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Medicinal Pteridophytes Used in the Treatment of Various Diseases by the Inhabitants of Sarkaghat Tehsil, Mandi District, Himachal Pradesh

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Abstract:

The present study was carried out to assess and document the medicinal knowledge of Pteridophytes of Sarkaghat Tehsil of Mandi District, Himachal Pradesh used for the treatment of various diseases. The Sarkaghat area has diverse flora with high medicinal potential. In the present study 25 medicinal Pteridophyte belonging to 14 genera and 10 families were documented. Pteridophyte are used for the treatment of 46 types of human ailments. Whole plant (40%) is used in the treatment of the majority of diseases while rhizome (23%) is the least used plant part for the treatment of human disease.

Key Words: Pteridophytes, Xylem Phloem, Cryptogams, Spores, Rhizome

INTRODUCTION:

The relationship of man with plants began from the time of human origin. From the time of their origin humans have depended on plants for their primary needs such as food, fodder, fuel, timber etc. There are about 3, 00,000 of vascular plants in the world. About 80% of the world population rely upon traditional medicines for their primary health care (1). Medicinal plants are the plants with potential capacity for the treatment of various diseases and are in use by people from ancient times (2).They are inexpensive and have fewer side effects so demand for herbal remedies is increasing day by day.

The study area Sarkaghat Tehsil is a part of Mandi District of Himachal Pradesh. Himachal Pradesh is positioned in the North-western region of India. It is located in the Western Himalayas. It is bounded by states of Jammu and Kashmir in the North, Punjab in the West, Haryana in the South-West, Uttarakhand in the South-East, Tibet in the East, Uttar Pradesh in the South. Most of the parts of the state lie in the Dhauladhar range. Himachal is fed by 5 perennial rivers Chenab, Ravi, Beas, Sutlej and Yamuna. Mandi district is one of the 12 districts of Himachal Pradesh. The study area Sarkaghat is situated between 31°41'55" North latitude and 76°44'10" East longitudes in the Western Himalayas (Figure 1).

Fig. 1: Map Of Himachal Pradesh Showing Study Area

The track is hilly covered by Shivalik range and the elevation varies from 450-1,300 metres (3). This region is rich in floral diversity and is suitable for ethno-botanical explorations. Various plants are used for the treatment of human diseases. A lot of work on medicinal pteridophytes from different parts of the country and state of Himachal Pradesh are reported (4-27) but there is very less work reported from the Sarkaghat area. The study area is rich in floral diversity and the people of the area depend greatly on forest products for their daily needs. So this area was selected for ethno-botanical study of medicinal Pteridophytes.

Pteridophytes are the first terrestrial vascular plants with vascular tissue xylem and phloem. They do not produce flowers or seeds, thus called as cryptogams. They reproduce by spores. They include ferns and horsetails. Ferns and their allies form the oldest major divisions of the Pteridophytes with more than 12000 (28). Ferns can grow in all climatic zones but show great diversity in the tropics (29).They are found in damp and shady places. Ferns are used as food, fooder, fiber and as ornamentals (30). There are a lot of studies on the economic values of higher plants but pteridophytes have been ignored (31).

MATERIAL AND METHODS:

Extensive field visits were conducted in the study area from low elevations to high elevations and in different seasons in the year 2018. During the field visits complete plant specimens were collected, photographs of plants were clicked, and morphological characters of the plants were recorded in the field note book. Ethnobotanical information about medicinal plants, their local names were obtained from local and well informed elderly people through informal interviews, group discussion and through semi structured questionnaire based upon proforma designed by (32). The plants were collected, pressed and herbarium was prepared. The voucher specimen were identified according to the field characters noted in the field note book at the time of collection; by comparison with the specimen lying in the herbarium; literature on the medicinal plants of Himachal Pradesh like "Medicinal and Aromatic Plants of Himachal Pradesh" (29), "Himachal Pradesh Ki Vanoshdhiya Sampada" (33); various local floras like "Flora Simlensis" (34) and "Flowers of the Himalaya" (35).

