



ISSN 2320-3862

JMPS 2014; 2(4): 50-58

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Received: 24-05-2014

Accepted: 28-06-2014

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## Survey of ethnobotanical observation on wild tuberous medicinal plants of Kollihills, Namakkal district, Tamilnadu

**R. Ramanathan, R. Bhuvanewari, M. Indhu, G. Subramanian and R. Dhandapani**

### Abstract

The present paper gives an account of 30 tuberous medicinal plants used in Kolli hills of Tamilnadu. Wild tuberous medicinal plants make a significant contribution to diet and medicinal uses of rural folklore people. Therefore, identification and utility of tuberous medicinal plants and local information collected by folklore people. Most of tuberous medicinal plants are consumed after cooking, while some of them are eaten raw. Botanical name, family, vernacular name and mode of action record for each species.

**Keywords:** Ethnobotanical, Kollihills, Folklore Tuberous medicinal plants, Tamilnadu.

### 1. Introduction

Medicinal plant sector has traditionally occupied an important position in the socio cultural, spiritual and medicinal area of rural and tribal lives of India. Medicinal plants as a group comprise approximately 8000 species and account for around 50% of all the higher flowering plant species of India. Millions of rural households use medicinal plants in a self-help mode. Over one and a half million practitioners of the Indian system of medicine in the oral and codified streams use medicinal plants in preventive, promotive and curative applications. There are estimated to be over 7800 manufacturing units in India. India has one of the richest plant medical cultures in the world. It is a culture that is of tremendous contemporary relevance because it can on one hand ensure health security to millions of people and on the other hand it can provide new and safe herbal drugs to the entire world. There are estimated to be around 25000 effective plant based formulations used in folk medicine and known to rural communities all over India and around 10000. Designed formulations are available in the indigenous medical texts. Cured drugs are usually the dried parts of medicinal plants (root, stem, wood, bark, leaves, flowers, seeds, fruits and whole plants etc). That form the essential raw materials for the production of traditional remedies of Ayurveda, Siddha, Unani, Homeopathy, Tibetan and other systems of medicine including the folk, ethno or tribal medicines. Tuberous plants characteristically have a storage organ on or below the soil surface; this organ may be a true bulb, corm, tuber, tuberous root, rhizome, rhizome stem or pseudobulb. Storage organs evolved over the years, allowing the plants to survive for an extended period of environmental stress such as cold, heat or drought. Carbohydrate and nutrient reserve are stored in these organs to support the growth of shoot, root and flower after the stressful period has passed [1]. Reveals that not much work has been done on wild tuberous medicinal plants of Kollihills, Namakkal district alone. Hence, the present work has been undertaken to record the plants, which are commonly used by ethnic people and other folklore medicine men of this region as a chief source of food and medicine.

### 2. Materials and Methods

#### 2.1. Study area

The Eastern Ghats are uneven terrain running nearly parallel to the eastern coast of India. Eastern Ghats are divisible into three zones such as northern Eastern Ghats, middle and the southern Ghats [2]. Kollihills the present study area are one among eight hills in the southern region (Fig 1 and 2). It lies at a longitude of 78°20' to 78°30'E and latitude of 11°10' to 11°30'N, covering about 500 km<sup>2</sup>. Forests cover 44% of the total geographical area; agricultural

activities cover less than 5% of the area. Annual rainfall varies between 300 to 750mm and the soil type varies between red to black clay. Highest point in Kolli hills is 1400m A.S.I., but the general level of the upper surface of the hill is not more than 1000. The altitude range of Kolli hills varied from 200 to 1415m A.S.I. The geology of area is characterized by charnockite associated with gneisses and metamorphic rocks. In order to estimate the carbon stock in above ground biomass, litter, woody debris and soil, about 26 quadrates of 25x25m size were established during September 2009 in different forest types, i.e., evergreen, deciduous, mixed open scrub and plantation forest. The geographical information of the district is simple and flatted area Kolli hills range occurs on the east of

the district. Cauvery river is flowing into the district. Which well is dry during the summer season, the population of Namakkal district has grown from 8.67 lakhs in 1961 to 15.90 lakhs in 1991 decade with the average growth rate being 3.54% per annum during this decade? The total geographical area of the district was 4376.57sq km in 1995-96. Cropped area accounts for about 64.34% of the total area forest land cover about 10.78% of the total land. However the forest lands accounted in revenue records are at variance with the data on actual extent of forest blocks available with the forest department significant portion 21.92% of the land fall under the category of other uncultivated land.

