

*Ethnobotanical Leaflets* 12: 118-126. 2008.

## **Glimpses of Tribal Botanical Knowledge of Tirunelveli Hills, Western Ghats, India**

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**Issued 4 March 2008**

### **ABSTRACT**

In the present paper, 46 plant species of angiosperms belonging to 19 genera of Euphorbiaceae that occur naturally in the Tirunelveli Hills of western Ghats, India, were chosen for study. It was found that the uses of Euphorbiaceous plants by the inhabitants of this region cover a number of broad categories including food, various kinds of poisons, medicines, sundry types of oils, waxes, rubbers, varnishes, compounds for paints and other industrial products.

**Key Words:** Tirunelveli hills, western Ghats, Euphorbiaceae, medicinal plants.

### **INTRODUCTION**

Evolution of human life and culture has directly or indirectly been associated with and influenced by the surrounding environment. Primitive people live closely associated with nature and chiefly depend on it for their survival. Their dependence on plants around them made them acquire the knowledge of economic and medicinal properties of many plants by methods of trial and error. Consequently, they became the store-house of knowledge of many useful as well as harmful plants, accumulated and enriched through generations and passed on from one generation to another, without any written documentation. World wide, tens of thousands of species of higher plants and several hundred lower plants are currently being employed by human beings for such purposes as food, fuel, fibre, oil, herbs, spices, industrial crops and as forage and fodder for domesticated animals. ( Heywood, 1992). Many people, especially in the poorer, underdeveloped countries, rely on wild plants for food, construction materials, fuel wood, medicine and many other purposes. Traditionally, the people in many local communities worldwide are extremely knowledgeable about plants and other natural resources, on which they are so immediately and intimately dependent. Unfortunately, much of this wealth of knowledge is today becoming lost as traditional cultures become eroded. Ethnobotanists can play very useful roles in rescuing this disappearing knowledge and

returning it to local communities. In this way local ethnobotanical knowledge can be conserved as part of living cultural- ecological systems, helping to maintain a sense of pride in local cultural knowledge and practice and reinforcing links between communities and the environment, all of which may be thought of as essential steps in the promotion of conservation (Martin, 1995). It is, therefore, important that before this rich unwritten folk-lore on uses of plants and plant resources becomes lost forever through the recent accelerated 'civilization' of the aborigines (tribals), it should be properly documented and preserved (Rao and Henry, 1997).

The health of every individual is directly dependent on the plant world. Out of the total Indian angiosperm flora of about 20,000 species, some 5,000 are economic species. Of the latter, some 3,000 are medicinal root plants; whereas 680 produce fruits of medicinal value. About 450 Indian medicinal plants are exported globally.

The richness and diversity of the tropical flora and fauna of India amazed the Europeans when they first arrived on this subcontinent. That this is so is evident from a reading of the text of the first work on Indian botany, *Coloquios dos simples*, a book which deals in part with the western Ghats of Peninsular India ( cf. Clive 1984).

*Euphorbia* is the largest genus in the family Euphorbiaceae and one of the sixth largest genera of flowering plants in the world, consisting of about 2000 species. Out of 81 species of *Euphorbia* occurring in India, about 40 species have been ethnobotanically studied (Binojkumar and Balakrishnan, 1996). According to Hill (1755), the milky latex of *Euphorbia* is effective in the treatment of Dropsies. Ainslie (1826), on the other hand, reported that the latex of *E. tortilis* was used externally for herpes.

A lyophilized aqueous extract of *E. hirta* was evaluated by Lanher *et al.*, (1996) for benzodiazepine like properties and for hypnotic neuroleptic and antidepressant properties. However, they found out that the extract did not possess neuroleptic activity, though slight antidepressant effects were obtained against reserpine-induced hypothermia.

*Aporosa lindleyana* has long been used traditionally for the treatment of jaundice, fever, headache and insanity. Significantly, the analgesic activity of a root extract of *A. lindleyana* was later proven by Krishnamoorthy *et al.*, (1999).

An extract of *Phyllanthus amarus* significantly reduces the radiation-induced Micronuclei (MN) induction in both polychromatic erythrocytes (PCE) and normochromatic erythrocytes (NCE). This reduction was found to increase linearly with extract dosages of from 25 to 125 mg/kg (Devi *et al.*, 2000).

During the field survey, the medicinal species of Euphorbiaceae were collected and documented. Information was obtained from the Tribals (Kanis) of Tirunelveli hills and the local Siddha, Ayurvedha practitioners and tabulated.

