Pak. J. Weed Sci. Res., 20(3): 359-373, 2014

MEDICINAL PLANTS USED IN THE ISOLATED REGION OF BUMBURET, KALASH VALLEY, DISTRICT CHITRAL, PAKISTAN

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ABSTRACT

This study was designed to record the endemic knowledge and practices regarding the medicinal plants used in Bumburet Kalash Valley of district Chitral, Pakistan. Sixty-two taxa were found medicinal belonging to 37 families and 57 genera, among them 32 species were angiosperms, in which 31 were dicots, one was monocot, while two were pteridophytes and one was gymnosperm. Our results showed that these species were used for 116 different kinds of diseases and ailments by the local inhabitants. In majority of the cases of herbaceous plants, the decoction was used by the local community, while recipes were prepared from different parts of various plants including root, rhizome, bark, leaves, fronds, flowers, fruits and seeds. All these plants are collected from the wild and only 8 species were found scarcely distributed in the area. Anthropogenic activities, unscientific collection, over harvesting, over exploitation, grazing, terracing, agricultural practices, soil erosion and deforestation were the main causes of depletion of the local flora. As the Kalash people are living in the isolated region of the country and they use plants for various medicinal purposes in curing different diseases, therefore, loss of these plants will result in the loss of the existing health care system in the area. It is important to carry out measures for the conservation of natural plants resources especially medicinal plants of Bumburet, Kalash Valley of Chitral.

Key words: Chitral, endemic knowledge, ethnobotany, Kalash valley, medicinal plants, Pakistan.

Citation: Ullah, A., A. Rashid and S.N. Parveen. 2014. Medicinal plants used in the isolated region of Bumburet, Kalash valley, district Chitral, Pakistan. Pak. J. Weed Sci. Res. 20(3): 359-373.

INTRODUCTION

The area lies between 71^0 $25^/$ and 71^0 $45^/$ Long. E. and 35^0 $33^/$ and 35^0 $55^/$ Lat. N with Lotkoh (Biron Shahi) on the north, Drosh in the

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south, Broz and Chitral in the east and Afghanistan on the west (Fig. 1). It stretches over an area of 210 sq. km. and holds a population of 16,028 persons. The Kalash tribe comprises of about 3,000 souls having their own belief, primitive and unique customs and traditions (Anonymous, 1998). The valley is rich in plant natural resources and is less disturbed presenting a tract of highly mountainous with steep to very steep slopes and diverse altitudinal and topographic variation. Some workers have carried out studies on the plant natural resources of District Chitral and adjoining District i.e. (Shinwari and Qaiser, 2011; Hazrat *et al*., 2011; Hussain *et al*., 2011; Jan *et al*., 2011; Ullah and Rashid, 2011; Ullah and Rashid, 2007; Khan and Khatoon, 2008; Qureshi *et al*., 2009; Ullah *et al*., 2009; Hazrat *et al*., 2010; Abbasi *et al*., 2010; Ullah *et al.,* 2006; Ullah *et al.,* 2005; Shinwari *et al.,* 2002; Shinwari *et al.,* 2003; Thomas and Shengji, 2003). It is believed that about 70-80% of the world population use traditional medicine for curing their illness and ailments (Farnsworth and Soejarto, 1991; Pei, 2001). The percentage of was decreased in developed countries 40-50% in Germany, 42% in the USA, 48% in Australia and 49% in France (Titz, 2004). It might be due to the decrease of medicinal plants in the wild habitat. For the period of 1991-2003, an average of 467,000 tones (valued at US $ 1.2 billion) of pharmaceutical plants were traded globally, with the dominance of few countries (Lange, 2006). For Pakistan a total of 1572 genera and 5521 species are identified (Ali, 2008), most of which are confined to the mountainous areas (Ali and Qaiser, 1986). Very few attempts have been made to document the medicinal uses of plants such as Sher (2002) and Ahmad and Sher (2003). But no studies and authentic herbarium specimens are collected by these workers. Many of the species reported in these studies are collected from rest of the Chitral District. Hussain (2003) collected ethnobotanical information of 19 fruit plants and, similarly, Hussain *et al.* (2007) documented the uses of 111 plants of Mastuj.

