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Ethnobotanical studies of aquatic plants of district Sialkot, Punjab (Pakistan)

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The present research work was conducted to explore the Ethnobotanical studies and medicinal utilization of aquatic flora. Regular field tours were conducted to collect aquatic flora of Sialkot district, Pakistan. In total of 18 species belonging to 13 families were collected from different sites and habitats. Work on Ethnobotanical aspect comprises the native names and conventional medicinal utilization of vegetation was obtained from native inhabitants through direct interviews. The present research work was conducted by taking interviews of 40 informers comprising of 25 females and 15 males of the study area. Typically, persons having more experience, skills and knowledge, particularly old females were interviewed. All interviews were completed arbitrarily; precedence was specified to the natives because of the reason they have improved information of flora and their frequent utilization. Ethno-botanical studies on aquatic flora have been rarely conducted in this area. i.e. Pistia is used to treat skin diseases. Mentha is widely used to cure digestive problems, Polygonum sp. used to treat summer prickles. It is imagined that such type of studies should be conducted in the future in study area.

Keywords: Ethnobotany, Aquatic plants, Sialkot, Gujrat 50700, Pakistan

1. Introduction

At the lower range of ice-covered mountain tops of Kashmir nearby the Chenab river, in the north-east of the Punjab Province. Sialkot district is situated. Sialkot city is the capital of Sialkot district. At an altitude of 256 m above sea level, lying between 33° 28'S, 70° 54'W, latitude and longitude. There are four Tehsils in district Sialkot namely Daska, Pasrur, Sambrial and tehsil Sialkot. There are three seasonal small streams in Sialkot, district namely they are bher and Nala palkhu. During the summer, climate of sialkot is very hot and humid, most hottest months of summer are May and June. Winter is very chilly. Sometimes temperature of winter drop up to 0 °C. The regular 1000 mm rain fall annually recorded in the Sialkot district. Over 26.82% urban populations inhabited in Sialkot district. The land of Sialkot district is usually plain and fertile. During monsoon season in summer, maximum rain fall is being recorded that must be consequences of the flooding which are frequent in irrigated areas. One of the advanced and best equipped weather forecasting and warning center in available in Sialkot. Diverse population are found in Sialkot district. There are almost 4,200,000 inhabitants are there in Sialkot district. They belong to different cultural variations including Gujars, Jutts, Rajpoot, Arain, Awan, Sheikh, Butt, Qureshi etc. Water land flora are photosynthetic organisms, sufficient to observe with the naked eye, that vigorously develop everlastingly or occasionally submerged underneath, suspended on, or growing up

throughout the wet plane. Wetland flora is characterized in seven plant divisions: Cyanobacteria, Chlorophyta, Rhodophyta, Xanthophyta, Bryophyta, Pteridophyta and Spermatophyta which are represented by 33 orders and 88 families with concerning 2,614 species in Ca. 412 genera [1]. There are several types of wetland species up to thousands belonging to unlike genera colonized in fresh water environment along the margins at the bottom in the surface of ponds and lakes, at ditches or muddy places, or in the natural drainage systems. Wetland flora is very grave habitat and basic center for fishes. It is an absolute oxygen source for aquatic life, a very safe place for both the prey and predator [2, 3].

Basic component of the healthy environment is aquatic flora. All vegetations whatever on soil or in or in the region of aquatic life exhibit the process, photosynthesis and by doing this these plants contributed to accumulation of oxygen in the environment [4]. Wetland flora has displayed variety. Special forms of wetland are there; these may be emergent plants, submerged plants, free moving, rooting and floating plants [5]. Almost all wetland plants due to their roots in deposits underneath water and its somatic parts in the atmosphere [6]. *Polygonum spps, Cyperus spps and Typha latifolia* are well-known examples of emergent forms of wetland flora. Truly floating wetland flora are duckweed and water meal . *Nymphaea sps and Nelumbo sps* are entrenched lucid plants, very significant hydrophytic flora. These exhibit marked role to provide for other hydrophytic flora

