

Full Length Research Paper

Ethno-botanical importance of Pteridophytes used by the tribe of Pachmarhi, Central India

Balendra Pratap Singh* and Ravi Upadhyay

Department of Botany, Government Post Graduate College, Pipariya, District Hoshangabad, Madhya Pradesh, India.

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The present study mainly focuses on the ethno-botanical importance of Pteridophytes which are widely used by the people of the tribe of Pachmarhi, India. As many as 31 pteridophytes plants species belonging to 16 families are presented in this research article. The botanical name, synonyms, family name, local name, habit, part used, and their ethno-botanical uses are provided. The local people of Panarpani, Badkachhar, Rorighat, Matkuli, Pagara, Bariam, Amkhedi, Neemghan, Singanama, Tekapar, Chaka, Pisua, Monhgaun, Kadari, Binoura, and Kherghat were interviewed in this study.

Key words: Pteridophytes, ethno-botanical plants, Pachmarhi tribe, India.

INTRODUCTION

Pachmarhi conservation area represents the central Indian Highlands and is a heterogeneous mosaic of a large contiguous forest area that includes protected areas where resource use has been stopped or controlled for a long time and the managed forests where it is still on (Anonymous, 1996). Human use of resource is need-based and hence a strategy to keep people away from the resource is neither feasible nor viable. The area represents the central Indian Highlands and the forests are economically amongst the most valuable of the dry deciduous types (Bir and Vasudeo, 1973). The total area of Pachmarhi biosphere reserve is 4981.72 km². It is located at Longitude 22° 11' to 22° 50'N and Latitude 77° 47' to 78° 52'E. It covers parts of three civil districts, viz., Hoshangabad (59.55%), Chhindwara (29.19%) and Betul (11.26%). It includes three wildlife conservation units viz., Bori Sanctuary (485.72 km²), Satpura National Park (524.37 km²) and Pachmarhi Sanctuary (491.63 km²) (Singh and Upadhyay, 2011).

Pachmarhi belong to the Gondwana sandstone series. Perennial streams flow through the gorges down below towards the base of these hills. It has one of the highest peaks at Dhoopgarh, which is one of the highest points between the Himalayas in the North and Palni and Nilgiri hills in the south of the Indian subcontinent (Singh and

Kaul, 2002). Though a lot of information on pteridophytic flora is available, about the Himalayan and South Indian members, there is very little information on pteridophytes of Pachmarhi. During past years extensive survey of different remote areas of Pachmarhi has been explored by various researchers (Vasudeva and Bir, 1992, 1993a, b, c; Pathak, 2001) in connection with pteridophytic biodiversity.

MATERIALS AND METHODS

The present study is the outcome of the one years of critical field survey in the different parts of Pachmarhi hills in various seasons. Ethno-botanical information was gathered from the local and tribal people (Rao and Hajra, 1995). All the specimens were collected in duplicate forms and they were deposited in the Herbarium of Botany Department of Government Narmada Post Graduate College, Hoshangabad (MP). Descriptions of species and identification were done with the help of the following literature: Beddome (1863 to 1865, 1973, 1983), Khullar (1994, 2000), Khullar et al. (1991), Pande and Pande (2002) and Verma et al. (1993).

OBSERVATIONS AND RESULTS

Actiniopteris radiata (Sw.) Link, (Actiniopteridaceae)

The local names for *Actiniopteris radiata* (Sw.) Link. are More pankhi, fan-leaved fern, and Myursikha. It is found in Jalgali, Panarpani and Surfali. However, the whole plants are used. The plants of *A. radiata* (Sw.) Link. are

*Corresponding author. E-mail: cool_balendrasingh@yahoo.com.

used as a styptic and anthelmintic, and are also used in bronchitis and gynecological disorders. The dry leaves are used in tuberculosis.

***Adiantum capillus-veneris* L., Sp. Pl. 2: 1096 (1753).
Syn. *A. fontannum* (Adiantaceae)**

The local name is Hansraj and it occurs in marshy and dry places of Mahadeo Hills. The whole part of the plant is used. The Gond community of Badkachhar, Bariaam and Dapka take the juice of fresh plants for curing cough and diabetes. Juice of fresh fronds is also taken by their children for good health. They keep the plants under the bed for the prevention of chicken pox.

