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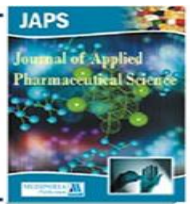

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Ethnomedicinal plants used to cure diarrhoea and dysentery in Pachalur hills of Dindigul district in Tamil Nadu, Southern India

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ABSTRACT

The people residing in Pachalur hills in Dindigul district of Tamil Nadu mostly depend on the vegetation around them for the prevention as well as the treatment of diseases and ailments. Information on ethnomedicinal uses of plants, their doses and mode of administration have been collected from the local traditional medicine practitioners (*Vaithiyar*) as well experienced men and women. The paper deals with 54 ethnomedicinal plants of 52 genera belonging to 31 families used by the villagers for diarrhoea and dysentery in Pachalur hills. Most of these plants are commonly available in natural sources and some were obtained from local dealers. Isolation of active principles, pharmacological investigations, and the potent anti–microbial activity should be studied on these medicinally important species. Attention should also be made on proper exploitation and utilization of these medicinal plants.

***Key words*:** Diarrhoea, Dysentery, Medicinal plants, Pachalur hills, Tamil Nadu.

INTRODUCTION

Evolution of human life and culture has directly or indirectly been associated with and influenced by the surrounding environment. World wide, 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. 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 (Heywood, 1992). Unfortunately, much of this wealth of knowledge is today becoming lost as traditional cultures become eroded. Therefore, there is an urgent need to document and preserve this rich unwritten folk-lore on uses of plants and plant resources, as otherwise it will be lost forever. In this connection, recently various ethnobotanical studies have been reported to expose the knowledge from the various tribals of Tamil Nadu, India Eluvakkal, 1991; Alagesaboopathi et al., 1999; Sankarasivaraman, 2000; Ganesan and Kesavan, 2003; Muthukumarasamy et al., 2003a; 2003b; Rajendran et al., 2003; Ignacimuthu et al., 2006; Sandhya et al., 2006; Ayyanar et al., 2008; Kottaimuthu, 2008; Shanmugam, 2008; Shanmugam et al., 2008; 2009, 2011). In such a way, the present study was carried out to document the ethnomedicinal plants used to cure diarrhoea and dysentery by the people includes Paliyar tribes of Pachalur hills in Dindigul district of Tamil Nadu.

MATERIALS AND METHODS

Study area

The study area, Pachalur is located in Dindigul district of Tamil Nadu, India. The area of investigation is lies between 10° 21' 46" N latitude and 77° 39' 50" E longitude. The elevation of the area of investigation ranges from 1000 – 1500 M above mean sea level. The temperature ranges from 15° C to 35° C. The mean of annual rainfall recorded in the study site was 650 – 840 mm.

Methodology

The study area was surveyed randomly in 12 locales including remote villages of Pachalur hills from June 2009 to May 2010. Interviews and detailed personal discussions were conducted with the local people who have unique knowledge about the medicinal uses of plants. A total of 40 respondents were interviewed, these included 23 males, 7 females and 10 herbal doctors (*Vaithiyar*) including both male and female that depended on plant as sources of medicines either for self–medication or for treating others. The age of the interviewed persons ranged 25 – 82. Before each interview Prior Informed Consent was taken from the interviewed persons to record the conversations. Flora of Tamil Nadu Carnatic (Matthew, 1983) and An Excursion Flora of Central Tamil Nadu (Matthew, 1991) were used to ascertain the nomenclature of the plant species.

RESULTS

54 species of medicinal plants used to treat diarrhoea and dysentery by the people inhabiting in Pachalur hills have been documented in this study. These plants are distributed in 52 genera and 31 families. The plants are alphabetically with their family name, local name (in Tamil) and medicinal uses in the following enumeration.