These plants darken out below water plant and instigate drop of oxygen for the bottomlesser plant [7, 4]. The surroundings of the majority submersed vegetation is confined in aquatic habitat ranges in depth of 10-12 feet [8]. Pondweeds are the vital submersed plants (*Potamogeton sp., Utricularia sp. and Elodea spp.* Pakistan exhibit prosperous past on the traditional utilization of flora. Punjab province is very famous in traditional medicinal uses. There are many plants in Sialkot that are important as far as ethnobotanical uses are concerned. According to Afridi [9], intended 67 medicinal plants from Khyber Agency. Haq and Husain. [10], determine local remedial and various conventional utilization of flora of Mansehra. As far as ethnobotany of vegetation of Rawalpindi is concerned [11-12], Kurram [13], margalla [14], Abbotabad [15], Kotli [16], Chitral [17], and Attock [18-20], comprise and examined. Ethnobotanical research of wetland flora has been made in the Sialkot district. The area is well-off in plant assets; therefore this work has been carried out to organize a record of native medicinal plants and collect the information about traditional medicinal uses of other plants. Organized effort on therapeutic utilized of flora has not been made, many researchers provide information about wetland flora of different areas of country [21-23]. Ethno-botanist carried out their work studies which are focusing primarily on the characters related to the ethno-botany of curative flora [23, 24, 14]. This study provide comprehensive in sequence concerning the ethno-medicinal importance of wetland flora of Sialkot district, Pakistan.

2. Materials and Methods

2.1 Surveys and Collection of plant material: Regular field tours were conducted to collect aquatic flora of Sialkot district, Pakistan. The present research work was carried out during March 2012-2013. In total of 18 species belonging to 13 families were collected from different sites and habitats. All plant specimens were collected in triplicate and voucher number was elected to plants. The present research work was carried out in the Systematics and Biodiversity lab and Herbarium of Quaid-i-Azam University, Islamabad. The research work includes ethno-botanical uses of wetland flora of Sialkot.

2.2 Interviews: The present research work was conducted by taking interviews of 40 informers comprising of 25 females and 15 males of the study area (Table 3). Typically, persons having

more experience, skills and knowledge, particularly old females were interviewed. All interviews were completed arbitrarily; precedence was specified to the natives because of the reason they have improved information of flora and their frequent utilization.

2.3 Nomenclature: Binomial nomenclature, method of naming the plants was followed.

2.4 Drying and preservation: Plants were dried and preserved by using standard herbarium techniques and deposited in the Herbarium of Pakistan Islamabad.

2.5 Acknowledgement of Samples: Samples were acknowledged with the help of flora of Pakistan [16]. Identification of plants was further reconfirmed through the Herbarium specimens and taxonomists Prof. Dr. Mir Ajab Khan and Dr. Mushtaq Ahmad of Department of Plant sciences, Quaid-i-Azam University Islamabad, Pakistan.

3. Results

Ethno-botany is exceptionally great field and deals with all categories of human being-plant association. It is the work of how the people of a specific community and area make utilization of flora. A total of 18 plants were found to be used as a medicine in the area of Sialkot, Pakistan and these were arranged with families, botanical and vernacular names, part used and ethnomedicinal uses. Plant species belonging to 13 families (Table 2), documented on the basis of their importance and medicinal uses. They were found to be used to cure various diseases and disorders describes in (Table 1).

4. Discussion

The 18 reference specimens of different genera of the following respective families including, Araceae, Pontederiaceae, Polygonaceae, Ranunculaceae, Lamiaceae, Verbenaceae, Cyperaceae, Poaceae, Typhaceae, Lemnaceae, Juncaceae, Cruciferae and Nympheaceae were subjected to extensive taxonomic investigation. Utilization of plants for the treatment of diseases in human being is as old a put into practice as the human race itself. However information of plants use co-evolved with human society throughout the experiential use of plants, generation after generation. In this study, i documented on the local uses of ethnobotanically important plants. Most of the recorded species in my work have also been reported as fodder species by other workers [25-27]. The present findings regarding the similarity in the use of plants as fodder are in agreement with previous studies. Ethnobotanical studies in various regions of Pakistan have also been carried out [28, 35]. In present work aquatic plants i.e. Ranunculus scleratus, Phyla nodiflora and used as fodder. Some of the plant has medicinal uses in my project. Medicinal plants are invariably used in local health system in traditional societies. Parvaiz *et al*. [27], describes that the Olive is a sanctified tree and is an affluent source of important nutrients and bioactive of remedial and therapeutic interest that is used by traditional people as remedy. Olive fruit contains substantial concentration of fresh pulp weight of hydrophilic, lipophilic and phenolic compounds that are known to possess multiple biological activities such as antioxidant, anticarcinogenic, anti-inflammatory, antimicrobial, antihypertensive, laxative and antiplatelet. Mostly aboriginal people depend on plants or parts of plants for curing the different diseases [30]. Medicinal plants are, Mentha spicata, Ranunculus muricatus, Nasturtium officinale and caltha alba etc in my work. Ibrar *et al*. [29], Jabar *et al*. [30], Ishtiaq *et al*. [31], Hussain *et al*. [9], Ahmad *et al*., [20], Shah *et al*. [32], and Badshah *et al*. [33], reported these plants to be medicinal. There are species used as edible fruits and vegetables. the leaves of, Nasturtium officinale, commeliana, Mentha spicata, Eeclipta alba and Conyza bonarensis, these plants are used to heal wound, burns and injury as reported in my work are in accordance with the work of Zubair. [24], Tareen *et al*. [34], they reported these plants to heal wounds.