RESULTS AND DISCUSSION:

The present study revealed the use of 25 medicinal Pteridophyes from 14 genera and 10 families for the treatment of various human diseases. These medicinal pteridophytes have been arranged in alphabetical order along with their family, vernacular name, plant part / parts used and medicinal uses (Table 1).

Table 1: List Of Medicinal Plant Of Pteridophytes Used For The Treatment Of Various Human Diseases In Sarkaghat Tehsil

S.NO.	Botanical Name	Family	Vernacular Name	Plant Part Used	Medicinal Uses
1.	*Adiantum capillus-veneris*	Pteridaceae	Maidenhair Fern, Common maidenhair, Southern Maidenhair Fern, Venus Maidenhair Fern,Hansraj, Hanspadi	Whole plant	Used as laxative, tonic ,in cold and cough, snake bites, hair growth , fever, menstrual irregularities
2.	*Adiantum caudatum*	Pteridaceae	Walking Maidenhair fern, Trailing maidenhair Peacock's Tail Mayurashikhaa, Sahastrahi, Saaharsra,Neelkantha shikhaa	Whole plant	Used in coughs and fevers, diabetes,skin diseases
3.	*Adiantum incisum*	Pteridaceae	Maiden Hair Fern ,Trailing maiden hair fern,Nilakantha-shikhaa, Mayurshikhaa,Hansraj, rajahans, Vahrishikha, Adhsaritakajhari	Whole plant	Used incough, fever , as tonic, in diabetes ,skin diseases, urinary tract diseases
4.	*Adiantum lunulatum Burm. f*	Pteridaceae	Walking maiden hair fern	Whole plant	Used in indigestion. dysentery, ulcers , leprosy ,cough, asthma, fever , hair fall, urinary tract diseases ,nose bleeding
5.	*Adiantum philippens*	Pteridaceae	walking maidenhair fern, black maidenhair ,Hamsapadi ,Hanswati, Kaante Jhar	Whole plant	Used as diuretic , in dysentery fever, asthma, to induce sterility in women, on wounds, indigestion, hair growth , diarrhoea
6.	*Adiantum venustum*	Pteridaceae	Himalayan maidenhair, evergreen maidenhair fern	Whole plant	Used as diuretic, tonic , in headaches ,scorpion stings, on cuts and wounds
7.	*Asplenium dalhousiae*	Aspleniaceae	Spleen wort	Fronds	Used in fever, skin diseases, burns
8.	*Asplenium tricomanes*	Aspleniaceae	Maidenhair spleenwort, Bird 's nest fern	Fronds	Used in irregular periods, coughs, liver diseases, as laxative, vermifuge
9.	*Athyrium attenuatum*	Athyriaceae		Rhizome	In Fever
10.	*Athyrium filix-femina*	Athyriaceae		*Fronds*	Used in cough, cold, body pain, stomach ailments, vermifuge, diuretic,gynaecological problems
11.	*Athyrium pectinatum*	Athyriaceae		Rhizome	As vermifuge
12.	*Cheilanthes albomarginata* Clarke (CA)	Pteridaceae	Lip fern	Rhizome	Rhizome used in stomach ulcer, stomach disorders ,cuts and wounds , as a tonic,in stomach diseases.
13.	*Cheilanthes bicolor (Roxb.in Griff.)*	Pteridaceae	Kali sanka, silver fern	Rhizome	Rhizome used in fever, as a tonic
14.	*Diplazium esculentum* (Retz.) Sw.	Athyriaceae	*Lingde, Lingri, Lingdu*	Whole plant, fronds	Used in fever, headache, body pain, fever, wounds, dysentery, skin infections ,laxative, tonic , anemia, indigestion, osteoporosis, tuberculosis
15.	*Dryopteris cochleata*	Dryopteridaceae	Wood fern , buckler fern	Fronds, rhizome	Fronds are used in eczema, as vermifuge, in muscle pain, rheumatism, throat problems. Rhizome is used for blood purification, as tonic , for cuts, wounds, ulcers
16.	*Marsilea minuta* Linn.	Marsileaceae	Dwarf water clover, gelid waterklawer, small water clover, airy pepperwort	Whole plant	Used in cough, muscle spasm, as sedative , in insomnia,indigestion,diarrhoea,skin diseases
17.	*Onychium*	Pteridaceae		Fronds	Used in urinary tract diseases