***Adiantum incisum* Forsk., (Adiantaceae)**

The local name is Hanspadi and it is found commonly throughout Mahadeo Hills. Only the Leaf is used. The leaf powder is mixed with butter and used for controlling the internal burning of the body. Also used in cough, diabetes, fever and skin diseases.

***Adiantum philippense* L., *Pteris lunata* (Adiantaceae)**

The local name is Hansraj and it is found in Mahadeo, Patharchatta, Jalgali and Richgarh. Only the leaf is used. Plant is demulcent, astringent and emenagogue. It is used in cough, asthma, fever, leprosy and hair falling. Useful in the treatment of throat swellings in the cattle; the paste of the rhizome is applied on the swelling of the throat (Singh and Upadhyay, 2010).

***Adiantum venustum* D. Don, (Adiantaceae)**

The local names are Hansraj and Hanspadi. It is found in woodland garden, dappled shade, shady edge, ground cover, in Mahadeo Hills. The Whole plant is used. Fronds are used as tonic, expectorant, astringent, emetic, diuretic etc. and decoction of fronds is given in fever also used in scorpion bite.

***Angiopteris helferiana* C. Presl, Fraser-Jenkins, C.R. in Taxon. Rev.**

Indian subcontinental pteridophytes with a local name of Godatop are found in places like jalgali, Dutches Falls, Jambodweep and Sunderkund. The parts used are the frond and rhizome. The stem and rhizome are used along with *Cyathea spinulosa* in the treatment of indigestion and other bowels related problems of cattle and goats. The portion of the bark is given orally to cattle in dysentery occurring during rainy seasons. This portion is also used in treatment hair loss of the cattle caused either due to infection or injury (Singh and Upadhyay, 2010).

***Asplenium nidus* L. Syn. *Thamnopteris persl.* (Aspleniaceae)**

The local name is Ghosala jhad. It is cultivated in many places in Mahadeo Hills, Pachmarhi and Panarpani. The whole parts of the plant are used. It is used in the enlargement of spleen in continuance of urine, calculus, jaundice and malaria.

***Asplenium trichomanes* L., (Aspleniaceae)**

The local name is Do patiya. It is found in marshy and shady places, Dutches fall and Jalgali and also at lower elevation in shady places of Mahadeo hills. Only the leaf of the plant is used. This is a laxative medicine. The leaf is smoked for colds in head and chest; it is used as an expectorant.

***Blechnum orientale* L., Sp. Pl. 2: 1077 (1753). (Blechnaceae)**

It is know as centipede fern and similar to *Blechnum javanicum* Blume (1828). Its local name is Bada fern. It is found in Slopes area of Mahadeo hills and Baba garden Nala panarpani. The frond and rhizome are used. The poultice is tied in boils and rhizomes are used as anathelmatic, rhizome is used in typhoid.

***Botrychium ternatum* (Thunb.) Sw. (Botrychiaceae)**

Its local name is fern and it occurs in many places where moisture is available throughout the year. Beside the Nalags, it is also found in places like Jalgali, Jambodweep, Dhupgarh and Dutches Fall. The whole part of the plant is used. The plant is used as a vulnerary. The root is prescribed in dysentery.

***Cheilanthes bicolor* (Roxb.in Griff.) Griff. Ex Fras.-Jenk., (Sinopteridaceae)**

Its local name is fern. It is found in all dry places of Mahadeo hills especially associated with ground flora of mixed dry forest. The whole plants are used. Plant powder mixed with cow's ghee is used as an incense to keep off fear in children. Brown stipes is used by the children as nose and ear studs. Root is used in sickness.

***Cyathea spinulosa* Wall. Ex Hook. (Cyatheaceae)**

The local names are Kante wala fern, Jatamasi and Jatashankari. It is found in deep Nallas and streams of Pachmarhi hills, Jalgali, Dutches Fall and Jambodweep. The whole part of the plant is used. It is used for graying of hair. It is also used as general hair tonic, powder of

fronds are used as sudorific and aphrodisiac (Singh and Upadhyay, 2010).

