INT. J. BIOL. BIOTECH., 7 (4): 409-416, 2010.

ETHNOMEDICINAL STUDY OF MARGHAZAR VALLEY, PAKISTAN

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ABSTRACT

A study of indigenous medicinal plants of Marghazar valley, District Swat Pakistan was conducted during summer 2006. The study revealed 69 species belonging to 53 families. It included 48 Angiospermic families, 2 Gymnospermic and 1 Pteridophyte and of potential medicinal value in the area.

Key words: medicinial plants, Marghazar valley, Swat, Pakistan.

INTRODUCTION

Plants are the primary producers of the ecosystem and the basic unit of life. Plants not only provide food, fiber and shelter for human beings and animals but they contain a wide range of chemical compounds which are used in pharmaceuticals, flavors, fragrance, colors & as insecticides. Zaman & Khan (1970) listed 100 drug plants of West Pakistan with their uses. Feo *et al*. (1992) studied both wild and cultivated medicinal plants of Caserta, Italy. They reported that 100 species belonging to 40 families were used for medicinal purposes. They listed numerous trees, shrubs and field crops with their common names part used, recipe preparation and application for diseases. Hussain *et al.* (1996) reported the ethnobotany of 125 species including medicinally important plants from Dabargai Hills District Swat. Iqbal (2000) reported 187 species having medicinal properties used by the local people of Malam Jaba Swat. He classified them as medicinal plants, vegetable and pot herbs, agro forestry plants, ornamental plants, honey bee species, agricultural tools making plants, yielding edible fruits, plant used in naming, thatching and sheltering , fencing and hedge plants, poisonous and timber yielding plants. Sakhi (2004) reported 151 species of medicinalwith medicinal value from Chail Valley District Swat. This paper describes the enthnobotani of Marghazar valley of Pakistan.

Marghazar is a land of gentle summer, golden autumn, snow mantled winter and flowers laden spring. It is situated in the lower parts of Swat District at a distance of 15 Km from Mingora. Its height from sea level is about 4200 feet. The highest mountain of Marghazar is Elum, the paradise between Swat & Buner. Elum is about 10,000 feet of Hindu Raj Rang in the South of District. According to revenue and census department, the area and the population in the Marghazar valley is 14647.68 hectares and 22613 people respectively.

Marghazar valley is comprised of five main villages named as Spal Bandai, Kukrai/Chithor, Marghazar, Sher Athraf and Islampur. Total forest area of Marghazar is divided into 18 compartments. These are:

Compartment 1, 2 and 3: These are in the area of Kukrai and Landai Kukrai. The common plant species are *Dodonaea viscosa*, *Pinus roxburghii*, *Quercus* spp.
Compartment No 4: It is called Thangay Kukrai. Main plants of this area are *Pinus wallichiana*, *Dodonaea viscosa*, *Pinus roxburghii* & *Quercus* spp.
Compartment No 5 & 6: Compartment No 5 is called Maidangai (Amlok Thal). Compartment No. 6 is Warkotay Thoorthamay & Ghat Thoorthamay. The vegetation of Compartment No 5 and 6 is the same as compartment No 4.
Compartment No 7 & 8: It is called Sar Bab & Kaduna, respectively. This compartment has *Picea smithiana*, *Pinus roxburghii*, *Pinus wallichiana*, *Abies pindrow*, *Juglans regia* & *Quercus* spp., etc.
Compartment N0 9: This is called Kaduna & Kara Banr. *Juglans regia* (Walnut), *Quercus* spp. and *Pinus wallichiana* (Blue pines) growing well.
Compartment No 10: It is called Jawazo Sar because *Aesculus indica* (Jawaz) growing here commonly.
Compartment No 11: It is called Muthra Bandai. Main plants are *Cedrus deodara*, *Pinus wallichiana* and *Quercus* spp., etc.
Compartment No 12, 13, 14, 15 & 16: These are called Sapail Banda, Sher Athraf, Shandala & Thoor Kamar (15+16) respectively.
Compartment No 17. This is called Khadra & have *Dodonaea viscosa*, *Quercus baloot* and *Pinus roxburghii*, etc.
Compartment No 18: It is called Aqba and have *Dodonaea viscosa*, *Quercus* spp. and *Pinus roxburghii* etc.

