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Traditional uses of wild medicinally important plants of Batkhela, KPK, Pakistan

Fayaz Ali[1]*, Imran Khan[1], Shariat Ullah[2], Mohammad Ihsan[3], Amir Abdullah khan[4]

***Corresponding author:**

Fayaz Ali

[1]Department of Botany. Shaheed Benazir Bhutto University Sheringal Dir(u) KPK, Pakistan
[2]Department of Botany. University of Malakand, Chakdara KPK Pakistan
[3]Department of Botany, Hazara University Mansehra KPK, Pakistan
[4]College of Life Sciences, Department of Plant Biology and Ecology, Nankai University, Tianjin China

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Abstract

The present study was carried out in Sangina valley of Batkhela, Malakand District, Khyber Pakhtunkhwa Pakistan. The aim of the current work was the documentation of plants utilized by the local inhabitants for different medicinal purposes. Majority of cases utilized same plant species in several ways for distinct remedies. After collecting informations through an open-ended questionnaire, totality of 46 plant species used for different medicinal purposes were recorded in the study area belonging to 31 families. Family Lamiaceaeranked as top by contributing 10.86% to the total documented medicinal plant species in the studied area. Family Euphorbiaceae and family Solanacaea shares individually 8.69% and 6.52% to the total, followed by Family Mimosaceae, Asteraceae, Moraceae and family Polygonaceae each having a contribution of 4.34%. Of total 46 reported plant species, 12 plant species were used as diuretic, 8 species were found good as tonic, 7 plant species were significant in curing of cough and 6 plant species were used for remedy of stomach pain. 5 plant species each were used for curing of fever, diarrhea and dysentery.

Keywords : Medicinal plant resources, traditional uses, Plant species.

Introduction

Medicinal Plants are a good source of income [1]. Plants have been used traditionally [2] whole time all over the globe by human beings [3].Plants are utilized as a foodstuff, as a drug, as a hunting material, for clothes, in local traditions and for remedies of various diseases since time immemorial [4]. In support of medicinal purposes about 53,000 plant varieties out of 0.259 millions species of higher plants been documented worldwide [5] are acknowledged the best [6].People are using plant species for different medicinal purposes from the ancient times [7]. It is believed that business of medicinal plant species will reach to 5 trillion dollars (US) by 2050 [8,9]. However apart from medicinal uses, the plant species are also playing a central role in the perfection of the economic status of the local people [10,11]. About 80 % of world inhabitants exercise medicinal plants for their fundamental fitness care, because of handily availability and having fewer side effects as the other pharmaceuticals have [12,13]. Most of the medicinal plants are currently found facing threat of extinction due to natural and manmade hazards [14].

Ecologically Pakistan is alienated into 9 regions having 6000 plant species [15]. About 10 to 12 % of these are used for medicinal purposes [5]. According to Hocking (1985) 84% of Pakistani villagers are still practicing from practitioners of traditional drugs [16], either due to lack of proper health facilities [17], or experience of elders from several decades [18]. Ethno botany getting strength in Pakistan with time as significant amount of work has been carried out in different parts of the country [19-24,7]. Review of literature study confirms that previously no such work has carried out on the present study area. This precious knowledge is transmitted from generation to generation verbally. Aim of the present work was an attempt to document valuable information's for future. Another aim of the current survey was to take into account the medicinal plants of this area, which are being used by the people of this area from centuries.

Materials and Methods

Study area and Climate

Batkhela is the capital and largest tehsil of district malakand, Khyber Pakhtunkhwa, Pakistan. Study area is characterized by rugged terrain and vales with elevation ranging from 700-898m [25], spanning between 34.50 N latitude and 71.73 E longitudes.