***Dicranopteris linearis* (Burm. f.) Underw, Bull. Torr. Bot. Club. 34:250 (1907). (Gleicheniaceae)**

A similar name to *Polypodium linearis* Burm. (1768). The local name is Rajhans and it is found in slopes on Mahadeo road and beside of footroad of choudagarh. The Whole plant is used. Young rachises are eaten after boiling.

Fronds are used for thatching the roofs and house walls. Decoction of plant is laxative. Fronds are used in asthma and aqueous extract of fronds possesses antibacterial activity. The plants are used as cushion for cattle shed. Used as an anthelmintic. The fronds of young plant are used to remove sterility in women by grinding them with cow milk.

***Diplazium esculentum* (Retz.) Sw., (Athuriaceae)**

The local name is fern and it is found in moist and shady region of Jalgali, panarpani, and choudagarh road. The rhizome of the plant is used. The rhizomes are kept in the granaries to check them from insect and pests. Young rhizomes are used as green vegetables and also used as salad or cooked as vegetables.

***Drynaria quaerifolia* Bory (Polypodiaceae)**

Its local name is Fern/bandertala and it is found throughout Pachamrhi. The rhizome is used. The rhizome paste mixed with molasses is taken internally during cardiac problem.

***Equisetum ramosissimum* Desf. (Equisetaceae)**

Its local name is Horsetail. It is found in many places as in Panarpani, Bariam and Badkachhar, the stem of the plant is used. Plant paste is applied in bone fracture.

***Helminthostachys zeylanica* (L.) Hook. (Helminthostachyaceae)**

Its local name is Kamraj. It is found Amkhedi, Neemghan, and Singanama. The whole plant is used. The plant is considered as intoxicant, anodyne and used in sciatica. Fronds are used as aphrodisiac.

***Isoetes coromandelina* (Isoetaceae)**

The local name is Jangali Lahsan. It is found on the way

to Sunderkund and in Nallah on the way to Mahadeo from Matkuli. The Spore and leaf are used. The plant is used to cure rheumatism in jadu-tona

Isoetes panchanani

Its local name is Jangali Lahsan. It is found on the way to Sunderkund, it is also found in Nallah on the way to Mahadeo from Matkuli. The Spores is locally used in locket for avoiding evil spirit.

***Lycopodium cernum* (L.) (Lycopodiaceae)**

The local name is Unknown and it is found in Jalgali. The whole part of the plants is used. The decoction of the plant is used in beri-beri as lotion, used in cough and skin eruption.

***Lycopodium volubile* (L.) (Lycopodiaceae)**

The local name is unknown. It is found in Neemghan and Jalgali. The whole part of the plants is used. It is used to treat flatulence, rheumatism, lung ailments, and diseases of children and young girls. The pollen was used to treat wounds and diseases of the skin such as eczema.

***Lygodium flexuosum* (L.) Sw. (Lycopodiaceae)**

The local name is not known. It is found in way to Dhoopgarh, Dutches Fall, Richgarh, and Big fall. The rhizome and leaf are used. Rhizome powder is used in skin diseases. Plants are used as expectorant, rheumatism, sprains, scabies, eczema and cut wounds. Fresh roots boiled with mustered oil are used in casbundes and rheumatism.

***Marsilea minuta* L., (Marsileaceae)**

The local name is Susni. It is found common in Pagara, Bariam, Amkhedi, Neemghan, Singanama, Tekapar, Chaka, and Pisua. The whole part of plant is used. Plant is used to treat cough, spastic conditions of leg muscles, in sedation and insomnia. A macrocyclic ketone of sedative and convulsant properties has been isolated.

***Nephrolepis cordifolia* (L.) Presl, (Nephrolepidaceae)**

The local name is Panian. It is found many places in forest garden in Panarpani. It is commonly found in marshy places. The tubers and leaf are used. Paste of the leaves is applied as wound to check bleeding. Fresh watery tubers are eaten to especially quench thirst.

Decoction of tubers is given to cure cough and intestinal disorders. Fresh watery tubers are used in stomach ulcer and acidity.

