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## A review on ethnobotanical aspect of *Lygodium flexuosum* Linn.

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### Abstract

The present study reports the distribution, ecology and Ethnobotany of the medicinal plant *Lygodium flexuosum*. Herbal medicines are used to treat various diseases and now they had become an item of global importance, with both medicinal and economic implications. The demand of herbal medicine is being increasing day by day due to their safety and efficacy. Now herbals had taken over the allopathic system due to their less side effect and efficient working mechanism. Herbals documentation is playing and pivotal role in increasing the economy of the country and had taken the nation on to the new path to achieve the goal of development. *Lygodium flexuosum* (Linn) Sw. is a fern found nearly throughout India. It belongs to the family Lygodiaceae and widely used in treating various ailments like jaundice, dysmenorrhoea, wound healing, Hair, rheumatism, sprains, scabies, ulcers and eczema. The main constitute of the plant is mainly used in wound healing and hair. In the present review an attempt had been made to explore different aspects of *L. flexuosum*.

**Keywords:** *Lygodium flexuosum*, lygodiaceae, ethnomedicine

### Introduction

The term "Ethnobotany" was first used by a botanist named John W. Harshberger in 1895 while he was teaching at the University of Pennsylvania. Although the term was not used until 1895, practical interests in Ethno-botany go back to the beginning of civilization when people relied on plants as a way of survival. Ethnobotany is the scientific study of the relationships that exist between people and plants [1]. That is ethnology- *study of culture* and botany-*study of plants*.

Nature has provided a complete remedy to cure all ailments of mankind. The history of herbal medicines is as old as human civilization (Kokate, Purohit and Gokhale, 2006) [2]. India has an ancient heritage of traditional medicines; Materia Medica of India provides lots of information on the folklore practices and traditional aspects of therapeutically important natural products. An Indian traditional medicine is based on various system including Ayurveda, Siddha and Unani [3]. Modern allopathic system has developed many sophisticated and costly diagnostic methodologies which at the times have made it quite exorbitant and beyond the reach of common man. Many modern synthetic drugs may harm more than they help in curing diseases by its serious effects [4].

The study of disease and their treatment must also have been contemporaneous with the dawn of human intellect. The primitive man must have used plants as therapeutically active agents for curing various diseases. There is no authentic record of medicines used by the primitive man but the Rig Veda which is the oldest book in the library supplies curious information on this subject (Kritikar and Basu, 2005) [3].

### Characteristic feature

*Lygodium flexuosum* is the sole genus in the family Lygodiaceae [5], though it is included in the family Schizaceae by some botanist. It occurs on mangrove and had tree-dominated habitat subdivision is Petridophyte and had life form of cryptophytes category (Wills, Zerbe and Breitung, 2006) [6]. It is commonly epiphytically grows on moss-covered tree trunks, branches a lithophytes on shady boulders along with moss and in Thailand its habitat is in abundance (Boonkerd, 2006) [7].

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**Fig 1:** *Lygodium flexuosum* Vegetative



**Fig 2:** *Lygodium flexuosum* Reproductive

Primary rachis branches abbreviated; secondary rachis branches alternately pinnate bearing 3-5 leaflets, variously lobed at base, gradually tapering towards apex (Tiwari, 1964), subcoriaceous, margins finely toothed; veins free. Rhizomatous, perennial, climbing herb (fern), fronds twining; sporangia on the margin in finger-like projections; pinnae not basally jointed (Singh, 2012) <sup>[1]</sup>. Terrestrial herbs (Fig-1) with long creeping rhizome (Smith *et al.*, 2006) <sup>[8]</sup>, 5-8 mm thick,

with fibrous roots at base; densely dark brown hairy, hairs 1 mm long, multicellular, uniseriate, tubular. Fronds pale green, 4-5 m long, climbing, tripinnate; stipe stout, dark brown, densely hairy at base, stramineous, glabrous above, wiry, 3-5 mm thick, rounded beneath, flattened above; primary pinnae alternate, stalked, forked once, with dormant bud on axis, each forked branch with 2-3 pairs of simple or forked pinnules alternately; pinnules 10-12 x 2.5-3 cm, oblong-lanceolate, simple or forked, or auriculate, apex subacute, acute or acuminate, base cuneate in simple pinnules, subtruncate or cordate in branched or forked pinnules; margin regularly or irregularly serrulate in sterile pinnules; costa raised above and below; veins distinct above and below, forked twice or thrice, free, reaching the margin, axis of main branches and costa pubescent; sporangia yellowish-brown, crowded on fingerlike lobes of fertile pinnae (Fig-2), lobes 3x1.5 mm, sporangia five pairs, alternate, indusiate. Spores 48 µm in diameter, yellowish-green.

