECE

- *Annual Trade of Tinospora cordifolia is*: 1000 -2000 M.T (Source: Medicinal Plants in India: An assessment of their demand and supply by Goraya and Ved. 2017)

- ***Average Market Price of Last 6 months***: Tinospora cordifolia (dry stem) – 34.54 rs/kg (Source: Collected by FEDMAPS – Federation of Medicinal and Aromatic Plant Stakeholders)

Value added products can be prepared by farmers/ women groups or students and can be start-up:

- Powder/churna of whole plant, stem, leaves or fruits
- Kadha/Juice of whole plant, stem, leaves or fruits
- Drops of concentrate of whole plant, stem, leaves or fruits
- Candies of whole plant, stem, leaves or fruits
- Pickles of fruits
- Sauces of leaves, stems of fruits

9. SUBSTITUTES AND ADULTRANTS

The commonest species of Tinospora with which T. cordifolia is likely to be substituted or adultrated are T. sinensis (Lour.) Merr. And T. crispa (Linn.) Miers ex Hook.f & Th. The extract of Guduchi (Guduchi satva) is adulterated with powder/flour of potato/sweet potato/arrowroot/ banana.

10. PROPAGATION AND CULTIVATION

The plant is sometimes cultivated as ornamental and is easily propagated by stem cuttings. It is perfectly suited to and grows well in almost any type of soil and under varying climatic conditions. It is specially trained to grow on Neem tree; thereby it is supposed to possess more medicinal value. It can also be grown by sowing seeds in monsoon, but the growth of seedlings is very slow as compared to plants grown by cuttings.

Climate and Soil: The plant grows in subtropical andf tropical climate. Light medium sandy loam soil rich in organic matter, and with adequate drainage, is suitable for its cultivation. Aiat does not toletrate high rainfall or water logged conditions.

Propagation Material: Stem cuttings are the best planting material for raising commercial crop. The cuttings can be obtained from mother plants in June –July. The plant can also be raised using seeds. Seeds take almost more than double the time to mature and yeild the same quantity of drug.

Agro – techniques

- **Nursery Techniques: Raising Propagules:** The stem cuttings are sown directly in the field. Cuttings are obtained from older stems with nodes. Cuttings should be sown within 24 hours of their removal from the mother plant. Meanwhile, they should be half-dipped in water vertically.
- **Propagule rate and pretreatment:** About 25000 cuttings are reqiured plantation in 1 hectare of land. No specific treatment is required before sowing.

Planting in the Field

- **Land preparation and fertilizer application:** The land is ploughed, harrowed, and made weed-free. A basal dose of FYM (farmyard mannure) @ 10 tonnes per hectare and half dose of ntrogen (75kg) are applied at the time of land preparation.
- **Transplanting and optimum spacing:** The stem cuttings with nodes are sown directly in the field. An optimum spacing of 3m × 3m is recommended for better yield. The plant requires support to grow, which can be provided by raising wooden stakes or trellis. Already growing shrubs or trees can also support the plant.
- **Intercropping system:** Bring a large twiner, it needs a host to twine and covers the host in a very short period. If the stem cuttings with aerial roots are thrown over trees, they start growing and strike roots in ground.
- **Inter-culture and maintenance practices:** Follow up dose of 10 tonnes of FYM with 75 kg nitrogen (20% nitrogen content) is recommended. About two to three weedings and hoeings are required for good growth of twiner. The inter-row spaces between spaces plants should be kept weed free by frequent weeding and hoeing, as the plants may get suppressed by weeds, especially during early stages of growth.
- **Irrigation practices:** The crop is grown under rain fed conditions. However, occasional irrigation during extremes of cold and hold weather may help the crop survive adverse conditions.
- **Disease and pest control:** No serious insect pest infection or disease has been reported in this crop.

11. AMRITA IN AYURVEDA

Guduchi was used as a medicinal purpose from Vedic kala and is presented here in chronological order

- ***Vedic kala***
- ***Samhita kala***
- ***Nighantu kala***
- ***Adhunik kala***

Vedic Kala:

In Atharvaveda, Sayanai defined about the traditional practice in which Guduchi was used to avoid snakes and scorpions.

Nighantu Kala:

The main purpose of Nighantu is that which gives a comprehensive knowledge from all aspects of a particular subject, especially plants through synonyms.

