

**IDENTIFICATION AND ETHNOBOTANICAL SURVEY OF MEDICINAL PLANTS IN VATHALMALAI HILLS, EASTERN GHATS, DHARMAPURI DISTRICT, TAMIL NADU, INDIA**

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**ABSTRACT**

**Objective:** Identification and ethnobotanical survey was made on the utilization of medicinal plant the tribal community of Vathalmalai Hills in Dharmapuri, Tamil Nadu, India. The objective of the study was to identify and documented the medicinal plants traditionally used by tribal people.

**Methods:** The study was conducted from October 2016 to October 2017. The data were collected from local tribal community, they were interviewed using semi-structured questionnaires, and their traditional ethnomedicinal knowledge was recorded. As, we had collecting the information through local tribal peoples, they we are know the plant local names as well as which plants and parts are mostly used in various disease and disorders problems.

**Results:** A total of 82 plant species and belonging to 40 families were identified. They are most frequently used plant parts leaf and most of the medicine prepared in the form powder and paste. The important disease cure for cold, diarrhea, chicken pox, smallpox, cough, headache, and stomach ache.

**Conclusion:** The ethnomedicinal survey of medicinal plants recommended by traditional healers for the treatment of various disease and disorders new areas of research on the antihypertensive effect of medicinal plants. In the case of safety and effectiveness, they can be refined and processed to produce natural drugs.

**Keywords:** Ethnobotanical survey, Tribal people, Vathalmalai, Ethnomedicines.

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**INTRODUCTION**

The Rig-Veda period 4500 BC–1600 BC is believed to be the oldest repository of human knowledge about medicinal usages of plants in the Indian subcontinent [1]. WHO quoting is very significant as they are focused worldwide. So that, we had mentioned their reports for percentage. Ethnobotany is two words “Ethno and Botany,” and the term was coined by John William Harshberger in the 1890s. It is defined as the study of the relationship between people and plants. Ethnobotanical studies reveal us a complete information about plants and their herbal uses of medicinal plants [2].

India has one of the 12 mega biodiversity countries of the world and is recognized as a country that is rich in all types of biodiversity such as ecosystem, species, and genetic diversity mainly due to its tropical location, disparate physical features, and climatic types are present [3]. India has one of the richest traditionally used medicinal plant in the country. Whether it is distributed to be around 25,000 effective plant-based formulations are known to rural communities in India and are used as folk medicine [4]. Tribal community in India 427 tribal had known the traditional medicine. The knowledge base and the practice have been marginalized due to political, social, and economic reasons of late, interest in traditional medicine has continuously been increasing, and thereby various ethnobotanical studies have been initiated to explore the knowledge base from the various tribal groups [5,6].

Vathalmalai (or) Vytla hills are a small village in Dharmapuri district, Tamil Nadu, India. Vytla hills consisting of seven villages such as Kothalangkadu, Chinnagkadu, Ondriyangkadu, Paalsilmbu, Mannaguli, Periyur, Nayakkanur. It has most of the flora have disappeared due to severe habitat fragmentation resultant from the creation of the plantations. However, some species continue to survive and thrive in

several protected areas nearby, include Servarayan hills Yercaud. The tribal people are closely related to the forest environment with which they traditionally live in harmony [7]. Ethnobotanical study focused on the hills of Vathalmalai, it has been variety of flora and knowledge of traditional medicine. The main objective of the study to identify medicinal plants species used by the tribal community of Vathalmalai hills and document the traditional medicinal knowledge associated with the use of these plants.

**METHODS****Study area**

The present survey was conducted in Vathalmalai or Vytla hills. It is located in Dharmapuri district, Tamil Nadu, India. It is Reserve forest. The area lies between latitude 12° 64' N and longitude 78° 20' E at an altitude ranging from 3600 m. The temperature ranges between 22 and 25°C. Vathalmalai is green and natural hill range, Soils of the Vathalmalai hills are mainly Red soil, Blackish brown, and Reddish brown.

**People**

The presented tribal people in Vathalmalai hills they were called as *Vedar*. Tribal community of Vathalmalai hills basically farmers. They are hardworking and economically backward. The tribal people professionally work for collection of honey bee, wax, and other minor forest products. The Various cropping and agricultural practices followed by around the study area has mentioned. Although agricultural modern techniques grown, they are followed the traditional methods.

