



Research Article

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ETHNOBOTANICAL LITERATURE SURVEY OF THREE INDIAN MEDICINAL PLANTS FOR HEPATOPROTECTIVE ACTIVITY

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ABSTRACT

Now-a-days medicinal plants have received much attention as sources of bioactive substances used to treat variety of diseases and disorders of major body organs including liver as a hepatoprotective and antioxidants. Liver is the heaviest gland of the body and plays the major role in metabolic activities and bio-chemical conversions. Hepatic disease is a basic collective term of conditions, diseases, and infections that affect the cells, tissues structures, or functions of the liver. Ethnobotanical survey was conducted to document remedies used as a hepatoprotective in Kuppam, Sathupally and their surrounding villages belongs to Chittoor and Khammam districts of Andhra Pradesh, India. This may be useful to researchers who are working in the area hepatopharmacology and therapeutics.

Keywords: *Begonia laciniata*, *Dendrobium ovatum*, *Cuscuta epithymum*

INTRODUCTION

Herbal medicines are free from side effects, adverse effects and they are economical, easily available and beneficial for the mankind over the centuries¹. Ethnobotany is the study of the relationship between plants and people, "ethno" means study of people and "botany" means study of plants². Tribal people are the ecosystem people who live in harmony with the nature and maintain a close link between man and environment³. According to article 342 of the constitution of India, there are 697 tribes as counted by the central government. These Indian tribal groups of people have been notified to occupy more than one state. More than half of the Indian tribal population is concentrated in the states of Madhya Pradesh, Chhattisgarh, Maharashtra, Orissa, Jharkhand, Gujarat and Andhra Pradesh (A.P.). The age old tribal knowledge of plants is an important aspect of ethnobotany. In recent years, use of ethnobotanical information in medicinal plant research has gained considerable attention in segments of the scientific community⁴.

The liver is a vital organ present in vertebrates and some other animals, lies below the diaphragm in the abdominal-pelvic region of the abdomen. It has a wide range of functions, including detoxification, protein synthesis, and production of biochemicals necessary for digestion. This organ plays a major role in metabolism and has a number of functions in the body, including glycogen storage, decomposition of red blood cells, plasma protein synthesis, hormone production and detoxification. It produces bile, an alkaline compound which aids in digestion via the emulsification of lipids. The liver is highly specialized tissue regulate a wide variety of high-volume biochemical reactions, including the synthesis and breakdown of small and complex molecules, many of which are necessary for normal vital functions.

The most common problems of liver include, Infections such as hepatitis A, B, C, D and E, alcohol damage, fatty liver, cirrhosis, cancer, drug damage particularly by acetaminophen and cancer drugs. The use of medicinal plants and their products for treatment of liver disorders in India and other countries is still continuing⁵⁻⁸.

Study of literature⁹⁻¹⁴ suggested ethnobotant interest of Kuppam, Sathupally and their surrounding villages of Chittoor and Khammam districts, A.P., India respectively. Kuppam is located 94.9 km distance from its district main city Chittoor and 516 km distance from its state main city Hyderabad, 688 meters above sea level. The Total area is 123,325 hectares of which 63,000 hectares of cultivable land (50.4%), 41,987 hectares under forest area (33.7%) and it has latitude 12°45" North, longitude 78°20" East. It has a total population of 300,000 of which 62,400 households in 5 mandals, 612 habitations¹⁵. The villages in and around Kuppam are Gonugur, Jarugu, Kangundi, Vasanadu, Dasegowniyur, Krishnadasanapalle, Vendugampalle, Dasegowniyur, Settipalle, Kanamanapalle and Nadimur. The forests areas around the Kuppam rich in flora are Berikonda, Thuvvakonda, and Raakasi gubbalu⁹.

The major tribes of Chittoor district are Chenchus, Yenadi, Lamada, Yerakula, Nakkalas and Suygali¹⁶. Sathupally, so named because it is the combination of seven (saath) villages. It is one of the major towns and mandal headquarters in Khammam district. There are 16 villages in this mandal and has a population of 1,00,000 (2011). It is present in between 17°12'36" North and 80°49'18" East. This place is famous for eucalyptus clones. The major tribes of Khammam district are Koya, Konda Reddi, Yrukula, Yenadi and Lambada are major schedule tribes¹⁷. The forests areas around the Sathupally are Medaram-Tadavi Forest range rich in variety of flora,

213 km away from Sathupally^{18, 19} Kinnerasani and Dandakaranya²⁰.

