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Exploring the Medicinal Plants Use and Cultivation in Chittoor District



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ABSTRACT

Plants that possess therapeutic values are termed as “Medicinal Plants”. Those plants that possess therapeutic value along with the nutritional value can be considered as “Nutraceuticals”. This category includes several kinds of cereals, pulses, green and leafy vegetable etc. This article mainly aims to reveal the worthy and valuable medicinal plants that are hidden in Chittoor district of Andhra Pradesh along with their faith of extinct and their usage by tribal people. It also represents the traditional use of those particular medicinal plants.



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INTRODUCTION:

GEOGRAPHICAL IMPORTANCE:



Figure 1: Geographical location of Chittoor district, A.P, INDIA.

BOUNDARIES:

Chittoor is a part of Rayalaseema region of Andhra Pradesh^[1]. The district occupies an area of 15,359 square kilometers (5,930 sq mi)^{[2][3]}. The district is bounded by Anantapur District to the northwest, Kadapa District to the north, Nellore District to the northeast, Krishnagiri District, Vellore District and Tiruvallur District of Tamil Nadu state to the south, and Kolar District of Karnataka state to the west. Chittoor is 160 km from Chennai, 180 km from Bangalore and 590 km from Hyderabad. Thirty percent of the total land area is covered by forests in the district. Mango and tamarind groves surround the city of Chittoor, and cattle are raised in the district.

LOCATION: [LATITUDE AND LONGITUDE]

Chittoor district lies extreme south of the Andhra Pradesh state approximately between 12°37' - 14°8' north latitudes and 78°3' - 79°55' east longitudes.

TYPE OF SOIL:

The soils in the district constitute red loamy 57%, red sandy 34%, and the remaining 9% is covered by black clay black loamy, black sandy and red clay.^[4]

CLIMATE:

The temperature in the western parts of the district like Punganur, Madanapalle, Horsley Hills is relatively lower than the eastern parts of the Chittoor District. This is because of the higher altitude of the western parts compared to the eastern parts. The summer temperatures touch to 46 °C in the eastern parts whereas in the western parts it ranges around 36° to 38 °C. Similarly, the winter temperatures of the western parts are relatively low ranging from 12 °C to 14 °C and in eastern parts, it is 16 °C to 18 °C.^[5]

ANNUAL RAINFALL:

Chittoor district receives an annual rainfall of 918.1 mm. The South West Monsoon and North East Monsoon are the major sources of rainfall for the district. On average the district receives 438.0 mm of rainfall through the South West Monsoon (From June to September) and 396.0 mm from North East Monsoon (From October to December). The rainfall received by the district in the years 2002 and 2003 are 984.2 mm and 934 mm respectively.^[6]

