

Ethnomedicinal Survey of Alagarkoil Hills (Reserved forest), TamilNadu, India

S. GANESAN*, N. RAMAR PANDI AND N. BANUMATHY
Centre for Research and P.G. Department of Botany,
Thiagarajar College (Autonomous)

Abstract

The ethnomedicinal uses of 111 plant species belonging to 100 genera and 49 families, employed by an ethnic group, the Valaiyans of Alagarkoil Hills of Madurai district, TamilNadu, India, in their traditional modes of treatment of diseases, such as skin diseases, colds and coughs, ulcers, stomach related problems, fevers, piles, jaundice, diabetes, etc., are presented in this paper.

Key words

Ethnomedicinal, Valaiyans, Alagarkoil Hills, Madurai.

Introduction

Tribal peoples throughout the world, India included, have developed their own cultures, customs, religious rites, taboos, legends and myths, folk tales, medicine, food, etc., They are the repository of accumulated experience and of knowledge of the indigenous vegetation; this can be utilized in tribal development. These days greater emphasis is being laid on this traditional

* Author for correspondence. Address: Centre for Research and P.G. Department of Botany, Thiagarajar College (Autonomous), Madurai - 625 009. TamilNadu, India. E-mail: sganesan76@yahoo.com.

knowledge and on using it in the “bioprospecting” of natural products as a new source of food and medicine.

In early times mankind developed, through observation and experience, knowledge of the properties of plants as a source of food and medicines. Although food and medical facilities are more readily available to most of the people in our times, still in several underdeveloped and less accessible areas of the country food deficiency and lack of medical facilities are prevalent. Plant parts like fruits, tubers, flowers, leaves, etc., are consumed as principal or supplementary food and employed as medicines (Sharma and Singh, 2001).

India is one of the twelve megadiversity countries in the world and has 17,000 flowering plants. Among the 25 hotspots in the world, the Eastern Himalayas and the Western Ghats are the two hotspots of India.

The country possesses a total of 427 tribal communities. The largest proportion of tribes is found in Mizoram (95%), followed by Lakshadweep (93%), Nagaland (88%), Meghalaya (86%) and Arunachal Pradesh (64%) (Dinesh Kumar, 2005; Kala, 2005).

TamilNadu is situated on the eastern side of the Indian Peninsula. The state has 29 districts and includes 37 tribal communities. They are distributed over various districts. Three major tribal groups of TamilNadu are the Valaya or Valaiyans, who live in the hill tracks of Madurai, Dindigul and Tanjore districts, and the Paliyan and Pulayan, living in the Western Ghats.

A considerable number of studies have been published on the ethnobotany and ethnomedicine of many tribal groups in different regions of India. Ethnobotanical studies of two groups of Valaiyans, residing in the Vellimalli hills and the Seithur hills (Rajendran *et al.*, 2001; Ganesan and Kesavan, 2003) respectively have already been undertaken. Since such a study regarding the Valaiyans of the Alagarkoil Hills in TamilNadu was lacking so far, an attempt has been made to fill this gap.

Study area

The area of investigation lies approximately between 77°30' and 78°20' longitude and 10°05' – 10°09' latitude. The elevation of the area of investigation ranges from 1000 to 3000 feet above sea level. Variations in the altitude and rainfall have a bearing on the vegetation in general. The floristic divisions of the area of investigation consist of dry deciduous forest, deciduous thorn forest, evergreen and grasslands.

The area lies between two hills: the "Vellai malai" to the southern side of the area of investigation and the "Sennamalai" to the northern side. These two hills are situated in the western part of the Alagarkoil hills. Valaiyans can reach Alagarkoil by a short cut route through the hills. Their areas of residence in the Alagarkoil hills are: 1. Vembarali, 2. Barali, 3. Alagapury, 4. Thethampatty, 5. Podugampattu, 6. Pattanampatty. The Valaiyans live in isolated pockets or in small hamlets as labourers and small landowners. The investigation was carried out for 10 months from August 2004 to May 2005.

Methodology

Ethnomedicinal information was gathered by contacting the medicine man, the headman and persons with a thorough knowledge of plants. The information gathered was confirmed by different groups of Valaiyans dwelling in different places of the area of investigation. The methodology of previous workers was adopted (Jains and Goel, 1995). The data was meticulously entered in a field notebook. The voucher specimens were collected and identified by referring to standard floras (Gamble and Fischer, 1957; Matthew, 1981; Nair and Henry 1983; Henry *et al.*, 1987; Henry *et al.*, 1989; Matthew, 1991). All the voucher plants were preserved in the form of herbarium specimens, deposited in the Centre for Research and PG Department of Botany, Thiagarajar College (Autonomous), Madurai, TamilNadu-625009.

Observations

Valaiyans are good herbalists. Plants are used in different forms such as juice extracts, decoctions, pastes, infusions, etc.

A juice extract is prepared by grinding the cleaned plants or plant parts with water; the extract is used after having been filtered.

A decoction is obtained by boiling the plants or plant parts in water.

A paste is made by crushing small parts of a plant with water and making this into a soft mass.

An infusion is prepared by soaking the cleaned plant or plant parts in water for a few hours or days; afterwards it is filtered and used.

A list of medicinal plants with their binomial, family, vernacular name, useful parts and medicinal uses is provided below.