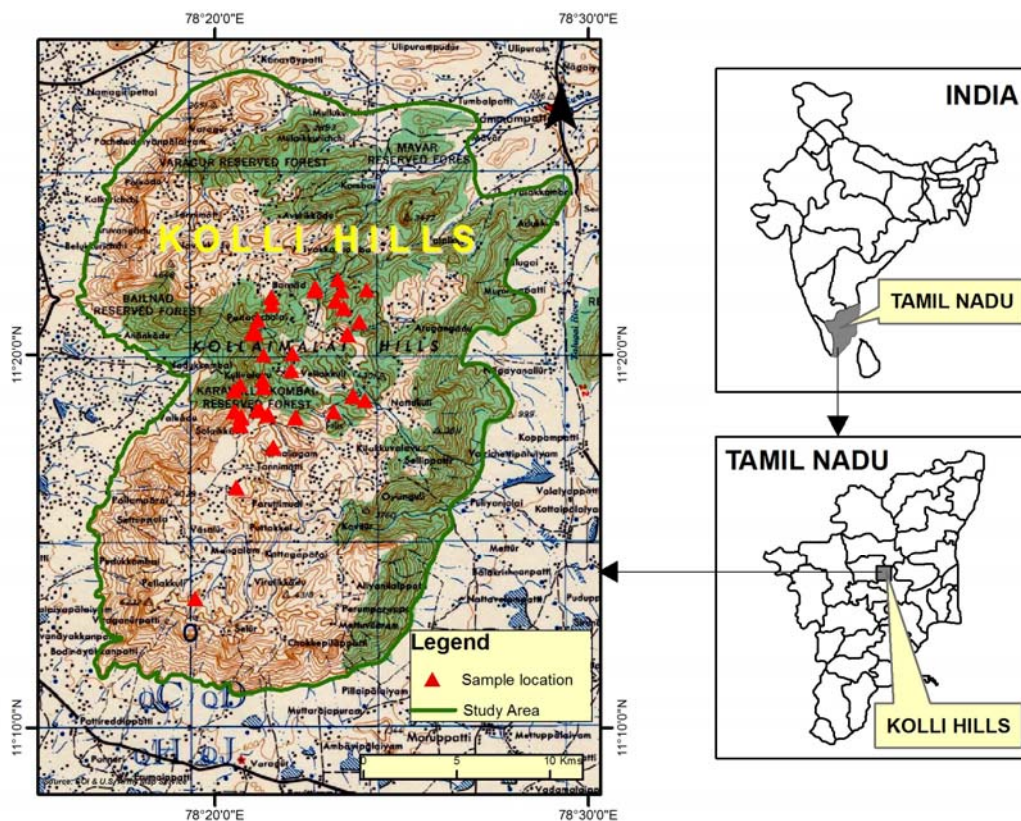


Fig 1: Study area and sampling sites

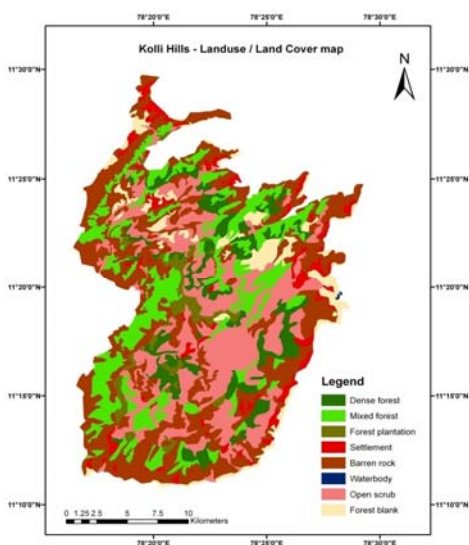


Fig 2: Land uses and land cover map of Kolli Hills

**2.2. Field visit**

Ethnobotanical observation of wild tuberous medicinal plants of Kollihills, Namakkal district, Tamilnadu was carried between October-2013 to February-2014. The methodology as proposed by Jain [3]. A medicinal plant survey was conducted mainly in Solakkadu, Keel solakkadu, Putthur, Dindupatty, Moolakadai, Semmedu, Melmenur, Poverkadu and Othakadai. About the medicinal plant information and its medicinal uses were received from different ethnic groups, villagers, tribal peoples and folklore who uses the plants for ethnobotanical observation of wild tuberous medicinal plants. All the species of plants were identified with help of local flora [4].

