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## Exploring Ethnomedico Secrets of the Herbs of Gatwala Forest Park, Faisalabad, Pakistan

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**Abstract** Plants which endowed medicinal values are held at the highest rank in folk medicinal systems throughout the world. The locally suggested remedies and the ethno-botanical knowledge for this purpose, whether it's traditional or modernized, have its roots into the belief in folk medicinal knowledge of the particular region. This study was conducted at Gatwala forest park (GFP), Faisalabad, Pakistan. The method adopted for documentation of indigenous knowledge was based on semi-structured interviews and direct observations. The present study gathered the indigenous knowledge of local inhabitants and about the use of herbaceous plants they collected from GFP. A total of 40 herbaceous plants belonging to 19 families were recorded as medicinal plants at the study site. Most of the plants we found were used for the treatment of common cold, sore throat, abdominal infections, skin disorders, hepatic diseases, eye ailments, stomach problems, fever, cough, chest congestion, asthma, joint pains. Along with their ethno-medicinal uses their occurrence was also recorded as very common, common, fairly common and scarce. This appraisal has documented the inventory of important medicinal plants of GFP by giving due weight age to the indigenous folk knowledge of the local inhabitants.

**Keywords** Ethnobotanical survey, medicinal herbs, GFP, indigenous knowledge, documentation

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### Introduction

John Harshburger American botanist, who for the very first time defined ethnobotany as a proper term in 1896. According to him this is the study of the plants used by the ancient and native people. The root of Indigenous knowledge is very old as that of the human civilization. The older civilizations like, Greek, Roman, Egyptian and Chinese had used the herbal medicines for the cure [1]. Medicinal plants have been used for many years to cure a great variety of diseases of men and animals. Our Holy Prophet (Peace Be Upon Him) had also used herbal cure for different diseases [2].

Today many of the medicinal plants which were used by the Greek physician Hippocrates are still in use of medical herbalists [3]. Not only these traditions are used in the developing countries but the developed countries are also being fascinated by them for getting relief from certain ailments [4]. Even for the first aid treatment, 80% people of the world are relying upon the traditional plants [5]. It has been stated that the medicinal plants are playing their vital roles for the manufacture of medicines and in cure various diseases [6].

Traditional medicinal practices are still considered to be very necessary element in each and every continent of the world [7-8]. The case where the modern cure system fails to eradicate a disease, patients gave their preference to the indigenous curing method through plants [9-10]. The plants are no doubt, very much significant in the traditional system of medicines of aboriginal inhabitants [11]. Throughout the world ethnobotanical surveys are being conducted in order to document the ethnobotanical importance of the plant resources. This combined effort is



applicable to trace out biological diversity, aids in development of community and also helpful in framing out the conservation strategies at all levels [11].

The medico-ethnobotany of Nujiang, Northwest Yunnan, China described that 52 medicinally important plant species of 32 families were utilized by the natives for the treatment of diseases [12]. The information on 32 medicinal plant species belonging to 24 families was recorded under the ethnobotanical survey of Rajshahi district of Bangladesh [13].

Pakistan is considered among those developing countries which have potential for production of plant diversity, preservation of the heritage in terms of indigenous knowledge of medicinal plants and also she has been gifted with varying climatic and soil conditions. 84% of Pakistan's population is dependent upon the traditional medicines for their medicinal necessities [14]. In remote areas herbal medicines are used for local drug productions and generously used in the areas where different diseases exist. So we can say that traditional knowledge of medicinal plants has strong roots in Pakistan as well. A very large number of drug plants are used by local inhabitants in northern and northwest parts of Pakistan [15].