ENUMERATION OF ETHNOMEDICINAL DATA

1. *Acalypha fruticosa* Forsskal – Euphorbiaceae – “Chinni” Leaf decoction relieves dysentery
2. *Acorus calamus* L. – Araceae – “Vasambu” Decoction of rhizome is used in diarrhoea and dysentery.
3. *Adhatoda vasica* Nees – Acanthaceae – “Adaathodai” Leaf juice is used in dysentery.
4. *Aegle marmelos* (L.) Corr. Serr. – Rutaceae – “Vilvam” Extract of ripened fruits is used for dysentery.
5. *Ageratum conyzoides* L. – Asteraceae – “Poombull” Leaf infusion is used in dysentery.
6. *Allium cepa* L. – Amaryllidaceae – “Vengaayam” Extract made from the bulbs is used against dysentery.
7. *Alpinia galanga* Willd. – Zingiberaceae – “Sitharathai” Seed decoction is used for diarrhoea.
8. *Alstonia scholaris* (L.) R.Br. – Apocynaceae – “Veppaalai” Stem bark is used in the form of liquid extract to cure chronic diarrhoea.
9. *Butea frondosa* J. Koenig ex Roxb. – Fabaceae – “Kaattuthee” Tree yields a gum, which is boiled with water and the extract is used in diarrhoea.
10. *Cassia tora* L. – Caesalpiniaceae – “Thagarai” Leaf extract is used to cure diarrhoea.
11. *Celosia cristata* (L.) Kuntze – Amaranthaceae – “Kozhikkondai” Flower extract is used in diarrhoea. Seed decoction is prescribed in dysentery.
12. *Cinnamomum iners* Reinw. – Lauraceae – “Lavangam” Seed decoction is used to treat dysentery.
13. *Citrus medica* L. – Rutaceae – “Yelumichai” Preserved rind of fruit is taken as raw for dysentery.
14. *Cocos nucifera* L. - Arecaceae - “Thennai” The endospermic part of the fruit is taken as raw to cure dysentery.
15. *Cuminum cyminum* L. – Apiaceae – “Seeragam” Seeds are eaten as raw to treat diarrhoea.
16. *Curculigo orchioides* Gaertner –Hypoxidaceae– “Nilappanai” Decoction made from the tuberous roots is used in diarrhoea.
17. *Desmodium triflorum* (L.) DC. – Fabaceae – “Sirupulladi” Leaf extract is used for dysentery and diarrhoea.
18. *Euphorbia hirta* L. – Euphorbiaceae – “Ammanpacharisi” Root extract is given to drink to cure blood dysentery.
19. *Ficus benghalensis* L. – Moraceae – “Aalamaram” Infusion of stem bark is used for dysentery. Leaf infusion is taken internally for diarrhoea.
20. *Ficus glomerata* Roxb. – Moraceae – “Athi” Root decoction is used in diarrhoea.
21. *Gardenia gummifera* L. f. – Rubiaceae – “Kambilippishin” Infusion of gum is used to cure diarrhoea.
22. *Grewia tiliifolia* Vahl – Tiliaceae – “Sadachi” Stem bark decoction is used in dysentery.
23. *Hamelia patens* Jacq. – Rubiaceae – “Varithelmunai” Syrup made from berries is used in blood dysentery.
24. *Helicteres isora* L. – Sterculiaceae – “Valamburi” Fruit powder is mixed with water and given to drink for diarrhoea and blood dysentery.
25. *Holarrhena pubescens* Wallich ex A. DC. –Apocynaceae- “Kudagappaalai” Infusion of stem bark used in dysentery and diarrhoea.
26. *Leea indica* (Burm. f.) Merr. – Vitaceae – “Nekki” Root extract is used in dysentery.
27. *Madhuca indica* J. F. Gmel. – Sapotaceae – “Yiluppai” Stem bark extract is used to cure diarrhoea.
28. *Mimusops elengi* L. – Sapotaceae – “Makizham” Fruit extract is used to treat diarrhoea and dysentery.
29. *Morinda tinctoria* Roxb. – Rubiaceae – “Manjanathi” Leaf extract is used to cure diarrhoea.
30. *Murraya koenigii* (L.) Sprengel – Rutaceae – “Karivepppilai” Leaves are cooked with normal diet and eat to cure diarrhoea and dysentery.
31. *Murraya paniculata* (L.) Jack – Rutaceae – “Konji” Leaf extract is used in blood dysentery.
32. *Pavonia odorata* willd. – Malvaceae – “Peraamutti” Root decoction is used for dysentery.
33. *Pergularia daemia* (Forsskal) Chiov. -Asclepiadaceae– “Velipparuthi”Decoction of leaves is used in infantile diarrhoea.