Nighantu Kala was the platinum period for the development of the Dravya Guna. The era of Nighantu has provided the evidence of the systematic & scientific understanding of the drug. In this period the drugs were explained with their synonyms, Rasa Panchaka and their utility in different disease. The descriptions regarding actions and indications of Guduchi have been mentioned in various Nighantus are as follows:

- *Ashtanga Nighantu: (Vahatacharya 8th century A.D)*
- *Dhanvantari Nighantuix: (Mahendra bhogika 10-13th century A.D)*
- *Nighantu Shesha (Hemchandra suri 11th century A.D)*
- *Sodhala Nighantu : (Sodhala 12th century A.D)*
- *Mandanpal Nighantu: (Mandanpal 14th century A.D)*
- *Kaiyadeva Nighantu: (Kaiyadeva 15 century A.D)*
- *Raj Nighantu : (Pandit Narhari 15th century A.D)*
- *Bhavaprakasha Nighantu : (Bhavamishra 16th century A.D)*
- *Saligrama Nighantu: (Lala Saligrama Vaishya 19th Century A.D.)*

Adhunika kala:

- *Abhidhana Ratnamala : (Acharya P.V. Sharma 20th century A.D)*
- *Shankara Nighantu: (Pt. Shankardatta Gaur 20th Century A.D)*
- *Nighantu Adarsha: (Bapal al Vaidhya 20th century A.D)*

Types of Guduchi:

Samhita has not mentioned about the varieties of *Guduchi*, where as *Mahendra Bhogika* of *Dhanwantari Nighantu* has identified two the varietires of the *Guduchi* the Botanical identification of which are –

1. *Guduchi – Tinospora cordifolia* (wild)
2. *Kandodbhava Guduchi- Tinospora sinensis* or *Tinospora malabarica*
3. *Padma Guduchi*- Mentioned by *Gangadhara*

Classification

Table showing category of Guduchi according to their usage and actions in different Ayurvedic texts:

Samhita/ Nighantu	***Gunas/Varga***
Charak Samhita	*Sandhaniya, Tripthighna, Sthanyashodana, Snehopaga, Trishnanigrahana, Dahaprashamana*
Sushruta Samhita	*Aragwadadi, Shyamadi, Ppatoladi, Kakolyadi, Guduchyadi, Vallipanchamoola*
Ashtanga Hridaya	*Tiktavarga, Patoladigana, Guduchyadi, Aragwadadadigana,*
Bhavaprakesha Nighantu	*Guduchyadi Varga*
Dhanvantari Nighantu	*Guduchyadi Varga*
Raja Nighantu	*Guduchyadi Varga*
Kaiyadeva Nighantu	*Aushadi Varga*
Nighantu Aadarsha	*Guduchyadi Varga*
Shodala Nighantu	*Guduchyadi Varga*
Mandanpal Nighantu	*Abhayadi Varga*
Priya Nighantu	*Pippalyadi Varga*

Ayurvedic Preparations:

- ***Rasa*** - *Tikta, kashaya*
- ***Guna*** - *Guru, Snigdha*
- ***Veerya*** - *Ushna*
- ***Vipaka*** - *Madhura*
- ***Doshaghnata***- *Tridoshashamaka*

Rogaghnata: *Kushtha, Vatarakta, Netraroga, Trishna, Daha, Chhardi, Aruchi, Agnimandya, Shoola, Yakridvikara, Kamala, Amlapitta, Pravahika, Atisara, Raktatisara, Grahani, Krimi, Arsha, Hriddaurbalya, Pleehavriddhi, Vastishotha, Raktavikara, Amvata, Pndu, Shwasa, Kasa, Shukradaurbalya, Prameha, Madhumeha, Mootrakrichchhra, kustha, visarpa, Twagroga, Phiranga, Jawara, Vishamjwara, Jeernajwara.*

Karma: Vedanasthapana, Kushthaghna, Trishnanigraha, Chhardinigrahana, Deepana, Panchana, Pittasaraka, Anulomana, Sangrahi, Krimighna, Hridya, Raktashodhaka, Raktavardhaka, Kaphaghna, Vrishya, Balya, Pramehahara, Mootrajanana, Jwaraghna, Dahapraprashamana, Rasayana

Doses:

- Decoction: 50 – 100 ml
- Powder : 3-6 gm
- Satva (Starch from roots and stems): 1-2 gm
- Juice (Swarasa): 5 -10 ml