In the past few years, various efforts have been made for the documentation of the traditional knowledge about native medicinal flora of Pakistan. For this very purpose, 100 medicinal plants were described of West Pakistan along with their detailed relevant information regarding their botanical names, their ecological occurrence, components and usages [16]. The folk utilitarian knowledge of 160 plants of Margalla Hills National Park plus their conservation status were recorded [17]. Similar effort was contributed to collect information about the interaction of KallarKahar communities of salt range, Pakistan with the native plants [18]. Outstanding features were recorded of medicinally important plants around motorway (M-2) Pakistan [19]. Another ethnobotanical data from the District Kotli, Azad Jammu & Kashmir, Pakistan from 2007-2008 was recorded [20]. A total of 38 species of 36 genera belonging to 25 families were found to be medicinal with performing multipurpose functions in daily life of indigenous people.

Without plants no life can exist because, these primary producers are the source of medicines, oxygen, shelter, shadow, food, clothing, forage along with other uncountable. Similarly, medicinal plants are the basic source of folk as well as modern medicinal system [21]. Ethnobotanical data on 108 plant species were collected belonging to 52 families, from the Abbottabad city of Pakistan for the documentation of the ethnomedicinal plants [22].

The purpose of the research was to explore and documents the ethnomedicinal importance of the study area.

## **Materials and Methods**

### **Study area**

This ethnobotanical survey was conducted at Gatwala forest park (GFP) which is situated along 17 Km Faisalabad to Shekhupura road, Pakistan. The GPS system located park at 31°-50' N, 73°-90'E as geographical location. It was established in 1992. Its total cover area is 131 Acres (53 ha). This artificial raised forest was designated under Wildlife Act, Government of Pakistan, 1997 as a Game Reserve [23].

During the survey field trips were organized. Along with personal observations, questionnaire and semi structured interviews were conducted. Plant specimens were collected, identified and were deposited in herbarium of Fatima Jinnah Women University, The Mall Rawalpindi. Random based Interviews of 60 informants including local inhabitants of all age status were conducted on. The interviews were in local language. The results were rechecked and compared with previous literature. The data obtained was analyzed and traditional knowledge was documented in the form of inventory.

### **Results**

A total of 40 herbaceous plants belonging to 19 families were recorded as medicinal plants at the study site. Most of the plants found there were used for the treatment of common cold, sore throat, abdominal infections, skin disorders, hepatic diseases, eye ailments, stomach problems, fever, cough, chest congestion, asthma, joint pains. Along with their ethnomedicinal uses their occurrence was also recorded (very common, common, fairly common and scarce). This appraisal has documented the inventory of important medicinal vegetation of GFP by giving due weightage to



the indigenous folk knowledge of the local inhabitants. Family names are arranged in alphabetical order, under which species belonging to any one of the particular family have been jotted down in results.

### i) Amaranthaceae

Botanical name: *Achyranthes aspera* L.

Common name: Ludhri/Poth Kant

Parts used: Leaves and roots

Ethnobotanical uses: Tooth ache can be reduced by using leaves and roots decoction. Night blindness is also treated by this herb. Herb extract is used for dysentery. Insect sting pinching is treated by the paste of roots and leaves. Skin disorders are also be treated by this herb. Chest congestion and asthma is treated by taking the mixture of honey and herb ash.

Occurrence: Fairly Common

### ii) Asteraceae

Botanical name: *Ageratum conyzoides* L.

Common name: Not known

Part used: Leaves and flowers, whole plant in dried form

Ethnobotanical uses: It is considered as an antibiotic which can cure gravel; a condition in which stones are formed in the kidneys and then pass to the urinary tract. It is a laxative and the tea of its leaves is helpful when given in condition of common cold. Its powder is usually sprinkled over the cuts and wounds to stop bleeding. Paste of its leaves and flower is lapped over the insect bite usually.

Occurrence: Fairly Common

Botanical name: *Cirsium arvense* L.

Common name: Kandharibooti

Parts used: Flowers

Ethnobotanical use: The flowers of the herb are ground with water for inducing vomiting in order to clean the stomach.

Occurrence: Fairly common

Botanical name: *Conyzabonariensis* L.

Common name: Loon booti/namkeenbooti

Part used: Whole plant

Ethnobotanical use: Best in treating diarrhea. The herb is boiled with water and given to the patient for treating the ailment.