1. *Abrus precatorius* L. (Fabaceae) “Kundumani”. A paste of the seeds is used to cure eczema.
2. *Abutilon indicum* (L.) Sweet (Malvaceae) “Thuththi”. A leaf paste is taken orally to cure piles. The leaves also relieve leg pains.
3. *Acalypha indica* L. (Euphorbiaceae) “Kuppaimeni”. A leaf paste, mixed with common salt, is used to cure eczema and chest pain.
4. *Achyranthes aspera* L. (Amaranthaceae) “Nayuruvi”. The boiled leaves are consumed to relieve internal piles and the roots are used as a brush to relieve pain and clean the teeth.
5. *Aerva lanata* (L.) Juss. (Amaranthaceae) “Kannupeeelai”. The decoction or juice of the whole plant is taken for urinary problems.
6. *Alangium salvifolium* (L.f.) Wangerin. (Alangiaceae) “Alingil”. The stem is used for brushing the teeth; one or two drops of the fruit juice are poured into the eyes to cure eye diseases in summer.
7. *Albizia amara* (Roxb.) Boivin (Mimosaceae) “Usilai”. A shade dried powder, mixed with water, is used as a shampoo for cleaning the hair and for the reduction of body heat.
8. *Albizia lebbeck* (L.) Benth. (Mimosaceae) “Vagai”. A leaf paste is applied to cure eczema.
9. *Aloe vera* (L.) Burm.f. (Liliaceae) “Choththukatthalai”. A leaf paste is applied over the body before taking a bath in order to reduce body heat.
10. *Alpinia calcarata* Roscoe (Zingiberaceae) “Chitharathi”. A powder of the dried rhizome, mixed with water, is used to relieve cough and cold and to improve digestion.
11. *Alstonia venenata* R. Br. (Apocynaceae) “Paalai”. The milky latex is used to heal wounds and cuts.
12. *Ammannia baccifera* L. (Lythraceae) “Neermalneruppu”. A leaf paste is applied to relieve swelling (edema).
13. *Andrographis paniculata* (Burm.f.) Wallich ex Nees (Acanthaceae) “Nilavaambu, Chirianangai”. A handful of leaves is taken and an extract is made, which, mixed with milk, is taken internally to cure snakebites.
14. *Anisomeles malabarica* (L.) R. Br. ex Sims. (Lamiaceae) “Peithumbai”. A paste of the leaves is applied to cure eczema.
15. *Annona squamosa* L. (Annonaceae) “Sita”. The young fruits are dried and made into a powder. A spoonful of this powder, mixed with water, is taken internally to cure dysentery.

16. *Argemone mexicana* L. (Papaveraceae) “Narimirati”. The yellow latex is used to cure ulcers of the lips and pimples and for wound healing.
17. *Argyreia kleiniana* (Roemer & Schultes) Raiz. (Convolvulaceae) “Onankodi”. A plant extract is internally used to cure an upset stomach.
18. *Aristolochia bracteolata* Lam. (Aristolochiaceae) “Aaduthinnaapalai”. A leaf paste is applied to the head before bathing to relieve dandruff and infections.
19. *Asparagus racemosus* Willd. (Liliaceae) “Thanneervittan”. An extract of the bulbs is used to cure urinary troubles.
20. *Boerhavia diffusa* L. (Nyctaginaceae) “Mukurattai”. A decoction of the roots is used for gas troubles.
21. *Borassus flabellifer* L. (Arecaceae) “Panai”. The pectin layer on the leaves is tied around cuts as a styptic.
22. *Cadaba trifoliata* (Roxb.) Wight & Arn. (Capparidaceae) “Purana”. A vapour from the boiled leaves is inhaled to relieve coughing and colds.
23. *Caesalpinia pulcherrima* (L.) S. W. (Caesalpiniaceae) “Mailkondarai”. A seed paste is applied to inflamed teeth to cure toothache.
24. *Calotropis gigantea* (L.) R.Br. (Asclepiadaceae) “Erukku”. The leaves are tied around wounds made by thorns.
25. *Cardiospermum halicacabum* L. (Sapindaceae) “Mudakkaththan”. A leaf paste is applied for joint pain or leaves are prepared in the form of a soup and consumed to cure rheumatic pains.
26. *Carica papaya* L. (Caricaceae) “Pappaali”. The milky latex of the plant is applied to teeth in order to relieve inflammatory pain.
27. *Carissa carandas* L. (Apocynaceae) “Kalakai”. The latex is used to cure mouth ulcers.
28. *Cassia auriculata* L. (Caesalpiniaceae) “Aavaram poo”. Dried and powdered flowers are used for cleaning the hair and reducing body heat.
29. *Cassia obtusa* (Roxb.) W. & A. (Caesalpiniaceae) “Nilavagai”. A leaf powder, mixed with hot water, is taken for throat pain.
30. *Cassia occidentalis* L. (Caesalpiniaceae) “Thakarai”. A paste of the leaves is used for skin diseases.
31. *Cataranthus pusillus* (Murr.), (Apocynaceae) “Mukkuthipoo”. A leaf paste is applied externally for tumours (kalalai).
32. *Centella asiatica* (L.) Urban (Apiaceae) “Vallarai”. The dried plant is powdered and this powder, mixed with hot water, is taken for gas