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The population of Malakand is estimated to be 567,000 in 2004-05 DCR [26].This beautiful valley is covered by large mountains from all the sides. It is the meeting point of River swat and River Panjkorra flowing from Dir and Chitral. It is bounded by Dir lower at north and by Swat at east and by Bunair at south. Among the all climatic zones of Pakistan, Malakand division is a zone of rich vegetation that lies in the Sino-Japanese phyto-geographical region of the world [27]. Different areas of Malakand possess homogenous climate. However climatic data of the study were obtained from meteorological stations of Dir and are presented in figure 1. January was found the coldest month among the others. March was known for significant precipitation. June was documented the hottest month for the study area.

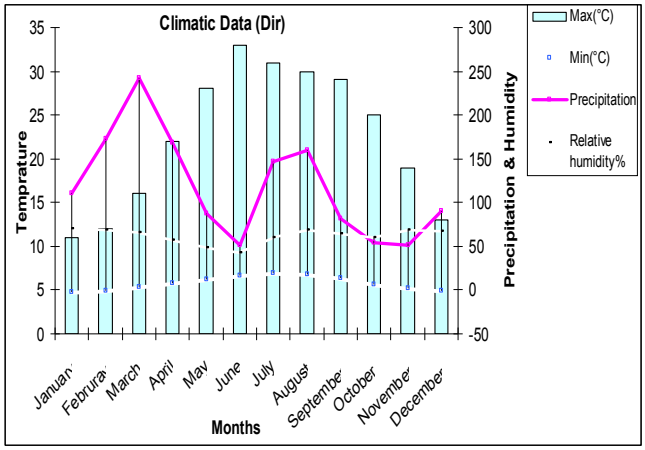

Figure 1. Climatic data of Dir Meteorological station.

Data collection

The ethno botanical survey was conceded by the start of May 2014 till the end of July 2014 in different regions of the study area. Priority is given to the areas having lack of basic health facilities. People of these areas depend on local plants directly in case of simple diseases to overcome the minor problems. The Information about the therapeutically vital plant species was gathered through a Questionnaire. The opinion poll was classified into three categorize. Category "A" contains information's about the sources; Category "B" has general data about the plant species. Category "C" incorporates data about the restorative employments of the plant species. It also contains information about the part utilized as prescriptions, uses, showcasing, dispersion, accessibility, wealth and that in which way the part is utilized for diseases. Individual' shaving age exceeding of 40 years were interviewed for data collection because of their much learning and experience. For further affirmation plants were taken to the nearby hakims (natural specialists) and pan saris (conventional businesspeople). A specific key (Table 1) is utilized for the parts of plant which are taken into utilization for restorative purposes or either some other.

Table 1. Key used for the different parts of recorded medicinally important plants of the studied area.

S.No	Part used	Key	S.No	Part used	Key
01	Pod	pd	02	Bark	bk
03	Flower	fr	04	Wood	wd
05	Fruit	ft	06	Root	rt
07	Gums	gm	08	Seed	rd
09	Latex	lx	10	Shoot	rt
11	Leaves	ls	12	Stem	rm
13	Resin	rn	14	Spikes	rs
15	Rhizome	re	16	Whole plant	rp

Aims and Objectives

the main aim of the current survey was to take into account the medicinal plants of this area, which are being used by the people of this area from centuries. It was also one of the objectives to provide awareness among the local community about the use of the plants for medicinal purposes as well as to provide information to the people about the economic values of certain plant species.

Results

Plant Habit

The study about the traditionaluses of wild plant species were carried out in Sangana valley Batkhela, Malakand division. A total of 46 medicinally important wild plant species belonging to 31 families were recorded in the study area of present work. Trees contributes 17.39% to the total documented plant species being documented in the area. Herbs shares 63.04% and declared as the highest contribution to the total followed by shrubs (19.56%)(Figure 2).