However, Ali and Qaiser (2009) carried out detail studies on the ethnobotany of the Chitral Valley and made collection from Bumburet and Birir but no intensive studies have been carried out on Bumburet Valley. Some work has been carried out by Khan *et al*. (2011) on the important medicinal plants of Chitral Gol National Park and Shaheen *et al*. (2012) on phytodiversity and endemic richness of Karambar Lake Vegetation from Chitral but none of them reported medicinal plants from Bumburet Kalash Valley Chitral. The present research deals with the medicinal plant wealth, which are generally in practice by the local inhabitants in Bumburet Kalash Valley for various purposes. The present study is to document the indigenous knowledge regarding

medicinal plants growing in the Valley and it will provide baseline information for further research.

MATERIALS AND METHODS

Thorough field studies were conducted throughout Bumburet Kalash Valley Chitral. The data was collected from May to September for two years2010-2012 and studies were carried out at 18 localities. Emphasis was given to the previously un-explored and non-investigated areas and collection was made during one week period with the help of local guide. Field notes were recorded including various information regarding the plant i.e. habit, flowering period, phenology, altitude and GPS data etc.

At each locality local inhabitants were interviewed regarding local name, part used, recipe and medicinal uses belonging to diverse age groups. The collected information was made authentic and more reliable by comparing the data collected from diverse age groups. For data collection semi-structured questionnaire was used with modification from Ali and Qaiser (2009), Croom (1983), and Lipp (1989). Majority of the informants were uneducated and reluctant while giving the information but complete information and procedure regarding the recipe and medicinal uses was extracted through local guide.

The collected specimens were pressed, dried, mounted on the herbarium sheets and the vouchers specimens were deposited at University of Peshawar Herbarium (PUP). Identification was carried out with the help of Floras and other available literature and nomenclature is based on Flora of Pakistan (Nasir and Ali, 1970-1989; Ali and Nasir, 1989-1991; Ali and Qaiser, 1993-2012) while for medicinal terminology Boulos (1983) was followed.

RESULTS AND DISCUSSION

Sixty two (62) species were medicinal belonging to 37 families and 57 genera, 32 were Angiosperms, in which 31 were dicots, one was monocot, while two were Pteridophytes and one was Gymnosperm. Asteraceae with 7 species was the leading one followed by Chenopodiaceae (4 species), Brassicaceae, Labiatae and Rosaceae with 3 species each. Amaranthaceae, Apiaceae, Elaeagnaceae, Moraceae, Papilionaceae, Pinaceae, Plantaginaceae, Poaceae, Polygoniaceae and Scrophulariaceae with 2 species each.Adiantaceae, Berberidaceae, Boraginaceae, Cannabinaceae, Capparidaceae, Convolvulaceae, Cucurbitaceae, Equisetaceae, Fagaceae, Geraniaceae, Hypericaceae, Juglandaceae, Linaceae, Malvaceae, Oxalidaceae, Platanaceae, Punicaceae, Ranunculaceae, Solanaceae, Urticaceae, Violaceae and Verbenaceae with one species each. The species of

medicinal uses are classified on their utilitarian basis discussed in the following paragraphs. Plant utilization by the isolated communities for curing various ailments have supplied tremendous information which can be properly utilized in planning for utilization of the endemic knowledge for better planning of the plant natural resources for the well-being of the community in general and for medicinal plants utilization in particular (Table-1).