### Identification

Ethno botanical review collection were a systematic approach and information was collected from Published literature, such as online journal, printed journal, Books, Thesis and Proceedings etc. The picture of *Lygodium flexuosum* taken from Patalkot, District Chhindwara Madhya Pradesh. It is also known as “Seeta Ladi” its local name given by Bhariya Tribals in Patalkot. Plants identified with the help of various floras and published literature of Beddome (1973) <sup>[9]</sup> Pand & Pande (2002) <sup>[10]</sup> and the Flora of Madhya Pradesh Vol.-I by Verma *et al.* (1993) <sup>[11]</sup>.

### Distribution of *Lygodium flexuosum* Linn.

It is principal weed of Malasiya it is widespread in eastern Asia, affecting rice (e.g., in loas), where report crop loss as plantation crop and natural lowland vegetation (Roder *et al.* 1995) <sup>[12]</sup>. Asia temperate- China, Guangdong, Guangxi, Guizhou, Hainan, Yunnan. Asia tropical: Indian subcontinent (India, Srilanka), Indo-China (Indonesia, Thailand), Malaysia (Indonesia, Malaysia, Papua New Guinea, Philippines). Australia- Northern territory, Queensland, Western Australia <sup>[13]</sup>. In India it is found in Dehradun, Kumaon, Shahjapur, Gorakhpur, throughout the plains in Bengal up to 5000 feet, both the sides of Madras state up to 4000 feet and Kerala. It is also found at low altitudes (below 1000 m) especially common in Bhabar forest. In the forest of Rishikesh and Dehradun is common. *L. flexuosum* is growing very well in the forest of Gumaniwala and Clemantown on the forest floor and Neelkhanth road near Barrage Rishikesh (Joshi, Pande and Pande, 2002) <sup>[14]</sup>. In Madhya Pradesh it is found in Satpura Hills Hoshangabad, Hoshangabad, Betul, Chhindwara, Damoh, Sidhi, Khandwa, Mandla, Gwalior, Indore, Shivpuri and Panna (Singh and Upadhyaya, 2014) <sup>[15]</sup>

### Observation

From the past decades this plant is used as an expectorant. Fresh roots are boiled with mustard oil and used in external applications for rheumatism, sprains, scabies, eczema and cut wounds, they are reported to be particularly useful for carbuncles. Stems may be used for tying rice sheaves (Chopara and Nayar, 2006) <sup>[16]</sup> *L. flexuosum* is an important medicinal plant as some of the scholars of Indian System of Medicine reported that the plant may be ‘Rudra Jata’, an intermediate drug in classical text of Ayurveda and its medicinal properties have been reported from all the parts of