## STUDY AREA AND ITS TRIBAL COMMUNITIES

The Tirunelveli hills lie between 77° 5' and 77°40' E and 8°20' and 8° 50' N from the southernmost segment of the Western Ghats. They extend through Papanasam R.F., Singampatti R.F., Kalakadu R.F., Mahendragiri R.F, Veerapuli R.F. and Ashambo R.F., and into the present day Kanyakumari district of Tamil Nadu (Fig 1). The tops of these mountains are often compared to oceanic islands in having unusually

large numbers of endemic species, this largely due to the isolation provided by the waters of Arabian Sea, Indian Ocean and the Bay of Bengal on three sides (Nayar, 1996; Gopalan and Henry, 2000). Otherwise, the western Ghats area as a whole is characterized by a profusion of different vegetation types, such as Southern Tropical Thorn Forest (foot hills to 20m), Southern Tropical Dry Deciduous Forest (200-400m), Grass Lands ( $\pm$  500m), Southern Tropical Moist Deciduous Forest (500-800m), Southern Tropical Wet Evergreen Forest (80-1500m), Subtropical Mountain Forest (7150m) and Grassy Swards at high altitudes (7100m).

The Kani's and Paliya tribes inhabit the villages of Petchiparai, Kallar and Mahendragiri in the Kanyakumari district and Kadayam, Sankarankoil, Puliarai, Papanasam, Courtallam, Sivagiri and Manjolai in the Tirunelveli District. They subsist on leaves, tubers and fruits of forest plants and on meat from wild, hunted animals. Wild plants provide the bulk of their medicines. Many changes can be expected in the future, however, since the younger generations of these communities are being more and more influenced by modern day social and living standards.

### METHODOLOGY

Field trips were conducted during 1999 to 2004 in the tribal and rural parts of the Tirunelveli hills.

Data was collected regarding plant and plant parts used, local names and purposes and method of administration of the drugs. Information was obtained from tribal medicine men, old men and women, and other local rural informants. The actual application of plant remedies was also observed during field work.

The plant specimens were identified using recent regional floras (Gamble, 1993 & 1994). Routine herbarium methods have been followed in preserving specimens and they are deposited in St. Xavier's College Herbarium, Palayamkottai.

### RESULTS

The tribals and rural populaces use a variety of species from the forested as well as non forested geographic pockets of the study area. In the present paper, 46 plant species of angiosperms belonging to 19 genera of the Euphorbiaceae were studied (Table 1). The uses of Euphorbiaceous plants in our own society cover a number of broad categories including food, various kinds of poisons, medicines, sundry types of oils, waxes, rubbers, varnishes, compounds for paints and other industrial products. Many plants of this family have been used in traditional Chinese medicine for more than 2000 years as anti-tumour drugs. According to Schroeder *et al.*, (1980), plants of this family have been used to treat cancer, tumours, and warts from the time of Hippocrates (ca 400 BC).

### CONCLUSION

As pointed out earlier, the field of ethnobotany is receiving more and more attention these days. However, it is still the molecular biologists whose work centers in the laboratory that garnishes more status and funding. Field ethno botanists have not yet received the same level of support and respect, primarily because interest in this field has only recently reemerged. Yet, the field is growing. New scientific journals and societies have begun to disseminate the studies of ethnobotanists to peers, other scientists, and policy

makers worldwide. The current era is an exciting time to be an ethnobotanist. Ethnobotany issues are the focus of much public attention. Due to increased public interest and policy making in conservation, companies are looking for new plants and new approaches for the production of food, medicines, and energy sources. University departments are opening positions for interdisciplinary-trained ethnobotanists. The future looks promising for these dedicated scientists in a fascinating and vital field of research.

