



ISSN: 0975-833X

RESEARCH ARTICLE

**DISTRIBUTION AND ETHNOMEDICINAL USES OF PETRIDOPHYTES IN SIRUMALAI HILLS,
EASTERN GHATS OF TAMILNADU, INDIA**

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ARTICLE INFO

Article History:

Received 27th March, 2015

Received in revised form

01st April, 2015

Accepted 11th May, 2015

Published online 30th June, 2015

Key words:

Eastern Ghats, Sirumalai Hills,
Medicinal Plants, Pteridophytes,
Tamil Nadu.

ABSTRACT

This study aims to assess and evaluate the number of traditional commercially important medicinal plants of the Sirumalai hills of Eastern Ghats, Tamil Nadu, India. Based on a field survey this documentation has been studied during 2014. Purpose of this documentation was to identify and quantify the most important medicinal plants used for the general health of the indigenous people of Sirumalai Hills. Due to the modern civilization most of the places ethnomedicinal information was gathered through questionnaire from the tribal and non-tribal people of Sirumalai hills in Tamil Nadu. In the present study, we have reported 20 species of medicinally important pteridophytes plants belonging to 12 families distributed in 18 genera. Our study concluded that, the wealth of traditional ethnomedicinal knowledge of Pteridophytes, population of certain medicinal plant species to a great potential for research in the discovery of new drugs to fight diseases.

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Citation: Thirupathi, M. and Karthikeyan, S. 2015. "Distribution and ethnomedicinal uses of petridophytes in sirumalai hills, eastern Ghats of Tamilnadu, India", *International Journal of Current Research*, 7, (6), 17224-17227.

INTRODUCTION

In recent times more than 13,000 plants have been studied for pharmaceutical applications and plant research has increased in the world and grow naturally around us. People in the world have learned how to use plants to fight illness and maintain health. These readily available and culturally important traditional medicines form the basis of an accessible and affordable health-care regime and are an important source of livelihood for indigenous and rural populations (Emily Roberson, 2008). Most of the peoples from are villagers completely depend on forest resources for maintaining their day-by-day requirements like medicine, food, fuel and household articles etc. In the past 2000 years of the history of medicine, mankind does not depended other sources of medicines than plants, either fresh or dried. Hence traditional knowledge is important not only for its potential contribution to drug development and market values, but also for the people's healthcare (Pei, 2001). According to the World Health organization (WHO) 80% of the world's population primarily those of developing countries rely on plant-derived medicines for their healthcare needs (Gurib, 2006). Medicinal plants are those plants are not only used for trational medicine which are rich in secondary –metabolites (alkoloids, glycosides,

coumarins, flavonides, steroids etc.) and are potential source of drugs. In India major exporter of medicinal plants turn over Rs. 86 crores worth of raw materials and drug from medicinal plants are exported from India. Pteridophytes (ferns and fern allies) are called as reptile group of plants and are one of the earliest groups of vascular creeping plants. Most of the local or indigenous people are not well known about the uses of Pteridophytes since it is no easily available like flowering plants. Petridophytes have an important role in the earth's biodiversity. Economic and medicinal values of higher plants have been investigated thoroughly, unfortunately Pteridophytes have been ignored. There is not much information was available on the literature about the medicinally important except a few studies (Caius, 1935; Benjamin, 2007). Therefore, this study was undertaken in order to ascertain the detailed information on Pteridophytes used by tribal and non-tribal people in Sirumalai hills of Eastern Ghats of Tamil Nadu, India.

MATERIALS AND METHODS

Description of the study area

Eastern Ghats of Tamilnadu is ehthnobotanically very rich, having a wide variety of medicinal plants. Eastern Ghats have more rich plant diversity and topographical condition is better than other terrestrial

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biodiversity of Tamilnadu, wealthy medicinal plants are available from this region. Sirumalai hills are situated in the Dindugal district of Tamil Nadu with an area of 317 Km² and the Southern portion of the hills lies in the Madurai district of Tamil Nadu. Sirumalai hills on the western, eastern and southern sides rise abruptly from the plains and on the northern side ascend to the plains by numerous long and gently sloping spurs. As per 2001 census, the total population in Sirumalai hills is about 5168 in Sirumalai Pudur, Talaikadu, Thavasimadai, Vellimalai Peak, and Waver Kadu (Figure 1).