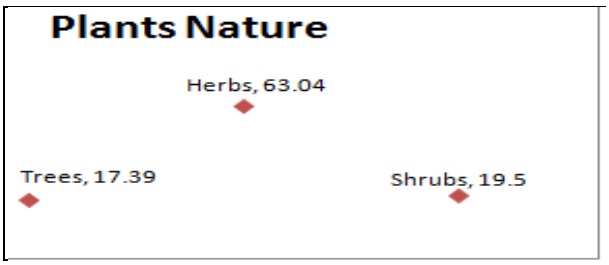

Figure. 2. Plants of different habitats

Families of Ethno botanical Importance

All the recorded 46 plant species during the present survey have countless importance in the improvement of life style of the local inhabitants in different aspects of life either directly or indirectly. Recorded species were belongs to thirty one different families which reveal the importance of these families as well as the

diversification and similarities in some cases with the plants of other regions. 7 families of these were as the dominant families on the basis of number of documented species of the study area. Family Lamiaceaeoccupy the top position by adding 10.8% of the recordred species followed by Euphorbiaceae (8.69%) as shown in figure 3. Family Solanaceae contributes 6.25% to the total, While Mimosaceae, Asteraceae, Moraceae and Polygonaceae each shares 4.34% to the total.

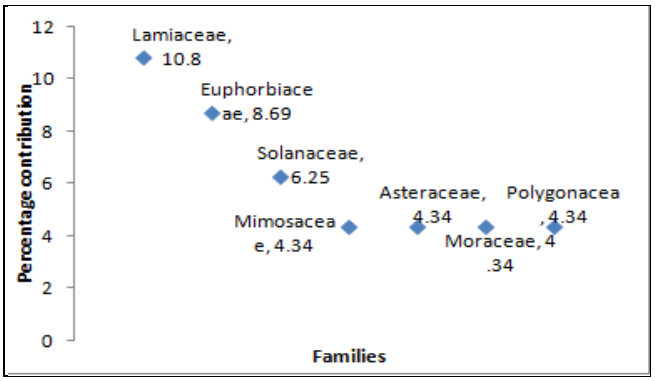

Figure 3. Graph showing fmillies contribution in percentage.

Ethno botanical survey

The study of important plant species were carried out in Sangana valley, Batkhela, which is one among the most important areas in District Malakand. In current survey the area is founded to be rich in vegetation of much value able and important plant species. Total of 46 plant species were studied in this survey used for different medicinal purposes. Within this survey the plant species were assigned to different groups on the basis of their utilization purposes. 12 plant species were recorded well as diuretic, 8 plant species were used as tonic, 7 for cough and 6 plant species were used for treatment of stomachache. The detail is shown in figure 4.

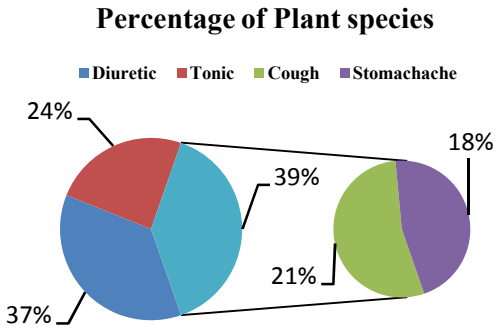

Figure 4. Number of Plants in percentage utilized for different diseases by the local inhabitants.

Economic aspects of the species

Most of the plants which are carried into consideration are naturally growing. Only few species are cultivated including *Ajugabracteosa* Wall. ex. Benth, *Brassica compestris*, *Oleaferruginea*, *Menthalongifolia*, *Berberis lyceum* Royle, *Cymbopogon citrates* (DC.) Stapf. etcfor traditional as well as for other economic purposes. Some of the documented medicinally importance plants like *Ajubabracteosa*, *Dhaturainnoxia* Mill., *Verbascumthapsus* L, *Cannabis sativa*, *Berberis lyceum* etcare wild and are exported in less quantity to the local herbs centers namely pansari stores. From Pansari stores these are then distributed to all parts of the country.