Generally semi traditional agricultural practices are adopted which have kept agriculture below subsistence level. The valley has small plain area available for agriculture. Cropping system is mainly mono-seasonal but in some areas double cropping is practiced. In the upper limits, which is Barani (rain-fid) area, maize is cultivated as cash crop; while in the lower valley wheat and onion are cropped in double cropping system. Rice is grown in some areas where possible. Soil fertility is declining due to the little input of farmyard and organic manure and the irrational use of fertilizer. Apple, apricot, pears and plums are the main trees, in traditional orchards.

Climatically the area falls within the subtropical and moist temperate zone, with heavy rain and snowfall, severe winter and pleasant summer. An average meteorological data collected by Department of Agricultural Extension Swat is given in (Table 1)

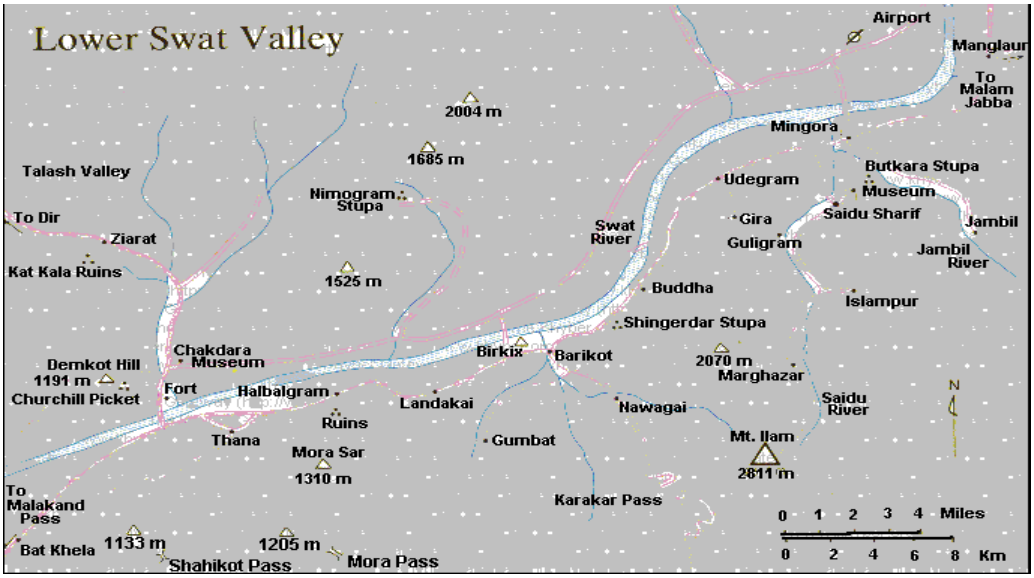

Fig. 1. Map of the study area

Table 1. Meteorological data collected by Department of Agricultural Extension Swat (2005).

Months	Temperature				Rain fall	R. Humidity
	Max (^{O}C)	Min (^{O}C)	Max (^{O}C)	Min (^{O}C)	(mm)	%
January	18	0	15	4	112	71
February	15	2	12	3	160	80
March	22	6	17	12	238	73
April	32	11	25	16	32	70
May	33	14	29	21	135	67
June	41	14	32	22	40	52
July	43	21	38	26	144	52
August	38	22	35	25	51	65
September	37	22	34	26	44	48
October	32	10	29	13	24	48
November	24	5	21	8	12	42
December	18	0	17	5	12	48