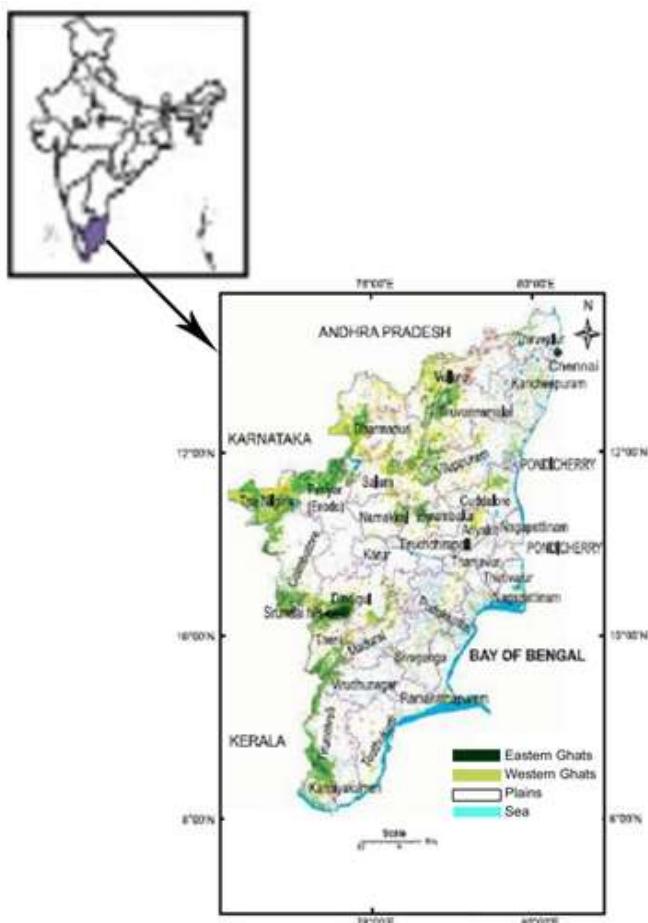


Figure 1. Location map of Sirumalai hills in Eastern Ghats of Tamil Nadu, Southern India

Specimen collection

The ethnobotanical knowledge of this study was carried out from January to December 2014. The medicinal plants were collected with the help of paliyers (Tribes of Sirumalai hills) and the other information gathered from the uses of plants was recorded in the field note books. The scientific information and Binomial names were verified with the Tropicos online database (www.tropicos.org). After the identification the herbarium specimens were deposited at department of Botany, M.R. Govt. Arts College Mannargudi for further verification.

RESULTS AND DISCUSSION

In the present study we have reported 20 species of Pteridophytes belonging to 12 families distributed as 18 genera.

The detailed information about the local name of the ferns used parts of the plants and medicinal uses were documented from the local and tribal people of Sirumalai Hills in Dindugal district of Tamil Nadu. The collected 20 species of Pteridophytes were used to treat 20 types of diseases such as wound and related injuries, diarrhoea, skin disorders, several aches, hair growth, body sickness, stomach problems, ulcer, sore throat, leprosy, ophthalmia, typhoid, urinary bladder and rheumatism.

In terms of the number of Pteridophytes collected in Sirumalai hills, Pteridaceae is the most predominant family of ethnomedicinal importance with 8 species of ethnomedicinal plants (Figure 2) (*Actinopteris radiata*, *Adiantum capillaries-veneri*, *Adiantum lunulatum*, *Ceratopteris thalictroides*, *Cheilanthes tenuifolia*, *Pteris biaurita*, *Pteris cretica*, and *Vittaria elongata*). It was followed by Polypodiaceae with 2 medicinal plants (*Drynaria quercifolia*, *Polypodium vulgare*) and Lycopodiaceae with 2 medicinal plants (*Huperzia Phlegmaria* and *Lycopodium cernuum* var. *panamense*) other families are represented with one species of ethnomedicinal importance.



Figure 2. Showing some Pteridophytes plants of Sirumalai Hills

The present study is ethnomedicinal uses reported in entirely different from the other reports available in the literature. For example, *Angiopteris evecta* is used in the treatment of ulcer and stomachache by the studied local people in Sirumalai, where the plant has been used in the treatment of different types of headaches. Likewise the following plants are reported to have different types of uses by the various local communities elsewhere; *Botrychium lanuginosum* is reported to have body pain and heal wound (Singh, 1999). *Ceratopteris thalictroides* is used to treat skin diseases (Singh, 1999), *Cheilanthes tenuifolia* is used as a general tonic (Dixit, 1974) *Hemionitis arifolia* is used to treat cuts, wounds and menstrual disorders and *Diplazium esculentum* (Retz.) for treating relief from cold and cough boils (Benjamin and Manickam, 2007).

Table 1. List of ethnomedicianally important Pteridophytes in Sirumalai hills of Eastern Ghats, Tamil Nadu, India