Medicinal plants are used by the human beings since long (Lama *et al.,* 2001; Partel *et al.,* 2005). While, Rigveda between 4500-1600 BC and Ayurveda Between 2500-600 BC are the first medicinal books in the sub-continent. The medicinal plants practice is very old and in present era of technology still people believe in traditional use of medicinal plants (Ali and Qaiser, 2009). The people of the valley are using 62 taxa for curing various for curing 116 different kinds of diseases and ailments including abdominal pain, acute appendicitis, anasarca, anti-diabetic, anti-scorbutic, antispasmodic, aphrodisiac, appetite, aromatic, arthralgia, asthma, astringent, backache, binding, bladder disease, bleeding, blister, bloating in animals, blood purifier, bloody stool, boils, bone fracture, bronchitis, broken bone, carminative, chest infection, chuttnies, cleaner, constipation, cold, coloring agent, cooling, corroborant, cracked bone, demulcent, diarrhea, diaphoretic, digestive, disagreeable, diuretic, dropsy, dye, dysentery, dyspepsia, earache, edible, eczema, emetic, emmenagogue, emollient, epilepsy, expectorant, face pack, febrifuge, fever, fish poison, flatulence, flavoring agent, flues, fodder, glactagouge, germicide, headache, heart, hemorrhoids, hepatitis, homeostatic, influenza, inflamed surface, intermittent fever, iron source, irritated eye, insect attack, jaundice, laxative, legendary drug, loose emotions, lungs, malaria, mouth wash, narcotic, nervine, noxious, pest attack, piles, pimples, prunitis, pulmonary disorder, purgative, refrigerant, repellent, rheumatism, sedative, skin disease, sore eye, sore throat, spice, cracked heels, stabbing pain, stimulant, stings, stomachic, swelling, tea, tonic, tonsillitis, toothache, toxic, typhoid, urinary bladder, urinary infection, vegetable, vermifuge, vomiting, whooping cough and wounds.

The inhabitants of the Bumburet Kalash Valley are living in the isolated region of the country and they are more dependent on plants as compare to other areas. Proper training, education regarding importance of medicinal plants and proper harvesting techniques are of imminent importance for the proper exploitation and exploration of the plant natural resources growing in the area. The local people are unaware about the importance of plants as medicines and its role in global economy. It has been noticed that majority of the collectors are small children or women and they are not aware about the proper

collection, drying and storing and marketing procedure. Six species are scarcely distributed in the valley i.e. *Berberis lycium*, *Hippophae rhamnoides*, *Hypericum perforatum*, *Thymus linearis*, *Cedrus deodara* and *Viola biflora*. While two species i.e. *Crataegus songarica* and *Elaeagnus angustifolia* are collected from very few localities and are under severe stress and it is feared that they may be finished from the Valley in near future. Moreover, due to lack of awareness regarding importance of medicinal plants the local plant wealth has been wasting with rapid rate. Further due to its unique culture and tourism attraction the plant biodiversity is severely affected and it is suggested that proper measures should be taken to ensure the sustainable utilization and proper exploitation of the medicinal plants growing in the area.

CONCLUSION

In the survey, 62plant species were found medicinal that belonged to 37 families. These 62 species comprised of 32 angiosperm species (31 dicots and one monocot), two pteridophytes and one gymnosperm species, which were used for 116 different ailments in form of decoctions. Different plant parts including root, rhizome, bark, leaves, fronds, flowers, fruits and seeds were used. Anthropogenic activities, unscientific collection, over harvesting, over exploitation, grazing, terracing, agricultural practices, soil erosion and deforestation were the main causes of depletion of the local flora. The loss of these plants will result in the loss of the existing health care system in the area, as the inhabitants only use the plants for cure of diseases. Conservation of the natural plant resources in this area is inevitable.

Table-1. Family, botanical name, local name, recipes and medicinal uses of important plant species distributedin the BumburetKalashvalley, Chitral, Pakistan

S #	Family	Botanical Name	Local Name Vr. Nos.	Recipes/part used	Medicinal Uses
1.	Adiantaceae	*Adiantum venustum* D. Don.	Sumbul 01 (PUP)	Decoction of fronds is prepared and used	Scorpion bites, expectorant, emetic and diuretic
2.	Amaranthaceae	*Achyranthus aspera* L.	Jishkay 02 (PUP)	Decoction of leaves is prepared and used	Blister, bone fracture, tonsitillitis, release abscess and boils
		Amaranthus viridis L.	Chalwai 03 (PUP)	The are cooked as vegetable and taken directly	Vegetable, laxative, abscesses and boils
3.	Apiaceae	*Coriandrum sativum*L.	Danu 04 (PUP)	Fresh leaves and dried fruits are directly used	Spices and digestive
		Foeniculum vulgare Miller.	Bodyong 05 (PUP)	Fresh leaves and dried fruits are directly used	Flues, bronchitis, backache and abdominal pain, vegetable spice and carminative
4.	Asteraceae	*Anthemis cotula* L.	Shirisht 06 (PUP)	Tea is prepared from floral parts both in fresh and dried condition	Flavouring, aromatic, toxic, antispasmodic, astringent, diaphoretic, diuretic, emetic, emmenagogue, stings, tonic, dye, repellent, disagreeable odour and noxious
		Artemesia persica Boiss.	Zhga 07 (PUP)	Decoction and dry powder is used	Tonic, febrifuge and Vermifuge
		Artemesia rutifolia Steph. ex Spreng	Dron 08 (PUP)	Decoction and dry powder is used	Febrifuge, tonic and vermifuge
		Conyza aegyptiaca Ait.	Waregakai 09 (PUP)	Fresh decoction of leaves is used	Homeostatic, stimulant, diuretic, astringent, diarrhea and dysentery
		Taraxacum officinale L.	Phovoo 10 (PUP)	Dried powder of rhizome/roots is used	Laxative and is given in constipation
		Bidens chinensis (L.) Willd.	Unknown 11 (PUP)	Tea is prepared from floral parts both in fresh and	Acute, appendicitis, dyspepsia, malaria, colds influenza, fever, sore