Formulations and Preparations

Guduchyadi Churna, Guduchyadi kvatha, Guduchyadi lauha, Amritarishta, Guduchi taila, Guduchyadi taila, Sarvajwarahara lauha, Dashamularishta, Kaishore guggulu, Pathyadi kvatha, Sanjivani vati, Kantakari avaleha, Chyavanprasha, Guduchi satva, Amritottara kvatha churna, Chinnodbhavadi kvatha churna, Brihat guduchi taila, Stanyashodhana kashaya churna, Panchanimba churna, Brihanmarichadya taila, Guduchi ghrita, Amritaguggulu, Amritashtaka churna, Bhadramustadi kvatha

- ***Churna*** - *Rasayana churna, Sudarsana churna*
- ***Kwatha*** - *Guduchyadi kwatha, Punarnavastaka kwatha*
- ***Arista*** - *Amritarista*
- ***Ghrita*** - *Guduchi Ghrita, Amritadi Ghrita, Panchatikta Ghrita*
- ***Taila*** - *Guduchyadi taila*
- ***Vati*** - *Samsamni vati, Chandraprabha vati*
- ***Lauha*** - *Guduchyadi lauha*
- ***Rasa Aushadhi*** – *Gandhak rasayan, Chandrakala rasa*

12. AMRITA IN UNANI SYSTEM OF MEDICINE

Gilo consists of dried, mature pieces of stem of *Tinospora cordifolia* (wild) Miers. Of Menispermaceae family

Unani Nane: Gilo

Action and Uses: Stem: *Daf-e-Humma, Musaffi-e-Dam, Muhallil-e-Warm, Mudir-e-Baul, Muqawwi-e-Badan, Qabiz Khafeef, Quatile –Krim-e-Shikam, Mushtahi, Muwallid-e-Mani, Daf-e-Sozhish-e-Qalb, Kabid and Meda.*

Use: *In Tap-e-Muharriqa, Tap-e-Diq, Kharish, Busoor Damameel, Aatishak, Sozak, Waj-ul Mafasil, Ishaal-e-Muzmin, Ishal-e-Damavi*

Dose: 5 to 10 g (Dry stem powder)

Therapeutic Use: *Humma, Ishal. Zaheer, Deedan-e-Ama*

Important Formulation: *Sufoof-e-Satt-e-Gilo, Sufoof-e-Satt-e-Gilo-Sartani*

13. AMRITA IN SIDDHA SYSTEM OF MEDICINE

SEENTHIL

Tinospora cordifolia (wild) Miers. (Fam. Menispermaceae) is a perennial climber found throughout tropical India; drug can be collected during summer preferably in the month of May; drug can be used in fresh form also.

Properties and actions

Curvai: *Kaippu*
Gunam: *Ilaku*
Virium: *Veppam*
Pirivu: *Karppu*
Ceykai: Ciruneriperukki, Kayakarpamakki, Kamameperukki, Muraiveppakarri, Pecittitundi, Ullazalarri, Urmakki, Udarterei, Veppamudakki

Therapeutic Use: *Sori* (Itchiness), *Suram* (fever), *Peenisam* (Sinusitis), *Kuttam* (skin diseases), *Kuruthiazhal* (hypertension)
Important Formulations: *Seenthil Curanam, Seenthil Ney, Kapasurak Kudinir*
Dose: Powder 3-5 gm; Decoction – 30-50 ml of water for preparing decoction

14. AMRITA IN HOMEOPATHY

Botanical Name: *Tinospora cordifolia* Miers.
Family: Meninspermaceae
Common Names: *Gulancha, Giloe, Guduchi*
Parts Used: Stem and root
Distribution: Throughout warm parts of India
Identification: Evaporator 25 ml mother tincture on water bath to remove alcohol. Extract the residue with 3 × 20 ml chloroform and concentrate the chloroform extract to 2 ml. carryout TLC On Precoated Silica Gel Aluminium Plate 60F -254, 0.25 mm thickness, Merck using chloroform:methanol (19:1 v/v) as mobile phase.

Preparation

(a) Mother Tincture 1/10

Tinospora Cordifolia, moist magma containing solids	**100 gm**
plant moisture	**488 ml**
Total of above two	**588g**
Purified Water	**69 g**
Strong Alcohol To make one thousand millilitres of the mother tincture	**480 ml**

(b) Potencies: 2 × and higher with dispensing Alcohol

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शासकीय औषधनिर्माण शास्त्र महाविद्यालय , अमरावती , महाराष्ट्र

आणि

राष्ट्रीय औषधी वनस्पती मंडळ (एन.एम.पी.बी)

....घरो घरी गिलोय .....घरो घरी अमृता.....