Table 1: List of ethno-botanical plants of Sialkot, Pakistan.

S. No	Family	Botanical Name	Vernacular Name	Part Used	Medicinal Uses
1	Araceae	*Pistia stratiotes*	Jal khumbni	Crushed leaves use to cure the infected area.	Anti-arthritis, anti-inflammatory, curative of skin disease.
2	Brassicaceae	*Nasturtium officinale*	Talmira	Leaves use to treat allergic problems.	Anti-allergic, spices
3	Cyperaceae	*C. alopecuroides*	Mootha ptera	whole plant	Treatment of skin infections
4	Cyperaceae	*C. nutans*	Sera	whole plant	Used as fooder for animals.
5	Cyperaceae	*C. digitatus*	Lambi ghass	whole plant	Anti-skin allergic
6	Cyperaceae	*C. glomeratus*	Gol ghass	whole plant	Anti-inflammatory
7	Juncaceae	*Juncus articulatus*	Juncus	Crushed leaves use to treat anaemia.	Antibleeding. antiaenemia.
8	Lamiaceae	*Mentha spicata*	jungli Podina	Decoction use to cure digestive problems.	Sedative, helpful digestion, carminative
9	Lemnacaeae	*Lemna minor*	Chetri	whole plant	It helps in phagocytosis, also use to cure measles and cold.
10	Nympheaceae	*Nymphaea nouchali*	Kanwal	Flowers and leaves	Anti-inflammatory
11	Poaceae	*Polypogon fugax*	Polygon	Leaves are crushed and then apply on infected skin.	Anti-allergic
12	Poaceae	*Arundo donax*	Naari	Leaves and stem	Skin treatment
13	Polygonaceae	*Persicaria barbata*	Barbata	Whole plant	Helps in Blood circulation, rheumatic arthritis, muscle pain, menoxenia, ulcer.
14	Polygonaceae	*Persicaria glabra*	Konda	Flowers and leaves cushed and use to cure inflammation.	Anti-inflammatory, curative of skin diseases.
15	Ponderetiaceae	*Eichhornia crassipes*	Sabs booti	Leaves crushed and applied on infected area.	Used in skin treatment, Goiter problem
16	Ranunculaceae	*Ranunculus sceleratus*	Peeli booti	Leaves mixture is used to cure pain.	Mostly use to cure pains
17	Scrophluriaceae	*Veronica-anagallis-aquatica*	Veronica	Crushed leaves use as tonic.	tonic, astringent
18	Typhacaeae	*Typha latifolia*	Arra	Mixture of leaves	It is used to clott the blood

Table 2: Division of aquatic plant species according to families of Sialkot, Pakistan.

S. no	Name of Families	Plant species
1	Araceae	1
2	Brassicaceae	1
3	Cyperaceae	4
4	Juncaceae	1
5	Lamiaceae	1
6	Lemnaceae	1
7	Nympheaceae	1
8	Poaceae	2
9	Polygonaceae	2
10	Pontederiaceae	1
11	Ranunculaceae	1
12	Scrophulariaceae	1
13	Typhaceae	1

Table 3: Interviews of local inhabitants of Sialkot, Pakistan.

Age groups (year)	Numbers of interviewees
40-55	25 females
58-63	15 males
Total	40

5. Conclusion

Native people of the region must be endowing with awareness concerning floral biodiversity and conservation. Procedures should be taken to preserve rare species which are near to extinction. Elemental studies of wetland flora to evaluate their nutritional value. Ethno-botanical studies on aquatic flora have been rarely conducted in this area. It is imagined that such type of studies should be conducted in the future in study area.

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