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RESEARCH ARTICLE

SURVEY OF MEDICINAL PLANTS OF PACHAMALAI HILLS, A PART OF EASTERN GHATS, TAMIL NADU

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ABSTRACT

The survey was carried out randomly to get information and documentation of medicinal plants of Pachamalai hills, a part of Eastern Ghats, Tamil Nadu, during 2006-2007. A total of 190 medicinal plant species with 158 genera belonging to 67 families (87.6% dicotyledons, 10.7% monocotyledons and 1.5% Gymnosperms) were recorded. Out of this 190 medicinal plants twenty three most important plants widely used for treatment of a variety of diseases by the local tribes are listed along with their botanical name, family name, vernacular name, mode of propagation, parts used, medicinal uses with current status.

INTRODUCTION

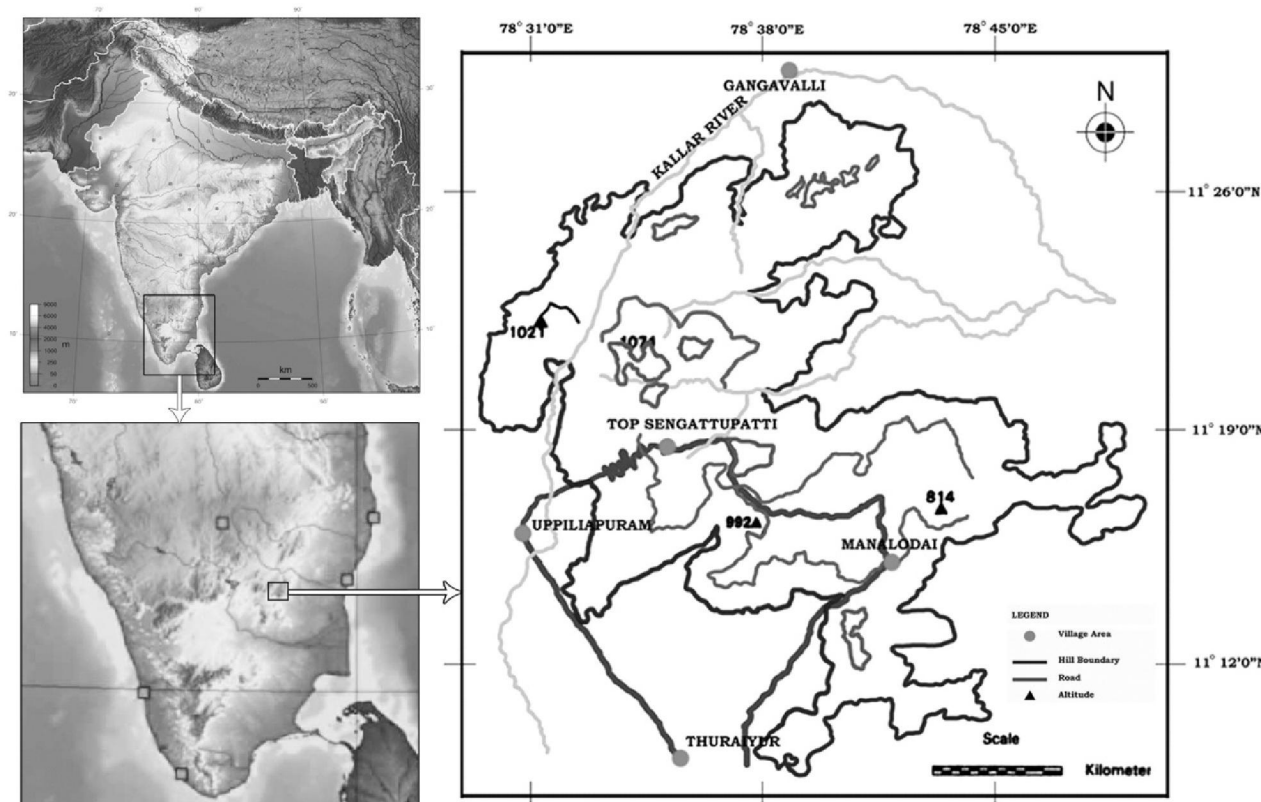
Medicinal plants are local heritage with global importance. India is endowed with a rich wealth of medicinal plants. It is the treasure trove of herbs in the world. For centuries a great majority of India's population has depended on crude drugs for the treatment of various ailments. The study of medicinal herbs in India has its roots in the science of Ayurveda. The use of the herbs, as part of the science of Ayurveda has been documented in the four Vedas: Rig Veda, Yajur Veda, Atharva Veda and Sama Veda. Medicinal plants play a key role in the healthcare system of large proportions of the world's population (Akerle, 1988). Medicinal plants are known to possess many potentially valuable therapeutic agents that provide raw materials for the preparation of medicines. These agents are produced by the plants in order to guard against the pathogens. Therefore, it is reasonable to expect a variety of phytochemicals. These bioactive substances are less toxic, more systemic and easily biodegradable. Due to this, research on plants is geared towards the discovery and development of novel phytochemicals for human use. The natural habitats for a great number of herbs and trees are dwindling due to various reasons like deforestation, developmental activities like road laying and hydroelectric projects, urbanization, changing lifestyles, globalization and the most important reason being the ignorance of the rural/tribal people to the economics of the medicinal plants. Also there exist problems like depletion of resources, materials not being available in large quantities and