.अमृता वेल लागे घरी..आरोग्य तुमच्या दारी....

१. गुळवेल म्हणजे काय?

गुळवेल चे साइंटिफिक नाव आहे टिनोस्पोरा कॉर्डिफोलिआ) Tinospora Cordifolia). हृदयाच्या आकाराची पाने म्हणून कॉर्डिफोलिया हे नाव पडले) गुळवेल मुख्यता भारतीय उपखंडात सापडणारी औषधी वनस्पती आहे .गुळवेल ला हिंदी मध्ये गिलोय असे म्हणतात. संस्कृत मध्ये गुळवेल ला गुडूची, अमृता किंवा अमृतवेल म्हणतात .हिंदू पुराणानुसार ह्या शब्दाचा अर्थ असा होतो की अशी वस्तू जी अमृतासारखी आहे व जीवित वस्तुंना वृद्धाअवस्थेतून तरुण बनवते. निरनिराळ्या व्याधींमध्ये गुळवेलीचा उपयोग होतो, त्यामुळे गुळवेल ही वनस्पती आयुर्वेदात 'अमृतकुंभ' म्हणून ओळखली जाते.

२. विविध नावे आणि प्रजाती

गिलोय च्या मुख्यत.सापडतात भारतात प्रजाती तीनच त्यातील .येतात नआढळू प्रजाती पाच :

T. bakis Miers – सेनेगल

T. rumphii Boerl – जावा

T. Cordifolia Miers – भारत आणि चायना

T. crispa Miers – भारत आणि चायना

T. malabarika Miers – भारत आणि चायना

- Latin name - Tinospora cordifolia Willd , कुळनाव- Menispermaceae
- इंग्रजी -मूनसिड, टिनोस्पोरा
- संस्कृत नावे -अमृता, गुडूची, बल्ली, छिन्ना, मधुपर्णी, वत्सादनी, कुण्डलिनी
- मराठी नावे -गुळवेल, अमृता, गुडची, गरोळ आणि गरुड
- हिंदी नावे -गीलोय, गुडीच
- संस्कृत -गुडूची, अमृत, अमृतावली, मधूपर्णी, गुडुचिका, तंत्रिका, कुंडलिनी, चक्रालक्षणिक
- बंगाली -गुलंचा
- गुजराती -गारो, गलक
- तेलुगू -ठिप्पाटीगा

- कन्नड –अमृतावली
- कश्मिरी –अमृत, गिलो
- मल्लू –चिथामृतू
- तमिळ –सिंडल, सिंडल कोडी

३. ओळख

गुळवेल ही अनेक वर्षे टिकणारी, एखाद्या झाडाच्या वा दुसर्या कोणत्याही आधाराला धरून वर चढणारी, नेहमी हिरवीगार राहणारी वेल आहे. दोन फांद्यामधून फुटणार्या बारीक दोर्या सारख्या तणावाच्या साहाय्याने आधाराला धरून गुळवेल वर चढते .

- कडूलिंबाच्या अथवा आंब्याच्या झाडावर वाढलेली वेल अत्यंत औषधी असते कारण ती त्या झाडतील औषधी गुणधर्म सुद्धा घेते.
- गुळवेल ही दिसायला मनीप्लांट सारखी परंतु, अतिशय दाट अशी विशाल वेल असते. पाने हृदयाच्या आकाराची असतात.
- यास पिवळी फुले येतात व लाल रंगाची छोटी छोटी गोल फळे झुबक्यां मध्ये लागतात.
- याचे कांड रसभरीत असते, ज्याचा औषधी करिता उपयोग केला जातो .
- गुळवेलीच्या मोठ्या वेली मांसल असून, मोठ्या झाडांवर व कुंपणांवर पसरलेल्या असतात.
- खोड - वेलीच्या खोडास लांब धाग्यांसारखी, हिरवी मुळे फुटून ती खाली लोंबत असतात .खोड बोटांएवढे जाड असून, त्यावरील साल पातळ, त्वचेसारखी असते, नंतर तिचे पापुद्रे निघतात .खोडांवर लहान-लहान छिंद्रे असतात .खोड आडवे कापल्यास आतील भाग चक्राकार दिसतो.
- पाने - साधी, एक आड एक, हृदयाकृती .गडद हिरवी व गुळगुळीत असतात .पानांचे देठ लांब .पानांवर 7 ते 9 शिरा दिसतात व पानांची रुंदी 5 ते 10 सें.मी असते.
- फुले - लहान पिवळसर-हिरवी नियमित व एकलिंगी असतात .पानांच्या बेचक्यातून आलेल्या लांब, नाजूक, खाली लोंबणाऱ्या पुष्पमंजिरीत येतात .
- नर व मादी फुले वेगवेगळ्या वेलींवर येतात .पुष्पमंजिरीत नरफुले गुच्छात तर मादी फुले एकांडी येतात .पाकळ्या सहा, पुंकेसर सहा, बीजांडकोश तीन कप्पी, पराग धारिणी तीन विभागी.
- फळे - गोलाकार, मोठ्या वाटाण्याएवढी, कठीण कवची .पिकल्यावर लाल, गुच्छाने येतात .बी एकच व खडबडीत कवच असणारी असते .
- गुळवेलीला नोव्हेंबर ते जून या कालावधीत फुले, फळे येतात.