**2.3. Photography**

Photography taken from the macroscopic characters of plant with the help with of digital camera Nikon scan auto selector WIDE 4x zoom (12.0mege pixies) color were made with art color paper.

### 3. Results

Survey of ethnobotanical observation of wild tuberous medicinal plants are arranged in alphabetical order by their binomial name, Tamil name, family parts used medicinal uses. A total of the 30 species survey of ethnobotanical tuberous medicinal plants (Table 1 and Fig 3-8), distributed among 23

genera belonging to 19 families were recorded. Among the families, most of the species belonged to Araceae (6species), Brassicaceae (3species), Dioscoreaceae (3species), Liliaceae (2species), Solanaceae (2species) remaining 14 families were given by single species (Table 2).

**Table 1:** Survey of ethnobotanical observation on wild tuberous medicinal plants of Kolli hills

S. No	Botanical name	Family	Vernacular Name	Uses
1.	<i>Amorphophallus companulatus</i> Roxb.	Araceae	senaikizhangu	The tuberous roots used treatment of piles abdominal pain; tuncour asthma and rheumatism the tuber have also been posses tonic, stomach and appetizer properties.
2.	<i>Amorphophallus paconifolius</i> (Dennst) Ni.	Araceae	Karnai kizhangu	The corm is prescribed in bronchitis, asthma, abdominal pain emesis, dysentery, piles, disease due to viliated blood rheumatics swellings.
3.	<i>Amorphophallus sylvaticus</i> (Roxb) Kunth.	Araceae	Kattu karnai	The corms are used vata, kapha, omitting, cough dysmenorrheal and sexual weakness, arthritics, inflammation vomiting, cough anorexia, amenorrhea dysmenorrheal, general debility.
4.	<i>Asparagus recemosus</i> Willd.	Liliaceae	Thanneer vittan kizhangu (or) Satavalli kizhangu	1 cup tuber juice given 7 -8 days the women's suffering from leucorrhoea and used in debility night blindness, throat complaints epilepsy and diarrhoeal and fever.
5.	<i>Beta vulgaris</i> Linn.	Chenopodiaceae	Beet root	The juice of the red beet root was recommended to stay the bloody flux, and help the yellow jaundice also the juice put into the nostrils.
6.	<i>Borassus flabellifer</i> Linn.	Araceae	panankizhangu	Palmyra tuber has 98% fiber that means upto 95% is starch content which will be not suitable for sugar patients intarge amount.
7.	<i>Brassica oleraceae</i> Linn.	Brassicaceae	Turnip	It is cooked as vegetable. It has high amount of minerals and vitamins. It is cured as skin problem and urinary problems
8.	<i>Coleus forskohlii</i> (Poir), Briq.	Lamiaceae	Koorkan kizhangu	Tuber's cooked as vegetables to be cure cold, fever and cough
9.	<i>Colocasia esculenta</i> Linn. (Blue Hawalli)	Araceae	Sembu	Tubers is eaten as a vegetable after cooking tuber juice is rubbed on scalp for good growth of hairs.
10.	<i>Colocasia esculenta</i> Linn.	Araceae	Sembu or Kattusembu	Tubers cooked as vegetables to stimulant and indigestion tuber juice is rubbed on scalp for good growth of hairs.
11.	<i>Colocasia gigantea</i> (Blume) Hook f.	Araceae	Yanaikathu sembu	Tubers eaten as a vegetables after cooking it has high amount of carbohydrate and it is used as variety of food preparation
12.	<i>Corollocarpus epigeous</i> Benth & Hook.f.	Cucurbitaceae	Akasha karuden	Tuber used for cardiac and anti-venum tuber is chewed in case of tumor in stomach or in stomachache the decoction of tuber is given to patient for 7 days in typhoid.
13.	<i>Cyperus rotundus</i> Linn.	Cyperaceae	Korai	Applied externally to stop hair loss and in grazing of hairs and externally to the breast as a galactogoe tuber used as appetizer, stomachic, anthelmintic, useful inleprosy blood disease.
14.	<i>Dahlia coccinia</i> Cav.	Asteraceae	Dahlia kizhangu (or) kizhangu rose	The dahlia substance were often given a substance called atlantic starch (or) diabetic sugar derived from dahlia tubers insulin is still used for kidney functionality.
15.	<i>Daucus carota</i> Linn.	Araliaceae	Carrot	It is used to be heart attacks and strokes in women. Carrots are used in herbal medicine to treat problems persistence diarrhea different digestive problems, as usual as high cholesterol, improve eye sight and help to visual acuity.
16.	<i>Dioscorea alata</i> Linn.	Dioscoreaceae	Vetrilaivalli kizhangu	Tubers eaten after cooking and act as diuretic and for indigestion.
17.	<i>Dioscorea esculenta</i> Burkill.	Dioscoreaceae	Mulli kizhangu (or) siruvalli kizhangu	Tubers eaten after boiling for treatment of rheumatoid arthritis and rheumatic.
18.	<i>Dioscorea oppositifolia</i> Linn.	Dioscoreaceae	Malaiyan kizhangu (or) kavalakodi	Tuber made into paste heated and applied to reduce swelling externally applied in itching tubers eaten after cooking for the treatment of restoring kidney.
19.	<i>Drynaria quercifolia</i> (Linn.) J. Smith.	polypodiaceae	Attukaal kizhangu	Decoction of fresh or dried rhizome for hemoptysis used as an astringent or anthiliminthic rhizomes is tonic and astringent to the bowels, typhoid, jaundice and dysentery.