throughout the year, etc. These have serious implications in the form of extinction of the medicinal plants and the consequent loss of germplasm and valuable information (Kameswara Rao, 2004). The rate of current destruction of the floristic elements is likely to rob the world of potentially new sources of the so-called "wonder drug" (Ayensu, 1983). The situation warrants for short-listing conservation of these valuable resources for our needs and for posterity. Contemporary herbal and naturopathic remedies are frequently based on combinations of traditional knowledge and scientific investigation. The sustainable use of medicinal plants known to the need to be guided by an authentic botanical knowledge of the plant species, their natural distribution, the traditional knowledge of plants in different indigenous systems of medicine, and information on their trade and agriculture. This paper gives an account on certain important medicinal plants of Pachamalai hills, a part of Eastern ghats, Tamil Nadu.

Study area

Pachamalai hills are a group of hills in Eastern Ghats and are spread across Salem and Tiruchirappalli districts of Tamil Nadu. The altitude of Pachamalai ranges from 900MSL to 1200MSL. These hills are abundant in dense scrub forest. The forests are evergreen and mixed deciduous type. The hills located between latitude 11°09'00" and 11°27'00" North, longitude 78°28'00" and 78°49'00" East. (Fig.1). The total geographical area is ~13,500 sq km. A sub-tropical climate prevails with a maximum temperature ranging between 23°C to 31°C and a minimum temperature ranging 12°C to 18°C.

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These hills receive maximum rainfall during the months of September, October and November through the Northeast monsoon. A maximum of 1250 mm has been recorded so far in the past 10 years. The hills receive rainfall in the months of June and August through Southwest monsoon.

METHODS

A team of three members undertook field study and surveyed the medicinal plants in Pachamalai hills from July 2006- June 2007. Based on the field survey and data collected, the medicinal plants were listed. Their identity was confirmed with the herbarium specimens of Rapinat herbarium (RH), St. Joseph's College, Tiruchirappalli, Madras Herbarium (MH), Botanical Survey of India, Southern Circle, Coimbatore and references (Gamble and Fischer, 1915-1936; Hooker, 1897; Kurian, 1995; Mathew, 1981-1983). Their medicinal uses were recorded with the help of relevant literature (Narayan Das *et al.*, 2003).

RESULT AND DISCUSSION

In the present study a total of 190 medicinal plants in 67 families and 158 genera were recorded as being used to treat different types of ailments. The families of medicinal plant species found in the present study are distributed among 57 dicotyledons (87.6%), 9 monocotyledons (10.7%), and 1 gymnosperm (1.5%). The largest number of species (13) belongs to *Euphorbiaceae* followed by (10) *Papilionoideae*, *Solanaceae* and *Rubiaceae* with eight species each. Each of all other families had less than seven plant species associated with the treatment of the diseases documented. Most of the species grow in wild, naturally and few of them were cultivated in kitchen gardens. In the following enumeration, plant species

with high medicinal values have been discussed. The species have been presented alphabetically with their botanical names followed by their families, local names, mode of propagation, parts used, medicinal uses and their status.

Enumeration of plants

No.(1). Plant Name: *Alangium salviflorum* (Linn.f.) Wang.