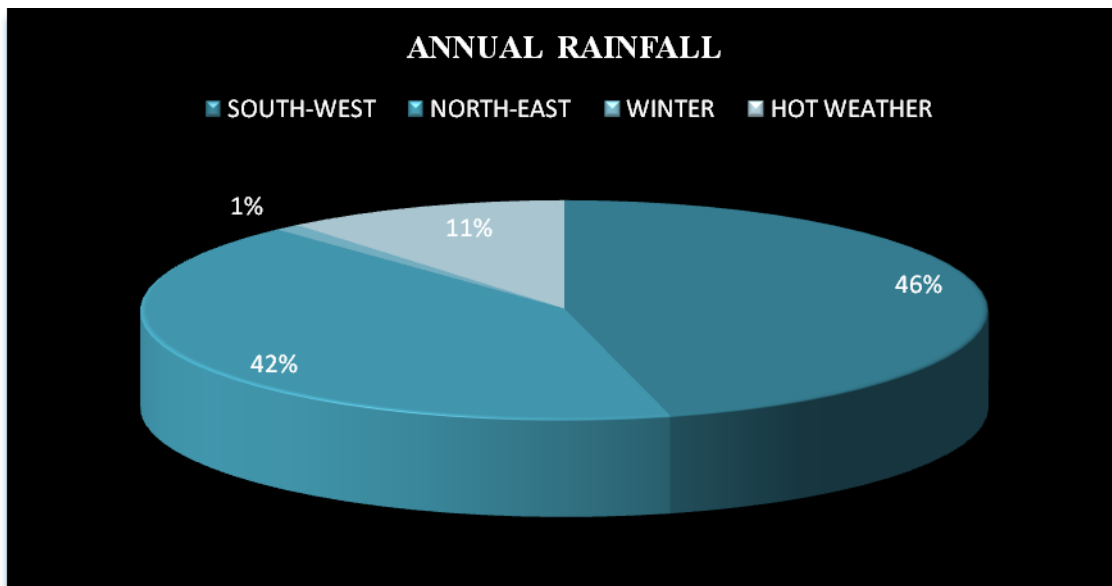


Figure 2: Graphical representation of annual rainfall in chittoor district.

Table 1: Medicinal plants of Chittoor district and their Medicinal importance^[7]

S.No.	SCIENTIFIC NAME	COMMON NAME	FAMILY	PLANT PART USED	TRADITIONAL USES
1.	<i>Annona squamosa</i>	Seethapalam	Annonaceae	Leaves	Toothache
				Stem bark	Snake bite
				Fruit	Abortion
2.	<i>Brassica nigra</i>	Avalu	Cruciferae	Seed	Diarrhoea, Contraceptive
3.	<i>Hibiscus rosa-sinensis</i>	Mandara	Malvaceae	flower	Hair tonic, jaundice
				Leaf	Alopecia
4.	<i>Citrullus colocynthis</i>	Verripuccha	Cucurbitaceae	Root	Abortion, Ante-partum treatment
				Fruit	Anthelmintic
				Whole plant	Leprosy (early stages)
				Leaves	Eczema
5.	<i>Leptadenia reticulata</i>	Mukkutummudu	Asclepiadaceae	Leaf	Cold, Earache Galactogogue
6.	<i>Melia azadirachta</i>	Turakavepa	Meliaceae	Leaves	Anthelmintic
7.	<i>Santalum album</i>	Srigandhamu	Santalaceae	Wood	Contraceptive, Headache, Menorrhagia, Wounds, Leucorrhoea
8.	<i>Waltheria indica</i>	nallabenda	sterculiaceae	Root	Inflammations
				Whole plant	Ulcers
9.	<i>Xanthium indicum</i>	Marula/Matangi	Asteraceae	Whole plant	Leucorrhoea

				Fruit	Fertility, Malarial fever.
10.	<i>Oroxylum indicum</i>	Pampana	Bignoniaceae	Root bark	Dysentery
				Stem bark	Flatulence, Wounds & Fractures

ENDANGERED AND EXTINCT SPECIES:

An endangered species is a population of organisms, which are at high risk of becoming extinct either due to loss of habitat, high death rate or changes in environmental and predation parameters. An organism is termed an endangered species if its population has become small such that free mating and reproduction becomes difficult. Environmental degradation, climate change, and changes in the prey-predation ratio are some of the factors driving many species to extinction today. Without adequate protection, a preservation or conservation measure, an endangered species finally goes into extinction, that is, permanent disappearance from the earth surface. Such species are never seen alive again in this world except in form of fossil (remains) only. ^[8]

Table 2: List of red listed Medicinal plant species across Chittoor districts^[9]

Sr.No.	SPECIES	
	SCIENTIFIC NAME	COMMON NAME
1.	<i>Santalum album</i>	Chandanam, Gandhapuckekka
2.	<i>Holostemmaada-kodien</i>	Bandi - giruvindateega, Pala-gurugu
3.	<i>Celastrus panicualtus</i>	Gundamedda Pallerutiva
4.	<i>Decalepis hamiltonii</i>	Maagaliberu
5.	<i>Rubia cordifolia</i>	Tamravalli
6.	<i>Entada pursaetha</i>	