Discussion

Collection and processing of plants around the globe has been there for centuries in order to cure different ailments of humans as well as animals in each and every culture of the world [28]. About 70-80% of the total population of world uses plants as a source of medicine while in early 1970 about 84% of Pakistani population was found to be using plants for medicinal purposes, still 80% of the rural community uses plants for prime health needs [29]. It is estimated by WHO that about 80 percent of Asia population cannot afford basic health facilities therefore they depend on plant resources which are easily accessible and effective to use.In Pakistan 6000 species of higher plants are found, among which 12% are used for medicinal purposes (Khan et al., 2015). In the current ethnobotanical survey a total of 46 plants belonging to 31 families of important medicinal uses have been studied. All of these species are used for different disorders which are; 2 species for gums bleeding, 6 species for diarrhea and dysentery, 8 species as expectorant, 2 species as anti-diabetic, 2 species for chest infections, 8 species as blood purifier, 5 species for wound healing, 8 species as anti-diuretic, 5 as anti-asthmatic, 4 species for digestive disorders, 8 species for cough, 2 species as tonic, 3 species as anti-rheumatic, 2 species for urinary disorders, 7 species as purgative, 2 species as sedative, 3 species as laxative, 2 species for nausea and vomiting, 2 species as anti-helminthic and 2 species as anti-diaphoretic. All these plants are presented in table 2 along with local names, scientific names, part used, local uses and habit. The main aim of the study was to document the local uses of plants been used by the local community for different ailments. These plants resources help in uplifting the economic status of community and cure of different diseases for local community.

Some of these plants are used ethnobotanically for many purposes and have many uses e.g Oil from *Brassica campestris*seed are used for controlling hair fall, skeletal muscle relaxation and are also given to cattle's for increasing of milk production. Leaves of this species are used as vegetables to cure digestive disorders. In the same way *Ajugabracteosa* is used for the treatment of diabetes, chest ailments and throat pain. Aqueous extract of the shoot is

used as a blood purifier, healing of external wounds and is also used in nasal infections particularly for removal of nose lumps. So plants are natural upholder of several natural chemical compounds which are used for multi purposes (Table-2).

Table 2: Ethnobotanical information of plants from Sangina valley Batkhela, Pakistan.

S.no	Scientific Name	Local Name	Habit	Family	Part Used	Uses
01	*Acacia farnesiana*(L.) Wild.	VilayatiKikar.	T	Mimosaceae	bk,pd	Bark is used for controlling in bleeding of gums. Pod is used for the treatment of prolapsed rectum.
02	*Acacia nilotica* (L.) Delile.	Kikar	T	Mimosaceae	bk,gm,sd ,wd	Bark is found good in treatment of diarrhea and dysentery. Seeds and gums are used as expectorant. Wood is used for cleaning of teeth (making tooth brushes)
03	*Ajugabracteosa*Wall.ex.Benth	Boti	H	Lamiaceae	wp	Used for the treatment of diabetes, chest ailments and throat pain. Aqueous extract of the shoot is used as a blood purifier. For healing of external wounds. Also used in nasal infections particularly for removal of lump.
04	*Berberis lyceum* Royle.	Kwarey	S	Berberidaceae	rt,ft,st	Boiled water of root are used as blood purifier and for the treatment of internal wounds. Root and stem powder are external wounds healing. Fruit of this species is edible (source of food).
05	*Boerhaviaprocumbens* Banks.ex.Roxb.	Itsit	H	Nyctaginaceae	wp	Found satisfactory as diuretic, expectorant and anti-asthmatic. Also help in regulation of menstrual cycle when used with mild laxatives.
06	*Brassica compestris*(Linn.)Clapham	Sarsoo	H	Brassicaceae	sd,ls	Oil of seed are used for controlling of hair fall and for skeletal muscle relaxation. Oil are also given to cattles for increasing of milk production. Leaves of this species are used as vegetables to cure digestive disorders.
07	*Calotropisprocera*(Willd.) R.Brown	Spalmai	S	Campanulaceae	wp	Flower powder is used for curing of cough and asthma. Leaves are for controlling of fever. Root is recorded good as expectorant.
08	*Cannnabis sativa* L.	Bhang	H	Cannabinaceae	ls	Hashish is prepared from female plant of this species. Used as expectorant. Found good in treatment of fever and pain.
09	*Capsella bursa-pastoris*(Linn.) Medic.	Chambraka	H	Brassicaceae	wp	It is used for controlling of high blood pressure.
10	*Centaureaiberica*Trevir	Kareza	H	Celastraceae	sd,sp	Seeds are helpful in heart