- troubles; the fried plants are used in the diet of children for improving their memory.
33. *Cissus quadrangularis* L. (Vitaceae) "Pirandai". A paste of the whole plant is taken for improving the digestion and inducing appetite.
 34. *Citrus medica* L. (Rutaceae) "Elumichi". The fruit juice, mixed with milk, is taken twice a day for the cure of dysentery.
 35. *Cleome aspera* J. Koeing ex DC. (Capparidaceae) "Karumpoondur". A leaf paste is used to cure eczema.
 36. *Cleome viscosa* L. (Capparidaceae) "Naikadugu". The juice of the leaves is poured into the ear to relieve earache.
 37. *Clerodendrum inerme* (L.) Gaertn. (Verbenaceae) "Peenaari changu". The leaf paste is used in psoriasis and other skin affections.
 38. *Coccinia grandis* (L.) J. Voigt (Cucurbitaceae) "Kovai". The leaf extract, mixed with milk, is used in cases of jaundice.
 39. *Cocos nucifera* L. (Arecaceae) "Thennai". The young fruit is used in dysentery.
 40. *Coleus amboinicus* Lour. (Lamiaceae) "Omavali". The leaf extract is used to cure a cold and the leaf juice to improve digestion.
 41. *Commiphora caudata* (Wright & Arn.) Engl. (Burseraceae) "Kiluvai". The exudation (gum) of the stem, mixed with water, is used as a mouthwash to cure mouth ulcers. The gum is also used for wound healing.
 42. *Corallocarpus epigaeus* (Rottler) C.B. Clarke (Cucurbitaceae) "Kollan kova killangu". A paste of the tubers is applied to a poisonous bite in order to remove the poison.
 43. *Cuscuta chinensis* Lam. (Convolvulaceae) "Manjapulluruvi". The leafless twining stem is made into a paste and applied to the broken part of a bone in order to promote the joining of the fractured parts.
 44. *Cyanotis arachnoidea* C.B. Clarke (Commelinaceae) "Vallukkai". A leaf paste is applied to a swelling to reduce itching.
 45. *Cymbidium aloifolium* (L.) Sw. (Orchidaceae) "Panai pulluruvi". The succulent leaves are warmed on a fire and two or three drops of the juice extract are poured into the ear(s) to cure earache.
 46. *Cynodon dactylon* (L.) Pers. (Poaceae) "Arugampul". The juice of the whole plant is used to reduce body heat and to lower the blood pressure.
 47. *Dichrostachys cinerea* (L.) W. & A. (Mimosaceae) "Vedathalai". An extract of the plant is used against rheumatic pains.

48. *Dodonaea angustifolia* L.f. (Sapindaceae) “Virali”. A leaf paste is applied to the surface of an extravasation of blood (haematoma).
49. *Eclipta prostrata* (L.) L. (Asteraceae) “Karisalankanni”. A leaf extract is applied to the head to relieve dandruff and to blacken gray hair.
50. *Eleusine coracana* (L.) Gaertn. (Poaceae) “Kaelvaragu”. The powdered seeds, mixed with hot water and thus assuming the form of a gel, are applied to the forehead to relieve viral fevers and colds.
51. *Enicostema axillare* (Lam.) A. Raynal (Gentianaceae) “Vellaragu”. The powdered leaves are taken twice a day against a white discharge (leucorrhoea) from the vagina. A leaf paste is used to reduce fertility in men.
52. *Erythrina variegata* L. (Fabaceae) “Mullumurungai”. A handful of leaves are ground with rice and made into a roasted dosa; this is consumed against cold and cough.
53. *Eucalyptus tereticornis* Smith (Myrtaceae) “Thailamaram”. The vapours of boiled leaves are inhaled for coughs and a cold. The oil from the plant, mixed with coconut oil, is applied to the chest to relieve a dry cough and chest pain.
54. *Euphorbia hirta* L. (Euphorbiaceae) “Amman patcharisi”. A paste made from the entire plant, mixed with goat’s milk, is taken internally for all stomach upsets in children.
55. *Evolvulus alsinoides* (L.) L. (Convolvulaceae) “Vishnukiranthi”. A decoction of the plant is used in fevers.
56. *Gloriosa superba* L. (Liliaceae) “Kanuvalikodi”. The pasted tubers are used as an abortifacient.
57. *Gymnema sylvestre* (Retz.) R. Br. ex Roem. & Schultes (Asclepiadaceae) “Chirukurunjan”. A powder of the dried leaves is used to cure diabetes and to reduce the sugar level of the blood.
58. *Hemidesmus indicus* (L.) R. Br. (Asclepiadaceae) “Nannaari”. An extract of the entire plant is given in fevers.
59. *Hibiscus rosa-sinensis* L. (Malvaceae) “Semparuththi”. Shade dried and powdered flowers are used for cleaning the hair and to prevent hair loss (alopecia).
60. *Hybanthus enneaspermus* (L.) F. Muell. (Violaceae) “Orithalthamarai”. The plant extract is used to reduce body heat and also to increase male fertility.
61. *Hygrophila auriculata* (Schumach.) Heine. (Acanthaceae) “Neermulli”. The seeds are soaked in water. The water is taken twice a day to relieve menstrual problems.

62. *Hyptis suaveolens* (L.) Poit. (Lamiaceae) “Karunchsatachi”. A paste of the leaves is used to cure eczema.
63. *Indigofera tinctoria* L. (Fabaceae) “Avuri”. A leaf decoction is used to cure skin diseases.
64. *Jatropha curcas* L. (Euphorbiaceae) “Chanimuthu & Kaattamanaku”. The plant is soaked in rice water and warmed on a fire. The leaves, in a warm condition, are tied around a painful area.
65. *Jatropha gossypifolia* L. (Euphorbiaceae) “Adalai”. The latex of the plant is applied to the lips to cure ulcers in the mouth; its stem is used for cleaning the teeth and for strengthening the gums.
66. *Justicia adhatoda* L. (Acanthaceae) “Adatodai”. A leaf decoction is used to relieve fever.
67. *Lawsonia inermis* L. (Lythraceae) “Maruthani”. A leaf paste is applied to cracks of the feet (“Piththa vedippu”); it also has a cooling effect on the body.
68. *Leonotis nepetaefolia* (L.) R. Br. (Lamiaceae) “Theanthumpai”. A leaf paste is used for eczema.
69. *Leucas aspera* (Willd.) Link (Lamiaceae) “Thumbai”. The vapours from the boiled leaves are inhaled to relieve coughing and colds.
70. *Mangifera indica* L. (Anacardiaceae) “Maa”. The latex of the plant cures wounds on the legs of livestock.
71. *Marsilea minuta* L. (Marsileaceae) “Aarakkerai”. The dried and powdered leaves, mixed with hot water, are taken in cases of diabetes.
72. *Melia azedarach* L. (Meliaceae) “Malaivembu”. The juice of the bark is taken internally in the early morning for three days in order to relieve stomach pain; it is also employed as an anthelmintic.
73. *Mollugo nudicaulis* Lam. (Aizoaceae) “Parpaadagam”. The entire plant is used to cure a cold; a leaf paste is used for skin diseases.
74. *Morinda tinctoria* Roxb. (Rubiaceae) “Manjanathi”. The leaf extract is used to cure dysentery.
75. *Moringa oleifera* Lam. (Moringaceae) “Murungai”. The boiled leaves and flowers are eaten to increase fertility in men. A handful of bark juice of the plant is used to cure stomach pain.
76. *Mukia maderaspatana* (L.) M. Roemer (Cucurbitaceae) “Mosumosukkal”. The leaf extract is taken internally to cure piles; it is applied to the hair of the head to blacken gray hair.
77. *Musa paradisiaca* L. (Musaceae) “Vazhai”. A plant extract is given for snake bite and also for burns.