S.No	Botanical Name	Family	Local Name	Medicinal Uses
1	<i>Actiniopteris radiata</i> (Sw.) Link.	Pteridaceae	Saava sedi, Korai pani	The juice extracted from the system is taken orally twice a day to treat diarrhoea and fever.
2	<i>Adiantum apillarie-veneris</i> L	Pteridaceae	Roaddu Keerai	The whole plant is made into a paste along with aloegel and applied externally in the affected places to treat cuts and wounds. The paste is also used as hair tonic by applied on head.
3	<i>Adiantum lunulatum</i> Burm.f	Pteridaceae	Roaddu Keerai, Pachai Keerai	The whole plant is ground into a paste with turmeric and applied over the affected places to treat pimples and wounds; The whole plant is boiled with water and the decoction is applied externally on the affected places to get relief from body pain and chest ache.
4	<i>Angiopteris evecta</i> (G.frost.) Hoffm.	Marattiaceae	Yanai vanagi Giant fern	Decoction obtained from the leaf is taken orally along with lemon juice to treat intestinal ulcer and stomachache.
5	<i>Blechnum orientale</i> .L	Blechanaceae	Centipede fern, Paku lipan	Juice extracted from the leaf is taken orally along with lemon juice to treat intestinal ulcer and stomachache.
6	<i>Botrychium lanuginosum</i> Wall. ex Hook. & Grev.	Ophioglossaceae	Nandu Kuddhi	Shade dried whole plant parts are ground with the seeds of pepper and cumin seeds and taken orally to get relief from body pain. Leaves are boiled with water and ground into paste and applied over the affected places to heal wounds.
7	<i>Ceratopteris thalictroides</i> (L). Brogn.	Pteridaceae	Water sprite	The whole plant parts are ground into paste and mixed with turmeric. The mixture is applied over the affected places to treat cure skin diseases and wounds.
8	<i>Cheilanthes tenuifolia</i> (Burm.f) Sw	Pteridaceae	Resam padi	Juice obtained from the leaves is mixed with hot water and taken orally along with honey to treat throat pain
9	<i>Christella parasitica</i> (L) Lev.	Thelypteridaceae	Parasitic maiden fern	The juice obtained from the leaf is taken orally to treat swellings.
10	<i>Diplazium esculentum</i> (Retz.) Sw.	Athyriaceae	Edible fern	Handful of leaves are made into juice and taken orally twice a day to get relief from cold and cough.
11	<i>Drynaria quercifolia</i> (L)J. Sm	Polypodiaceae	Aattukal kizhangu	Skin removed rhizome is made into a paste and boiled with pepper, cumin seeds, onion and garlic along with water. The mixture thus obtained is taken orally to get relief from body pain, knee pain and joint pains and swellings
12	<i>Lygodium microphyllum</i> (Cav.) R.Br	Lygodiaceae	MulluKodi, Kokki Kodi	Leaf is ground into paste with turmeric and applied over the affected places to heal wounds. Juice made from the plant is taken orally along with pepper to get relief from cough.
13	<i>Marsilea quadrifolia</i> L.	Marsileaceae	Aarakkeerai	Handful of leaves are mixed with pepper and garlic and ground into paste. The paste is taken orally to treat cold and cough. The paste is mixed with turmeric and applied over the affected places to cure skin diseases.
14	<i>Nephrolepis auriculata</i> (L). Trimen	Davalliaceae	Sword fern	Leaf is ground into paste with pepper and taken orally twice a day to get relief from cough.
15	<i>Polypodium vulgare</i> L.	Polypodiaceae	Rockcap fern	The rhizome and leaves are mixed and made into a paste and applied over the affected places to treat swellings.
16	<i>Psilotum nudum</i> (L) P. Beauv.	Psilotaceae	Whisk fern	Whole plant parts are soaked in water for an hour and the decoction thus obtained is mixed with turmeric and applied over the affected places to heal wounds.
17	<i>Pteris biaurita</i> L	Pteridaceae	Nandu Kuddhi	The rhizome is ground into paste and applied over the affected places to get relief from body pain.
18	<i>Pteris cretica</i> L.	Pteridaceae	Nandu Kuddhi	The paste made from the leaf is tied with cloth and applied over the affected places to heal wounds.
19	<i>Selaginella tenera</i> (Hok.et.Grev) Spring	Seleginellaceae	Sanjeevani	The whole plant parts are ground into paste and applied over the affected places get relief from body pain and swellings.
20	<i>Vittaria elongata</i> Sw	Pteridaceae	Stiff shoestring fern	The leaf is ground into a paste and applied over the affected places to get relief from knee pain and therapeutic pain.

Some of the plants reported in the present study are interrelated with the study of Benjamin and Manickam (2007). Similarities in the use of a pteridophyte species between local people may support the presence of specific active compounds in these plants, which may be useful for finding cures for specific ailments. *Pteris cretica* is used in the treatment of heal wound and body pain. Wound healing also studied by indigenous people. In the literature the plant is reported to have carcinogenic activity and provides an example of a secondary compound that is actually harmful to animals (Pei, 2001).

Benjamin and Manickam (2007) reported that about 61 species of Pteridophytes have been reported to have medicinal uses in the various tribal and non-tribal people in the Western Ghats and these plants were frequently used to treat stomach problems, poisonous bites, nervous disorders, cough, fever, asthma and diabetes. Quite a number of forest dwelling people in various villages of India are frequently using some species of Pteridophytes for their primary healthcare needs but there is no much information available on the literature about the plants used by them.

Conclusion

The present study provides traditional medicine of South India in general could provide very interesting clues for future phytochemical and pharamalogical research on lesser known plants (Pteridophytes). Nowadays there is an increasing demand for the production of health care medicine. This study would provide some basic clues of medicinal properties of ferns (Pteridophytes) used by hill tribes (paliyars) of Sirumalai Hills Eastern Ghats of Tamil Nadu.

Acknowledgements

The authors are thankful to the Principal, M.R. Govt. Arts College Mannargudi for permitting us to do work and local people of Sirumalai Hills for sharing their knowledge.

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