MATERIALS AND METHODS

A study of indigenous medicinal plants of Marghazar valley was conducted during summer 2006. Frequent visits were made to the area. The map of the investigated area was obtained from EPS & the HUJRA (Holistic Understanding for Justified Research and Action). Ten houses in each of the five villages of Marghazar valley were visited for data collection. Both male and female mostly above 40 years of age were interviewed through questionnaire. The questionnaire was divided into two parts; the first part included personal information such as name, locality, age, education and occupation. Whereas the second part was specified for plants local name, part in

use, purpose of use, local method of recipe preparation, the tool used for collection. We selected only those plants which were reconfirmed at least by four individuals. Plant specimens were collected, documented, pressed, preserved, and identified with the help of herbarium specimens and available literature (Stewart, 1967 and 1972; Beg and Khan, 1977; Nasir and Ali, 1970-1989; Ali and Nasir, 1989-1991; Nasir and Rafiq, 1995 and Ali and Qaiser, 1993-2007). Plants were arranged alphabetically and mounting of specimens were made on standard Herbarium sheet of size 28.75 cm x 32.50 cm. Voucher specimens were deposited in Herbarium Department of Botany Govt. Post Graduate Jahanzeb College, Swat.

Results: The results are summarized in Table 2 which is as follows:

Table 2. Ethnomedicinal Plants used by the local people of Marghazar, Swat.

Family	Botancial Name	Local Name	Part used	Mode of preparation	Aliments treated
GROUP I FUNGI					
1. Helveliaceae	*Morchella esculenta* (L) Pers.ex.fr.	Goujai	Whole plant		Laxative & general body tonic
Recipe:	Fried.				
GROUP II PTERIDOPHYTES					
1. Equisetaceae	*Equisetum arvense* L.	Band bandakai	Stem	Powder & paste	Diuretic, wound healing and give strengthening to bones, hair & nails
2. Polypodiaceae	*Adiantum capillus veneris* L	Sumbal	Whole plant	Decoction	Expectorant, hypomenorrhoea & demulcent
	Adiantum venustum Don;	Sumbal	Leaves	Decoction	Hepatitis C & blood purifier, backache, fever & cough
GROUP III GYMNOSPERMS					
1. Pinaceae	*Cedrus deodara* (Roxb.ex Lamb) G.Don.	Ranzra	Seeds	Oil	Carminative, diuretic, very useful in fever & piles
	Pinus roxburghii Sargent	Nakhtar	Resin		Blood purifier, ulcer diuretic & skin diseases
Recipe : The resin is boiled with milk & then the mixture is converted into tablet form & is used to treat acne.					
2. Taxaceae	*Taxus baccata* L.	Banrya	Root & bark	Decoction	Antispasmodic & hepatitis C
GROUP IV ANGIOSPERM					
1. Alliaceae	*Allium sativum* L.	Ooga	Leaves, Cloves	Paste, decoction	Lowering blood pressure
2. Acanthaceae	*Justacia adhatoda* Nees	Baikar, Arusa	Leaves	Paste	Expectorant, abortifacient & reduce swellings
3. Apiaceae	*Coriandrum sativum* L.	Dhania	Leaves and seeds	Powder	Carminative, aromatic, stomachic & aphrodisiac
	Foeniculum vulgare Mill.	Kaga	Fruit	Powder & juice	Purgative, carminative, Menstrual problems and improve eyesight
4. Araceae	*Arisaema flavum*	Marjarai	Rhizome	Fruit, and seeds	Vermicides,