Family: Alangiaceae

Local name: Alangi

Propagation: Seeds

Parts used: Roots and fruits

Uses: The root bark is an antidote for several poisons. The roots are useful for external application in acute case of rheumatism, leprosy, inflammation and bites of rabies dogs. Fruits are useful in treating burning sensation and haemorrhages.

Status: Common

No.(2). Plant Name: *Albizia lebeck* Benth.

Family: Fabaceae

Local name: Vakai

Propagation: Seeds

Parts used: Bark, flowers, seeds.

Uses: The bark is useful in cough and catarrh, asthma, enlarged cervical glands, ophthalmopathy, nyctalopia, strengthening gums, scrofula, skin eruptions, leprosy, leucoderma, sprains, wounds, neuralgia, inflammations, diarrhea. The flowers are useful in chronic cough and bronchitis. The seeds are useful in inflammations, seminal weakness, leucoderma, leprosy, chronic catarrh.

Status: Common

No.(3). Plant Name: *Andrographis paniculata* (Burm.f.) Nees

Family: Acanthaceae

Local name: Nilavembu

Propagation: Seeds and cutting.

Parts used: Whole plant.

Uses: The leaves are used in treating dysentery, diarrhea, enteritis, coryza, cough, sore throat, tonsillitis, bronchitis, arthralgia, menstrual and post-partum haemometra, scrofula, hypertension and snake-bite.

Status: Common

No.(4). Plant Name: *Carissa carandas* L.

Family: Apocynaceae

Local name: Perumkla

Propagation: Seeds

Parts used: Roots, fruits

Uses: The roots are useful in stomach disorders, intestinal worms, scabies and pruritis. The unripe fruits are useful in hyperdipsia, diarrhea and intermittent fevers. The ripe fruits are useful in anorexia, burning sensation, skin diseases, scabies and pruritis.

Status: Common

No.(5). Plant Name: *Cassia obtusa* Wight and Arn.

Family: Caesalpiaceae

Local name: Nila avarai

Propagation: Seeds

Parts used: Leaves

Uses: The leaves are useful in stomach disorders, intestinal worms, scabies and pruritis. The powdered leaves are mixed in hot water and taken for throat pain. They are also used as cattle feed.

Status: Endemic

No.(6). Plant Name: *Centella asiatica* (L.)Urban

Family: Umbelliferae

Local name: Vallarai

Propagation: Seeds and vegetative method.

Parts used: Whole plant

Uses: The plant is used in the therapy of measles, epistaxis, diarrhea, dysentery, constipation, jaundice, dysuria, furunculosis. External application in the form of poultice is useful for fractures and sprains.

Status: Common

No.(7). Plant Name: *Evolvulus alsinoides* L.

Family: Convolvulaceae

Local name: Vishnukranti

Propagation: Seeds and vegetative method.

Parts used: Whole plant

Uses: It is a nootropic agent. It is useful in chronic bronchitis, general weakness, fever, nervous debility, loss of memory, syphilis and scrofula.

Status: Common

No.(8). Plant Name: *Feronia limonia* L.

Family: Rutaceae

Local name: Vilanga

Propagation: Seeds and vegetative method.

Parts used: Fruits and leaves.

Uses: The fruit is used to stimulate the digestive system. The leaves are used to treat indigestion, flatulence, diarrhea, dysentery and haemorrhoids.

Status: Common

No.(9). Plant Name: *Gloriosa superba* L.

Family: Liliaceae

Local name: Kannuvalikodi

Propagation: Seeds and vegetative method.

Parts used: Seeds and tubers.

Uses: The roots are used in curing ulcers, bleeding piles, white discharge, skin diseases, leprosy, indigestion, snakebites, baldness, debility. Useful in promoting labour and expulsion of the placenta. If consumed in large doses, it is highly poisonous and causes vomiting, purging, stomach ache and burning sensation. Seeds are used for relieving rheumatic pain and as a muscle relaxant.

Status: Endangered

No.(10). Plant Name: *Gymnema sylvestre* (Retz.) R.Br.

Family: Asclepiadaceae

Local name: Sakkaraikolli

Propagation: Seeds and vegetative method.

Parts used: Whole plant, leaves

Uses: The plant is useful in inflammations, hepatosplenomegaly, dyspepsia, constipation, jaundice, helminthiasis, cardiopathy, cough, asthma, bronchitis, intermittent fever, conjunctivitis and leucoderma. The fresh leaves when chewed have the property of paralyzing the sense of taste for sweet and bitter substances for sometime.