**Data collection**

Frequently, the field survey conducted on (October 2016–October 2017). The Ethnobotanical data were collected through discussions among the herbal practitioners in the study area. Most of the

information was gathered from elderly people of tribal. The collected plants species were identified using the flora of Presidency of Madras (Gamble, 1935) and the Flora of Tamil Nadu Carnatic (Mathew, 1983). The identified plant specimens were than confirmed with the herbaria of Botanical Survey of India (BSI), southern circle, Coimbatore, Tamil Nadu, India.

## RESULTS AND DISCUSSION

The ethnomedicinal system has been used in various part of the countries since ancient times and it is the best treatment at that time from tribal people community. The present study resulted in the collection of 82 plants species and belonging to 40 families of Angiosperms were identified. The medicinal plants are arranged by scientific name, common name, Tamil name, family name, plant parts used and therapeutic uses (Table 1). The most dominant families such as Asteraceae, Acanthaceae, Fabaceae, Euphorbiaceae, Lamiaceae, Malvaceae. The data were collected from local tribal people of Vathalmalai hills. As shown in Fig. 1, the plant representation of plant form used in shrub (30%), herb (50%), climber (5%), and tree (10%). As shown in Fig. 2, the most frequently utilized plant parts percentage were whole plant (5%), buds and pulp (7%), bark (10%), stem and seed (12%), fruit (15%), flowers (20%), root (35%), and leaves 60%. Vathalmalai traditional healers medicine prepare in the form of single or complex other plant parts to cure various disease and disorders problems. Mostly prepare of medicine in the form of powder, decoction, and paste. The majority of disease cures such as with cold, cough, headache, stomach ache, dysentery, skin disease, wounds, diabetes, and sexual disorders.

## DISCUSSION

In India, about 7300 plant species are used in traditional health-care systems such as Ayurveda, Siddha, Unani, and folk healing practices. The blooming of traditional medicine industry results in an increasing demand on medicinal plant products. Medicinal plants 90% derived from natural habitats.

Rajgond Tribal of Haladkeri Village in Bidar district is far away from modern medicine even in the 21<sup>st</sup> century and is known for their unique way of life and disease management [8]. Jawadhu hill's in Tiruvannamalai district have a huge relations with their surrounding environment condition. The tribal community has not forgotten their age-old ethnicity and traditions. Medicinal plants Knowledge, which are used in their daily life against different ailments still lies with them. The variety flora of Jawadhu Hill's include, a large number of medicinal plants, are present [9].

Tirunelveli Kani tribals used the fruit of *Trichopus zeylanicus* for body strength, asthma, and venereal disease. It is claimed that one can live for days together without food and still be able to perform rigorous

physical work by eating a few fruits of Arokyapachilai every day and they named the plant as "Arokyapachilai" (greener of health) those are use [10]. Tirunelveli Kani traditional healers used one or more medicinal plant parts than preparation of medicine in the treatment of single or multiple ailments; the similar findings were reported by several researchers [11]. In similar results, *Gymnema sylvestre* the most generally used medicinal plant, it was attributed to its use in the treatment of various diseases, and it is well recognized by all the informants as an antidiabetic plant. Thanjavur district Irulas tribal people are growing *G. sylvestre* as a climbing vine in their home, and it was a household custom to consume one leaf a day to cure various disease [12]. As Kani traditional healers too frequently use some mixture such as honey, cow goat milk, sugar, ghee, salt, boiled rice, and buttermilk to improve the acceptability and medicinal property of certain remedies [13].

Yercaud hills local tribal people prescribed the medicinally important plants either as single or as in combination with other plants medicine to cure illness problems. An interesting observation was that some of the documented medicinal plants such as *Acalypha indica* L., *G. sylvestre* R. Br., *Leucas aspera* (Willd.) Link, *Mimosa pudica* L., and *Solanum nigrum* L. were found to be practiced as important medicinal plants in Yercaud hills for the treatment of such as snake bite, diabetes, headache, dysentery and stomach ulcer [14]. Palamalai traditional healers are used one or more plant parts combination medicine to treating various disease and disorders problems. The local tribal community people are generally dependent on the traditional health-care system. Traditional knowledge belief in the area also has their own unintentional role in the conservation and sustainable utilization of medicinal plants [15].