Table 3: List of red listed species across Chittoor district^[9]

Sr.No.	SPECIES	
	SCIENTIFIC NAME	COMMON NAME
1.	<i>Boswellia ovalifoliolata</i>	Guggilam
2.	<i>Pterocarpus santalinus</i>	Raktagandhamu
3.	<i>Shorea tumbaggaia</i>	Guggilapukam, Tamba
4.	<i>Syzygium alternifolium</i>	Manchi-moyadi
5.	<i>Terminalia pallida</i>	Tella karaka, Thellakaraka, Velama karaka
6.	<i>Hildegardia populifolia</i>	
7.	<i>Pimpinella tirupatiensis</i>	KondaKottimeera.
8.	<i>Cycas beddomei</i>	Pareetha.
9.	<i>Phyllanthus indofischeri</i>	
10.	<i>Leucas indica</i>	nagalapuramiana
11.	<i>Shorea tumbuggaia</i>	Thambajalari

CONSERVATION METHODS OF ENDANGERED SPECIES:

EX-SITU CONSERVATION:

This is the process of protecting or preserving an endangered species of either plants or animal outside of its natural habitat either by removing whole or part of that population from the threatened habitat and placing it in a new environment which may be a wild area or within human control environment. In ex-situ conservation, species whose life is threatened in a particular habitat is removed and placed in a well-protected habitat and taken care of by man.

Eg: Zoos, Botanical Gardens, and Aquaria. Other modern methods of ex-situ conservation where reproductive parts of an endangered species are stored for future reproduction or propagation include Seed bank, Genebank, Germplasm bank, and In-vitro Storages (IUCN, 2010).

BOTANICAL GARDEN:

These are areas set aside for propagation and preservation of plant species to ensure their continuous existence. An endangered plant species is harvested in the wild and grown in the garden under human care to prevent it from becoming extinct.

Eg: Royal Botanical Garden of England

AQUARIA:

Aquaria are facilities used for captive breeding of fish and other aquatic animals. In the past, aquaria were only used for display (decoration) of the environment. However, due to growing threat to freshwater species, they are now being used for captive breeding programs.

Eg: For conservation of fishes in the Lake Victoria in Africa, the desert fishes of North America and Appalachian stream fishes.

ZOO:

A zoo is a place where wild animals are kept either for tourism, scientific studies/ research, preservation or breeding purposes.

***In-Vitro* STORAGE:**

Is a storage facility in form of glass tube or vessel containing nitrogen liquid which keeps the temperature in the vessel at about - 150 degrees Celsius. Hence cuttings, stems or other reproductive parts of plant stored in these strict conditions remain viable for a long time without losing their fertility.

Eg: Seed Bank or in *In-Vitro* tubes

GENE BANK:

These are cryogenic facilities used for the storage of living sperm, eggs or embryos for future reproduction. The eggs or sperms of endangered animal species are preserved through this method.

IN-SITU CONSERVATION:

This involves the conservation and preservation of species in their natural habitat in places where the species naturally occurs. Under this method, the entire ecosystem is protected and maintained so that all the constituent species, both known and unknown are conserved.

Eg: Strict nature reserve (SNR), Games Reserve, National Park

STRICT NATURE RESERVES:

These are plant communities reserved in perpetuity in their natural state for economic, educational, scientific, cultural and aesthetic values. SNR are established in remote areas and given adequate protection.

GAMES RESERVES:

Game reserves are areas set aside for the propagation, protection, conservation and management of flora and fauna with fauna species been of main interest. Game reserves are statutorily owned and managed by state or local governments.

NATIONAL PARKS:

These are areas exclusively set aside for the propagation, protection, conservation and management of flora and fauna as well as the protection of site, landscape or geological formation of a particular place for scientific or aesthetic values for the benefit of the general public. National parks are owned by the Federal Government.