४. गुळवेलीमधील रासायनिक घटक

अल्कलॉईडसग्लाइकोसाइड ,, स्टेरॉईडस ,टरपेनोइडस ,टरपेनोइडस-डाय ,उडणशील पदार्थ इत्यादी.

५. औषधी उपयोग

गुळवेल ही महत्त्वाची औषधी वनस्पती आहे. तिचे खोड अनेक रोगांवरील औषधांत वापरतात. गुळवेल पित्तसारक, संग्राहक, मूत्रजनन, ज्वरहर व नियत कालिक ज्वरनाशक गुणधर्माची आहे.

ही वनस्पती रक्त सुधारक असून, पित्तवृद्धीच्या काविळीत गुणकारी व त्वचारोगात उपयोगी आहे. अलर्जी ,मधुमेह, वारंवार मूत्रवेग तसेच प्लिहा वृद्धीत अत्यंत उपयुक्त आहे.गुळवेल कुष्ठ व वात रक्तविकारा तही उपयुक्त आहे. गुळवेलीचे सत्त्व व काढा वापरतात. गुळवेल सत्त्व दीर्घकालीन आम्ल अतिसारात वापरतात .

गुळवेलीचा पाण्या तील अर्क ज्वर नाशक म्हणून वापरतात .गुळवेलीचा काढा शक्तिवर्धक असून, दुर्बल करणारे रोग) कावीळ कॅन्सर ,मधुमेह ,टायफोइड ,मलेरिया ,एड्स , (यासारखे तसेच खंडित ताप आणि अपचनात वापरतात. सौम्य विषम ज्वरात आणि जीर्ण ज्वरात गुळवेलीचा चांगला उपयोग होतो .आतड्यांचा प्रक्षोम आणि शक्ती क्षीण झालेली असताना तसेच संधिवाताची लक्षणे दूर करण्या साठी ही औषधी वनस्पती महत्त्वाची मानली जाते. गुळवेलीने भूक लागते, अन्नपचन चांगले होते, रोग्याचा फिक्कट पणा कमी होतो, अशक्तपणा कमी होऊन शक्ती वाढते.

६. गुळवेल रोग प्रतिकार शक्ती तंत्रास सशक्त करते

शरीराचे रोग प्रतिकार शक्ती तंत्र विकृत झाल्यास वारंवार सर्दी पडसे, ताप येणे, अशक्त पणा ही लक्षणे निर्माण होतात. गुळवेल च्या सेवनाने शरीराची रोग प्रतिकार शक्ती वाढते.

वारंवार आजारी पडणार्या व्यक्तींना गुळवेला मुळे फायदा होतो. विभिन्न एलर्जी जन्य आजार तसेच गुळवेल त्रिदोष शामक आहे. रोग प्रतिकार व्याधींवर गुळवेल अतिशय उपयोगी आहे.

- गुळवेल रक्तातील रक्तशर्कराचे प्रमाण कमी करते
- गुळवेल हे संधीवात व अन्य वात व्याधींवर उपयोगी आहे
- गुळवेल शक्तिवर्धक व वाजीकर आहे
- विभिन्न चर्मरोगां वर प्रभावी आहे
- मूळव्याध, महिलांचे प्रमेहादी विकारावर उपयोगी
- मानसिक व्याधींवर उपयोगी