S.NO.	Botanical Name	Family	Vernacular Name	Plant Part Used	Medicinal Uses
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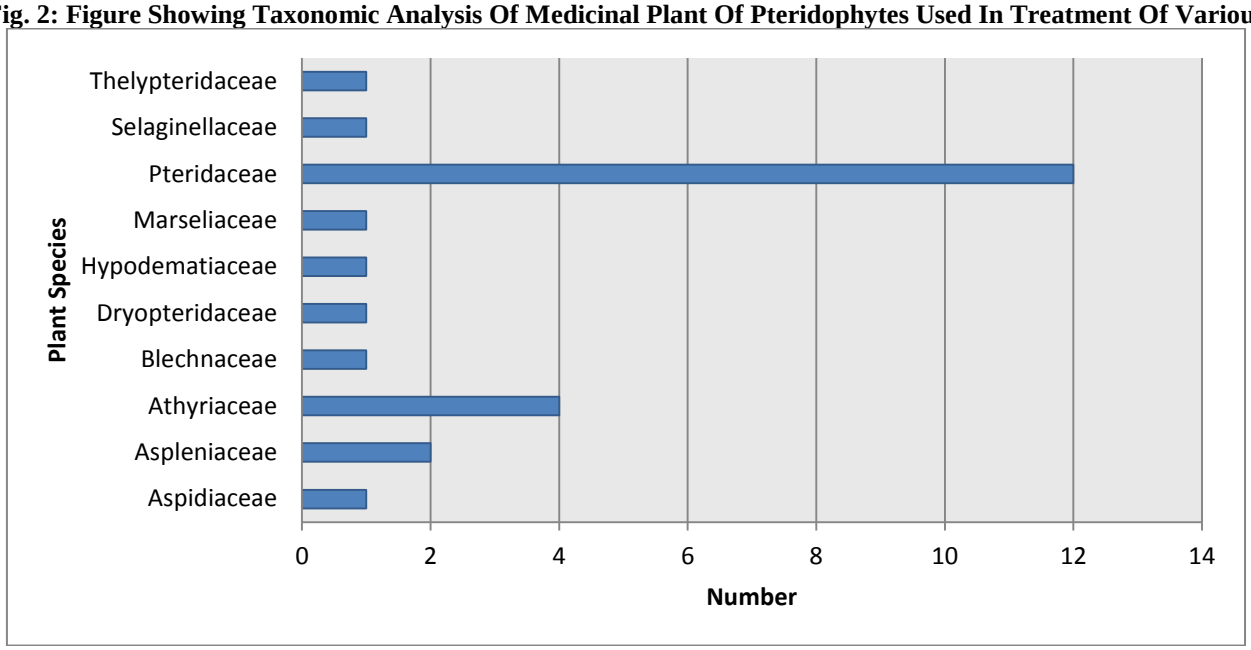
18.	*Onychium japonicum*	Pteridaceae	Carrot fern	Whole plant	Used in Skin diseases, fever, headache
19.	*Pteris cretica*	Pteridaceae	Cretan Brake, Cretan Fern, Ribbon Fern, Table Fern	Whole plant, fronds	Used on wounds, , in fever
20.	*Pteris vittata* L	Pteridaceae	Brake fern	Fronds	Used in sores on the tongue, in burns
21.	*Selaginella chrysocaulos*	Selaginellaceae	Kungoo	Whole plant, Spores	Used in fever. Powder of dried spores used as vermillion or kungu.
22.	*Thelypteris dentate* (Forssk.)	Thelypteridaceae		Whole Plant	In menstrual disorder
23.	*Hypodematium crenatum*	Hypodematiaceae		Fronds	Used in insect bites, on cuts, to increasing fertility in female
24.	*Tectaria coadunate*	Aspidiaceae		Fronds, rhizome	Used in asthma, insect bites, dysentery, diarrhoea
25.	*Woodwardia unigemmata*	Blechnaceae	jewelled chain fern	Rhizome, frond	*Used in dysentery*