MATERIALS AND METHODS

Data were collected through oral interviews of both genders of Yenadi tribe in two selected study areas in Chittoor and Khammam districts of A.P. (Figure 1). Their responses recorded in a pre-piloted form²¹. These two study areas are Kuppam and Khammam of A.P., India. These selected areas represent fairly well the ecological nature, people and geographical features of the region. The study was conducted between 2012 August and 2013 January. The tribes were interviewed within their localities. Among the questions asked during the interviews was age, sex, years of experience and tribe. Others were presenting symptoms upon which the diagnosis of the disease is made, estimated number of liver disease patients treated and their responses, names and parts of the plants used in the treatment of the disease. Samples of all the medicinal plants cited by the tribes were collected with their assistance. Further identification and authentication was done by a Taxonomist in the Department of Botany, Sri Venkateswara University, Thirupathi, A.P. Voucher specimens (No. SVU-B-12, 13, 14) were prepared, labeled and deposited in the college Herbarium. The data forms were later analyzed to give the botanical names, common names, families and the parts of the plants used.

Begonia laciniata Roxb.

Synonym: *Begonia palmata* D. Don²²⁻²⁴

Common names:

In English: Beefsteak Geraniums, Elephant's Ear;
Folk: Hoorjo (West Bengal), Teisu (Nagaland)²⁵.

Taxonomy

Domain: Eukaryota
Kingdom: Plantae
Phylum: Tracheophyta
Class: Spermatopsida
Subclass: Rosidae
Order: Cucurbitales,
Family: Begoniaceae
Genus: *Begonia*

Specific epithet: *laciniata* - Roxb. (Figure 2)

Botanical name: - *Begonia laciniata* Roxb.²⁶

Habitat: Tropical and sub-tropical regions, especially in America. Found in Sikkim, Arunachal Pradesh, Assam, Meghalaya, Nagaland and Manipur, ascending to an altitude to 2,100 m.

Folkloric Actions: A decoction of the root is given for liver diseases and fever. The extract from succulent stalks is used for venereal diseases in folk medicine. Fresh shoots are chewed for tooth troubles. Aqueous extracts of the leaves and flowers of *Begonia* sp. are active against Gram-positive and Gram-negative bacteria²⁷.

Dendrobium ovatum (L.) Krenzl.

Botanical synonyms: *Dendrobium ovatum* (L.) Druce

Synonyms:

Callista ovata (L.) Kuntze,
Cymbidium ovatum (L.) Willd.,

Dendrobium chlorops Lindl.,

Epidendrum ovatum L.

Common name: The ovate dendrobium, Green lipped dendrobium, hairy-lipped dendrobium²⁸

Taxonomy

Domain: Eukaryota
Kingdom: Plantae
Phylum: Tracheophyta
Class: Spermatopsida
Subclass: Liliidae
Order: Asparagales
Family: Orchidaceae
Genus: *Dendrobium*

Specific epithet: *ovatum* - (L.) Kraenzl. (Figure 3)

Botanical name: *Dendrobium ovatum* (L.) Kraenzl.²⁹

Habitat: Native to Western Ghats, and also Tamil Nadu

Common names: Folk: Nagli (Maharashtra)

Folkloric Actions: Juice of fresh plant used for stomachic, carminative, antispasmodic, laxative, liver tonic. Traces of alkaloids have been reported to be present in the pseudobulbs and leaves [Jivanti substitute]³⁰.

Cuscuta epithimum (L.) L.

Botanical synonyms: *Cuscuta epithimum* Sievers ex Ledeb., *Cuscuta epithimum* Webb and Berthel., *Cuscuta epithimum* Thuill., *Cuscuta epithimum* Murray³¹

Synonyms

Cuscuta acutiflora Rota, *Cuscuta trifolii* Babington,
Cuscuta campanulata Stokes,
Cuscuta coriariae Sennen and Pau,
Cuscuta epithymiphyta St.-Leg.,
Cuscuta hygrogenes Gand.,
Cuscuta muelleri Strail,
Cuscuta ulicis Godr.

Common names:

In English- Dodder, Hellweed, Strangle -tare, Clover dodder, Thyme dodder, Devil's Guts;
Ayurvedic-Aakaashvalli, Amarvalli, Amarvela;
Unani-Aftimoon;
Folk-Sitammapogunalu (Telugu)³²⁻³⁸.