78. *Notonia grandiflora* DC. (Asteraceae) “Muyalkathu”. The juice of the succulent leaves is poured into the ears to cure earache; a leaf paste is used for eczema.
79. *Ocimum canum* Sims (Lamiaceae) “Naithulasi”. The vapour of boiled leaves is inhaled to relieve headache and fever.
80. *Ocimum tenuiflorum* L. (Lamiaceae) “Nallathulasi”. An infusion of the leaves is consumed to relieve a cold and coughing.
81. *Oldenlandia umbellata* L. (Rubiaceae) “Impural”. A teaspoonful of the dried and powdered plant mixed with water is taken internally for asthma.
82. *Pavetta indica* L. (Rubiaceae) “Therani”. A leaf paste is used for snakebite.
83. *Pedaliium murex* L. (Pedaliaceae) “Yaanainerunji”. A leaf paste is applied to swellings to reduce itching.
84. *Pergularia daemia* (Forsskal) Chiov. (Asclepiadaceae) “Vaeliparuthi”. A leaf paste is consumed to relieve gas trouble.
85. *Phyllanthus amarus* Schum. & Thonn. (Euphorbiaceae) “Kizhaanelli”. The whole plant paste is mixed with goat’s milk and taken internally for three days to cure jaundice.
86. *Polygala arvensis* Willd. (Polygalaceae) A root paste is used against inflammations.
87. *Pongamia pinnata* (L.) Pierre (Fabaceae) “Pungam”. The seed oil is used to cure rheumatic pains and swellings.
88. *Sesbania grandiflora* (L.) Poiret (Fabaceae) “Agaththi”. The leaves prepared in the form of a soup are taken as a vermifuge and also to cure peptic ulcer.
89. *Solanum nigrum* L. (Solanaceae) “Milaguthakkali”. The plant prepared in the form of a soup is taken for stomach ulcer. The leaf paste is also used to cure rabies.
90. *Solanum surattense* Burm. f. (Solanaceae) “Kandankathiri”. The powdered whole plant, mixed with water, is taken internally to cure colds and wheezing by difficult breathing.
91. *Solanum torvum* L. (Solanaceae) “Sundai”. A leaf paste is used to bath a newborn baby in order to protect it from infections.
92. *Solanum trilobatum* L. (Solanaceae) “Thudhuvelai”. A leaf juice is taken in the form of a soup for coughs and colds.
93. *Sphaeranthus indicus* L. (Asteraceae) “Kottaikaranthi”. A spoonful of the powdered plant, mixed with water, is taken internally to blacken gray hair.

94. *Syzygium cumini* (L.) Skeels (Myrtaceae) “Navel”. The dried and powdered seeds, mixed with hot water, are taken for reducing the blood sugar level.
95. *Tamarindus indica* L. (Caesalpiniaceae) “Puli”. A paste of the seed coat is applied to a scorpion bite to relieve pain or the scratched seed is placed in a warm condition on the area of a scorpion bite to relieve pain.
96. *Tephrosia purpurea* (L.) Pers, (Fabaceae) “Kozhunji”. A paste of the root bark is taken for stomach pain.
97. *Tragia involucrata* L. (Euphorbiaceae) “Senthatti”. A paste of the fruits is applied to the forehead to relieve one-sided headache; a handful of a leaf paste, mixed with water, is taken internally to relieve stomach pain during the menstruation period.
98. *Tribulus terrestris* L. (Zygophyllaceae) “Nerunji”. The plant extract is used to remove kidney stones.
99. *Vernonia cinerea* L. (Asteraceae) “Mukuttiipoondu”. The plant paste is used to cure paralysis.
100. *Vitex negundo*, L. (Verbinaceae) “Karunochchi”. The vapour from boiled leaves is inhaled to relieve a running nose and headache.
101. *Wrightia tinctoria* (Roxb.) Br. (Apocynaceae) “Vetpalai”. A paste of the leaves, mixed with neem (nimba: *Azadirachta indica* A.Juss.) oil, is applied for eczema.
102. *Zaleya decandra* (L.) Burm. f. (Aizoaceae) “Sathasaaranetti”. The leaves are boiled and consumed for removing gas trouble.
103. *Zingiber roseum* Rosc. (Zingiberaceae) “Inji”. The juice of the rhizome, mixed with honey, is taken internally to improve digestion and to relieve giddiness (piththamayakam).

Apart from individual plants, a combination of two or more plants may be utilized in medicine.