	ex. Sprengel					problems, stomach pain and as a tonic. Spines are found good in curing of sexual diseases.
11	*Chenopodiumbotrys*L.	SkhaKharawa	H	Chenopodiaceae	wp	Used in hepatic disorder, cough and in enlarged spleen. The roots are used in urinary diseases, rheumatism.
12	*Chorozophoratinctoria*(L.)Raffin	Kuronda	H	Euphorbiaceae	wp	This species is poisonous, emetic and cathartic.
13	*Cichoriumintybus*L.	Han	H	Asteraceae	ls,rt	Found good in dissolving of digestive problems by increasing the secretion of bile. Used for curing of asthma, as tonic and for spleen enlargement.
14	*Cotoneaster microphyllus*Wall.ex Lindley	Mamanra	S	Rosaceae	ls,rt	Leaves are used for incense. Roots are used as good soil binder due to its extensive root system. Stem is also used for making baskets.
15	*Cymbopogon citrates* (DC.) Stapf.	Lemon grass	H	Poaceae	ls	Its main use is in the production of ionone, a synthetic perfume with the adour of violets, but recently it has become increasingly important as a starting point for the synthesis of vitamin-A. Infused leaves are used as herbal tea; oil is used as a relaxant in bath water and to clean oily skin
16	*Daphne mucronata*Royle	Leghone	S	Thymelaceae	wp	Fruit are purgative. Bark and leaves are used as poultice for tumours, swellings and rheumatism. Root is gastro-intestinal irritant.
17	*Dodoneaviscosa*L.	Ghwarhaskey	S	Spindaceae	bk,sd, ls	Bark is used as a plaster for fractured or misplaced bones. Powdered seeds are used for body pains. The leaves are used as bandages for wounds healing and for discharging of pus.
18	*Dhaturainnoxia*Mill.	Dhatura	H	Datiscaceae	sd,ls	Sees are highly poisonous and used as sedative. Leaves are used as antiseptic and for curing of eye disorders.
19	*Eucalyptus lanceolata*L.	Lachi	T	Myrtinaceae	gm	Its wood is used as fuel, for timber, and for thatching purposes. The powdered seeds are used for curing cough. Also used as mosquito repellent.
20	*Euphorbia helioscopia*Linn.	Mandarro	H	Euphorbiaceae	rt,st	Local hakims use this plant as a laxative. The latex produces swelling on the skin. Used as rodenticide in homes.
21	*Euphorbia hirta*Linn.	Dudli	H	Euphorbiaceae	wp	Used as remedy for coughs, bronchial and pulmonary disorders.