34. *Phyllanthus amarus* Schum. & Thonn. –Euphorbiaceae– "Keelaanelli" Entire plant extract is taken internally to treat diarrhoea and dysentery.
35. *Plumbago zeylanica* L. – Plumbaginaceae – "Sitharmoolam" Infusion of root is used in diarrhoea
36. *Pongamia glabra* Vent. – Fabaceae – "Pungam" Leaf decoction is used to cure diarrhoea.
37. *Psidium guajava* L. – Myrtaceae – "Koyyaa" Decoction of stem bark is given to drink for diarrhoea.
38. *Punica granatum* L. – Punicaceae – "Maadhulai" Rind of the fruit is made into extract with water and taken internally to cure diarrhoea and blood dysentery.
39. *Rhododendron arboreum* Ser. – Ericaceae – "Rose maram" Flower extract is used in dysentery.
40. *Sapindus emarginata* Vahl – Sapindaceae – "Poondhikkottai" Fruit decoction is used to treat diarrhoea.
41. *Saraca indica* auct.non.L. – Caesalpiniaceae – "Asokamaram" Stem bark decoction is used in blood dysentery. Flowers also are eaten as raw dysentery.
42. *Sesbania grandifolia* (L.) Poiret – Fabaceae – "Agathi" Leaves are cooked and eaten with normal diet to cure diarrhoea and blood dysentery.
43. *Shorea robusta* Gaertn. f. – Dipterocarpaceae – "Saambiraani" Fruit extract is used in diarrhoea.
44. *Sida cordifolia* L. – Malvaceae – "Nilathuthi" Infusion of Leaves is used in dysentery.
45. *Solanum nigrum* L. – Solanaceae – "Miluguthakkaali" Extract prepared from entire plant is taken internally for diarrhoea.
46. *Spermacoce hispida* L – Rubiaceae – "Nathaichoori" Plant extract is used in dysentery.
47. *Spermacoce ocymoides* Burm.f. – Rubiaceae – "Muttaichoori" Entire plant extract is used to cure diarrhoea and dysentery.
48. *Stachytarpheta indica* auct non. (L.) Vahl – Verbenaceae– "Seemainaayuruvi" Infusion of leaves is used in diarrhoea and dysentery.
49. *Streblus asper* Lour. – Moraceae – "Paraai" Extract made from root powder given in dysentery. Decoction of stem bark is used in blood dysentery.
50. *Tecomaria capensis* (Thumb.) Lindley – Bignoniaceae– "Sevviral poo" Decoction of leaves is given for diarrhoea.
51. *Toddalia asiatica* L. – Rutaceae – "Milagaranai" Leaf extract is used to cure diarrhoea.
52. *Trema orientalis* (L.) Blume – Ulmaceae – "Chengotam" Decoction of root is given for diarrhoea.
53. *Trichodesma indicum* (L.) R. Br. – Boraginaceae – "Kavizhthumbai" Root decoction is taken internally to treat blood dysentery.
54. *Tridax procumbens* L. – Asteraceae – "Kinattruppaasaan" Leaf extract is given to drink cure dysentery and diarrhoea.

DISCUSSION

Totally 35 plants (*Acalypha fruticosa, Acorus calamus, Adhatoda vasica, Aegle marmelos, Ageratum conyzoides, Allium cepa, Celosia cristata, Cinnamomum iners, Citrus medica, Cocos nucifera, Desmodium triflorum, Euphorbia hirta, Ficus benghalensis, Grewia tiliifolia, Hamelia patens, Helicteres isora, Holarrhena pubescens, Leea indica, Mimusops elengi, Murraya koenigii, Murraya paniculata, Pavonia odorata, Phyllanthus amarus, Punica granatum, Rhododendron arboreum, Saraca indica, Sesbania grandifolia, Shorea robusta, Sida cordifolia, Spermacoce hispida, Spermacoce ocymoides, Stachytarpheta indica, Streblus asper, Trichodesma indicum* and *Tridax procumbens*) are used in the treatment of dysentery.

The following 35 plants are used for treating diarrhoea: *Acorus calamus, Alpinia galanga, Alstonia scholaris, Butea frondosa, Cassia tora, Celosia cristata, Cuminum cyminum, Curculigo orchioides, Desmodium triflorum, Ficus benghalensis, Ficus glomerata, Gardenia gummifera, Helicteres isora, Holarrhena pubescens, Madhuca indica, Mimusops elengi, Morinda tinctoria, Murraya koenigii, Pergularia daemia, Phyllanthus amarus, Plumbago zeylanica, Pongamia glabra, Psidium guajava, Punica granatum, Sapindus emarginata, Sesbania grandifolia, Shorea robusta, Solanum nigrum, Spermacoce ocymoides, Stachytarpheta indica, Streblus asper, Tecomaria capensis, Toddalia asiatica, Trema orientalis* and *Tridax procumbens*.