the plant. The rhizome and root is ethno medicinally useful in the treatment of jaundice. The leaf paste is applied to cure jaundice by Kadar tribes of South Western Ghats of India. The root is used in jaundice and stomach pain by Rabha, Oraon and Mech tribes in Jalpaiguri district of West Bengal, India. *L. flexuosum* extract had antiproliferative and apoptotic activity in both cancer cells. *L. flexuosum* n-hexane extracts which is responsible for the possible hepatoprotective action (Wills and Asha, 2006, 2009) <sup>[17, 18]</sup>. It is also used in liver diseases (Samant, and Pant, 2006) <sup>[19]</sup>. This fern reported to exhibit antifertility activity (Gaitonde and Mahajan, 1980) <sup>[20]</sup>. In China it is used as an expectorant. Bidi made of root is smoked. Fresh root is boiled with mustard oil are used for massage, powder of whole plant is taken (Banerjee and Sen, 1980) <sup>[21]</sup>. The plant is used as an expectorant, in jaundice, stomach pain (Jain, 1991) <sup>[22]</sup>. Fresh roots are used in external applications for Rheumatism, Sprains, Scabies, Eczema and Cut Wounds. (Benjamin and Manickam, 2007) <sup>[23]</sup>. 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 used in casbundes and rheumatism (Upreti *et al.*, 2009) <sup>[24]</sup>. The roots are *Lygodium* used in Preparation of Bhakhar, roots is essential component in the process of Fermentation of Rice Beer (Bhattaacharyya, Singh and Bhattacharyya, 2010) <sup>[25]</sup>. Extract of the rhizome of *L. flexuosum* in India is used to cure gonorrhea. The ash of plant is used for treating herpes this plant is used to feed domestic animals to treat foot and mouth diseases. During the time of scarcity, Chitwan people use their knowledge of wild plants to obtain vegetable for sustenance they collect tender plant and its parts from the common land. This fern is used as fodder and forage resources of common land in Western Chitwan (Dangol, 2008) <sup>[26]</sup>. Regarding the conservation aspects Lodhas of West Bengal believe Bhut Raj (*L. flexuosum*) to be adobe of gods (Jain and Kapoor, 2007) <sup>[27]</sup>. There are many plant species growing in the plantation and out of these 70% are palatable and can be used as forages for the rearing of cattle. Palatable species are those that can be termed as grazable by the cattle and *L. flexuosum* is the fern which is palatable (Pride, 2011; Jalaludin and Halim, 1998) <sup>[28, 29]</sup> it is used in the manufacturing of basket, hats, bags and other fancy articles (Bayani, 2011) <sup>[30]</sup>. It is used in treatment of Skin diseases, Rheumatism, Sprains, Scabies, Eczema, Cut wounds and Rheumatism (Singh and Upadhyay, 2014) <sup>[15]</sup>. It is use in weaving (Morton, 1996) <sup>[31]</sup>. It is also used to reduce inflammation and acts as panacea for wounds, treat ulcer, various respiratory diseases, general disorders, muscles sprains and it also had the potential to act as the pain killer (Shrivastava, 2007; Baltrushes, 2005) <sup>[32, 33]</sup>. 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 used in casbundes and rheumatism (Singh, 2012) <sup>[1]</sup>. Its fronds used for carbuncles, rheumatism, sprains, scabies, ulcers and cut wounds, Extract of stem and rhizome used in Gonorrhoea and Spermatorrhoea. The paste of fresh leaves is applied on piles. Spores cure high fever (Singh, Dixit and Sahu, 2005) <sup>[34]</sup>. This is used as expectorant. Rhizome applied to carbuncle in the treatment of rheumatism, sprain, scabies, ulcers, eczema and coughs. Aqueous rhizome extract is used for the treatment of gonorrhea (Singh, Sahu and Maheshwari, 1989; Dixit and Vohra, 1984; Kumari *et al.*, 2011) <sup>[35, 36, 37]</sup>. Its rhizome is applied for piles, herpes and is also tied on the waist, plants

juice given to relieve fever and treatment of jaundice (Manandhar, 1996) <sup>[38]</sup>. Infusion of leaves used for treating female infertility. Paste is applied to fix fractured bones. Root powdered used for blood dysentery. Rhizome boiled with mustard oil is locally applied to carbuncle and in the treatment of rheumatism, sprains, scabies and ulcers. Aqueous rhizome extract is used for the treatment of gonorrhea. The Plant juice is given to relieve fever (Rout, Panda and Mishra, 2009) <sup>[39]</sup>. Roots are used in Rheumatism, Sprains, Scabies, Eczema and cut wounds (Shrivastava and Shukla, 2018) <sup>[40]</sup>.