७. गुळवेलीसंबंधी आयुर्वेदातील उद्धरणे

गुळवेल ह्या वनस्पतीला आयुर्वेदात फार महत्त्व आहे .आयुर्वेदात गुळवेलाला "अमृता" हे नाव दिले आहे .या नावाप्रमाणेच ही वनस्पती अमर आहे, जमिनीतील पाण्याची पातळी कमी झाली तरीही ही वनस्पती जिवंत राहते .भारतातील सर्व भागात ही वनस्पती सहज आढळते .या वनस्पतीच्या उपयोगासंदर्भात विविध ऋषींनी आयुर्वेदिक ग्रंथांमध्ये बरीच माहिती लिहून ठेवलेली आहे, ती पुढीलप्रमाणे-

" पिबेद्वा षट्पलं सर्पिरभयां वा प्रयोजयेत्|
त्रिफलायाः कषायं वा गुडूच्या रसमेव वा||"
- (चरकसंहिता)
" पिप्पला मधु संमिक्ष गुडूची स्वरसं पिबेत|
जीर्णा ज्वर कफ प्लहिका सारोचक नाशनम्|| "
-(भैषज्य रत्नावली)

" गुडूची कटुका तिक्ता स्वादुपाका रसायनी ।
संग्रहिणी कषायोष्णा लध्वी बल्याग्नि दीपनी ।।
दोषत्रयामतृड्दाहमेहकासांश्च पाण्डुताम् ।
कामलाकुष्ठवातास्रज्वरकृमिवमीन्हरेत् ।
प्रमेहश्वासकासार्शः कृच्छ्रहृद्रोगवातनुत् ।।"
– (भावप्रकाश निघंटू)

८. लागवड

गुळवेलच्या पेरलेल्या बिया सुमारे १० ते १२ दिवसात उगवायला लागतात .जवळपास ३० ते ३५ टक्के बिया उगवतात .पण पेरण्यापूर्वी २४ तास थंड पाण्यात भिजवल्यास उगवणक्षमता वाढते आणि ८० ते ९० टक्क्यांपर्यंत बिया उगवून येतात .छाटापासून रोपे तयार करता येतात .

पेन्सिलीच्या जाडीचे १० ते १५ सें.मी .लांबीचे छाट घ्यावे लागतात .अशा छाटावर साधारण ५ ते ७ डोळे असतात .त्यापैकी दोन मातीत जातील, याप्रकारे छाट रोपावेत .छाट काढल्यावर त्यांची लागण रोपवाटिकेत करेपर्यंत ते छाट पाण्यात अर्धवट बुडवून ठेवावेत .मात्र उशिरात उशिरा चोवीस तासांच्या आत लावणी करावी .

छाटांची लागवड सरळ शेतात देखील करता येते .जवळजवळ सर्व छाटांना महिनाभरात मुळे फुटतात तर जवळपास ९० टक्के छाटांना दीड महिन्यात पालवी फुटते . रोपे शेतात लावताना त्या आधी वर्षभर भराभर वाढणारी झाडे शेतात लावावी म्हणजे गुळवेल त्यांचा आधार घेत वाढतो .अशा प्रकारे गुळवेल कृषीवानिकी मध्ये अंतर्भूत करता येईल .अन्यथा बांबू वा तत्सम आधार उभे करावेत .लागवडीआधी जमीन चांगली नांगरून घ्यावी आणि १० टन शेणखत मिसळून घ्यावे .तसेच ७५ किलो नत्राचा डोस लागवडी आधी देण्यात यावा .केवळ गुळवेल लावायची असेल तर ३ x ३ मीटर अंतरावर लागवड करावी .उर्वरित १० टन शेणखत आणि ७५ किलो नत्राचा डोस रोपे लावल्यापासून साधारण ३ महिन्यांनी द्यावा.

उन्हाळ्यात गुळवेलची खोडे बुंध्यापासून काही अंतरावर कापावीत .बुंध्यापासून पून्हा अभिवृद्धी होत असल्याने पून्हा लागवडीची गरज नसते. कापलेली खोडे बारीक तुकडे करून सावलीत सुकवावीत. गुळवेलीच्या चांगल्या सुकविलेल्या खोडाला सध्या २५०० ते ५००० रुपये प्रतीक्विंटल दर मिळतो. मात्र लागवड करताना खर्च आणि उत्पन्नाचा ताळमेळ पाहूनच शेतकरी बंधूंनी निर्णय घ्यावा.

९. औषध उपयोगी अंगे– खोड व पाने

१०. मात्रा

- वाळलेले खोड व पानाचे चूर्ण 1-3 चमचे. दिवसातून 3-4 वेळा घेऊन वर दूध साखर घ्यावे.
- काढा - 4-8 चमचे दिवसा तून 2- 3 वेळा घेऊन वर पाणी प्यावे.
- गुळवेल सत्त्व - पाव ते अर्धा चमचा दिवसातून 3-4 वेळा घेऊन वर दूध साखर घ्यावी.