Taxonomy

Domain: Eukaryotaes
Kingdom: Plantae
Phylum: Tracheophyta
Class: Spermatopsida
Subclass: Asteridae
Order: Solanales
Family: Convolvulaceae
Genus: *Cuscuta*

Specific epithet: *epithimum* Linn. (Figure 4)

Botanical name: *Cuscuta epithimum* (L.) L.³⁹⁻⁴⁵

Habitat: A parasitic climber, occurring in Europe, Asia, South Africa.

Folkloric Actions: Hepatic, laxative, carminative. The parasitic plant accumulates alkaloids from the host plant. It contains flavonoids, including kaempferol and quercetin, hydroxycinnamic acid derivatives. Cuscutalin (1%) and cuscutin (0.02%) are main active principles of the plant. Seeds contain amarvelin, resins, oil (3%) and reducing sugars. Used in urinary, spleen and liver disorders⁴⁶.

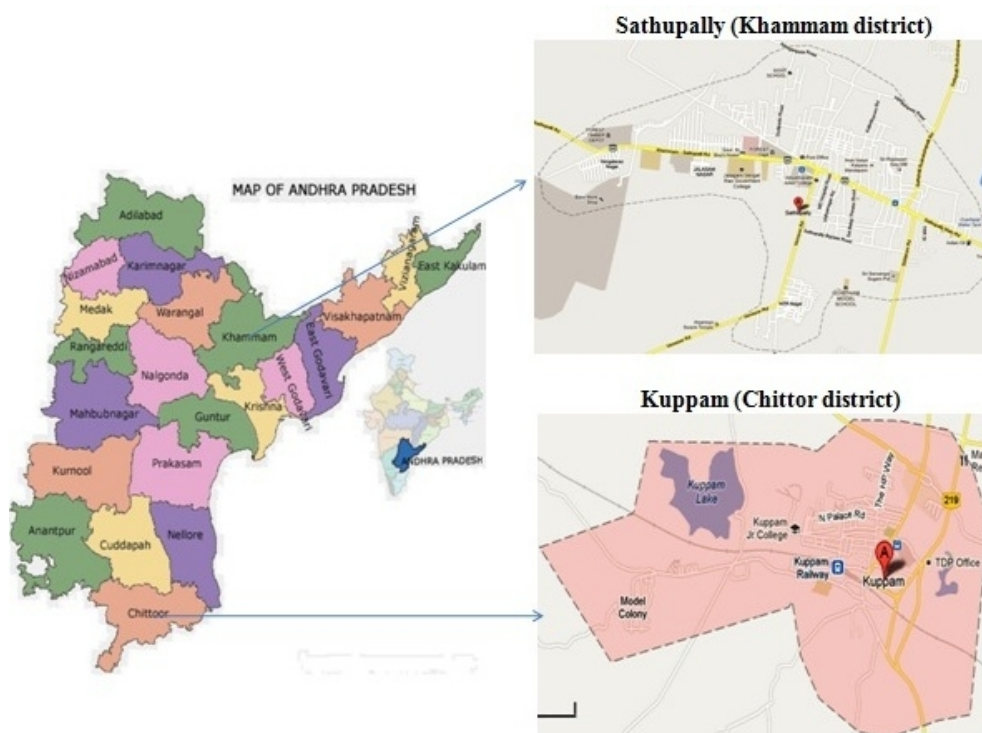


Figure 1: Map showing the location of study areas



Figure 2: *Begonia laciniata* Roxb.



Figure 3: *Dendrobium ovatum* (L.) Krenzl.



Figure 4: *Cuscuta epithymum* (L.) L.

RESULTS AND DISCUSSION

Herbalists (Yenadi by tribe) were interviewed about hepatoprotective use of medicinal plants *Begonia laciniata*, *Dendrobium ovatum*, *Cuscuta epithymum* across Kuppam, Sathupally and their surrounding villages of Chittoor and Khammam districts of A.P., India. About 60% of the Herbalists were male and 40% are females having age range of 40 – 60 years showed 98% positive results for hepatoprotective use of above said plants.

CONCLUSION

It is concluded that, *Begonia laciniata*, *Dendrobium ovatum* and *Cuscuta epithymum* were traditionally used hepatoprotective medicinal plants.

Future Scope

The author further continued his research scope on above said medicinal plants for their biological activity, isolation of individual constituents and formulation.

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