- I. A. *Cuminum cyminum* L. (Apiaceae) “Seeragam”;
B. *Murraya koenigii* (L.) Sprengel (Rutaceae) “Karuveppilai”.

The leaves of *Murraya koenigii* are ground with fruits of *Cuminum cyminum*; the extract is taken with buttermilk for dysentery.

- II. A *Allium sativum* L. (Liliaceae) “Vellai poodu” ;
B. *Cissus quadrangularis* L. (Vitaceae) “Pirandai” ;
C. *Capsicum frutescens* L. (Solanaceae) “Milakai”.

These three plants are made into a green salad and taken for gas trouble.

- III A. *Cleome gynandra* L. (Capparidaceae) “Thaivelai”;

B. *Abutilon indicum* (L.) Sweet. (Malvaceae) “Thuthi”.

An extract of the roots of these plants is used to cure an upset stomach in livestock.

IV. A. *Cocos nucifera* L. (Arecaceae) “Thennai” ;

B. *Trigonella foenum-graecum* L. (Fabaceae) “Vendayam”.

A spoonful seeds of *Trigonella foenum-graecum* is soaked in tender coconut water and exposed to moonlight (on a full moon day) for 12 hours. In the early morning the coconut water, along with the seeds, is taken internally to relieve a white vaginal discharge in women and to reduce body heat.

V A. *Piper betle* L. (Piperaceae) “Vettilai”;

B. *Zingiber roseum* Rosc. (Zingiberaceae) “Inji”.

The leaf extract of *Piper betle*, mixed with an extract of the rhizome of *Zingiber roseum*, is taken internally to relieve liver infections.

VI. A. *Tephrosia purpurea* (L.) Pers. (Fabaceae) “Kozhunji”;

B. *Piper nigrum* L. (Piperaceae) “Milagu”.

Leaves of *Tephrosia purpurea*, ground with fruits of *Piper nigrum*, are taken with buttermilk to relieve a white vaginal discharge in women.

VII A. *Ocimum tenuiflorum* L. (Lamiaceae) “Nallathulasi”;

B. *Piper nigrum* L. Piperaceae, “Milagu”;

C. *Solanum surattense* Burm. f. (Solanaceae) “Kandankaththari”.

Leaves of *Ocimum tenuiflorum* and *Solanum surattense* are ground with fruits of *Piper nigrum*; the extract is taken internally to relieve colds and coughing.

VIII. A. *Coriandrum sativum* L. (Apiaceae) “Koththamalli”;

B. *Zingiber roseum* Rosc. (Zingiberaceae) “Inji”.

The seeds of *Coriandrum sativum* and the rhizome of *Zingiber roseum* are ground with water; the extract is taken internally for giddiness.

Discussion

The tribal and rural population of India is highly dependent on medicinal plants for meeting their healthcare needs. This has attracted the attention of several botanists and plant scientists who directed vigorous research towards the investigation of several medicinal plants; this has resulted in an extensive scientific literature.

The present investigation shows that 111 plant species belonging to 100 genera and 49 families are employed for medicinal purposes by a particular

tribal population. Out of these, 110 plant species represented Angiosperms, while one plant (*Marsilea minuta*) belonged to the Pteridophyta.

The following 20 plants are employed in skin related disorders: *Abrus precatorius*, *Acalypha indica*, *Albizia lebbeck*, *Ammannia baccifera*, *Anisomeles malabarica*, *Argemone mexicana*, *Aristolochia bracteolata*, *Cassia occidentalis*, *Cleome aspera*, *Clerodendrum inerme*, *Cyanotis arachnoidea*, *Eclipta prostrata*, *Hyptis suaveolens*, *Indigofera tinctoria*, *Lawsonia inermis*, *Leonotis nepetaefolia*, *Mollugo nudicaulis*, *Notonia grandiflora*, *Pedaliium murex* and *Wrightia tinctoria*.

The following 10 plants are used for treating colds and coughing: *Alpinia calcarata*, *Cadaba trifoliata*, *Eleusine coracana*, *Erythrina variegata*, *Eucalyptus tereticornis*, *Leucas aspera*, *Mollugo nudicaulis*, *Ocimum tenuiflorum*, *Solanum surattense* and *Solanum trilobatum*.

The following 8 plants are employed for the reduction of body heat: *Albizia amara*, *Aloe vera*, *Cassia auriculata*, *Cocos nucifera*, *Cynodon dactylon*, *Hybanthus enneaspermus*, *Lawsonia inermis* and *Trigonella foenum-graecum*.

Abutilon indicum, *Acalypha indica*, *Cardiospermum halicacabum*, *Cassia obtusa*, *Dichrostachys cinerea*, *Eucalyptus tereticornis* and *Pongamia pinnata* are employed in the treatment of various pains related to the legs, the joints, the chest and the throat.

Allium sativum, *Boerhavia diffusa*, *Capsicum frutescens*, *Centella asiatica*, *Cissus quadrangularis*, *Pergularia daemia* and *Zaleya decandra* are taken for gas trouble.

Justicia adhatoda, *Eleusine coracana*, *Evolvulus alsinoides*, *Hemidesmus indicus* and *Ocimum canum* are utilized in the treatment of fevers.

Argemone mexicana, *Carissa carandas*, *Commiphora caudata*, *Sesbania grandiflora* and *Solanum nigrum* are employed in the treatment of various ulcers.

The following plants are administered for stomach related problems such as an upset stomach (*Abutilon indicum*, *Argyreia kleiniana*, *Cleome gynandra* and *Euphorbia hirta*), dysentery (*Annona squamosa*, *Citrus medica*, *Cocos nucifera* and *Cuminum cyminum*) and stomach pain (*Melia azedarach*, *Moringa oleifera* and *Tephrosia purpurea*).