20.	<i>Gloriosa superba</i> Linn.	Liliaceae	Kanvali kizhangu (or) senkanthal kodi	Entire tuber tied around the back during labour tuber used as anthenuitic, abortifacient, also used in ulcer, leprosy, it is used some problems and snake bite etc...
21.	<i>Ipomea batatas</i> Poir.	Convolvulaceae	Sarkaraivalli kizhangu	Tubers roots eaten after cooking to cure fever and bronchitis and curing urinary problem and digestion problems.
22.	<i>Manihot esculenta</i> Crantz.	Euphorbiaceae	Maravallikizhangu	Tubers eaten after cooking to cure indigestion and body energy.
23.	<i>Mirabilis jalapa</i> Linn.	Nyctaginaceae	Anthimantharai	The root tuber is ground and paste is applied on tuber to check growth of old tumor. This plant is used as decorative plant.
24.	<i>Musa paradisiaca</i> Linn.	Musaceae	Banana tree	It is used to be arrest homoptysis and posses strongly astringent and anthelmintic properties other uses are asthma, burns diabetes dysentery excessive menstrual flow fever, gout, headache, hemorrhage tuberculosis and ulcer and remove kidney stones.
25.	<i>Nymphaea nouchali</i> Burmanf.	Nymphaeaceae	Alli	It is used to treat indigestion, it is a anti-diabetic, the tubers are can be used eaten food items and usually boiled and roasted.
26.	<i>Polianthes tuberosa</i> Linn.	Asparagaceae	Sambangi kizhangu	This is have been used in decoction for gonorrhea, the warm and seductive scent as a hypaolic women suffering insomnia and depressed; with low sexual drive.
27	<i>Raphanus sativus</i> Linn. (white)	Brassicaceae	White mullangi	One litre of juice of root is remove stomachache, it is using as food of vegetables. It cured as swellings, tunouss ulcers and it is also used to fever, cough skin problems and some urinary problems.
28	<i>Raphanus sativus</i> Linn. (red)	Brassicaceae	Red mullangi	It have highly medicinal value it is used as vegetables in eating, it is cured as swelling, tumours and ulcers, it also used to fever, cough skin problems and cardiac disorders and some urinary problems.
29.	<i>Solanum tuberosm</i> Linn.	Solanaceae	Urulai kizhangu	The tubers are used as peptic ulcers and excessive acidity, externally burled potato's to can be mashed and applied as hot as borne as a poultice to aching sheumatic joints betters fill.
30.	<i>Withania sominifera</i> (Linn.) Dunal.	Solanaceae	Amukara kizhangu	Tubers used as medicine to cure muscle related disease. The dried powder of tuber is given to check constipation; one teaspoon fall of root powder is given with 250ml milk twice a day in rheumatism.