Occurrence: Fairly common

Botanical name: *Parthenium hysterophorus* L.

Common name: Gajarbooti

Ethnobotanical use: The paste of the plant is helpful in treating skin disorders especially irritability. Liver problems are also treated.

Occurrence: Fairly common

Botanical name: *Sonchu soleraceus* L.

Common name: Not known

Part used: Whole plant

Ethnobotanical use: Its leaves are used for the treatment of ingestion problems. An ointment is prepared from the decoction of this plant and that is used for the cure of wounds and ulcers. A special type of tea is made to treat



diarrhea. After evaporation of the latex of sap, a gum is produced which is used for treating warts and also liver problems are cured. Leaves are used to make poultice which is applied on the inflammations and burning

Occurrence: Fairly common

Botanical name: *Lactuca serriola* L.

Common name: Kahu

Parts used: Whole plant

Ethnobotanical use: The herb is useful in treating chest congestion, whooping cough and asthma.

Occurrence: Fairly common

Botanical name: *Xanthium strumarium* L.

Common name: Chotagokhru/ Ladhbooti

Parts used: Whole plant

Ethnobotanical use: This plant is sedative. The crushed plant gives relief to the insect sting pain. It is considered as diuretic. The dried root is mixed in oil and used for curing earache. The fruit of this plant is used in small-pox pain relief.

Occurrence: Fairly common

### iii) Brassicaceae

Botanical name: *Brassicca juncea* L.

Common name: Saroonbooti

Parts used Leaves

Ethnobotanical use: Headache and cramps are treated by placing the leaves of this plant in order to get relief.

Occurrence: Scarce

Botanical name: *Coronopus didymus* L.

Common name: Not Known

Parts used: Whole plant

Ethnobotanical use: It is insect repellent and is considered as a body coolant

Occurrence: Common

Botanical name: *Sisymbriumirio* L.

Common name: Saagbooti

Parts used: Seed

Ethnobotanical use: The seeds are used for reduction of chest congestion. Hepatitis-C can be treated by taking seed powder with water.

Occurrence: Common

### iv) Caryophyllaceae

Botanical name: *Stellaria media* L.

Common name: Not known

Part use: Whole plant

Ethnobotanical use: Used as a laxative, relieves constipation, reduce chest congestion and insect sting pinching. Poultice of this plant is helpful in treating skin disorders like burns and rashes. Sometimes the paste of this herb is lapped over the broken bones as a bandage. It gives relief to the pain.

Occurrence: Very Common



**v) Chenopodiaceae**

Botanical name: *Atriplex crassifolia* Ledeb.

Common name: Not known

Part used: Seed

Ethnobotanical use: Diuretic, emollient, refreshing, pulmonary diseases.

Occurrence: Scarce

Botanical name: *Chenopodium album* L.

Common name: Bathu

Part used: Whole plant

Ethnobotanical use: It is useful in melioration of hunger in form of a tonic.

The stomach infection, rheumatism, pains in body parts, eye problems and bronchitis can be cured by this herb. The intestine ulcer is treated by taking infusion of this plant. Toothache and cavities are treated by this plant in form of decoction.

Occurrence Fairly Common

Botanical name: *Chenopodium murale* L.

Common name: Not known

Part used: Oil of flowering tips and fruit

Ethnobotanical use: Plant is nutritive, diuretic, tranquilizer and tonic for liver.

Leaves are edible. Leaves are used for salad. It is sweet digestive, carminative, laxative and cardiac disorders can be treated.

Occurrence: Fairly Common

Botanical name: *Kochia indica* Wt.

Common name: Bui

Part used: Roots, whole plant

Ethnobotanical use: Tooth brushes of this plant are used and it is also helpful in relieving toothache. Similarly its extract is considered as a cardiac tonic

Occurrence: Fairly Common

**vi) Convolvulaceae**

Botanical name: *Convolvulus arvensis* L.