## Conclusions

In the present observation we have made an attempt to congregate the review of ethno botanical, information on *L. flexuosum*, a medicinal herb used in the Indian system of medicine. Research on *L. flexuosum* plants parts such as Rhizome, leaves and roots has gained a special attention in recent times as several of them have shown promising activities like antifertility, wound healing, eczema and hepatoprotective. This plant is also used in bidi and the bidi made of root is smoked. Fresh roots are boiled with mustard oils and used for massage. It is used to cure ulcer, eczema, cut and wound. It is also used in treating ailments like dysmennorrhea, jaundice, sprains and rheumatism. Now days, this had proven to be one of the most useful drug in the treatment of wounds. *L. flexuosum* is an important medicinal plant as some of the scholars of Indian System of Medicine reported that the plant may be 'Rudra Jata', an intermediate drug in classical text of Ayurveda and its medicinal properties have been reported from all the parts of the plant. *L. flexuosum* extract had antiproliferative and apoptotic activity in both cancer cells. This review will definitely help for the researchers as well as practitioners, dealing with this plant.

## Reference

1. Singh BP. Ecological and Ethnobotanical Studies of Pteridophytes of Satpura Hills. (Ph.D. thesis); MPBOU, 2012.
2. Kokate CK, Purhoit AP, Gokhale SB. Text book of Pharmacognosy. 36th ed. Pune: New Delhi: Nirali Prakashan, 2006.
3. Kirtikar KR, Basu BD. Indian Medicinal Plants. Dehradun: National Book Distributions, 2005.
4. Acharya D, Shrivastava A. Indigenous Herbal Medicines: Tribal Formulations and Traditional Herbal Practices. Aavishkar Publishers Distributor, Jaipur- India, 2008, 440.
5. Medicinal ferns of India by National botanic gardens. Lucknow, India. Bulletin no. 1959, 4-5.
6. Wills M, Zerbe S, Breitung W. Habitat survey, mapping and assessment in the Mai Po nature reserve. Hong Kong (China): Archiv Natur Lands, 2006, 53–69.
7. Boonkerd T. Pteridophyte flora of thong Pha Phum National Park, Kanchan aburi province, Thailand. J Nat Hist Chulalaongkorn Univ. 2006; 6:17–30.
8. Tiwari SDN. Ferns of Madhya Pradesh. J. Indian Bot. Soc. 1964; 43:431-452.
9. Alan R, Smith, Kathleen M. Pryer, Eric Schuettpelz, Petra Korall, Harald Schneider & Paul G. Wolf. A classification for extant ferns; taxon. 2006; 55(3):705-731.
10. Beddome RH. The ferns of British India. Oxford & IBH Publishing Company New Delhi, 1973; 1.
11. Pande HC, Pande PC. An Illustrated Fern Flora of