Fig. 2: Figure Showing Taxonomic Analysis Of Medicinal Plant Of Pteridophytes Used In Treatment Of Various



The predominant families are Pteridaceae with 12 plant spp.; Athyriaceae with 4; Aspleniaceae with 2; Aspidiaceae, Blechnaceae, Dryopteridaceae, Hypodematiaceae, Marseliaceae, Selaginellaceae, Thelypteridaceae with 1 plant each (Figure 2).

Diseases

The medicinal pteridophytes were reported for the treatment of 46 human diseases. 13 of pteridophytes are used in the treatment of fever; 7 plant each as tonic in cough; 6 in wound healing ; 5 plant each are used in dysentery and skin diseases; 4 plant each as laxative, on cuts, as vermifuge ; 3 each in asthma, urinary tract diseases, as diuretic, diarrhoea, indigestion, headache; 2 each in diabetes, body pain, burns, menstrual irregularity , Insect bite, hair growth, ulcers; 1plant each in skin infection, hair fall, cold, scorpion sting, anemia, snake bite, osteoporosis, tuberculosis, eczema, blood purification, , liver diseases, stomach diseases, noose bleeding, muscle pain, rheumatism, gynaecological problems, throat problems, to induce sterility in female, insomnia, sores on tongue, muscle spasm, as sedative, to increase fertility in female, leprosy (Figure 3).

Out of 25 plant whole plant is used as medicine in 12 plant species (40%), frond in 11 plant species (37%) and rhizome in 7 plant species (23%) each (Figure 4) . Present study results revealed that there is diverse ethnomedicinal knowledge related to medicinal Pteridophytes in the Sarkaghat area. Plant from family Pteridaceae are the most used category for the treatment of multiple diseases. Whole plant is used for the treatment of maximum number of diseases.

Figure 3:Figure Showing Various Disease Categories Treated By Medicinal Plant Of Pteridophytes