***Nephrolepis acuta* Wall (Davalliaceae)**

The local name is Unknown. It is found in many places in forest garden in Panarpani. It is commonly found in marshy places. The whole part of the plant is used. It is used to treat Dysmenorrhoea.

***Ophioglossum reticulatum* L., (Ophioglossaceae)**

The local name is Brahmi. It is found in wide area of Mahadeo hills, Badkachhar road side and Jalgali. The leaves are used. The paste of plant is applied on burns as cooling agent. The extract of leaf is also used in the preparation of tonic used as vulnerary and as remedy for wounds.

***Osmunda regalis* L. *O. japonicus* (Osmundaceae)**

Its local name is Brahmi. It is commonly found in both sides of Nallahs and Patharchatta, Vanashree Vihar, Jalgali, Jambodweep, and Panarpani. The whole plant is used for the treatment of rheumatism, intestinal problems and rickets.

***Pteris wallichiana* Agardh, Recens. (Pteridaceae)**

The local name is Unknown. It is found in Rorigat, panarpani, and jalgali of Mahadeo Hills. The whole plant is used. Young fronds are steamed and eaten as a flavoring material. Juice is stated to possess astringent properties. Decoction is given in dysentery and applied to glandular swellings. A roasted frond made into a paste with sesame oil is applied to skin affections of infants.

***Selaginella bryopteris* (L.) Bak., (Selaginellaceae) Sanjeevani**

The local name is Sanjeevani. It is found in Panarpani garden. The whole part of the plants is used. Plant is locally used as diuretic and in gonorrhoea. Locally, the dried plant along with tobacco, are smoked by tribal people for inducing hallucinations used as witch craft and worship.

***Sphenomeris chinensis* (L.) Maxon, (Lindsaeaceae)**

The local name is Unknown. It is found in Jalgali, Rorigat and Mahadeo hills. The plant is used in swelling and sprains, dried fronds are used as a substitute for tea leaves used internally for chronic enteritis and used as

diuretic.

DISCUSSION

Pachmarhi hills provide an excellent piece of rich biodiversity. The tribal community solely depends on the forest products, not only this, they have their own herbal health care system. In this health care system, these people use various plants, and their products to combat with numerous human diseases. There are several reports reciting the ethno-botanical uses of higher plants found in this area. However, similar reports on the use of member of lower plant group as medicine are very scars (Benjamin and Manickam, 2007).

The author had attempted here to gain the indigenous knowledge of tribal peoples about the use of pteridophytes members in medicine system of the community. There is no doubt that this plant has several important medicinal properties and has been worshipped among local people as a magical herb owing to its medicinal properties (Sah, 2008). The thirty Pteridophytes are widely used by the local people of the Kumaun Himalaya for ethnomedicinal purpose (Upreti et al., 2009). Ethnomedicinal importance of some medicinal pteridophytes of Rajsthan and their active constituent would be helpful in treating various kinds of diseases (Parihar and Parihar, 2006).

The ethnomedicinal uses of 11 species of ferns and fern allies of Hadoti plateau, Rajsthan were reported by Sharma (2002). In the present study, the tribal of this area are found to use some common pteridophytes in their routine health care system to treat the diseases like cold, sciatica, fever, gonorrhoea, rickets, cardiac problem, rheumatism, skin diseases, mental disorders, stomach ulcer and acidity, abdominal and respiratory disorders, eczema and sexual problems, home decoration, jadu-tona, tattoos on hand used only woman's. 30 important members of ethno-botanical used pteridophytic plant, which are used by the peoples of tribal communities.