Common name: Lali/Lehli

Part used: Whole plant

Ethnobotanical use: Constipation is cured by mixing the powder of plant with sugar and taken with milk or water.

Burning wounds are cured by applying the paste of the leaves over them.

Occurrence: Fairly Common

**vii) Euphorbiaceae**

Botanical name: *Euphorbia helioscopia* L.

Common name: Chhatridodak, Gandibooti

Part used: Whole plant

Ethnobotanical use: Seeds are roasted with black pepper and given to the patient of cholera for at least one week.

Whole plant is a laxative vermifuge.

Occurrence: Common



**viii) Fabaceae**

Botanical name: *Melilotus alba* L.

Common name: ChittiSinjhi

Part used: Aerial parts of the plant

Ethnobotanical use: The paste of aerial parts is used externally for inflammations and joint pains.

Occurrence: Fairly common

Botanical name: *Lathyrusaphaca* L.

Common name: Dokani

Part used: flower and seed

Ethnobotanical use: Ripen seeds are said to be narcotic and flowers are used as resolvent.

Occurrence: Fairly common

Botanical name: *Vicia sativa* L.

Common name: Matri

Part used: Whole plant

Ethnobotanical use: It is considered to be antidote of poison.

Occurrence: Fairly common

**ix) Fumariaceae**

Botanical name: *Fumaria officinalis* Husk. Pugsley.

Common name: Pappra

Part use: Whole plant

Ethnobotanical use: It is very useful in the treatment of various diseases. Cattle diarrhea is treated by this plant. The juice of the plant is useful for treatment of common cold, goiter and diarrhea. It is a blood purifier. The plant is used in treatment of diabetes and bladder infection by taking its infusion.

Occurrence: Common

**x) Malvaceae**

Botanical name: *Abutilon fruticosum* L.

Common name: Not known

Part used: Whole plant, seed and root

Ethnobotanical use: Dysentery and eye irritation are treated by the extract of this plant taken in different forms. Root decoction is made and used in treating fever. Ground seeds are taken with water for cure of stomach disease. The bark is having diuretic qualities.

Occurrence: Scarce

Botanical name: *Malvastrum coromendelianum* Garcke.

Common name: Patakha/Damhni plant

Part used: Whole plant, flower

Ethnobotanical use: An anti-bacterial and anti-fungal weed as it is a bit poisonous.

Used in treating cuts, sores and wounds. Cough and dysentery is treated with the decoction of the whole herb.

Occurrence: Common

Botanical name: *Malva parviflora* (Linn) Wall.

Common name: Sonchal

Part used: Whole plant

Ethnobotanical use: Common cold, fever and cough are cured by taking the tea made by boiling this herb in water.



Occurrence: Fairly common

**xi) Mimosaceae**

Botanical name: *Prosopis cineraria* Druce.

Common name: Perasoo

Part used: Stem, leaves and bark

Ethnobotanical use: It is considered as the antidote against the infection of fungi, bacteria and virus. The tea of the leaves of this herb has been used for the treatment of bronchitis, muscle cramps, dysentery and asthma. Its stem bark has pain relieving properties.

Smoke from burning of its leaves is helping in curing eye problems. Bark is used for curing rheumatism. The paste of leaves is applied directly on boils, and open wounds over the skin.

Occurrence: Scarce

**xii) Oxalidaceae**

Botanical name: *Oxalis corniculata* L.

Common name: Khati Booti/ Khatmith

Part used: Whole plant

Ethnobotanical use: Leaves are used for scorpion sting. Asthma and chest congestion can be reduced by taking the tea of this herb. It is also used as laxative plus carminative. The crushed young leaves are lapped on skin to treat eczema. The juice of the plant is given in stomach trouble, decoction made from its roots are useful in treating stomach disorders. A special kind of 'chutney' is made from this plant; people think that it is a blood purifier. The extract of this herb is applied on wounds which relieve the pain and stops bleeding. The rusts from the pans are also removed by using this multipurpose herb along with sand.