	(Forssk.) Schott				stomachic
	Acorus calamus L.	Skhawaja	Rhizome	Powder and Juice	Diuretic, Dysentery
5. Asclepiadaceae	*Calotropis procera* (Willd.) R.Br.	Spulmay	Whole plant	Powder & Latex	Diabetes, diarrhea, ulcer, cough & asthma
	Caralluma tuberculata N.E.Brown.	Pamankai	Stem		Powder, Febrifuge, carminative, stomachic, rheumatism, diabetes
6. Asteraceae	*Artemisia griffithiana* Boiss	Tarkha	Leaves	Powder, Juice	dysentery, stomachic, antialergic & hepatitis
	Carthamus oxycantha M.Bieb.	Kareza	Seed	Oil	Diuretic, regulate blood pressure, and stomachic
	Xanthium strumarium L.	Ghishkay	Leaves	Decoction	Tonic, malaria, fever, ulcer & diuretic.
7. Berberidaceae	*Berberis lyceum* Royle	Kwaray	Root, bark Berries and	Powder	Febrifuge, hepatitis, jaundice, chronic and Diarrhea
8. Brassicaceae	*Lepidium sativum* L.	Halam	Fruit	Leaves & Seeds	Abdominal pain & Diarrhea
	Nasturtium officinale R.Br.	Tharmera	Whole plant	Powder	Anthelmintic, abdominal pain, chest pain, gas trouble, & hepatitis
9. Cannabinaceae	*Cannabis sativa* L.	Bhang	Leaves & flowers	Powder & Juice	Pain killer, anodyne, narcotic & for malaria.
10. Caryophylaceae	*Stellaria media* (L.) Vill.	Olalai	Whole plant	Treat piles, constipation,	astringent & purgative
Recipe: Plant is washed, cooked in ghee, garlic and with coriander to treat piles.					
11. Cuscutaceae	*Cuscuta reflexa* Roxb.	Tar Botay	Stem	Powder	Blood purifier, diuretic, purgative, antidiabetics & anthalmintic
12. Fagaceae	*Quercus dilatata* Lindl.ex Royle	Banj	Bark, acorns		Chronic diarrhea, dysentery, gonorrhea & urinary disorders
Recipe: The dried roasted acrons are used as anti-inflammatory in diarrhea and in urinary disorders.					
13. Fumariaceae	*Fumaria indica* (Hausskn.) Pugsl.	Papra	Whole plant	Decoction	Blood purifier, diuretic, anthelmintic, Dyspepsia and skin acne
14. Geraniaceae	*Geranium wallichianum* D.Don ex Sweet.	Sra zeal	Rhizome	Powder	Fever ,cough, cold, astringent and kidney diseases
15. Hippocastanaceae	*Aesculus indica* (Wall.ex comb.) Hook.f	Jawaz	Fruit	Powder	abdominal pain, tonic, intestinal colic, astringent,
17. Hypericaceae (Guttiferae)	*Hypericum perforatum* L.	Shin chai	Stem & leaves	Decoction	Diuretic, analgesic, astringent, anthelmintic reduce the hypertension
18. Juglandaceae	*Juglans regia* L.	Ghwoz	Fruit, bark		Antiseptic, tonic & for cleaning teeth
19. Lamiaceae	*Ajuga bracteosa* Wall.ex Benth		Boti		Whole plant Powder