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REFERENCES

Anonymous (1996). Pachmarhi Biosphere Reserve, Project Document:

- (Environmental Planning and Coordination Organization- EPCO), Bhopal.
- Beddome RH (1863-1865). The Ferns of Southern India etc. t. 1-271. Gantz Bros., Madras. [Reprinted 1970, Today and Tomorrow's Printers and Publishers, New Delhi.; Reprint 2nd ed., 1973, Bishen Singh Mahendra Pal Singh, Dehradun.
- Beddome RH (1973). The ferns of British India. Vol. 1. Oxford and IBH Publishing Company New Delhi.
- Beddome RH (1983). The ferns of Southern India. 2nd ed., Bishen Singh Mahendra Pal Singh, Dehradun.
- Benjamin A, Manickam VS (2007). Medicinal pteridophytes from the Western Ghats, Indian J. Tradit. Knowl., 6(4): 611-618.
- Bir SS, Vasudeva SM (1973). Ecological and Phyto-geographical observation on the Pteridophytic flora of Pachmarhi hills (Central India). India. J. Bot. Sci., 51: 297-304.
- Fraser-Jenkins, CR (2008). Taxonomic Revision of Three hundred Indian Subcontinent Pteridophytes with a Revised Census-List. Bishen Singh Mahendra Pal Singh, Dehra Dun, p. 685.
- Khullar SP (1994), and (2000). An Illustrated Fern Flora of the West Himalaya. Vol. I (1994) and Vol. II (2000), International Book Distributors, Dehra Dun.
- Khullar SP, Pangtey YPS, Samant SS, Rawal RS, Singh P (1991). Ferns of Nainital. Bishen Singh Mahendra Pal Singh, Dehra Dun.
- Pande HC, Pande PC (2002). An Illustrated Fern Flora of Kumaun Himalaya Vol. I and Vol. II, Bishen Singh Mahendra Pal Singh, Dehradun.
- Parihar P, Parihar L (2006). Some pteridophytes of medicinal importance from Rajasthan, Natural product radiance. 5(4): 293-301.
- Pathak S (2001). Pteridophytic Flora of Pachmarhi Hills, M.P. (Ph D. Thesis) Vikram University, Ujjain, M.P.
- Rao RR, Hajra PK (1995). Methods of research in Ethnobotany. In: Jain, S.K. (ed.), A Manual of Ethnobotany. Sci. Pub. Jodhpur, India, pp. 28-34.
- Sah P (2008). Does the Magical Himalayan Herb "Sanjeevani Booti" really exist in Nature? J. Am. Sci., 4(3): 65-67.
- Sharma NK (2002). Ethnomedicinal studies on ferns and fern allies of Hadoti plateau, Southern Rajasthan. Zoos'Print J., 17(3): 732-734.
- Singh BP, Upadhyay R (2010). Observations on some ferns of Pachmarhi Biosphere Reserve in traditional veterinary uses. Indian fern J., 27: 94-100.
- Singh VP, Kaul A (2002). Biodiversity and Vegetation of Pachmarhi Hills. Scientific Publishers, Jodhpur, India.
- Tiwari SDN (1964). Fern of Madhya Pradesh. J. Indian Bot. Soc., 43: 431-452.
- Upreti K, Jalal JS, Tewari LM, Joshi GC, Pangtey YPS, Tewari G (2009). Ethnomedicinal uses of Pteridophytes of Kumaun Himalaya, Uttarakhand, India J. Ame. Sci., 5(4):167-170.
- Vasudeva SM, Bir SS (1992). Pteridophytic flora of Pachmarhi Hills, Central India-I (General Account and Families: Psilotaceae- Isoetaceae), Indian Fern J., 9: 153-173.
- Vasudeva SM, Bir SS (1993a). Pteridophytic Flora of Pachmarhi Hills, Central India-II (Keys to Different Taxa and Fern Families: Ophioglossaceae-Davalliaceae), Indian Fern J., 10: 40-72.
- Vasudeva SM, Bir SS (1993b). Pteridophytic Flora of Pachmarhi Hills, Central India-III (Fern Families: Gleicheniaceae- Athyriaceae), Indian Fern J., 10: 113-138.
- Vasudeva SM, Bir SS (1993c). Pteridophytic Flora of Pachmarhi Hills, Central India-IV (Fern Families: Thelypteridaceae-Marsileaceae, Indian Fern J., 10: 172-205.
- Verma DM, Balakrishnan, NP, Dixit RD (1993). Flora of Madhya Pradesh Vol. 1, Botanical Survey of India, Department of Environment and Forests, Government of India, Calcutta, pp. 69, 50, 72, 74.