Status: Common

No.(11). Plant Name: *Hemidesmus indicus* (L.) R.Br.

Family: Asclepiadaceae

Local name: Nannari

Propagation: Seeds and vegetative method.

Parts used: Roots, stem, leaves.

Uses: Leaves are useful in burning sensation, leucoderma, leprosy, skin diseases, pruritis, asthma, bronchitis, hyperdipsia, ophthalmopathy, hemicrania, epileptic fits, dyspepsia, helminthiasis, diarrhea, dysentery, hemorrhoids, strangury, leucorrhoea, syphilis, abscess, arthralgia, fever and general debility. The leaves are useful in vomiting, wounds and leucoderma. Stems are diaphoretic and laxative.

Status: Endemic

No.(12). Plant Name: *Hiptage benghalensis* (L.) Kurz

Family: Malpighiaceae

Local name: Madhavi

Propagation: Seeds and vegetative method.

Parts used: Bark, leaves, flowers.

Uses: The bark, leaves and flowers are useful in burning sensation, wounds, ulcers, cough, asthma, cardiac debility, inflammations, skin diseases, leprosy, scabies, rheumatism and hyperdipsia.

Status: Common

No.(13). Plant Name: *Hugonia mystax* L.

Family: Linaceae

Local name: Motirakanni

Propagation: Seeds and vegetative method.

Parts used: Roots

Uses: The roots are useful in fevers, verminosis, externally as a paste for inflammations.

Status: Common

No.(14). Plant Name: *Mallotus phillippensis* (Lamk.) Muell.

Family: Euphorbiaceae

Local name: Kunkumam

Propagation: Seeds and vegetative method.

Parts used: Glandular hairs of the fruit.

Uses: The glandular hairs of the fruit are useful in verminosis, constipation, flatulence, wounds, ulcers, renal and vesical calculi, hemorrhages, poisonous affections, scabies, ringworm herpes and other parasitic skin affections.

Status: Common

No.(15). Plant Name: *Naravelia zeylanica* L.

Family: Ranunculaceae

Local name: Vatamkolli

Propagation: Seeds and vegetative method.

Parts used: Whole plant.

Uses: The plant is astringent, anthelmintic, depurative, anodyne, anti-inflammatory. It is useful in helminthiasis, dermatopathy, leprosy, rheumatism, odontalgia, cephalalgia, colic, inflammations, wounds and ulcers.

Status: Vulnerable

No.(16). Plant Name: *Plumbago zeylanica* L.

Family: Plumbaginaceae

Local name: Chithiramulana

Propagation: Seeds and vegetative method.

Parts used: Leaves, roots.

Uses: The root is used to treat leprosy. In Indian herbal medicine, the leaves and root are used to treat infections and digestive problems like dysentery. A paste of the leaves and root is applied to painful rheumatic areas and itchy areas.

Status: Common

No.(17). Plant Name: *Randia dumetorum* Retz. Poir.

Family: Rubiaceae

Local name: Mathukkaarai.

Propagation: Seeds and vegetative method.

Parts used: Bark, fruits.

Uses: The bark is useful in ostealgia during fever, diarrhea, bruises and cuts. The fruits are emmenagogue, expectorant, febrifuge, abortifacient and antispasmodic.

Status: Common

No.(18). Plant Name: *Rubia cordifolia* L.

Family: Rubiaceae

Local name: Manjitti

Propagation: Seeds and vegetative method.

Parts used: Roots and stem.

Uses: They are used internally in the treatment of abnormal uterine bleeding, internal and external haemorrhage, bronchitis, rheumatism, stones in the kidney, bladder and gall, dysentery, etc. The stem is used in Tibetan medicine, where they are considered to have a bitter taste and a cooling potency. It is also used in the treatment of blood disorders and spreading fever of kidneys and intestines. Apart from all these medicinal values, the leaves are used as a side dish with rice and also a red dye is obtained from the roots.

Status: Endangered

No.(19). Plant Name: *Santalum album* L.

Family: Santalaceae.