						Also good as diuretic and expectorant. In large doses it causes nausea and vomiting.
22	*FilagoHurdwarica*(Wall .ex DC.)Wagenitz		H	Fagaceae	wp	
23	*Fumariaindica*(Haussk n.)Pugsley	Shahtra/Kra chy	H	Fumaricaceae	wp	Whole plant is used for curing of asthma and paralysis. Leaves are used to cure cough.
24	*Convulvulusarvensis*(L inn.) Roth	Prewata	H	Convolvulaceae	sd,rt	Seeds and roots are used as purgative. Causing nausea, vomiting and certain serious disturbances to Central Nervous System (CNS), colour blindness, dilation of pupil and hallucinations.
25	*Meliaazedarach*Linn.	Thorashand ai	T	Meliaceae	wp	Fruit and leaves are used as antihelminthic. Bark is good in curing of tooth ache. Wood is used for burning purposes.
26	*Menthaarvensis*Linn.	Pudina	H	Lamiaceae	wp	Use as antispasmodic , diuretic, for diarrhea, for abdominal pain and for digestive disorders.
27	*Menthalongifolia*L.	Enaley	H	Lamiaceae	wp	Used for the disorders of digestive system. The leaves are dried, powdered, and then used for stomach ache and as a carminative.
28	*Morus alba* L.	Bedana Toot	T	Moraceae	bk,ft	Bark is purgative and used as antihelminthic. Fruit is refrigerant in fever and used as remedy for sore throat.
29	*Morusnigra*L.	Toot siah	T	Moraceae	bk,ft	Fruit is nutritive and also useful in laxatives. Bark is used as expectorant and inhibit tumor formation. Also good in controlling of sugar level in blood.
30	*Nerium oleander* L.	Gandhery	S	Apocyanaceae	wp	The plant is useful as diuretic. Sometime it is also used as a cathartic.
31	*Oleaferruginea*Royle	Khuna	T	Oleaceae	ft,bk,ls	Oil from fruits is edible and also use for curing of pain in joints. Bark is good as antihelminthic. Leaves are found good as antidiabatic and anti hepatitic.
32	*Otostegialimbata*(Bent h) Boiss	Spin azghay	S	Lamiaceae	wp	Used for curing of different gum diseases. Also found good in healing of wounds.
33	*Oxalis corniculata* L.	Tharuky	H	Oxalidaceae	wp	The plant is edible having sour taste and used as antidiabatic. Also used in cases of severe fever and stomachache.
34	*Physalis minima* L.	Aknaj	H	Solanaceae	ft	Fruit is found as a diuretic and tonic. Juice from roots are also

						used in otitis.
35	*Plantagolanceolata* Linn.	Ghwajabai	H	Plantaginaceae	ls,sd	Leaves when boiled in water are used against chest infection. Seeds are purgative.
36	*Platanusorientalis*L.	Chinar	T	Platanaceae	ls,bk	Fresh leaves are applied for curing of different eye problems. Bark is boiled in water with vinegar and is used in hernia, toothache, diarrhea and dysentery.
37	*Ricinuscommunis*L.	Herhundha	S	Euphorbiaceae	sd	Oil from the seeds is utilized as purgative, counter irritant in scorpion sting. Seed oil of this species with almond oil is also used for controlling of hair fall.
38	*Rumexdentatus*L.	Shalkhey	H	Polygonaceae	rt,ls	It is used as a vegetable and as a purgative. Also used as antidiabetic.
39	*Rumexnepalensis*L.	Tharukey	H	Polygonaceae	rt	Roots are are found good as purgative and are used as substitute for *Rheum emodi.*
40	*Salvia moorcroftiana*L.	Khardhug	H	Rutaceae	rt,ls	Roots are used in case of diarrhea. Leaves of this species are used to cure cough, for healing of wounds and to relieve body pain.
41	*Solanumnigrum*Auct.	Kachmacho	H	Solanaceae	wp	Fruit is used anti hepatitis and internal abdominal inflammations. Leaves are used for kidney stones. Fruit is edible.
42	*Solanumsurattense*Bur m f.	Maraghonai	H	Solanaceae	wp	The plant is diuretic. Used to cure dropsy,cough,asthma and sore throat. Also used as pain killer in rheumatism.
43	*Teucriumstocksianum* Boiss.	Kharbotey	H	Lamiaceae	wp	Used as stimulant, diaphoretic, diuretic and very useful in jaundice
44	*Tribulusterrestris*Linn.	Markondai	H	Zygophyllaceae	Ft	Fruit is very useful in urinary disorders, impotence, cough, heart diseases, ulcerated gums,sermatorrhoea, and haemorrhages.
45	*Verbascumthapsus*L	Kharghwag	H	Valerianaceae	sd,ls,rt	
46	*Xanthium strumarium*Linn.	Ghiskey	H	Asteraceae	wp	Plant is sedative, emollient, astringent, diuretic, strong diaphoretic, demulcent, used in otitis, mouth, ulcers and toothache.

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