13 plants (*Acorus calamus, Celosia cristata, Ficus benghalensis, Helicteres isora, Holarrhena pubescens, Mimusops elengi, Murraya koenigii, Phyllanthus amarus, Punica granatum, Sesbania grandifolia, Spermacoce ocymoides, Stachytarpheta indica* and *Tridax procumbens*) are used to cure diarrhoea as well as dysentery. Among the 35 plants used to treat dysentery the following 7 plants are used for blood dysentery: *Euphorbia hirta, Hamelia patens, Murraya paniculata, Punica granatum, Sesbania grandifolia, Streblus asper* and *Trichodesma indicum*

Most of the plants reported in this study were collected from natural vegetation (85%) and few of them from home gardens and local markets (15%). Rutaceae is represented by the highest number of species (5 species) followed by Fabaceae and Rubiaceae (4 species each) and Euphorbiaceae and Moraceae (each of 3 species). 6 families (Amaranthaceae, Apocynaceae, Caesalpiniaceae, Malvaceae and Sapotaceae) contained 2 species each. The rest are represented with one species each. Among the different plant parts used for the preparation of medicine, leaves (31.45%) were found to be the most frequently used plant parts in the preparation of medicine followed by fruit and roots (16. 05%), stem bark (12.49%), whole plant parts (7.14%), seed (7.13%), Flower (4.35%), Gum (3.56) and rhizome (1.78%) (Table 1, Figure 1). The methods of preparation fall into 6 categories, viz., extract (36.79%), decoction (23.18%), cooked (14.28%), infusion (12.75%), raw (10.7%) and powder (3.56%) (Table 1, Figure 2).

CONCLUSION

This study shows that knowledge and usage of herbal medicine for the treatment of various ailments among people living in Pachalur hills is still a major part of their life and culture. They use forest plants, weeds, fruit plants, vegetables, spices and ornamental plants as traditional medicine. As the ethnic groups

Table 1: Percent distributions of the parts of the plant used and mode of treatment followed by the villagers of Pachalur hills.

S. No.	Parts used	Mode of treatment						Total
		Cooked	Decoction	Extract	Infusion	Powder	Raw	
1	Entire plant	7.14	-	-	-	-	-	7.14
2	Flower	3.57	-	-	-	-	1.78	4.35
3	Fruit	-	1.78	8.92	-	1.78	3.57	16.05
4	Gum	-	-	1.78	1.78	-	-	3.56
5	Leaf	3.57	7.14	13.60	7.14	-	-	31.45
6	Rhizome	-	1.78	-	-	-	-	1.78
7	Root	-	1.78	8.92	-	1.78	3.57	16.05
8	Seed	-	5.35	-	-	-	1.78	7.13
9	Stem bark	-	5.35	3.57	3.57	-	-	12.49
	Total	14.28	23.18	36.79	12.75	3.56	10.7	100

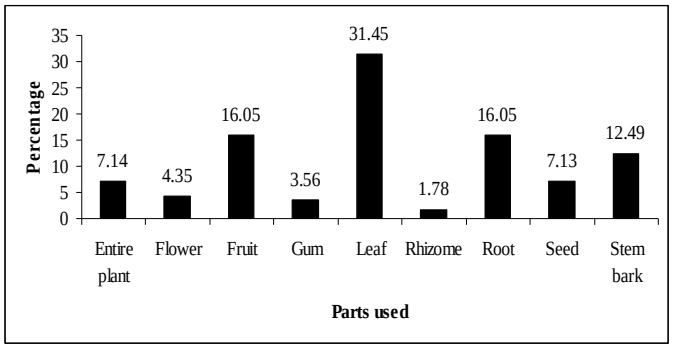

Fig. 1: Percent distribution of plant parts used to cure diarrhoea and dysentery.

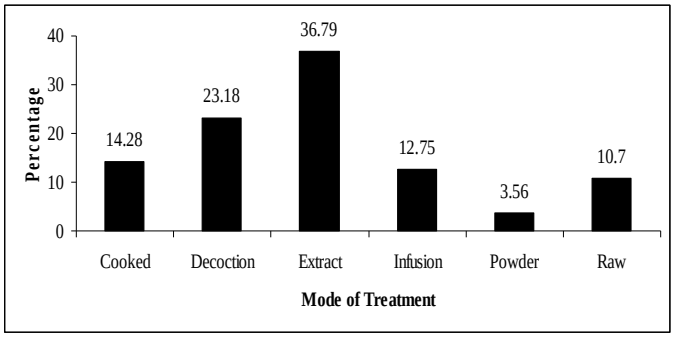

Fig. 2: Percent distribution of mode of treatment followed.

migrated from place to place in search of their livelihood, their folklore knowledge also became fragmented and travelled with them often with additions and deletions. Their findings in course of time have become basic leads for chemical, pharmacological, clinical and biochemical investigations, which ultimately may birth to drug discovery. Therefore, phytochemical and pharmacological values of these medicinally important plants should be tested. Moreover, it may further be mentioned that over exploitation of these species in the name of medicine may lead some species ultimately to the disappearance in future. Therefore, attention should also be made on proper exploitation and utilization of these medicinal plants.