					Cardiac stimulant, antidiabetic, astringent, blood purifier
	Ajuga parviflora Benth.	Tarkha boti	Whole plant	Powder	Hepatitis, rheumatisim, against tonsilits
	Isodon rugosus L.	Sperkai	Stem, leaves	Powder	Mouth diseases, toothache & astringent
	Mentha longifolia L.	Velanay	Whole plant	Paste	Diarrhea, dysentery, dyspepsia, abdominal pain & prevent vomiting
	Ocimum basilicum L.	Kashmalay	Seeds		Nerve tonic, Carminative & stomachic.
Recipe: The seeds are boiled in milk & used as nerve tonic.					
	Salvia moorcroftiana Wall.	Kharghwag	Leaves	Paste	Pain killer, wound healing
	Teucrium stocksianum Boiss.	Kwandi botay	Whole plant	Decoction	Sore throat, fever, refrigerant & jaundice
	Thymus linearis Benth.	Spairkai	Fruit	Roasted fruit	Carminative, digestive, relieve pain
20. Meliaceae	*Melia azedarach* L.	Tora bekanra or Shandai	Whole tree	Powder Decoction	Antiallergic, hysteria, antirheumatic, diabetes & control blood pressure
21. Mimosaceae	*Acacia modesta* Wall.	Palosa	Gum	Powder	Pain killer, stimulant & Sexual tonic
22. Moraceae	*Ficus palmata* Forssk.	Inzar	Juice and fruit	Latex	Dysentery, stomachic & Impotency, blood purifier,
23. Myrsinaceae	*Myrsine africana* L.	Marurang or Marugaya	Leaves & fruit	Powder	laxative dropsy, colic & tapeworms
24. Myrtaceae	*Eucalyptus lanceolata* L.	Lachi	Leaves, bark	Decoction	Abdominal pain and and fruit colic
	Myrtus communis L.	Manro	Fruit & leaves		Carminative, antiseptic, expectorant, stomachic & bronchial disorders
25. Oleaceae	*Olea ferruginea* Royle	Khona	Leaves & fruit	Decoction	Antiseptic, antijaundice, & oil anthelmentic, Antihepatitis relief pain
26. Oxalidacea	*Oxalis corniculata* L.	Tarookay	Leaves	Powder	Refrigerant, vermifuge, cure fever
27. Paeoniaceae	*Paeonia emodi* Wall.ex Royle.	Mamikh	Root	Powder	Tonic, backache, pain killer & anti rheumatic
28. Papaveraceae	*Papaver somniferum* L.	Apeem or Qashqash	Latex, capsule & seeds		Anodyne, narcotic, pain killer, expectorant, cure cough & fever
29. Papilionaceae	*Dalbergia sissoo* Roxb.	Shawa	Leaves	Decoction	Gonorrhea, stop vomiting

30. Poaceae	*Avena sativa* L.	Jamdary	Fruit	Powder	aphrodisiac, stimulant, and nerve tonic
	Bromus japonicus Thumb ex Murr.	Jokai	Shoot	Powder	Constipation
31. Polygonaceae	*Bistorta amplexicaulis* (D.Don) Green	Tarwa panra	Rhizome	Powder	Mouth & tongue inflammation, rheumatism & gout
	Rumex hastatus D.Don.	Tharookay	Leaves & root	Filtererate	Abdominal pain, wound Healing

Recipe: Roots are cleaned, boiled along with gur (Sugar) & filter is given to human & cattle for abdominal pain.

32. Punicaceae	*Punica protopunica* L.	Anangorai	Rind of fruit	Powdered	Cooling, abdominal pain, and seeds headache, & urinary tract infections
33. Rhamnaceae	*Ziziphus numularia* (Burn.f) Wight & Arn.	Karkanre	Fruit & leaves	Decoction	Laxative, scabies & dermatite
	Ziziphus jujuba Lam.	Markhanary	Fruit & leaves		Astringent, antidiabetic, refrigerant & diabetes
35. Rosaceae	*Rubus fruticosus* HK.f.	Karwara	Fruit & shoots	Extracts	Cure sore throat, fever and diarrhea
36. Rutaceae	*Zanthoxylum armatum* Dc.	Dambara	Fruit, seeds		Carminative, tootachace, & bark flavoring agent & aromatic
37. Sapindaceae	*Dodonaea viscosa* (L.) Jacq.	Ghouraskay	Leaves, bark	Powder & seeds	Wounds, burns and swellings
38. Saxifragaceae	*Berginia ciliata* (Haw.) Stern.b.	Goganda/ Kamar panra	Leaves & rhizome	Paste and power	Antidiabetics, expectorant & wound healing
39. Scrophulariaceae	*Verbascum thapsus* L.	Khardag	Whole plant	Powder	Rheumatism, Inflamed skin & to discharge pus
40. Solanaceae	*Solanum surratense* Burn.f.	Manraghonay	Whole plant	Powder	Antiasthmatic, diuretic, bitter in fever & stomachic
	Withania somnifera (L.) Dunale	Kotilal	Whole plant	Powder	Aphrodisiac, diarrhea, dysentery & antiemetic
41. Urticaceae	*Debregeasia saeneb* F	Gurakai	Leaves & fruits	Powder	Flavoring agent in jaundice and useful in eczema & dermatitis
42. Valerianaceae	*Valeriana jatamansi* Jones.	Mushk-e-Bala	Rhizome	Decoction	Carminative, aromatic, antispasmodic & epilepsy
43. Verbenaceae	*Verbena officinalis* L.	Shamakai	Whole plant	Decoction	Anti malarial, febrifuge & coolant
44. Verbenaceae	*Vitex negundo* L.	Marwandai	Leaves & root	Decoction	Aromatic, febrifuge, & paste Diuretic & anthelmintic
45. Violaceae	*Viola canescence* Wall.	Banafsha	Whole plant	Decoction	Diuretic, antipyretic, Astringent & pain killer
46. Vitaceae	*Vitis vinifera* L.	Kwar	Fruit & leaves		Astringent, asthma, & blood builder