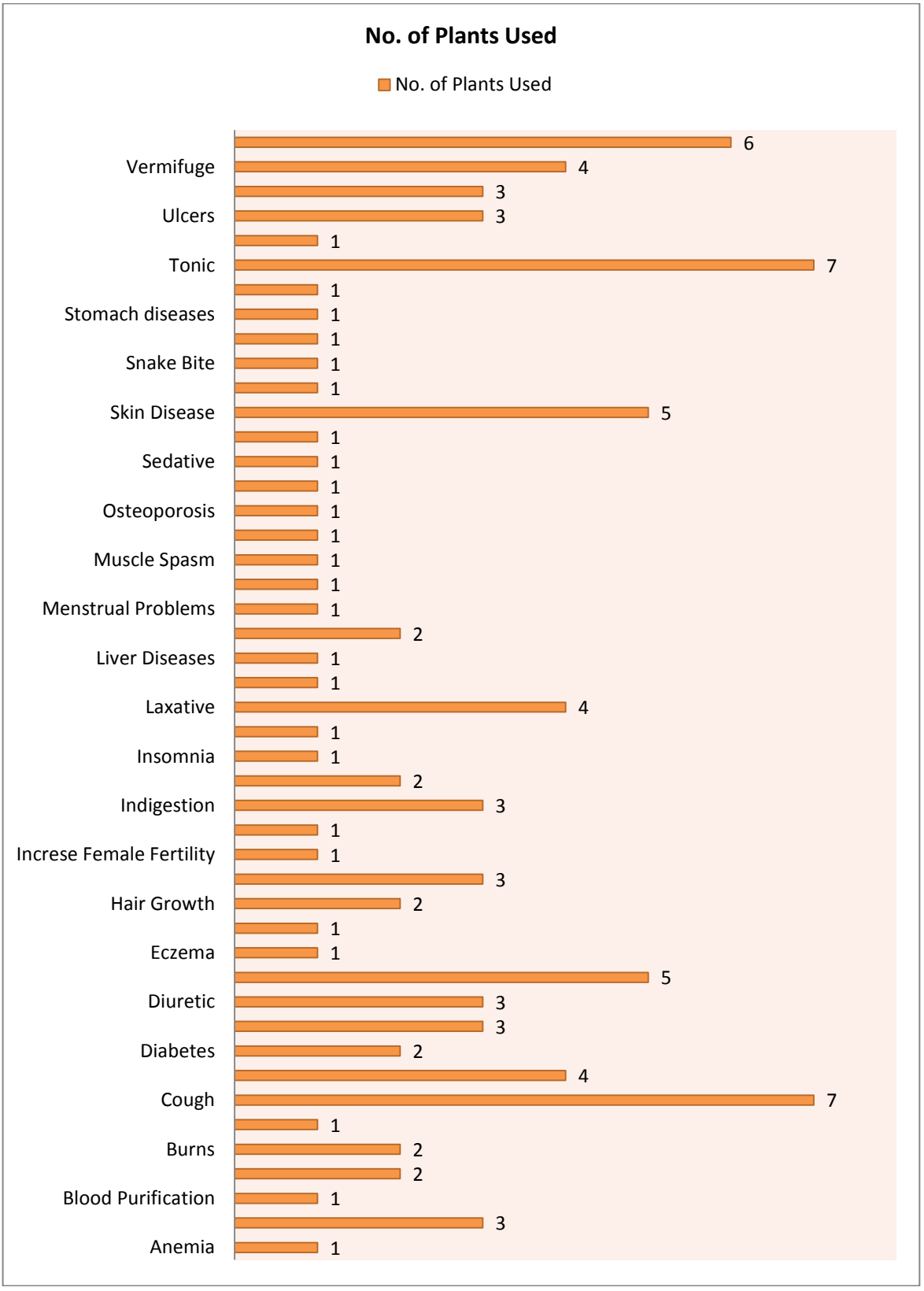
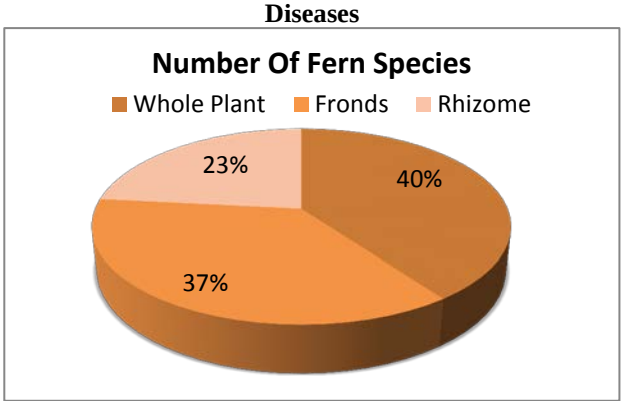


Figure 4:Figure Showing Plant Parts Used Of Medicinal Pteridophytes For Treatment Of Various Diseases



CONCLUSION:

The present study provides information about the ethnobotanical diversity of medicinal ferns of Mandi district used for the treatment of various human diseases. This study is an initiative in documenting the vast ethnobotanical knowledge of the local inhabitants which is otherwise passed orally from one generation to another. It was observed that people of rural as well as urban areas largely depend on medicinal Pteridophytes as source of medicine for various ailments. They have vast ethnobotanical knowledge related to medicinal pteridophytes. The study exposed that the study area shows great ethnobotanical diversity of medicinal pteridophytes in respect to the treatment of various human diseases. There is urgent need for the documentation and conservation of this plant based knowledge of Sarkaghat area.

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