- Kumaun Himalaya Vol. I & Vol. II, Bishen Singh Mahendra Pal Singh, Dehradun, 2002.
12. Verma DM, Balakrishnan NP, Dixit RD. Flora of Madhya Pradesh, Botanical Survey of India, Department of Environment and Forests, Government of India. Calcutta, 1993; 1.
13. Roder W, Phengchan S, Maniphone S, Songnhikongsuathor K, Keoboulapha B. Weed management strategies aimed at reducing labor for upland rice production; Fragile lives in fragile ecosystems; proceedings of the international rice research conference, 1995.
14. Yadav E, Mani M, Chandra P, Sachan N, Ghosh AK. A review on therapeutic potential of *Lygodium flexuosum* Linn. Pharmacognosy Review. 2012; 6(12):107-114.
15. Joshi P, Pande HC, Pande PC. "Ferns of central Himalayas-I (Chamoli and Rudrapur)", 2002, 201-4.
16. Singh BP, Upadhyay R. Medicinal Pteridophytes of Madhya Pradesh; Journal of Medicinal Plants Studies. 2014; 2(4):65-68.
17. Chopra RN, Nayar SL. Glossary of Indian medicinal plants. Vol. 1. New Delhi: NISCAIR Press, 2006, 158.
18. Wills PJ, Asha VV. Protective effect of *Lygodium flexuosum* (L.) Sw. (Lygodiaceae) against D-galactosamine induced liver injury in rats. J Ethno pharmacol. 2006; 108:116-23.
19. Wills PJ, Asha VV. Chemopreventive action of *Lygodium flexuosum* extracts in human hepatoma PLC/PRF/5 and Hep 3B cells. J Ethno pharmacol. 2009; 122:294-303.
20. Samant SS, Pant S. Diversity, distribution pattern and conservation status of the plant used in liver diseases, ailments in Indian Himalayan region. J Mt Sci. 2006; 3:28-47.
21. Gaitonde BB, Mahajan RT. Antifertility activity of *Lygodium flexuosum*. Indian J Med Res. 1980; 12:597-604.
22. Banerjee RD, Sen SP. Antibiotic activity of pteridophytes. J Econ Bot. 1980; 34:284-98.
23. Jain SK. Dictionary of Indian folk medicine and ethno botany. Deep Publishers, New Delhi, 1991.
24. Benjamin A, Manickam VS. Medicinal Pteridophytes from the Western Ghats; Ind. J. of Trad. Know. 2007; 6(4):611-618.
25. Upreti K, Jalal Jeewan S, Tiwari Lalit M, Joshi GC, Pangtey YPS, Tiwari Geeta. Ethnomedicinal uses of Pteridophytes of Kumaun Himalaya, Uttarakhand, India Journal of American Science. 2009; 5(4):167-170.
26. Bhattaacharyya PK, Singh S, Bhattacharyya K. The Traditional Knowledge in Preparation of Bhakhar: An Essential Component in the Process of Fermentation of Chhotia Nagpur Rice Beer, Handia; Proceedings, 97th Indian Science Congress, 2010.
27. Dangol DR. Traditional uses of plants of common land and habitat in western Chitwan, Nepal. J Inst Agric Anim Sci. 2008; 29:71-8.
28. Jain SK, Kapoor SC. Divine botany universal and useful but under explored traditions. J Indian Tradit Knowl. 2007; 6:534-9.
29. Pride D. Symbiosis: Cattle rearing in oil palm plantations. Palm Oil Truth Foundation. [Last accessed on 2011]. Available from: <http://www.palmoiltruthfoundation.com>
30. Jalaludin S, Halim RA. Development of the livestock industry in Malaysia, regional workshop on area wide integration of crop livestock activities. Bangkok, Thailand: FAO regional office, 1998.
31. Bayani NS. Non-Wood Forest Products in Asia-Philippines. FAO corporate document repository, Forestry Department, Philippines, 2011.
32. Morton CV. The use of climbing fern *Lygodium* in weaving. An fern J. 1996; 56:79-81.
33. Shrivastava K. Importance of ferns in human medicines; Ethno botanical Leaflets. 2007; 11:231-4.
34. Baltrushes N. Senior Honor's Thesis. California, Berkely: Department of Integrative Biology. Medical ethno botany phytochemistry and bioactivity of the ferns of Moorea French Polynesia, 2005.
35. Singh S, Dixit RD, Sahu TR. Ethno medical uses of Pteridophytes of Amarkantak, Madhya Pradesh. J Indian Tradit Knowl. 2005; 4:392-5.
36. Singh KK, Saha S, Maheswari JK. Ethno medicinal uses of some ferns amongst the tribals of Uttar Pradesh. Indian fern journal. 1989; 6:62-67.
37. Dixit RD, Vohra JN. A Dictionary of the Pteridophytes flora of India series-4 (Botanical survey of India, Howrah), 1984.
38. Kumari P, Otaghvari AM, Govindapuri H, Bahuguna YM, Uniyal PL. Some ethno-medicinally important Pteridophytes of India; Int. J. Med. Arom. Plants. 2011; 1(1):11-22.
39. Manandhar PN. Ethno botanical observation on ferns and fern allies of Nepal. J. Econ Taxon Bot, Add Ser, 12, 1996, 414-422.
40. Rout SD, Panda T, Mishra N. Ethno medicinal studies on some pteridophytes of Similipal Biosphere Reserve, Orissa, India; Inter. J. of Medi. and Medical Sci. 2009; 1(5):192-197.
41. Srivastava N, Shukla AN. Diversity and uses of medicinal plants in Chandra Prabha Wildlife Sanctuary, Chandauli district, Uttar Pradesh; Tropical Plant Research. 2018; 5(3):405-418.