				dried condition	throat and eczema
		Bidens tripartitea L.	Unknown 12 (PUP)	Tea is prepared from floral parts both in fresh and dried condition	Influenza, colds, fever, sore throat, hepatitis, acute appendicitis, dysentery, rheumatic arthralgia, malaria, hemorrhoids and prunitis
5.	Berberidaceae	*Berberis lyceum* Royle	Chovenj 13 (PUP)	Dry powder of the rhizome and fresh drink of fruits are taken directly	Backache antispasmodic, pharyngitis, relief of intestinal coilic and intestinal wounds
6.	Boraginaceae	*Cynoglossum glochidiatum* Wall. exBenth.	Shamakai 14 (PUP)	Dry root powder mixed with sugar is taken directly	Anti vomiting
7.	Brassicaceae	*Capsella bursa-pastoris*L.	Shaftaljoshu 15 (PUP)	Leaves are used as vegetable and seeds are collected and taken directly	Stimulant, diuretic, stop bleeding, stimulant, astringent and in dropsy
		Sisymbrium irio L.	Khelikheli 16 (PUP)	Seeds are collected and used in preparation of various drinks like lassi and local achar.	Stabbing pain, diarrhea, bloody stool, bronchitis, as face pack, to clear facial pimples, throat and chest infections, expectorant, stimulant, used in asthma and febrifuge
		Nasturtium officinale R.Br.	Shashakh 17 (PUP)	The leaves of plant are fried and used as a vegetable	Anti diabetic, binding, stomachic, appetites, vermifuge and in chest troubles
		Lepidium sativum L.	Notknown 18 (PUP)	Fruits are collected and mixed with ghur or sugar and taken orally	Detoxifier, nutritional component is vitamin C. traditional medicinal remedies are made from the leaves, also used in belly complaints against drastic irregularity
8.	Cannabinaceae	*Cannabis sativa* L.	Bhong 19 (PUP)	Floral buds are used in preparation of special	Abdominal swelling / bloating in animals, narcotic, laxative,