In similar results showed Asteraceae family plants have a highly medicinal plant species present compared to Babungo family because of largely available biologically active compound present [16]. *Acatochaeta Africana* has been found to contain phytochemicals which are capable of arresting wound bleeding, preventing the growth of wound contaminating microbes and accelerating wound healing. Most young people are not interested in traditional medical practice because it is less profitable compared to growing cash crops [17]. Western Ghats is one of the plant biodiversity hotspot of India. Agumbe region of Western Ghats is known for rich plant diversity and traditional medicinal practices. Ten plants were identified to be used to treat fungal infections used exclusively against infectious diseases of both bacteria and fungi in general and skin infections, itching, wound dressing in particular [18].

## CONCLUSION

The study was aimed to indigenous knowledge about medicinal plants used by Vathalmalai terrible people. A total of 82 plant species belonging to 40 plant families were used as medicinal plants for treating of cold, cough, headache, and stomach ache. The knowledge of traditional medicines among the younger population is too poor thus older population can play pivotal role to inherit their knowledge. The medicinal plants of this region require immediate conservation due to urbanization and agriculture practices. Thus, cultivation of these medicinally important plants should to be encouraged.

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## AUTHORS CONTRIBUTIONS

All the authors have contributed equally.

## CONFLICT OF INTERESTS

Declared none.