CULTURAL CONSERVATION:

Before the advent of modern conservation methods in Nigeria, some cultural beliefs had helped a lot in the conservation of some wild plants and animal species. Not all animals were either killed or eaten by some tribes.

1. *Calorophone excelsa* was never cut by the Binis. It was believed to protect the Bini Kingdom against witches and wizard.

2. Trees like *Parkiabiglobosa*, *prosopisaficana*, *Elaesguinensis*, *Irvingiagabonensis* etc, were highly protected in many parts of the country particularly in northern Nigeria due to cultural beliefs and traditions.^[8]

CONTRIBUTION OF FOREST AND ENVIRONMENT DEPARTMENT:

Andhra Pradesh Forest Department is one of the administrative divisions of Government of Andhra Pradesh. It is headed by the Principal Chief Conservator of Forests. The primary function of this department is protection, conservation and management of forests in the Andhra Pradesh State. The Forest Department is organized into 12 territorial circles and 43 divisions. In addition, one Senior Officer of the rank of Deputy Conservator of Forests functions as Planning and Extension Officer in each district.

The vegetation found in the AP state is largely of dry deciduous type with a mixture of Teak, and species of the genera *Terminalia*, *Dalbergia*, *Pterocarpus*, *Anogeissus* etc. The hills of Eastern Ghats add greatly to the Biological Diversity and provide centers of endemism for plants, birds and lesser forms of animal life.

The state is a proud possessor of some rare and endemic plants like *Cycas beddomei*, *Pterocarpus santalinus*, *Terminalia pallida*, *Syzygium alternifolium*, *Shorea talura*, *Shorea tumburgia*, *Psilotum nudum* etc. Similarly the Double-banded or the Jerdon's courser, The Golden gecko, The Slender loris which are rare and endangered are endemic to the state.^[10]

SITUATION OF FARMERS:

The farmers in our area (which is the middle part of the district) grow paddy for one season and follow it up with two years of sugarcane. This is the cycle. In the eastern talukas of our district the situation is somewhat different. There the soil is sandier and there is more rainfall. Farmers opt for a cycle of paddy and groundnut (in rabi). In the western talukas, the climate is moderate, but there is water shortage although the soils are red and rich. They prefer to grow vegetables, especially tomato. While some do grow mulberry (for silk), the location of two metropolis close by, Bangalore and Chennai (175 kms and 150 kms respectively from Chittoor) have spurred the cultivation of vegetables like tomato, brinjal, beans and potato apart from flowers and grapes in a few pockets. It has also meant rapid growth in allied activities such as poultry and dairying.

The district enjoys the cover of both monsoons. It gets about 900 mms of annual average rainfall. The salubrious climate and easy drainage of water in most areas enable the farmers to raise a variety of crops from pan and banana to sugarcane, paddy, groundnut and flowers and vegetables as mentioned above.^[11]

ROLE OF TIRUPATI:

Tirupati is a city in Chittoor district of the Indian state of Andhra Pradesh. Tirupati is considered one of the holiest Hindu pilgrimage sites because of Tirumala Venkateswara Temple, besides other historical temples, and is referred to as the "Spiritual Capital of Andhra Pradesh".^[12]

Tirupati is also home to many educational institutions and universities. For the year 2012-13, India's Ministry of Tourism named Tirupati as the "Best Heritage City"^[13].

Tirupati has been selected as one of the hundred Indian cities to be developed as a smart city under Smart Cities Mission by Government of India.

Sri Venkateswara National Park is a national park and biosphere reserve which is part of Seshachalam Hills. The total area of the park is 353 km². The park is home to about 1,500 vascular plant species belonging to 174 families. Some of the rare and endemic plant species like *Red sanders*, *Shorea talura*, *Shorea thumburgaia*, *Terminalia pallida*, *Sandalwood*, *Syzygium alternifolium*, *Psilotum nudum* occur in this region. *Cycas beddomei* is a species of cycad in the genus *Cycas* is found only in the Tirumala Hills.^[14]



Figure 3: Tirupati – “The Land Of Spirituality”.