The following plants are given for gynaecological problems; *Hygrophila auriculata*, *Piper nigrum*, *Tephrosia purpurea*, *Tragia involucrata* and *Trigonella foenum-graecum*. For male fertility *Hybanthus enneaspermus* and *Moringa oleifera* are used.

Three plants are used to cure piles (*Abutilon indicum*, *Achranthes aspera* and *Mukia maderaspatana*), diabetes (*Gymnema sylvestre*, *Marsilea minuta*, *Syzygium cumini*), and earache (*Cleome viscosa*, *Cymbidium aloifolium*, *Notonia grandiflora*).

Employing two plants or one plant only cures the following ailments: jaundice, *Coccinia grandis* and *Phyllanthus amarus*; urinary problems, *Aerva lanata* and *Asparagus racemosus*; headache, *Ocimum canum* and *Vitex negundo*; toothache, *Carica papaya* and *Caesalpinia pulcherima*; asthma, *Oldenlandia umbellata* and *Solanum surattense*; giddiness, *Coriandrum sativum* and *Zingiber roseum*; paralysis, *Vernonia cinerea*; kidney stones, *Tribulus terrestris*; tumours, *Cataranthus pusillus*.

The studies on the ethnomedicinal lore of the Seithur hills (Rajendran *et al.*, 2001) revealed the use of 36 plant species belonging to 33 genera distributed over 24 families of flowering plants by the Valaya tribals of Virudhunagar. Out of these, 7 species were used for scabies and other skin diseases, 2 species for jaundice, 4 species for headache, 3 species for fever and one species for diabetes. The present study documented 111 medicinal plant species belonging to 100 genera distributed over 48 families. Out of these, 20 species were employed in skin diseases, 2 species in cases of jaundice, 3 species in cases of headache, 5 species in fevers, 3 species in cases of diabetes. Nearly 9 plants recorded in the present study were also employed by the Valaiya of Seithur hills.

The studies conducted on the ethnomedicinal plants used by the Valaiyans of Vellimalai hills (Ganesan and Kesavan, 2003) indexed 84 angiospermic plant species belonging to 28 genera distributed over 40 families for the treatment of various disorders, such as wounds, cuts, stomach pain, diabetes, fever, eczema, dandruff, cold, body heat, poisonous bites. The present study on the ethnobotany of the Valaiyans in the Alagarkoil hills revealed 111 medicinal plants for curing the above-mentioned diseases. Nearly 36 plants reported by the Valaiyans of the Vellimalai hills were also noticed in the present study.

The ethnobotanical uses of 161 species of Angiospermic plants distributed over 139 genera representing 60 families were reported from the Thottianaickans of Semmalai hills, Tiruchirapalli district (Venkatesan *et al.*, 2005); the uses of 119 plants for medicinal purposes were recorded. In the present study 111 plants out of a total of 167 were categorized as of medicinal value. Among the medicinal plants enumerated, the Thottianaickans

also used 55 plants employed by the Valaiyans for treating different kinds of diseases.

Ganesan *et al.* (2004) conducted an ethnobotanical survey of the Lower Palani hills of TamilNadu. They enumerated 45 species of plants distributed over 42 genera and belonging to 26 families as of ethnomedicinal value among the Paliyans and Pulayans for the treatment of various ailments. The plants were distributed over the Acanthaceae (4 species), Liliaceae, Cucurbitaceae, Solanaceae (3 species each), Sapindaceae, Amaryllidaceae, and Euphorbiaceae (2 species each). The Pteridophytes were represented by one species (*Nephrolepis auriculata*) and the remaining 16 families also contained one species each.

In the present study 111 medicinal plants were recorded. They belonged to the Fabaceae and Lamiaceae (7 species each), Apocynaceae, Asclepiadaceae, Asteraceae, Capparaceae, Cucurbitaceae and Liliaceae (4 species each), Acanthaceae, Apiaceae, Mimosaceae and Rubiaceae (3 species each). A number of 12 families counted 2 species each and the remaining 22 families one single species each.

The Valaiyans utilize a large number of plants for medicinal and other purposes. A fair number of these species, listed for medicinal purposes by the Valaiyans, were found to be common and already reported from other places (Karuppusamy, *et al.*, 2000; Rajendran *et al.*, 2001; Ganesan and Kesavan, 2003; Ganesan *et al.*, 2004 and Venkatesan *et al.*, 2005).

The uses of certain species have gained importance due to their manifold properties. For example, *Abutilon indicum* is used for piles and leg pain, *Acalypha indica* for eczema and chest pain, *Mollugo nudicaulis* for cold and skin diseases, *Notonia grandis* for earache and eczema. Sharma and Singh (2000) and Jain and Patole (2001) have also reported similar activities in certain plant species (*Cassia fistula* and *Gloriosa superba*) in their studies on ethnobotanical uses of plants. A few species described here as well as by various other authors from different regions as used by various tribes are common, but used for different purposes.

Information on some very useful medicines known to the tribal or ethnic communities through the experiences of ages is usually passed on from generation to generation. The tribal ways of life are rapidly breaking off under the impact of improved communication facilities and still more under the various tribal welfare schemes of the government (Matthew, 1981). As the tribal population is gradually adapting modern ways life, their heritage of traditional knowledge of plants will soon be lost forever.

For the ethnobotanist it is an urgent task to record for posterity whatever is valuable in the traditions of the tribes, their way of life, and their knowledge of plants before all this has disappeared before the close of this century. At the present this valuable diversity is under serious threat due to habitat destruction, overexploitation, shifting cultivation and several anthropogenic and natural pressures. This suggests that the awareness about medicinal plants and their conservation strategy for the sustainability of our ecosystems has to be stimulated.