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REFERENCES

Alagesaboopathi C., Dwarakan P, Balu S. Plants used as medicine by tribals of Shevaroy hills, Tamil Nadu. *J. Econ. Taxon. Bot.* 1999; 23(2): 391 – 393.

Ayyanar M., Sankarasivaraman K, Ignacimuthu S. Traditional Herbal Medicines Used for the Treatment of Diabetes among Two Major Tribal Groups in South Tamil Nadu, India *Ethnobotanical Leaflets.* 2008; 12: 276 – 280.

Eluvakkal T. Ethnobotanical studies of Paliyans of Sirumalai Hills, Sathuragiri Hills and Kumily Hills. M. Phil., Dissertation. Thiagarajar College (Autonomous), Madurai, Tamilnadu, India. 1991.

Ganesan S., Kesavan L. Ethnomedicianal Plants used by the ethnic group Valaiyans of Vellimalai hills (Reserved forest), Tamil Nadu, India. *J. Econ. Taxon. Bot*. 2003; 27(3): 754 – 760.

Heywood VH. Conservation of germplasm of wild species. In: Sandlund OT., Hindar K Brown AHD. (eds.). *Conservation of Biodiversity for Sustainable Development*. Scandinavian University Press, Oslo, 1992; pp: 189 – 203.

Ignacimuthu S., Ayyanar M., Sankarasivaraman K. Ethnobotanical investigations among tribes in Madurai District of Tamil Nadu (India). *J. Ethnobiol. Ethnomed.* 2006; 2: 25.

Kottaimuthu R. Ethnobotany of the Valaiyans of Karandamalai, Dindigul District, Tamil Nadu, India. *Ethnobotanical Leaflets*. 2008: 12: 195 – 203.

Matthew KM. Flora of Tamil Nadu Carnatic. Rapinat Herbarium, St. Joseph's College, Tiruchirapalli, Tamil Nadu; 1983.

Matthew KM. An Excursion Flora of Central Tamil Nadu. Oxford and IBH Publishing Co Pvt Ltd, New Delhi; 1991.

Muthukumarasamy S., Mohan VR., Kumaresan S., Chelladurai V. Herbal medicinal plants used by Paliyars to obtain relief from gastro-intestinal complaints. *J. Econ. Taxon. Bot*. 2003a; 27: 711 – 714.

Muthukumarasamy S., Mohan VR., Kumaresan S., Chelladurai V. Herbal remedies of Paliyar tribe of Grizzled Giant Squirrel Wildlife Sanctuary, Western Ghats, Srivilliputhur, Tamil Nadu for poisonous bites. *J. Econ. Taxon. Bot*. 2003b; 27, 761 – 764.

Rajendran S. M., Agarwal SC., Sundaresan V. Lesser Known Ethnomedicinal Plants of the Ayyakarkoil Forest Province of Southwestern Ghats, Tamil Nadu, India– Part I. *J. Her. Spic. Med. Plants*. 2003; 10: 103 – 112.

Sandhya B., Thomas S., Isabel W., Shenbagarathai R. Ethnomedicinal plants used by the Valaiyan community of Piranmalai hills (Reserved forest), Tamil Nadu, India – A pilot study. *African J. Trad. CAM*. 2006; 3: 101 – 114.

Sankarasivaraman K. Ethnobotanical Wealth of Paliyar Tribe in Tamilnadu. Ph. D. Thesis, Manomanium Sundaranar University, Tirunelveli, Tamil Nadu, India. 2000.

Shanmugam S. Flora of Angiosperms and Ethnobotanical Studies on Paliyar tribes of Pachalur in Dindigul District of Tamil Nadu, India. M. Phil. Dissertation. Thiagarajar College (Autonomous), Madurai, Tamil Nadu, India. 2008.

Shanmugam S., Ramar S., Ragavendhar K., Ramanathan R., Rajendran K. Plants used as medicine by Paliyar tribes of Shenbagathope in Virudhunagar district of Tamil Nadu. *J. Econ. Taxon. Bot*. 2008; 32 (4): 922 – 929.

Shanmugam S, Manikandan K, Rajendran K. Ethnomedicinal survey of medicinal plants used for the treatment of diabetes and jaundice among the villagers of Sivagangai district, Tamil Nadu. *Ethnobotanical Leaflets*. 2009; **13**: 186 – 193.

Shanmugam S, Kalaiselvan M, Selvakumar P, Suresh K, Rajendran K. Ethnomedicinal plants used to cure diarrhoea and dysentery in Sivagangai district of Tamil Nadu, India. *Int J Res Ayur Pharm* 2011; **2** (5): 991 – 994.