Occurrence: Common

**xiii) Poaceae**

Botanical name: *Avena sativa* L.

Common name: Jai

Part used: Seeds

Ethnobotanical use: The seeds are considered as the tonic for the nerves. Relieve the joint's pain. The seed tonic is used in insomnia. Muscle fatigue is also cured by this tonic.

Occurrence: Scarce

Botanical name: *Cynodondactylon* L.

Common name: Khabbal ghass/ humrikbooti

Part used: Leaves and stem

Ethnobotanical use: The paste of the leaves is applied on cuts, sores and upon wounds. Bleeding from the mouth and stomach disorders are treated by the juice of the leaves. Leaf extract is mixed with honey and taken in the case of vomit with blood.

Occurrence: Very common

Botanical name: *Panicumanti dotale* Retz.

Common name: Not known

Part used: Whole plant

Ethnobotanical use: Smoke emitted from burning of this weed Fumigates wounds.

Sore throat is treated by taking tea of this herb. It is also used in disinfection of the smallpox.

Occurrence: Very Common



Botanical name: *Imperata cylindrical* Beauv.

Common name: Dabbghass

Part used: Whole plant

Ethnobotanical use: Root decoction is made and used in treating dysentery and diarrhea mostly. The fruit spike is considered as sedative. The rhizome is used in curing piles. Similarly its rhizome has restorative properties. Tonic of this herb is useful in reducing fever. Seed paste is used to stop the bleeding from wounds.

Occurrence: Fairly common

#### xiv) Primulaceae

Botanical name: *Anagalli sarvensis* L.

Common name: Unknown

Part used: Whole plant

Ethnobotanical use: Brain disorders like Leprosy, Dropsy, Mania and Hydrophobia can be treated by this herb. Due to moisturizing properties the paste of this plant is helpful in treating warts, reduces headache and rheumatic pains. It is an expectorant. It has also antifungal and antiviral properties. Similarly it can cure the diseases of cattle like 'Ranikhait.

Occurrence: Fairly common

#### xv) Ranunculaceae

Botanical name: *Ranunculus muricatus* L.

Common name: Not known

Part used: Whole plant

Ethnobotanical use: Asthma is treated by the decoction of this herb.

Occurrence: Common

#### xvi) Rubiaceae

Botanical name: *Galium aparine* L.

Common name: Chipko

Part used: Whole plant

Ethnobotanic use: The wound is covered with the plant as a bandage. Jaundice patient is given the extract of this plant for treatment.

Occurrence: Scarce

#### xvii) Scrophulariaceae

Botanical name: *Veronica arvensis* L.

Common name: Not known

Part used: Stem and leaves

Ethnobotanic use: paste is made and applied on wounds and burns.

Occurrence: Scarce

#### xviii) Solanaceae

Botanical name: *Spegularia flaccida* L.

Common name: Not known

Part used: Whole plant

Ethnobotanical use: It treats gravel that is the formation of stones in the kidneys.

Plant is dried and ground in order to make it in powder form. A pinch of this powder is taken by the patient once a day.

Occurrence: Scarce



Botanical name: *Solanum nigrum* L.

Common name: Kachmach/ mako

Part used: Leaves, fruit

Ethnobotanical use: To avoid the digestion problems of cattle mostly the leaves of this plant are mixed with the forage. For the treatment of jaundice and constipation the berries of the plant are given to the patient in form of decoction. Its extract is also considered as a good tonic.

Occurrence: Fairly common

Botanical name: *Nicotiana plumbaginifolia* Viv.

Common name: Not known

Part used: Roots

Ethnobotanical use: Piles and stomach disorders are treated for cure with this plant. The root paste and black pepper are mixed together and given to the patient of piles with an empty stomach daily.

Occurrence: Scarce

#### **xix) Verbenaceae**

Botanical name: *Lippianodiflora* L.