**Table 2:** List of plant families with number of ethnobotanical observation on wild tuberous medicinal plants.

S. No.	Family	Number of species
1	Araceae	6 species
2	Araliaceae	1 species
3	Arecaceae	1 species
4	Asparagaceae	1 species
5	Asteraceae	1 species
6	Brassicaceae	3 species
7	Chenopodiaceae	1 species
8	Convolvulaceae	1 species
9	Cucurbitaceae	1 species
10	Cyperaceae	1 species
11	Dioscoreaceae	3 species
12	Euphorbiaceae	1 species
13	Lamiaceae	1 species
14	Liliaceae	2 species
15	Musaceae	1 species
16	Nyctaginaceae	1 species
17	Nymphaeaceae	1 species
18	Polypodaceae	1 species
19	Solanaceae	2 species
	TOTAL	30 species



**Fig 3: (a)** *Colocasia gigantea* Linn. Collected by a Malayali Tribal



**Fig 3: (b)** Collection of *Manihot esculenta* Crantz. by a Malayali Tribal and Research Scholar.



*Amorphophallus campanulatus* (Roxb)



*Amorphophallus paconifolius* (Dennst) Ni.



*Amorphophallus sylvaticus* (Roxb) Kunth



*Asparagus racemosus* Willd



*Beta vulgaris* Linn. – Beet Root



*Borassus flabellifer* Linn.

**Fig 4.**



*Brassica oleraceae* Linn. [Hanelt]



*Coleus forskohlii* (Poir.) Briq.



*Colocasia esculenta* Linn.



*Colocasia esculenta* (Linn.) Schott



*Colocasia gigantea* (Blume) Hook f



*Corollacarpus epigeous* Benth & Hook f

**Fig 5.**



*Cyperus rotundus* Linn.



*Dahlia coccinea* Cav



*Daucus carota* Linn. (carrot)



*Dioscorea alata* Linn.



*Dioscorea esculenta* Burkill.



*Dioscorea oppositifolia* Linn.

**Fig 6.**



*Drynaria quercifolia* (Linn)J. Smith



*Gloriosa superba* Linn.



*Ipomea batatas* Poir.



*Manihot esculenta* Crantz.



*Mirabilis jalapa* Linn.



*Musa paradisiaca* Linn.

Fig 7.



*Nymphaea nouchali* Burman f.



*Polianthes tuberosa* Linn.



*Raphanus sativus* Linn. white



*Raphanus sativus* Linn. red





*Solanum tuberosum* Linn.



*Withania somnifera* (Linn.) Dunal.

**Fig. 8**

#### 4. Discussion and Conclusion

The word "ETHNO" means traditions or of the folk or indigenous to local people. The phrase ethnobotanical practices deal with aspects of indigenous plant with tuberous practices. Use of indigenous/traditional herbal tuberous medicine is cost effective treatment for the livestock. Ethnobotanical observation on wild tuberous medicinal plants includes the indigenous beliefs, knowledge, skills, methods and practices pertaining to the health care of human being [5]. Many of the ethnobotanical observation on wild tuberous medicinal plants practices are widely accepted globally as complementary to the existing modern practices [6]. The indigenous treatments for various diseases and ailments of livestock are documented through interdisciplinary collaboration with the government and non-government organization. Folklore people utilize plant resource to meet their requirements, including ethnobotanical observation of wild tuberous medicinal plants. Ethnobotanical observation on wild tuberous medicinal plant studies have been made in India [5-15]. Therefore an urgent need was felt to document this precious knowledge of the tribes of Namakkal district which has not yet been thoroughly explored ethnobotanical observation on wild tuberous medicinal plants. The present investigation reveals that 30 plant species belonging to 19 families are used as herbal medicines in the study area in Namakkal district. This type of practice is comparatively cheap, time saving and provide immediate relief to some extent [16]. Due to continuous harvesting some of the medicinal plants of this area have decreased. There is a need to raise awareness and cultivation of above medicinal plants to the local people of that area to meet their own needs as well for providing them income. This information may be helpful to further research work.

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