Local name: Sandanam

Propagation: Seeds

Parts used: Heartwood

Uses: The heartwood is useful in burning sensation, dipsia, cephalalgia, foul odour due to hyperhidrosis, skin diseases,

leprosy, forgetfulness, amentia, psychopathy, cardiac debility, haemoptysis, hyperacidity, jaundice, strangury, cough, bronchitis, inflammations, cystitis, dysentery, gastric irritability, menorrhagia, leucorrhoea, spermatorrhoea, intermittent fever and general debility.

Status: Threatened

No.(20). Plant Name: *Smilax zeylanica* L.

Family: Liliaceae

Local name: Kattu kodi

Propagation: Seeds

Parts used: Roots and leaves

Uses: Roots are used for the treatment of venereal diseases, skin diseases, sores, swellings and abscess. Also applied for rheumatism and pains in the lower extremities.

Status: Threatened

No.(21). Plant Name: *Solanum erianthum* D.Don.

Family: Solanaceae

Local name: Aanai sundaikaai

Propagation: Seeds

Parts used: Leaves

Uses: A locally applied poultice of pounded and heated fresh leaves is indicated for the relief of hemorrhoids and scrofula. A plaster made of concentrated fresh juice cures dermatomycosis and impetigo. An internally applied decoction of the leaves is used as taeniafuge in buffaloes.

Status: Common

No.(22). Plant Name: *Strychnos nux-vomica* L.

Family: Loganiaceae

Local name: Etti

Propagation: Seeds

Parts used: Bark, leaves, seeds

Uses: The leaves are applied as poultice in the treatment of chronic wounds and ulcers and the leaf decoction is useful in paralytic complaints. The pulp of the ripe fruit is treating paralytic affections of paws and foot. The seeds are useful in anemia, insomnia, cardiopalmus, asthma, bronchitis, constipation, diabetes, intermittent and malarial fevers, skin diseases and weakness of limbs.

Status: Common

No.(23). Plant Name: *Wrightia tinctoria* (Roxb.) R.Br.

Family: Apocynaceae

Local name: Tontampalai

Propagation: Seeds

Parts used: Leaves, bark, seeds.

Uses: The leaves are useful in odontalgia, hypertension. The bark and seeds are useful in dyspepsia, flatulence, colic, leprosy, psoriasis, hemorrhoids, dipsia, helminthiasis, fever, burning sensation, and dropsy.

Status: Common

The present study clearly indicates that Pachamalai hills have great diversity of medicinal plants with rich properties of curing diverse kinds of ailments. Most of the medicinal plants possess therapeutic properties in parts like leaves, roots, stem, fruit, bark, seeds, and flowers. If left untouched by human interferences, these hills can act as a vast reservoir of medicinal herbs which can play a vital role in the improvement of healthcare (Plate-1 and 2).

PLATE-1



A view of Pachamalai Hills

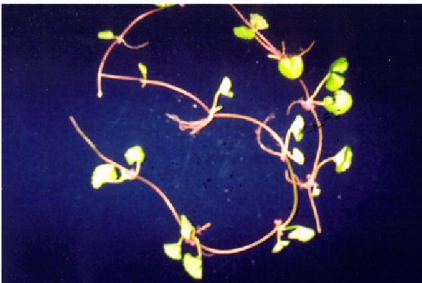
*Alangium salvifolium**Albizzia lebbek Benth.**Andrographis paniculata Nees.**Carissa carandus L.**Cassia obtusa (Roxb.) Wight & Arn.**Centella asiatica L.**Evolvulus alsinoides L.**Feronia limonia L.**Gloriosa superba L.**Gymnema sylvestre (Retz.) R.Br.**Hemidesmus indicus R.Br.*

PLATE-2



Hiptage benghalensis (L.) Kurz.



Hugonia mystax L.



Mallotus philippensis (Lamk.) M.



Naravelia zeylanica (L.) DC.



Plumbago zeylanica L.



Randia dumetorum (Retz.) Poir.



Rubia cardifolia L.



Santalum album L.



Smilax zeylanica L.



Solanum erianthum L.



Strychnos nux-vomica L.



Wrightia tinctoria

Conclusion

This study has revealed that medicinal plants play a vital role in the primary healthcare of the people. Due to various reasons like destructive harvesting and over exploitation, these plants are gradually becoming extinct. The present study is important to reverse this trend and to preserve the knowledge of medicinal plants. It is also of significance to exploit novel pharmacological agents in various treatments of diseases.

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