Common name: Unknown

Part used: Whole plant

Ethnobotanical use: Whole plant is helpful in curing hepatitis. For at least one month water in which this plant is soaked over the night is given to the patient in the morning on daily basis. Leaves are considered as anti-poison. On weak knee joints, the paste of its leaves and stem is applied. The extract of this plant is used as a hair tonic which is effective in eliminating the dandruff.

Occurrence: Scarce

#### **Discussion**

Plants are essential components of life because they provide us medicines with no or minor side effects. They are vital for us because of the various biological activities are being performed by them. The present study found 40 medicinal herbs belonging to 19 families in GFP. In the present study semi-structured interviews were held in local language. Almost all of the herbs and weeds were positively identified by the informants with the common names along with their specific uses. Most of the plants we found at GFP were used for the treatment of common cold, sore throat, abdominal infections, skin disorders, hepatic diseases, eye ailments, stomach problems, fever, cough, chest congestion, asthma, joint pains etc. 29 species of medicinal plants, belonging to 18 families were also identified in kallarkahar, salt range of Pakistan [18].

The results found in the present study about the traditional uses of *Achyranthus aspera*, *Stellaria media* and *Vicia sativa* were also confirmed by reference [18] during the ethnobotanical survey of Abbottabad city.

WHO estimated in the recent years that nearly 80% of world population depends upon the herbal medicines. Similarly, 60% of the population of Pakistan relied upon the herbal medicines as prescribed by the local traditional healers [22]. The reason is that these traditional herbal medicines are inexpensive and easily accessible by the common people [24-25].

While comparing the ethnobotanical use of the species found at GFP with those mentioned in previous literature, it was found that each species is just not restricted to these ethnomedicinal values, rather, these have other reported ethnobotanical uses and benefits in other regions. Most of the shrubs found at District Kotli, Azad Jammu & Kashmir, Pakistan had more than one ethnobotanical uses [20]. According to the present study, the ethnobotanical use of *Convolvulus arvensis* is the treatment of constipation and burning wounds, whereas reference [26] found that this herb was used for washing purposes in the valleys of Gilgit. Reference [27] conducted an ethnobotanical survey in Shakargarh, District Narowal, Pakistan and they found that these plants were not only medicinal but also used as forage and fuel.



Resultantly, by virtue of this study, it was found that the old age native people have traditional knowledge on medicinal plants but the younger ones don't have much. It seemed that the treasure of the folk knowledge and practice about medicinal plants is under threat as documented by reference [20].

Reference [28] stressed for the conservation of medicinal plants in canal irrigated areas of Pakistan, especially in Punjab. GFP is also a canal irrigated; artificial raised forest but the medicinal plants here are not getting attention from park authorities. These plants are naturally growing, but no organized approach had been used to gather and grow the medicinal herbs in a proper way. Medicinal herbs should also be planted in Gatwala forest park, so that the indigenous people would have an easy access to them. But along with their cultivation and harvesting, the conservation of these valuable species should always be kept as first priority. It can be done by strict restriction on the illegal harvesting, by reducing the grazing stress and other indirect human activities (e.g. Sports, recreational tours etc) should also be controlled which could harm them.

The present study in GFP highlighted the dominance of perennial grass species as compared to other medicinal plants. The supporting fact behind this observation is that, these species have ability to grow and withstand against unfavorable conditions [29].

Hence, there is an imperative need for conducting more ethnobotanical surveys in Pakistan, in order to produce and document more information about the benefits of these marvelous species of the nature. The medicinal plants can be explored and protected by involving indigenous inhabitants by the introduction of conservation programs at local level [22].

### Conclusion

For the purpose of modernizing and improving the catalog of natural plants of Pakistan, the government should also take steps for documenting the inventory of the traditional uses of these medicinal plants. Similarly, these traditional practices should also be projected through media as well. This effort at national level will definitely aid in preserving the cultural, social and natural heritage of Pakistan with respect to herbal domestic medicinal remedies. This appraisal will serve as a first step towards the systematic documentation of an inventory of medicinally important plant species of the study area as well as the future research.

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