Under NMPB-AYUSH National Campaign On "*Tinospora cordifolia* -Amrita for

On the occasion of "59th National Pharmacy Week (NPW)"-2020

Govt. College of Pharmacy, Amravati-444604 Maharashtra India
NMPB, Ministry of AYUSH, India
Sponsored
National Level Online Giloy Awareness "**Quiz Competition**"
Theme: "***Tinospora cordifolia* (Giloy) for Socioeconomic Empowerment"**

Timeline:
Last date for participation form submission through Google form link: : **5 Dec. 2020**

Date of online quiz competition- **11/12/2020.** Timing- 1.30PM to 2.00PM [30 Minutes]

Prizes:
The winning teams will receive certificate and cash awards of Rs. 5000, Rs. 3000, and Rs. 2000 for first, second, and third prizes, respectively depending on score and time taken to submit quiz. **E-Certificate** will be provided to all participants

Eligibility:
✓ The quiz competition is open to all pharmacy students of India studying D.Pharm, B.Pharm, M.Pharm and Pharm.D from a Pharmacy College/Institute recognized by PCI/AICTE.

✓ Participation should be in team only. Maximum three students can be in one team. Team members can be from D.Pharm, B.Pharm, M.Pharm and or Pharm.D.

✓ The team participation form should be signed and forwarded by HOD or Principal of institute. Open Google form link to get *template* of quiz participation form.

Google form link for participation and detail guidelines: **https://forms.gle/yQPFjyypsCJsnfMK7**

For submission of entries and any queries mail us to:
sharudeore_2@yahoo.com
9766577646

Govt. College of Pharmacy, Amravati-444604 Maharashtra India
NMPB, Ministry of AYUSH, India
Sponsored
National Level Online Poster Presentation Competition
Theme: "***Tinospora cordifolia* (Giloy) for Socioeconomic Empowerment"**

Under NMPB-AYUSH National Campaign On "*Tinospora cordifolia* - Amrita for Life"

On the occasion of "59th National Pharmacy Week (NPW)" 2020

Poster can be in following categories: (Only Original work)
✓ Review article- Pharmacognosy and Pharmacology, Adulteration, Market Potential, Market formulations, Traditional importance, Cultivation and or conservation of *Tinospora cordifolia*
✓ Research article on Well evaluated value added product/s of different part/s of *Tinospora cordifolia*
✓ Poem (English/Hindi)
✓ Creative Photographs/images of different parts of *Tinospora cordifolia or* Cultivation and or conservation activities
✓ Handmade Drawing/Painting/Rangoli/Computerized Art

Eligibility
* The competition is open to all pharmacy students of India studying **D.Pharm, B.Pharm, M.Pharm and Pharm.D** from a Pharmacy College/Institute recognized by PCI/AICTE.

* Up to **three entries** may be submitted for each category from each college.

Prizes
✓ The winners will receive certificate and cash awards of Rs. 5000, Rs. 3000, and Rs. 2000 for first, second, and third prizes, respectively from each categories.
✓ In addition, there will be consolation prizes of Rs. 1000 each for another 10 best entries from all categories. All participants will receive certificate of participation and attractive information brochure.
Language: English only except for poem.
Registration fee: No registration fee will be taken.
Submission process: Entries will have to be uploaded in the link provided (Google Form).

Timeline
The contest is open from **20 Nov. 2020 to 10 Dec. 2020.** Late submissions will not be considered.

Google form link for submission and detail guidelines: https://forms.gle/u7bpwh2NXHtg5wnd9

For submission of entries and any queries mail us to		
Somshekhar S. Khadabadi , Principal	*Convener*	*khadabadi@yahoo.com*
Sharada L. Deore, Associate Professor,	*Co-ordinator*	*sharudeore_2@yahoo.com*
Bhushan A. Baviskar, Assistant Professor	*Co-cordintaor*	*baviskarbhushan@gmail.com*

..... घरो घरी गिलोय..... घरो घरी अमृता.....
..... अमृता वेल लागे घरी.. आरोग्य तुमच्या दारी....