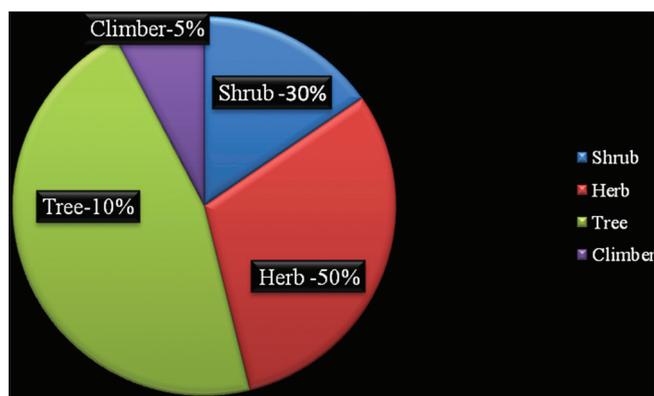


Fig. 1: Habit wise distribution of medicinal plants used by Vathalmalai tribals

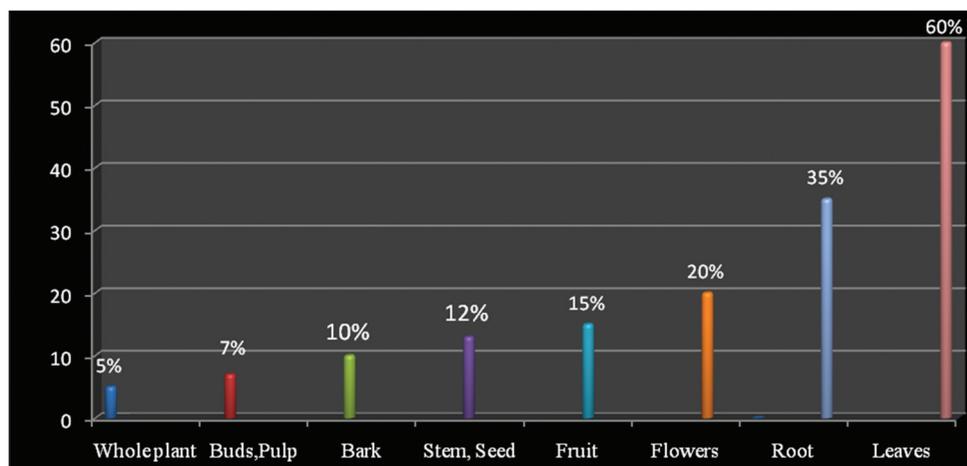


Fig. 2: Medicinal plants parts percentage used in Vathalmalai tribal community

Table 1: Medicinal plants used by local Tribal community from Vathalmalai hills

Scientific name	Common name	Local name	Family	Parts	Therapeutic uses
<i>Ageratina adenophora</i>	Crofton weed	Pachha	Asteraceae	Leaves	Paste of leaves to treat in wound and skin disease
<i>Ageratum conyzoides</i>	Whiteweed	Pump pillu	Asteraceae	Leaves	Leaves paste to treat ague, Wounds, bruises
<i>Annona squamosa</i>	Custard apple	Seetha	Annonaceae	Fruits	Fruits to cure Improve digestion
<i>Acalypha indica</i>	Indian mercury	Kuppaimeni	Euphorbiaceae	Leaves	Few leaves soak water then drink the water to cure Respiratory problems
<i>Abutilon indicum</i>	Indian Mallow	Thuthi	Malvaceae	Leaves	Grind leaves with little turmeric apply wound
<i>Achyranthus aspera</i>	Prickly chaff flower	Naayuruvi	Amaranthaceae	Leaves	Leaves juice to cure Ear infection and wounds
<i>Amaranthus spinosus</i>	Spiny amaranth	Mullu keerai	Amaranthaceae	Seed, Root	Seed used for broken bones, Root juice used for fever, urinary troubles
<i>Annona reticulata</i>	Bullocks heart	Rama-chitha	Annonaceae	Leaves, Bark	Fruits and Bark to treat diarrhea and dysentery
<i>Acacia nilotica</i>	Babul	Karuvelam	Leguminosae	Bark	Decoction of the bark to treat mouth ulcer
<i>Albizia amara</i>	Oil cake tree	Thuringi	Fabaceae	Bark	Bark used to treat jaundice and mouth inflammations
<i>Aloe vera</i>	Katralazhi	Chottu katthallai	Liliaceae	Leaves gel	Leaves gel to treat ulcer, gel apply skin
<i>Artocarpus integrifolia</i>	Jackfruit	Palaa	Moraceae	Fruit	Eating fruit to cure stomach, indigestion and increase sperm
<i>Alangium salvifolium</i>	Ankol	Alingi	Alangiaceae	Root bark	The root-bark is also used in traditional medicine skin problems and snake bite
<i>Aerva lanata</i>	Mountain knotgrass	Pulann-chatti	Amaranthaceae	Whole plant	Decoction of the whole plant to treat remove the kidney stone and cure urinary path problems
<i>Clitoria ternatea</i>	Butterfly pea	Sangu poo	Fabaceae	Leaves	Boiled leaves to treat headache
<i>Crisnum asiaticum</i>	Poison bulb	Thodavalzhi kilangu	Amaryllidaceae	Leaves	Leaves juice mixed salt to treat ear-problems
<i>Colocassia esculenta</i>	Green taro	Sempu	Araceae	Leaves	Decoction of the peel to cure diarrhea, corm used tribe people to cure ache
<i>Cardiospermum halicacabum</i>	Ballon plant	Modikkottan	Sapindaceae	Whole plant	Leaves juice used for ear problems. Stomach ache, snakebite. Roots used for urinary tract problems
<i>Coccinia indica</i>	Kowai	Cova palam	Cucurbitaceae	Leaves Fruits	Cooking leaves treatment for ulcer
<i>Cissus quadrangularis</i>	Veldt grape	Perandai	Vitaceae	Whole plant	Whole plant to treat stomach and cough
<i>Cipadessa baccifera</i>	Ranabili	Puilipan cheddi	Meliaceae	Root	Root juice used cough and cold
<i>Cassia fistula</i>	Indian laburnum	Charak-kondrai	Caesalpinaceae	Dry, flower	Decoction of the dry flower to treat stomach ache and diabetes
<i>Capparis zeylanica</i>	Ceylon caper	Suduthoratti	Capparidaceae	Root, Bark	Decoction of the root bark to treat vomiting and appetite
<i>Citrus aurantifolia</i>	Lime	Elumichai	Rutaceae	Fruits	Lemon juice, warm water, and sugar to drink improve liver function

(Contd...)

Table 1: (Continued)