References

- Dinesh Kumar, 2005. Tribal literacy disparity in India. *Curr. Sci.*, 88(5): 676.
- Gamble, J.S and Fischer, C.E.C. 1959. *The flora of the Presidency of Madras*. Rep, Ed, I–III. Botanical Survey of India, Calcutta.
- Ganesan, S. and L. Kesavan, 2003. Ethnomedicinal plants used by the ethnic group Valaiyans of Vellimalai hills (Reserved Forest), Tamil Nadu, India. *J. Econ. Taxon. Bot.* 27 (3): 754–760.
- Ganesan. S., Suresh. N. and Kesavan. L. 2004. Ethnomedicinal Survey of Lower Palni Hills of Tamil Nadu. *Indian journal of Traditional Knowledge*, 3(3): 299–304.
- Henry, A.N., Kumari, G.R. and Chitra, V. 1987. *Flora of Tamil Nadu*, Series–I, Vol. II. Botanical survey of India, southern – Circle, Coimbatore.
- Hentry, A.N., Chithra, V. and Balakrishnan, N.P. 1989. *Flora of Tamil Nadu*, Series–I, Vol. III Botanical survey of India, southern – Circle, Coimbatore.
- Jain, A.K. and S.N. Patole, 2001. Less-known medicinal uses of plants among some tribal and rural communities of Pachmarchi forest (M.P.). *Ethnobotany*. 13: 96–100.
- Jain, S.K. and Goel, A.K. 1995. *A manual of Ethnobotany*, S.K. Jain (Ed.), Scientific Publishers, Jodhpur. 142–153.
- Kala, C.P. 2005. Ethnomedicinal botany of the Apatani in the Eastern Himalaya region of India. *Jornal of Ethnobiology and Ethnomedicine*, 1(11): (<http://www.ethnobiomed.com/content/1/1/11>).
- Karuppusamy, S., Rajasekaran, K.M. and Kumuthakalavalli, R. 2000. Needs for Diversity - Conservation of Traditional medicinal plant Resources of Dindigul District, TamilNadu. *Ecol. Env. & Cons.* 6(3): 273–278.
- Matthew, K.M. 1981. *Materials for a flora of the Tamilnadu Carnatic*, Rapinat herbarium, India.
- Matthew, K.M. 1991. *An Excursion flora of Central TamilNadu*, India Oxford and IBH Publishing Co., New Delhi.
- Nair, N.C and Hentry, A.N., 1983. *Flora of TamilNadu*, Series–I, Vol. I, Botanical survey of India, Southern – Circle, Coimbatore.
- Sharma, P.P. and N.P. Singh, 2001. Ethnomedicinal uses of some edible parts in Dadra, Nagar Haveli and Daman (U.T.). *Ethnobotany*. 13: 121–125.
- Venkatesan, G., Ganesan, S., Kesavan, L. and Banumathy, N. 2005. Ethnobotany of Ethnic group Thottianaickan of Tiruchirapalli District, Tamilnadu, India. In: *Advances in Medicinal Plants*, Vol. I, Asian Medicinal Plants and Health Care Trust, Jodhpur. Pp. 59–75.

Autobiographical Statement

Dr. S. GANESAN
4/44a, Piranmalai Road,
Pallapatty (Post),
Melur (Taluk), Madurai (Dist),
Tamil Nadu, India. PIN: 625103.
E. Mail: sganesan76@yahoo.com
Contact: 91- 4544-230769. 91- 9860429845.

Education

Philosophy Doctorate in Botany (Ph.D.,) (1999–2004), Master of Science in Botany (M.Sc.,) (1997–1999), Bachelor of Science in Botany (B.Sc.,) (1994–1997), Thiagarajar College (Autonomous), Madurai Kamaraj University, Madurai-625 009, TamilNadu, India.

Present Employment

Research Scientist, (Quality Assurance & Research of ISM Herbal Drugs)

Field of Interest

Natural Products from Microbes and Plants.

Title of Research in Ph.D.

“Studies on Biocontrol of Soil-Borne Plant Pathogens”

Published Research works in Journals and Books

- Ganesan, S and Sekar, R. 2000. Occurrence of Phytoplasmal Diseases in Madurai. *J. Eco-biol.*, 12(4): 249–273.
- Ganesan, S., Manimaran, P., Ramesh, K and Sekar, R. 2003. Biocontrol of Onion Basal Rot disease caused by *Fusarium oxysporum* f. sp. *cepae*. In: *Biotechnology in Agriculture Industry and Environment* (Proceedings of International Conference of SAARC Countries Dec.28–30, 2001) ed. A.D. Deshmukh, Pub. Microbiology Society, Karad, Maharashtra. Pp.119–124.
- Ganesan, S. and Kesavan, L. 2003. Ethnomedicinal plants used by the ethnic group Valaiyans of Vellimalai hills (Reserved forest), Tamil Nadu, India. *J. Econ. Taxon. Bot.*, 27 (3): 754–760.