47. Zygophyllaceae	*Peganum hermala* L.	Spailaney	Seeds, stem	Powdered	Emetic, antiseptic, & leaves narcotic & anodyne, evil eyes
48. Zygophyllaceae	*Tribulus terrestris* L.	Markundai	Fruit		Aphrodisiac, urinary, disorders, & chronic cystitis

Recipe: Fruit are mixed with honey and used for curing impotence.

DISCUSSION

The plants were arranged alphabetically by Families which is given in the table 2. The table also contains Botanical name, local name, part used, mode of preparation and ailments treated. The local people of Marghazar valley have vast indigenous knowledge about medicinal plant because the hospitals are far away from them and live in Bandas in summer season. Therefore these peoples mostly depends upon medicinal plants grow in fields, forests and in the mountains. During this survey 69 plant species were reported which are used directly or indirectly for the curing of different diseases. It was also noted that some plants had single medicinal value while some have several such uses. Some are used in combination with gur (sugar), ghee, honey, etc. These plants are collected by the local people during the growing season of the plant. There are kept either in polythene, cloth bags or Box (tawangai in Pashto). These plants are used both in fresh as well as in dried form. Most of the plants such as *Acorus calamus*, *Aesculus indica*, *Eucalyptus lanceolatus*, *Foeniculum vulgare*, *Rubus fruticosus* and *Mentha longifolia* are used as carminative and for abdominal pain. *Acacia modesta*, *Ficus carica* and *Juglans regia* are general body tonic as reported by Ajaib *et al.* (2009). Besides these *Ajuga bracteosa*, *Allium sativum*, *Calotropis procera*, *Melia azedarach*, *Punica protopunica*, *Withiania somnifera* & *Ziziphus jujube* are used as antiemetic, diuretic, anti hepatitis, urinary tract infection and for headache, cold and flu.

Due to the lack of knowledge, overgrazing, improper management and deforestation the natural regeneration of important medicinal plants are adversely affected. To solve these problems social awareness about natural vegetation are required. To protect the plants from over exploitation proper training to the local community especially to women is required (Ajaib *et al.* 2010).

The population of the area is increasing day by day and the valley environment degrading. The people of the remote villages like Shandala and especially Kaduna are far away and have little accessibility to hospital because of the large distance and still there is no transport system. Due to these difficulties, though the local people mostly depend upon medicinal plants of the area for the treament. During survey when the old people were interviewed it become clear that the traditional knowledge is mostly limited to these old people. Young generation did not know more about the important medicinal plants. Most of the plants become extinct due to over grazing, deforestation, improper management, biotic factors and over exploitation. All of these had negative impact on the environment, resources and culture of the Marghazar valley. Mostly the people are illiterate and are therefore, the medicinal plants are not properly utilized. The people have no proper training, regarding harvesting, post harvest care, storage and marketing of the medicinal plants.

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(*Accepted for publication August 2010*)