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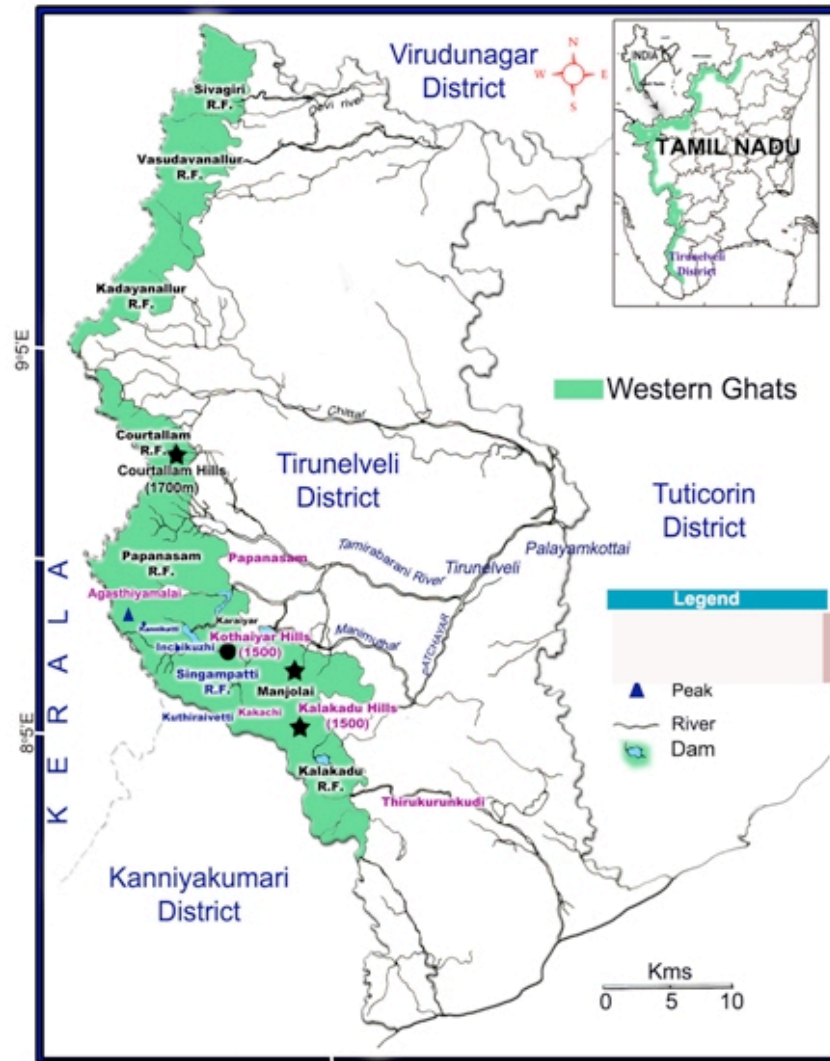


Fig 1. Study Area

**Table 1. The list of Medicinal plants of Euphorbiaceae from Tirunelveli hills.**

S.No.	Scientific Name	Local Name	Habit	Parts / mode of administration	Status
1.	<i>Acalypha ciliata</i> Forssk.	-	Herb	Whole plant Laxative and	Common

2.	<i>Acalypha fruticosa</i> Forssk.	Sirusinni	Shrub	Leaves Roots	vermifugal properties Digestive troubles Gonorrhoea	Common
3.	<i>Acalypha indica</i> L.	Kuppai meni	Herb	Whole plant	Tooth ache, ear ache, severe cough, ringwork and burns	Common
4.	<i>Acalypha racemosa</i> Heyne ex Baill.	-	Herb as under shrub	Whole plant	Substitute for <i>A.</i> <i>indica</i>	-
5.	<i>Aporusa lindleyana</i> (Wight) Baill.	-	Tree	Root	Excessive thirst and fever	Occasional
6.	<i>Antidesma acidum</i> Retz.	Kattu khoya	Shrub or small tree	Leaves	Cooked as vegetable	Occasional
7.	<i>Antidesma alexiteria</i> L.	-	Small tree	Leaves	Snake bite	Common
8.	<i>Antidesma bunius</i> (L.) Sprengel	-	Tree	Leaves	Ulcers, indigestion	Common
9.	<i>Baccourea courtallensis</i> (Wight) Muell. Arg.	-	Tree	Fruit	Acidity, edible	Occasional
10.	<i>Bischofia javanica</i> Blume	Malai poovarasu	Tree	Leaves Bark	Sores, tooth ache and eye diseases Throat troubles	Occasional
11.	<i>Breynia retusa</i> (Dennst.) Alston	-	Shrub	Stem	Conjunctivities	Common
12.	<i>Breynia vitis-idaea</i> (Burm.f.) C. Fischer	Manipullanti	Shrub	Leaves Roots	Tonsils. Mouthwash for toothache	Common
13.	<i>Bridelia retusa</i> (L.) Sprengel.	Mulvengai, Adamaruthu	Shrub or tree	Bark	Hypertensive properties	Common
14.	<i>Croton caudatus</i> Geiseler	-	Shrub	Leaves Roots	Applied as poultice in sprains, diuretic. Malaria	Rare
15.	<i>Croton zeylanicus</i> Muell. -Arg.	-	Shrub	Bark	Stomach ache	Common
16.	<i>Drypetes roxburghii</i> (Wall.) Harusawa	Parupala	Tree	Leaves Seeds	Fever, sterility. Habitual abortion and burning sensation	Rare
17.	<i>Euphorbia antiquorum</i> L.	Sathura kalli	Tree	Roots	Stomachic, digestive, wounds, ulcers, deafness, cough and anti- inflammatory	Common
18.	<i>Euphorbia dracunculoides</i> Lam.	-	Herb	Capsules	Removing warts	Common
19.	<i>Euphorbia hirta</i> L.	Ammanpacharisi	Herb	Whole	Purifies blood, skin	Common