				drinks called thandai and then it is taken orally	sedative, stimulant, scorpion and other insect bites
9.	Capparidaceae	*Capparis spinosa* L.	Kawir 20 (PUP)	Floral buds are used as vegetable	Typhoid, malaria, face pack, abdominal pain, pimples, sun block and "Parpi" a legendary drug
10	Chenopodiaceae	*Chenopodium album* L.	Khudoor 21 (PUP)	Whole plant is used as vegetable	Blood purifier, piles, laxative, jaundice, blood purifier, laxative and piles
		Chenopodium botrys L.	Kunakh 22 (PUP)	Decoction of the plant is prepared and taken	The plant is antiasthmatic, used in treatment of catarrh and anthelmintic
		Chenopodium murale L.	Darkunakh 23 (PUP)	Whole plant is used as vegetable	Diuretic, aphrodisiac, anthelmintic, abdominal pain, in piles and sore eye
11.	Convolvulaceae	*Convolvulus arvensis* W. & A.	Polinijoshu 24 (PUP)	Decoction of leaves and roots is prepared and taken	Epilepsy and sexual debility
12.	Cucurbitaceae	*Cucurbeta pepo* L.	Kado 25 (PUP)	The fruit is cooked as vegetable and taken	Vegetable, Jaundice, heart and stomach problems
13.	Elaeagnaceae	*Elaeagnus angustifolia* L.	Shunjor 26 (PUP)	The fruits are collected and drink is prepared, fruits are also taken directly	The yellow flowers have a strong pleasant odour, the acid fruit is astringent and can be eaten, used in sore throat and temperature
		Hippophae rhamnoides L.	Mirginz 27 (PUP)	Fruits are collected and taken directly	Irritated eyes, abdominal pain, anthelmintic and split heels
14.	Equisetaceae	*Equisetum debile* Roxb. ex Vaucher.	Bandakai 28 (PUP)	Decoction of the whole plant is prepared and taken	Expulsion of calculus from kidneys, diuretic, astringent, dropsy, affections spitting of blood, in acidity of the stomach, dyspepsia, haemorrhage, cystic ulceration and ulcers bleeding of wounds
15.	Fagaceae	*Quercus*	Banj	The poultice of bark and	Broken and cracked bones, urinary

		semecarpifolia Smith.	29 (PUP)	cooked fruits are taken	infection and as a tonic
16.	Geraniaceae	*Geranium wallichianum* D. Don ex Sweet	Regzeley 30 (PUP)	Rhizome is grinded and mixed with Halwa and taken	Tonic and in backache
17.	Hypericaceae	*Hypericum perforatum* L.	Not known 31 (PUP)	Decoction of flowers lowers and leaves and sometimes dried leaves and flowers are used for preparing tea.	Medicinal properties, antidepressant antispasmodic cholagogue astringent sedative analgesic antiviral, wound healer, encouraging the formation of granulation tissue and promoting nerve repair, stomach ulcers, rheumatism, neuralgia, sciatica and shingles, wounds, sunburn, burns, and post-operative scars, colic, aches and pains, inflammation of the digestive tract and bed-wetting
18.	Juglandaceae	*Juglans regia* L.	Birmogh 32 (PUP)	Bark is used as a Maswak and lipstick, the seed are taken directly	Dye, eczema and intestinal worms
19.	Lamiaceae (Labiataea)	*Mentha longifolia* (L.) Huds.	Bain 33 (PUP)	Fresh and dry grinded leaves are mixed with curd and taken orally	Vomiting, diarrhea, dysentery and carminative
		Mentha piperita L.	Podina 34 (PUP)	Fresh and dry grinded leaves are mixed with curd and taken orally	Dyspepsia, stimulant, carminative and used as mouthwash
		Origanum vulgare L.	Ishpain 35 (PUP)	Decoction of the whole plant is used	Flavoring agent, toothache and earache and diuretic
		Thymus linearis Benth.	Unknown 36 (PUP)	Decoction of fresh and dry grinded leaves are mixed with	Leaves are dried and used as a tea and to flavors meat dishes
20.	Linaceae	*Linum perenne* L.	Shintiki	Seeds are mixed with	Antirheumatic, carminative,

			37 (PUP)	ghuror sugar	emollient, ophthalmic, poultice and stomachic
21.	Malvaceae	*Malva neglecta* Wallr.	Yorpghuzu 38 (PUP)	The plant is used as a vegetable and taken directly	Headache, purgative for the young once of domestic animals and used in joshanda
22.	Moraceae	*Ficus palmate* Forssk.	Kowait 39 (PUP)	The fresh and dried fruits are collected and taken directly	Demulcent and laxative, lungs, urinary bladder, constipation and piles
		Morus alba L.	Mrach 40 (PUP)	The fresh and dried fruits are collected and taken directly	Purgative, edible and purgative
23.	Oxalidaceae	*Oxalis corniculuata* L.	Mayonogam buri 41 (PUP)	The plant is used as vegetable	Stomachache, cleaner, stops the bleeding, refrigerant and anathematic
24.	Papilionaceae	*Melilotus albus* Desr.	Zarwak 42 (PUP)	The plant is used as vegetable	Emollient, swelling and used in diarrhea
		Trifolium repens L.	Shabluki 43 (PUP)	The plant is used as vegetable	It is used as fodder for cattle and demulcent
25.	Pinaceae	*Pinus gerardiana* Wallich ex Lambert.	Chalghoza 44 (PUP)	The seeds are collected and taken directly	Tonic and edible
		Cedrus deodara (Roxb. ex D. Don) G. Don.	Dow 45 (PUP)	The gum obtained from the trunk are collected and the seeds are used directly	Carminative, fever, flatulence and is used as pulmonary, urinary disorders, astringent and skin diseases
26.	Platanaceae	*Platanus orientalis* L.	Chinar 46 (PUP)	Decoction of bark is used	Toothache and diarrhea
27.	Plantaginacea e	*Plantago lanceolata* L.	Boieko-ligini 47 (PUP)	The seeds are collected, dried, mixed with milk or curd and taken directly	Diarrhea, fever, loose motions, constipation, sore, wounds and inflamed surfaces
		Plantago major L.	BronoAchar 48 (PUP)	The seeds are collected, dried, mixed with milk or curd and taken directly	Boils and stabbing pain

