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J. Nat. Prod. Plant Resour., 2011, 1 (2): 50-55 (http://scholarsresearchlibrary.com/archive.html)



Ethnomedicinal Uses of Pteridophytes in Kolli Hills, Eastern Ghats of Tamil Nadu, India

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ABSTRACT

The present investigation was carried out during January to December 2009 for the documentation of medicinal uses of Pteridophytes in Kolli Hills of Eastern Ghats, Tamil Nadu, India. The survey aimed to identifying the plants used for the general health of the indigenous people of the study area. Ethnomedicinal information was gathered through questionnaire from the tribal and non-tribal people of Kolli hills in Tamil Nadu. We have reported 30 species of medicinally important Pteridophytes belonging to 16 families distributed in 27 genera. Our study concluded that, the wealth of indigenous ethnomedicinal knowledge of Pteridophytes may also points to a great potential for research in the discovery of new drugs to fight diseases and other new uses.

Keywords: Eastern Ghats, Kolli Hills, Medicinal Plants, Pteridophytes, Tamil Nadu

INTRODUCTION

People living in villages and far-flung areas depend completely on forest resources for maintaining their day-to-day needs like medicine, food, fuel and household articles. In the last 2000 years of the history of medicine, we can see that for most of this period, mankind had no other source of medicine than plants, either fresh or dried. Traditional medical knowledge is important not only for its potential contribution to drug development and market values, but also for the people's healthcare [1]. According to the WHO, 80% of the world's population primarily those of developing countries rely on plant-derived medicines for their healthcare needs [2].

Pteridophytes (ferns and fern allies) are called as reptile group of plants and are one of the earliest groups of vascular plants. Most of the indigenous people are not well known about the uses of Pteridophytes since it is not easily available like flowering plants. Pteridophytes 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 [3-7]. Therefore, this study was undertaken in order to ascertain the detailed information on Pteridophytes used by tribal and non-tribal people in Kolli hills of Eastern Ghats of Tamil Nadu, India.

MATERIALS AND METHODS

Eastern Ghats of India is ethnobotanically very rich, having a wide variety of medicinal plants. With its (Eastern Ghats) diverse topographical condition, the region is well situated for a range of medicinal plant species. Kolli hills/ Kollimalai (Figure 1) is situated in the Namakkal district of Tamil Nadu with an area of 282.92 sq.km and some part of the eastern portion of the hills lies in the Perambalur district of Tamil Nadu. Kolli 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 1991 census, the total population in Kolli hills is about 33,888 in 6840 households. The present study was conducted in the various villages of Kolli hills such as Nachiyar Kovil, Solaikadu, Kuzhivalavu sholai and Nattukulpatti.

Data collection on ethnobotanical knowledge was carried out from January to December 2009 with the traditional healers using a semi-structured questionnaire. The plants were collected with the help of traditional healers and the information regarding the use of plants were recorded in the field note books. Binomial and current names of the collected plants were checked with the Tropicos, an online database (www.tropicos.org.). The herbarium specimens were deposited in the Department of Botany, Kandaswami Kandar's College, Namakkal for future reference.

RESULTS AND DISCUSSION

In the present study we have reported 30 species of Pteridophytes belonging to 22 families distributed in 27 genera. The detailed information about the local name of the ferns used, parts of the plants used and medicinal uses were documented from the local and tribal people of Kolli Hills in Namakkal district of Tamil Nadu. The collected 30 species of Pteridophytes were used to treat 38 types of diseases such as wound and related injuries, body sickness, diarrhoea, skin problems, body pain, knee problem, cough, cold, fever, asthma, kidney problem, tonic, chronic disorders, several aches, hair growth, stomach problems, ulcer, sore throat, leprosy, opthalmia, typhoid, urinary bladder and rheumatism.

In terms of the number of Pteridophytes collected in Kolli hills, Pteridaceae is the most predominant family of ethnomedicinal importance with 11 species of ethnomedicinal plants (*Actiniopteris radiate, Adiantum capillaris-veneri, Adiantum lunulatum, Ceratopteris thalictroides, Cheilanthes tenuifolia, Hemionitis arifolia, Pityrogramma calomelanos, Pteris biaurita, Pteris cretica, Pteris vittata and Vittaria elongata*). It was followed by Polypodiaceae with 4 medicinal plants (*Drynaria quercifolia, Microsorium punctatum, Polypodium vulgare* and *Pyrrosia lanceolata*) and Lycopodiaceae with 2 medicinal plants (*Huperzia phlegmaria* and *Lycopodium cernum var. panamense*). Other families are represented with one species of ethnomedicinal importance.