				plant	diseases, cough, asthma, and other respiratory disorders	
20.	<i>Euphorbia indica</i> Lam.	-	Herb	Whole plant	Diarrhoea, dysentery and leucorrhoea	Common
21.	<i>Euphorbia nivulia</i> Buch.-Ham.	Illaikalli	Small tree	Leaf, latex and root	Skin disorders, ear disorders, retention of urine, swelling, worm infection	Occasional
22.	<i>Euphorbia rosea</i> Retz.	-	Herb	Leaves and seeds	Vermifuge	Occasional
23.	<i>Euphorbia rothiana</i> Sprengel	-	Herb	Leaves	Vermifuge	Rare
24.	<i>Euphorbia thymifolia</i> L.	Chinnamman pacharisi	Herb	Whole plant	Ring worm, wounds, asthma, skin diseases.	Common
25.	<i>Euphorbia tirucalli</i> L.	Thirukalli	Small tree	Milky juice	Warts, toothache, cough asthma and earache	Common
26.	<i>Euphorbia tortilis</i> Rottler	Thirugukalli	Small tree	Milky juice	Herbs	Common
27.	<i>Glochidion zeylanicum</i> (Gaertner) Juss.	Kokkamani maram	Small tree	Bark Shoot Fruit	Stomachic Itches Cooling and restorative	Common
28.	<i>Jatropha curcas</i> L.	Kattamanakku	Shrub	Leaves Latex Seeds	Foul ulcers, tumours and scabies Wounds, ulcers. Wounds, skin diseases	Common
29.	<i>Jatropha glandulifera</i> Roxb.	Vellai kattukottai	Shrub	Stem Seeds	Arrest bleeding from wounds and cuts and ulcers Cleansing application for wounds, sores and ulcers	Common
30.	<i>Jatropha gossypifolia</i> L.	Adalai	Shrub	Leaves Seeds Roots	Stomachic, fever. Fixed oil useful in body pain Kidney troubles, liver bladder diseases, diabetes and against leprosy	Common
31.	<i>Macaranga indica</i> Wight	Vattakkanni	Tree	Gum	Antiseptic, applied on the sores	Common
32.	<i>Macaranga peltata</i> (Roxb.) Muell. Arg.	Vattathamarai	Tree	Gum Leaves Bark	Applied on venereal sores Extract as vulnerary. Contains antiseptic tannins.	Common



33.	<i>Mallotus philippensis</i> (Lam.) Muell. Arg.	Thirisalakkai Maram	Tree	Bark Fruits	Antiseptic Skin affection	Common
34.	<i>Phyllanthus amarus</i> Schum. & Thonn.	Kezhanelli	Herb	Whole plant	Jaundice, diarrhoea, dysentery, intermittent fever, diseases of the urino-genital system, scabies, ulcers and wounds	Common
35.	<i>Phyllanthus emblica</i> L.	Nelli	Tree	Root bark Leaves  Fruits	Jaundice, diarrhoea. Inflammation, dysentery and diarrhoea. Diabetes, cough, asthama, peptic ulcers, skin diseases, leprosy, anaemia, cardiac disorders and greyness of hairs	Common
36.	<i>Phyllanthus maderaspatensis</i> L.	Melanelli	Herb	Leaves Seeds	Infusion in headache. Carminative, diuretic	Common
37.	<i>Phyllanthus reticulatus</i> Poir.	Karunelli	Shrub	Whole plant	Burning sensation, sores, diarrhoea and skin eruptions	Common
38.	<i>Phyllanthus rheedii</i> Wight	-	Herb	Whole plant	Stomach disorders	Common
39.	<i>Phyllanthus urinaria</i> L.	Sivappu keezhanelli	Herb	Whole plant	Substitute for <i>Phyllanthus amarus</i>	Common
40.	<i>Phyllanthus virgatus</i> Forst.	-	Herb	Whole plant	Having antiseptic properties	Occasional
41.	<i>Sauropus androgynus</i> (L.) Merr.	Thavasimurungai	Shrub	Leaves  Roots	Leafy vegetable (multivitamin content) Fever, bladder, ulcers	Occasional
42.	<i>Sauropus quadrangularis</i> Muell.-Arg.	-	Shrub	Leaves	Dried and smoked as a cure for tonsils	Occasional
43.	<i>Sebastiania chamaelea</i> (L.) Muell.-Arg.	-	Shrub	Leaves	Diarrhoea	Common
44.	<i>Securinga virosa</i> (Roxb.ex Willd.) Baill.	Aadu thinnichedi	Shrub	Bark  Leaves  Roots	Paste on skin scratches Destroying worms of the sores, laxative and antipyretic Analgesic	Common
45.	<i>Suregarda multiflora</i> (Juss.) Baill.	-	Small tree	Bark	Hepatic troubles, purgative	Occasional
46.	<i>Tragia involucrata</i> L.	Chenthatti	Climbing	Roots	Skin eruption, veneral	Occasional

var. *involutrata*

herb

diseases, diabetes, blood  
impurities and vomiting