Scientific name	Common name	Local name	Family	Parts	Therapeutic uses
<i>Citrus lemon</i>	lemon	Narattai	Rutaceae	Fruits	Fresh lime juice in warm water to treat constipation.
<i>Dodonaea visosa</i>	Hop bush	Viralsi	Sapindaceae	Leaves	Leaves paste to treat hematoma
<i>Diplocyclos palmatus</i>	Lollipop climber	Aiviralk-kovai	Cucurbitaceae	Fruits, Leaves	Fruits and leaves are used to cure stomach
<i>Datura metel</i>	Thornapple	Ummathai	Solanaceae	Seeds, Leaves	Leaves used for Joint pain, headache
<i>Euphorbia hirta</i>	Asthma-plant	Ammam Paccharisi	Euphorbiaceae	Whole plant	Whole plant powder to treat Stomach
<i>Emila sonchifolia</i>	Lilac tassel flower	Myalccevi	Asteraceae	Whole plant	Decoction of the Whole plant to treat fever
<i>Euphorbia cyathophora</i>	Wild Poinsettia	Thithli poo	Euphorbiaceae	Leaves	Leaves juice to treat stomach-ache and constipation
<i>Eclipta prostrata</i>	False Daisy	Karisilanganni	Asteraceae	Fresh Leaves	Eating five fresh leaves cure constipation
<i>Euphorbia tirucali</i>	Pencil tree	Nirgudi	Euphorbiaceae	Root and Bud	Decoction of the Root and Bud to treat coughs and pectoral pain
<i>Euphorbia cyathophora</i>	Catalina	Paalperukki	Euphorbiaceae	Leaves	Decoction of the leaves to treat stomach, constipation
<i>Hemidesmus indicus</i>	Indian sarsaparilla	Nannari	Periplocaceae	Tuber	Tuber used for tea for stimulate and cure stomach-pain
<i>Hygrophila auriculata</i>	Temple plant	Neer-mulli	Acanthaceae	Whole plant	Decoction of the whole plant to treat jaundice, enlarge liver
<i>Heliotropium indicum</i>	Indian heliotrope	Tetkkida	Boraginaceae	Leaves	Leaves with garlic and ginger oral consumption act as cancer agent
<i>Ipomoea obscura</i>	Morning Glory	Sirudali	Convolvulaceae	Dry Leaves	Dry powder leaves to treat aphthae
<i>Jasminum ariculatum</i>	Jasmine	Malligai	Oliaceae	Leaves	The leaves are used in the treatment of mouth ulcers
<i>Jatropha gossypifolia</i>	Cotton leaf	Kattamanakku	Euphorbiaceae	Bark	Decoction of the Bark used for stimulate menstruation
<i>Lepidagathis cristata</i>	Mullabanthi	Karappan poondu	Acanthaceae	Leaves	Leaves extract for treating malaria
<i>Lantana camara</i>	Lantana weed	Unnchedi	Verbenaceae	Roots	Fresh root used for dysentery
<i>Leucas aspera</i>	Thumbai	Thumma chettu	Lamiaceae	Leaf, Flower	Decoction of the whole plant cure malarial fever; leaves juice apply skin disease, swelling
<i>Leonotis nepetifolia</i>	Lion's Ear	Ranaperi	Lamiaceae	Whole plant	Decoction of the whole plant is to clean out the uterus, treat diarrhea
<i>Mucuna prurita</i>	Bengal velvet bean	Poonaikali	Fabaceae	Seeds	Seeds used for male infertility, snake-bites
<i>Madhuca longifolia</i>	Iluppai	Illupi	Sapotaceae	Flowers	Flowers juice to treat headache and eyes problem.
<i>Martynia anua</i>	Devil's Claw	Kakatundi	Malvaceae	Leaves	Leaves to treat cure stomach
<i>Melia azedarachta</i>	Bakayan tree	Malai vembu	Meliaceae	Leaves, Bark	Decoction of the leaves to relief hernia, Bark decoction to cure kidney problems
<i>Momordica charantia</i>	Bitter gourd	Pavai kai	Cucurbitaceae	Fruits, Seeds	Fruits used for stimulate digestion, Seeds dry powder decoction used for diabetes
<i>Mimusops elengi</i>	Bullet wood	Magizhamboo	Sapotaceae	Fruits	Fruits to treat constipation
<i>Morinda coreia</i>	Noni	Manchanari	Rubiaceae	Trunk	The trunk to treat mensturtional disorders
<i>Mymosa pudica</i>	Thotta-sinigi	Sensitive plant	Leguminosae	Leaves	Leaves paste used for wounds
<i>Ocimum tenuifloram</i>	Thulsi	Thulasi	Lamiaceae	Leaves	Fresh leaves to treat cough and cold
<i>Ocimum americanum</i>	Hairy Basil	Nai-thulasi	Lamiaceae	Leaves	Leaves paste to cure skin disease and apply wounds
<i>Pavonia odorata</i>	Fragrant sticky mallow	Anantai	Malvaceae	Whole plant	Leaf juice to cure gonorrhoea
<i>Passiflora foetida</i>	Stinking passionflower	Mupparisavalli	Passifloraceae	Whole plant	Whole plant used for liver disorders, fever
<i>Psidium guajava</i>	Guava	Koyya	Myrtaceae	Root, Leaves,	Leaf used for malarial fever
<i>Phyllanthus amarus</i>	Stonebreaker	Kila-nelli	Phyllanthaceae	Whole plant	Root juice and milk to cure jaundice, decoction of whole plant cure malarial fever
<i>Pergularia daemia</i>	Pergularia	Uttamani	Asclepiadaceae	Leaf, Root	Root decoction to treat venereal disease, leaf used for fever
<i>Phyllanthus maderaspatensis</i>	Bhumaamalaki	Arecipudu	Euphorbiaceae	Leaves	Leaves to treat urinary problems
<i>Plectranthus amboinicus</i>	Indian borage	Karpuravalli	Lamiaceae	Leaves	Leaves are taken internally in the treatment of coughs and cold