The ethnomedicinal uses reported in the present study is entirely different from the other reports available in the literature. For example, *Angiopteris evecta* is used in the treatment of skin diseases and dysentery by the studied local people in Kolli hills, whereas the plant has been used

in the treatment of different types of headaches among the tribal people of Meghalaya [8]. Likewise the following plants are reported to have different types of uses by the various local communities elsewhere; *Botrychium lanuginosum* is reported to have antidysentric and antibacterial activity [9], *Ceratopteris thalictroides* is used to treat skin diseases [9], *Cheilanthes tenuifolia* is used as a general tonic [10], *Hemionitis arifolia* is used to treat cuts, wounds and menstrual disorders and *Leucostegia immerse* for treating boils and constipation [7].

Botanical Name	Family	Local Name	Medicinal Uses
Actiniopteris	Pteridaceae	Saava sedi.	The juice extracted from the stem is taken orally twice
radiata (Sw.) Link.		Korai panai	a day to treat diarrhoea and fever.
Adiantum	Pteridaceae	Roaddu Keerai	The whole plant is made into a paste along with aloe
capillaris-veneris L.			gel and applied externally in the affected places to
			treat cuts and wounds.
			The paste is also used as hair tonic by applied on head.
Adiantum lunulatum	Pteridaceae	Roaddu Keerai,	The whole plant is ground into a paste with turmeric
Burm. f.		Pachai Keerai	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.
Angiopteris evecta	Marattiaceae	Yanai vanagi	Decoction obtained from the leaf is taken orally along
(G.Forst.) Hoffm.			with lemon juice to treat intestinal ulcer and
Dlashum animetala	Dlashawaaaa		stomacnache.
Biecnnum orientale	Blechanaceae	-	Juice extracted from the leaf is used to cure intestinal
L.			woulds, the paste made from the finzome is used to
Botrychium	Ophioglossaceae	Nandu Kuddhi	Shade dried whole plant parts are ground with the
lanuginosum Wall	Opinogiossaceae		seeds of pepper and cumin seeds and taken orally to
ex Hook & Grev			get relief from body pain
			Leaves are boiled with water and ground into paste
			and applied over the affected places to heal wounds.
Ceratopteris	Pteridaceae	-	The whole plant parts are ground into paste and mixed
thalictroides			with turmeric. The mixture is applied over the affected
(L.)Brongn.			places to treat cure skin diseases and wounds.
Cheilanthes	Pteridaceae	-	Juice obtained from the leaves is mixed with hot water
tenuifolia (Burm.f.)			and taken orally along with honey to treat throat pain.
Sw.			
Christella	Thelypteridaceae	-	The juice obtained from the leaf is taken orally to treat
parasitica (L.) Lev.			swellings.
Dicranopteris	Gleichiniaceae	-	The rhizome is made into a paste and taken orally to
<i>linearis</i> (Burn.f.)			cure asthma.
Und.			
Diplazium	Athyriaceae	-	Handful of leaves are made into juice and taken orally
<i>esculentum</i> (Retz.)			twice a day to get relief from cold and cough.
Sw.	D.1	A	
Drynaria guaraifalia (L.) L	Polypodiaceae	Aattukal	Skin removed mizome is made into a paste and boiled
quercijolia (L.) J.		Kizhangu	water. The mixture thus obtained is taken orally to get
5111.			relief from body pain knee pain and joint pain
Hemionitis arifolia	Pteridaceae	Kambithamarai	Root is mixed with turmeric ground into paste. The
(Burm) Moore	Tterruaceae	Kamonnanarar	mixture is applied over the affected places to cure
200100100			cuts, wounds, body pains and swellings.
Huperzia	Lycopodiaceae	Easwaran/	The whole plant is ground into a paste and applied
phlegmaria (L.)	J 1	Easwari sadai	over wounds;
Rothm.			tribal people used this plant as a religious plant and