28.	Poaceae	*Cynodon dactylon* (L.) Pers.	Ghass 49 (PUP)	Decoction of the plant is prepared and taken	Blood purifier, diuretic, dropsy, anasarca, astringent, bleeding, cuts and wounds
29.	Polygonaceae	*Rumex hastatus* D. Don.	Sirkonzu 50 (PUP)	The plant is used as a vegetable	Chuttnies, increase appetite, purgative, astringent and diuretic
		Rumex nepalensis Spreng.	Sirkonzu 51 (PUP)	The plant is used as a vegetable	Purgative, cooling and astringent
30.	Punicaceae	*Punica granatum* L.	Daldum 52 (PUP)	The fruits rind and seed are taken directly both in fresh and dried forms	Vermifuge, stomach complaints, diarrhea, dysentery, swelling, astringent, cooling, blood purifier, whooping cough, laxative
31.	Ranunculaceae	*Clematis orientalis* L.	Chontruk 53 (PUP)	Decoction of flower and fruits is taken directly	Diarrhea, dysentery and eczema
32.	Rosaceae	*Crataegus songarica* C. Koch	Gooni 54 (PUP)	The fruit are collected, dried and taken directly	Leaves used as fodder, wood for fuel requirements, Fruits are edible,Cardiotonic, hypotensive, wood-heavy, hard, tough, close-grained, useful for making tool handles, mallets and other small items
		Malus pumila Mill.	Palogh 55 (PUP)	The fruits are taken directly	Purgative, source of iron, expectorant, used in jams and jellies
		Rubus nepalensis L.	Achu 56 (PUP)	The fruit are collected and drink is prepared and taken orally	Tonic, sexual debility, edible, carminative, diarrhea, diuretic, astringent, looseness of bowels, drinks and wines
		Prunus armeniaca L.	Zhuli 57 (PUP)	The fruit id taken directly	Laxative, gum and sexual stimulant
33.	Scrophulariaceae	*Verbascum thapsus* L.	Gordogh-karu	Decoction of the plant and seed are collected and	Abdominal pain, coloring agent, narcotic and used as fish poison

			58 (PUP)	used directly	
34.	Solanaceae	*Solanum nigrum* L.	Pirmilik 59 (PUP)	The decoction of the plant and fruits are prepared and taken	Skin diseases, germicide, pain, carminative, tonic, intestinal worms and swelling
35.	Urticaceae	*Urtica dioica* L.	Drozunu 60 (PUP)	Decoction of the plant is prepared and used directly	Astringent, anathematic, jaundice and diuretic
36.	Violaceae	*Viola biflora* L.	Melkon 61 (PUP)	Fruits are taken directly and local drinks are prepared from the fruits which are very famous and common among the locals.	Malaria, intermittent fever, diarrhea and coolness of the body, blood purifier, nervine, corroborant, antispasmodic, febrifuge, tonic, aphrodisiac, antiscorbutic, glactagouge, emetic, diuretic and in whooping cough
37.	Verbenaceae	*Vitex negundo* L.	Un known 62 (PUP)	The decoction of leaves and roots is taken directly	Pain of chest and back, insect and pest attack, headache, gum diseases and skin disorder

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