(Contd....)

Table 1: (Continued)

Scientific name	Common name	Local name	Family	Parts	Therapeutic uses
<i>Pueraria tuberosa</i>	Indian kudzu	Nilpushni Kezhugu	Fabaceae	Tuber	Tuber used for gastric troubles
<i>Rungia repens</i>	Creeping rungia	Pottkanchi	Acanthaceae	Whole plant	Whole plant juice to treat snake-bites
<i>Rungia pectinata</i>	Comb rungia	Tavashu	Acanthaceae	Root	Root to treat fever
<i>Rivina humilis</i>	Rouge plant	Raatha nalli	phytolaccaceae	Leaves	leaves paste to treating wounds
<i>Randia dumetorum</i>	Madanaphala	Marakkaarai	Rubiaceae	Fruit, Pulp	Fruit, pulp grinding to cure skin pimples problems
<i>Rhinacanthus nasutus</i>	Snake jasmine	Anichchi	Acanthaceae	Root bark	Root-bark is a remedy for itching problems.
<i>Sida acuta</i>	Broomweed	Kattu Karunthaikai	Malvaceae	Whole plant	Decoction of the whole plant cure fever
<i>Solanum indicum</i>	Indian nightshade	Anachundai	Solanaceae	Roots, Berries	Prevent asthma attacks, cardiac disorders, improve digestion strength, cure skin disease
<i>Sphaeranthus indicus</i>	Indian sphaeranthus	Visnukkarantai	Asteraceae	Bark	Bark soaked water to treat diarrhea
<i>Solanum trilobatum</i>	Purple pea	Thoothuvalai	Solanaceae	Leaves	Boiled leaf then filter the water and some amount of milk add to treat for cold
<i>Synedrella nodiflora</i>	Node weed	Mudiyan pachchai	Asteraceae	Leaves	Leaf used for ear and stomach-ache.
<i>Sida cordata</i>	Long-stalk Sida,	Palampasi	Malvaceae	Whole plant	Whole plant juice to apply boils and pimples
<i>Semecarpus anacardium</i>	Geeru beeja	Cen-kottai	Anacardiaceae	Seeds	Seed oil to treat Wound.
<i>Strychnos potatorum</i>	Clearing-nut tree	Thethankottai	Loganiaceae	Bark	In-site bark to treat skin pimples
<i>Tecoma stants</i>	Trumpet flower	Sonnappatti	Bignoniaceae	Root, Leaves	Leaves to cure diabetes and stomach problems
<i>Tephrosia purpurea</i>	Wild indigo	Kollukkai Velai	Fabaceae	Whole plant	Whole plant to cure liver, kidney problems, skin disease, Relief body pain
<i>Tinospora cortifolia</i>	Guduchi	Shindilakodi	Menispermaceae	Stem	Stem juice to cure many types of cancers, gout, liver disease
<i>Tylophora indica</i>	Vomiting swallow	Kalutai-p-palai	Asclepiadaceae	Leaf and bark	Leaf decoction to treat dysentery, asthma
<i>Tridax procumbens</i>	Coat buttons	Vettukkaaya-thalai	Asteraceae	Leaves	Leaves Decoction and paste is bound on wound caused by cut.
<i>Veronica agrestis</i>	Field speedwell	Ottu chetti	Plantaginaceae	Whole plant	Decoction of the whole to treat relief pain in menstruation
<i>Ziziphus xylopyrus</i>	Woody fruited	Suraipalam	Rhamnaceae	Root-Bark	Root bark to treat asthma, diarrhea

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