Leucostegia immersa Wall. ex C.Dryopteridaceae The rhizome is mixed with water and turmeric ar made into a paste. The mixture is tied with cloth over the affected places to treat swellings.Lycopodium cernum var. panamenseLycopodiaceae The juice made from the whole plant is mixed with honey and cow's milk and given orally to children to get relief from cough and cold. Paste made from the whole plant is applied over the affected places to heal wounds.Lygodium microphyllumLygodiaceaeMullu Kodi, Kokki KodiLeaf is ground into paste with turmeric and applied over the affected places to heal wounds:
Immersa Wall. ex C. Disponentaceae Immersa Wall. ex C. Presl. Immersa Wall. ex C. Immersa Wall. ex C. Lycopodium cernum var. panamense Lycopodiaceae - Lycopodium cernum var. panamense Lycopodiaceae - Lygodium microphyllum Lygodiaceae Mullu Kodi, Leaf is ground into paste with turmeric and applied over the affected places to heal wounds:
Presl. induce into a plate. The initiate is ned with clour of the initiate is need with clour of the initiate is neaplace. Lygodi
Lycopodium cernum Lycopodiaceae - The juice made from the whole plant is mixed withoney and cow's milk and given orally to children is get relief from cough and cold. Var. panamense - The juice made from the whole plant is applied over the affected places to heal wounds. Lygodium Lygodiaceae Mullu Kodi, Leaf is ground into paste with turmeric and applied over the affected places to heal wounds:
var. panamense Lysoppenation honey and cow's milk and given orally to children get relief from cough and cold. Paste made from the whole plant is applied over the affected places to heal wounds. Lygodium Lygodiaceae Mullu Kodi, Kokki Kodi Leaf is ground into paste with turmeric and applied over the affected places to heal wounds:
Image: A state of the stat
Description Paste made from the whole plant is applied over the affected places to heal wounds. Lygodium Lygodiaceae Mullu Kodi, microphyllum Kokki Kodi over the affected places to heal wounds:
Lygodiaceae Mullu Kodi, Leaf is ground into paste with turmeric and applied microphyllum Kokki Kodi over the affected places to heal wounds:
<i>Lygodium</i> Lygodiaceae Mullu Kodi, Leaf is ground into paste with turmeric and applied over the affected places to heal wounds:
microphyllum Kokki Kodi over the affected places to heal wounds:
(Cav.) R. Br. Juice made from the plant is taken orally along with
pepper to get relief from cough.
Marsileaceae Aarakkeerai Handful of leaves are mixed with pepper and garl
<i>quadrifolia</i> L. and ground into paste. The paste is taken orally to tre
cold and cough. The paste is mixed with turmeric an
applied over the affected places to cure skin diseases.
Microsorium Polypodiaceae Nundu Kuddhi Leaf is ground into juice applied over the affected
<i>punctatum</i> (L.) places twice a day with hot water to heal wounds.
<i>The protects</i> Davainaceae - Leaf is ground into paste with pepper and taken oral twice a day to get rolief from couch
Trimon
Diturgaramma Distriducion Whole plant parts are boiled with water and the
<i>calomelanos</i> (I)
Link morning to treat kidney problem fever cough ar
cold Rhizome is ground into juice and taken orally
treat asthma.
<i>Polypodium vulgare</i> Polypodiaceae - The rhizome and leaves are mixed and made into
L. paste and applied over the affected places to tre
swellings.
Psilotum nudum (L.) Psilotaceae - Whole plant parts are soaked in water for an hour ar
P. Beauv. the decoction thus obtained is mixed with turmeric ar
applied over the affected places to heal wounds.
Pteris biaurita L. Pteridaceae Nandu Kuddhi The rhizome is ground into paste and applied over the
affected places to get relief from body pain.
Pteris cretica L. Pteridaceae Nandu Kuddhi The paste made from the leaf is tied with cloth an
applied over the affected places to heal wounds.
Pteris vittata L. Pteridaceae Yanai vanaji The whole plant parts are ground into paste ar
applied over the affected places for wound healing.
The paste is mixed with pepper and taken orally to g
Purrosia langeolata Polynodiacese
(L.) Farw. (L.) Farw.
Selaginella tenera Seleginellaceae - The whole plant parts are ground into paste ar
(Hook. et Grev.) applied over the affected places get relief from body
Spring pain and swellings.
Tectaria coadunata Tectariaceae - The root is mixed with pepper and cumin seeds an
(Wall. ex Hook. & boiled with water. The decoction thus obtained
Grev.) C. Chr. taken orally twice a day to cure asthma; the juice made
from the root is applied over the wound to heal soon
the juice made from the leaves is taken orally to tre
Stomacnacne. Vittania alongata Diaridagoog The leaf is around into a paste and applied over the second applied
Sw affected places to get relief from know pain or
therapeutic pain.



Figure 1. Location map of Kolli hills in Eastern Ghats of Tamil Nadu, southern India

Some of the plants reported in the present study are interrelated with the study of Benjamin and Manickam [7]. 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 vittata* is used in the treatment of cough, fever and

wound healing by the studied local 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 [11].

Benjamin and Manickam [7] reported that there 61 species of Pteridophytes have been reported to have medicinal uses among 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 not much information available on the literature about the plants used by them.

CONCLUSION

The present study provides a base for enhancing scientists' attention towards consideration of ethnomedicinally important Pteridophytes. According to Botanical Survey of India, Tamil Nadu is reported to have more than 200 species of Pteridophytes, of which only 25% of the plants are reported to have ethnomedicinal uses. Also, the plants which were screened for various biological activities are not adequate, because of the insufficient information available in the literature about the medicinal uses of Pteridophytes. There is a need to document and widespread the medicinal uses of Pteridophytes which were used by the indigenous people. Since, the wealth of indigenous ethnomedicinal knowledge of Pteridophytes may also points to a great potential for research and as a source of new material for the discovery of new drugs by the phytopharmaceutical industry to fight diseases.

Acknowledgements

The authors are also grateful to the Indian Council of Medical Research (ICMR), New Delhi for financial support for preparation of this manuscript. The authors are thankful to the Principal, Kandaswami Kandar's College, Namakkal for permitting us to do work and the local people of Kolli hills for sharing their knowledge.

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