- Ganesan, S and Sekar, R. 2004. Biocontrol mechanism of *Trichoderma harzianum* (ITCC-4572) on Groundnut Web Blight Disease Caused by *Rhizoctonia solani*. *Journal of Theoretical and Experimental Biology*, 1: 43–47.
- Ganesan, S., Suresh, N. and Kesavan, L. 2004. Ethnomedicinal survey of Lower Palni Hills of Tamil Nadu. *Indian Journal of Traditional Knowledge*, 3(3): 299–304.
- Annapoorani, C., Ganesan, S. and Chandrasekaran, S. 2004. Impact of exotic plant invasions on the structure and composition of herbaceous community in village ponds of Sivagangai District. *TeJAS.*, 1(2): 74–80.
- Ganesan, S. and Sekar, R. 2004. Biocontrol mechanism of Groundnut (*Arachis hypogaea* L.) Diseases-*Trichoderma* system. In: *Biotechnological Applications in Environment and Agriculture*, eds. G.R. Pathade and P.K. Goel, ABD Pub. Jaipur, India. Pp. 312–327 (ISBN – 81-89011-12-X).
- Venkatesan, G., Ganesan, S., Kesavan, L. and Banumathy, N. 2005. Ethnobotany of Ethnic group Thottianaickan of Tiruchirapalli District, TamilNadu, India. In: *Advances in Medicinal Plants*. Vol. I. Pub. Asian Medicinal Plants and Health Care Trust, Jodhpur, Rajasthan. Pp.59–75 (ISBN - 81-89070-07-X).
- Ganesan, S., Venkateshan, G. and Banumathy, N. 2006. Medicinal Plants used by Ethnic group Thottianaickans of Semmalai Hills (Reserved forest), Tiruchirappalli District, Tamil Nadu. *Indian Journal of Traditional Knowledge*, 5(2): 245–252.

In Press

- Murugavel, S., Ganesan, S., Kesavan, L. and Banumathy, N. 2006. Enumerations of Roadside Flora of Madurai city, Tamil Nadu, India. In: *Advances in Medicinal Plants*. Vol. 3. Pub. Asian Medicinal Plants and Health Care Trust, Jodhpur, Rajasthan.
- Ganesan, S., Chandhirasekaran, M. and Selvaraj, A. 2006. Ethnoveterinary Health Care Practices in Southern Districts of Tamil Nadu, India. *Indian Journal of Traditional Knowledge* (accepted for publication)
- Ganesan, S., Manikandan, P. and Sekar, R. 2006. Enumerations of Angiospermic Parasitic Plants and its Hosts in Southern Districts of Tamil Nadu, India. *J. Econ. Taxon. Bot.*, (accepted for publication)

On Communication

- Chandrasekaran, S., Priyadarshini, Ganesan, S. and Arun Nakentran. N. 2004. Impact of *Prosopis juliflora* on the structure and functional attributes of herbaceous community in the semi arid region of Tamil Nadu. *Tropical Ecology*.
- Siva, N., Ganesan, S. and Banumathy, N. 2005. Antifungal effect of leaf extract of some medicinal plants against *Fusarium oxysporum* causing wilt disease of *Solanum melangeana* L. (Egg plant). *Natural products radiance*.

Presented Research works in National and International Seminars:

- Ganesan, S. and Sekar, R. 2001. Biocontrol of Soil borne plant pathogens. Presented in: International Symposium on Recent Advances in Biological Science. Sponsored by DBT,

- Ministry of Science and Technology, Govt. of India & K.S.R. Educational and Charitable Tiruchengode, Tamil Nadu. Oct.11&12.
- Ganesan, S., Ramesh, K. and Sekar, R. 2001. Biocontrol of Onion basal rot Disease. Presented in: International Symposium on Recent Advances in Biological Science. Sponsored by DBT, Ministry of Science and Technology, Govt. of India & K.S.R. Educational and Charitable Tiruchengode, Tamil Nadu. Oct.11&12.
- Ganesan, S., Manimaran, P., Ramesh, K. and Sekar, R. 2001. Biocontrol of Onion Basal rot Disease caused by *Fusarium oxysporum* f.sp.*cepae*. Presented in: International Conference of SAARC Countries on "Biotechnology in Agriculture, Industry and Environment". (Sponsored by: DST, CPCB, CSIR, New Delhi, UGC, WRO-Pune, Shivaji University, Kolhapur, Yashvantro Chavan College) Karad, Maharashtra. Dec.28–30.
- Ganesan, S., Rajkumar, P. and Kesavan, L. 2001. Medicinal plants used by Valaiyans. Presented in: National Conference on Siddha medicine Organized by Friends of Siddha medicine. Thirunelveli, Tamil Nadu. Feb.24 & 25.
- Ganesan, S., Eluvakkal, T. and Kesavan, L. .2001. Medicinal plants used by Paliyans of Sirumalai hills, Sathuragiri hills and Kumily hills of Tamil Nadu. India. Presented in: State level seminar on conservation of biodiversity present and future scenario. Sponsored by UGC. Ayyanadar Janakiammal College, Sivakasi, Tamil Nadu. March.23& 24.
- Chandrasekaran, S., Priyadarshini, A.L., Ganesan, S. and Balakrishnan, R. 2002. Changes in Herbaceous vegetation following the invasion of *Prosopis juliflora* in the semi arid region of Tamil Nadu. Presented in: UGC State level Seminar, Recent Trends in Eco conservation, St. Johns college, Palayamkottai. Feb.14–16.
- Anne Virgin Jeeva, A., Ganesan, S. and Sekar, R. 2003. Fluorescent *Pseudomonas* as plant growth promoting rhizobacteria and biocontrol agents in groundnut crop (*Arachis hypogaea* L.) Presented in: International Seminar on Recent Advances in Biotechnology, (Sponsored by Department of Biotechnology, Govt. of India & Tamil Nadu State Council for Science & Technology, Chennai) Ponnaiya Ramajeyam College, Thanjavur.
- Ganesan, S. and Sekar, R. 2003. Mechanism of control of *Rhizoctonia solani* causing Web blight Disease in Groundnut by *Trichoderma harzianum* (ITCC – 4572). Presented in: One day Symposium on "Human Resource Development in Microbiology, Organized by: Association of Microbiologists of India, Cochin Unit. St. Teresa College, Ernakulam. Feb.8.