RICH BIODIVERSITY FOUND IN SESHACHALAM FORESTS:

Taking into consideration the rich biodiversity found in the Seshachalam ranges, which falls on the southern part of the Eastern Ghats, covering an area of 4,755.99 sq.km in the districts of Chittoor and Kadapa, the Central government designated the area as a biosphere reserve in the year 2010. Thus, Seshachalam became the first biosphere reserve in the entire State and 16th in the country. These hill ranges are rich in plant diversity and home to many endangered animals. The vegetation is a unique mix of both dry and moist deciduous type. The Seshachalam bio-reserve, among other areas, also includes Sri Venkateswara National Park of which the famous hill temple town of Lord Venkateswara forms a division, besides Sri Venkateswara wildlife sanctuary and the Idupulapaya estates of late Chief Minister Y.S.Rajasekhara Reddy.

ENDEMIC AND RARE PLANTS:

The forests are also reckoned for harboring several endemic and rare plants, including red sander logs, which have great demand in the international market. According to a study, it has been estimated that over 1,700 species belonging to 178 families of vascular plants exist in the region.^[15]

ROLE OF QUACKS:

"Quackery is the promotion of false and unproven health schemes for a profit. It is rooted in the traditions of the marketplace", with "commercialism overwhelming professionalism in the marketing of alternative medicine".^[16] Quackery is most often used to denote the peddling of the "cure-alls" described above. Quackery continues even today; it can be found in any culture and in every medical tradition. Unlike other advertising mediums, rapid advancements in communication through the Internet have opened doors for an unregulated market of quack cures and marketing campaigns rivaling the early 20th century. Most people with an e-mail account have experienced the marketing tactics of spamming—in which modern forms of quackery are touted as miraculous remedies for "weight-loss" and "sexual enhancement", as well as outlets for unprescribed medicines of unknown quality.

While quackery is often aimed at the aged or chronically ill, it can be aimed at all age groups, including teens, and the FDA has mentioned^[17] some areas where potential quackery may be a

problem: breast developers, weight loss, steroids and growth hormones, tanning and tanning pills, hair removal and growth, and look-alike drugs.

QUACKS CLAIM TO REMOVE KIDNEY STONES AT CHITTOOR:

Tirupati: Gangs of crooks mostly quacks in Chittoor district are earning in crores claiming to extract stones from kidneys of innocent and illiterate poor people after massaging a part of spinal cord and waist of the patient and then handing over pebbles as the removed stones. Such gangs are allegedly thriving at five places in the district.

- This racket came to light following an investigation conducted by The Hans India and HM TV. Shocked by the investigative report, two quacks namely Vijaya (55) and her husband Jagannadha Naidu (60) of Polinaidupalle in Srirangarajapuram mandal and their relatives tried to attack the TV crew and resorted to abuse to prevent the sting operation. The media persons had to seek help from police for their safety.

The couple has been in the profession for the last ten years and their main targets are illiterates and poor. Though they lack basic knowledge on heart and kidney functions, they have mastered the art of befooling gullible poor.^[18]

CONCLUSION:

By means of extending their therapeutic and nutritional values, plants will keep on remembering us that they are not only “LUNG OF EARTH”, but also “HEART OF HUMAN LIFE”. This article mainly deals with the medicinal plants located in Chittoor district of Andhra Pradesh, India. So that one can realize the importance of natural reserves and natural wealth situated around one’s surroundings, which is very much essential in today’s polluted life. Moreover, it also shows traditional use of plants by tribal people so that one can come to know the value of plants in our day to day survival. It also provides information about extinct and endangered species of Chittoor district and their effective methods of conservation.

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