शासकीय औषधनिर्माण शास्त्र महाविद्यालय, अमरावती यांनी राष्ट्रीय औषधी वनस्पती मंडळ (एन.एम.पी.बी) सोबत मिळून आयुर्वेदातील अत्यंत गुणकारी औषधी वनस्पती अमृता म्हणजेच गिलोय किंवा गुडूची *(Tinospora cordifolia)* प्रत्येक घरात पोहचवण्यासाठीचे अभियान हाती घेतले आहे.

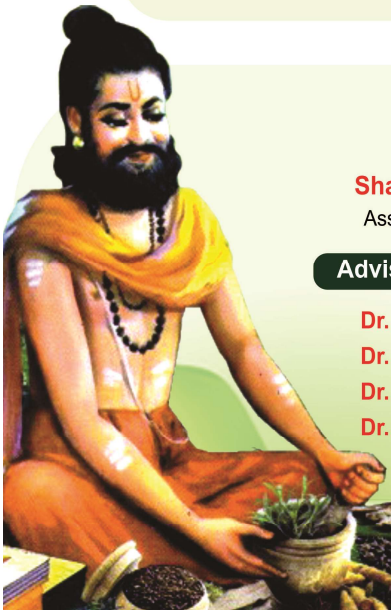
यात विद्यार्थी, शिक्षक, सरकारी कार्यालये व सर्वसामान्या मध्ये अमृता या वनस्पती विषयी माहिती तसेच जागरूकता वाढवणे करीता आकर्षक माहिती-पुस्तक आणि उत्साह वाढवणे साठी प्रश्नमंजुषा आयोजित करण्यात येईल. विविध महिला समुहासोबत कार्यक्रम द्वारे अमृता प्रत्येक घरी पोहचवण्यात येईल. अमृताची रोपे त्यांनाच देण्यात येतील जी ती रोपे आपल्या घरी बागेत लावून योग्य प्रकारे काळजी घेण्याची हमी देतील व रोपा सोबत सेल्फी काढून व्हाट्सॲप वर पाठवतील आणि सोशियल मिडिया वर गिलोय च्या उपयोगीते विषयी फोटोसहित जागरूकता निर्माण करतील.

.....हर घर गिलोय- अमृता अभियान .....

शासकीय औषधनिर्माण शास्त्र महाविद्यालय, अमरावती ने आयुष मंत्रालय के राष्ट्रीय औषधीय पादप बोर्ड (एन.एम.पी.बी) से मिलकर भारतीय औषधीय परंपरा के महत्त्वपूर्ण अंग रहे *Tinospora cordifolia* यानी गुडूची के पौधे को घरों तक लेकर जाने के अभियान के रूप में गिलोय के प्रसार का काम हाथ में लिया है।

इसमें विद्यार्थी, शिक्षक तथा सरकारी कार्यालय एवं सर्वसामान्याओ मे गिलोय के पौधे देना, गिलोय के बारे में उनकी जानकारी और जागरूकता बढ़ाने के लिए आकर्षक माहिती-पुस्तिका और उत्साह बढ़ाने के लिए प्रश्नोत्तर प्रतियोगिता का आयोजन शामिल होगा। महिला समूहों के साथ कार्यक्रमों के माध्यम से गिलोय को घरों तक ले जाना। पौधे उन्हीं को दिये जायेंगे जो इसकी जिम्मेदारी लेंगे कि घर लेजाकर पौधा लगायेंगे और उसकी फोटो खींचकर व्हाट्सॲप करेंगे तथा सोशल मिडिया में फोटोसहित गिलोय उपयोगिता की जागरूकता मे हिस्सा लेंगे।

Govt. College of Pharmacy, Amravati, Maharashtra India is organizing NMPB, Ministry of AYUSH, India Sponsored awareness program Under National Campaign On "Tinospora cordifolia -Amrita for Life" under Theme: "Tinospora cordifolia (Giloy) for Socioeconomic Empowerment" will run A Healthy Campaign For "Every Home Giloy". Giloy is most popular plant from Ayurveda having many health benefits. Under this campaign Giloy Plants will be distributed among students, teachers, government institutes and society along with informative brochure about scientific information of Amrita to create awareness regarding appropriate use and benefits of plant Amrita. Quiz competition will also be arranged to create excitement about plant Amrita among students. Giloy awareness will be extended to every home though Giloy awareness programs in collaboration with Women organizations, NGOs and Pharmacy Professional bodies. Plantlets will be distributed freely to only those who will send selfie with plant on WhatsApp and will take responsibility to grow and care the plant at their home and ready to spread awareness about its benefits in society through social media.



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