

Threats to the sustainability of Ethno-Medicinal uses in Northern Pakistan (A Case Study of Miandam Valley, District Swat, NWFP Province, Pakistan)

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Abstract

Miandam valley is best representative of moist temperate forest geographically located 35, 02 N and 72, 33 E. The valley has over 300 plant species of which majority plants species are reported to be medicinal. The local community prepares medicines from these species through traditional way by using their indigenous knowledge for curing variety of disease. Decrease in medicinal plants has been observed in the last 30 years due to various threats and issues. Deforestation has been reported the main threat behind the declining trends of medicinal plants. The results shows that due to external pressures many plant species have been found endangered, rare and vulnerable. A high deforestation rate of 2% per year has been recorded over the last 30 years. Each year 8,053 trees are cutting in the valley for domestic and commercial consumption which is more than the actual yield provided by working circles and outside working circles areas. Current deforestation rate is leading towards substantial decrease in medicinal plant's wild production and hence can affect ethno-medicinal uses and the socio-economic condition of the associated people. It is necessary to find out ways and means for effective domestic and commercial uses of medicinal plants to ensure its sustainability.

Introduction

Medicinal plants are considered very important in primary health care system. A large number of plants are known for their medicinal properties. There is a large demand for medicinal herbs due to increase in the use of herbal formulations. Herbal medicines are used by about 75-80% of the world's population for primary health care because of better cultural acceptability, better compatibility with human body and lesser side effects. (Prajapati. N. D & Tarun Prajapati, 2002)

Earlier, medicinal plants were obtained from the forests. At that time in the forests they were in abundance and the consumption was in milligrams or grams. But now, the situation has reversed due to deforestation, uprooting of the plants for fulfilling the requirements and the craze for herbal globalization. So the medicinal plants have become endangered. Therefore, the rates have also increased and are unable to fulfill the requirement of the genuine material in the world.

People living in the mountainous ranges of Pakistani Himalayas, Hindukush and Karakoram are greatly dependent on medicinal plants for variety of uses. It proved to be a good income source and cheap source of curing diseases at local level. Currently medicinal plants are under severe threat of extinction due to rapid deforestation, over and improper collection, over grazing etc. The present study is an effort to analyze the current status of medicinal plants in the context of its value for the local people of Miandam valley, District Swat, NWFP-Pakistan.

Study Area

Miandam valley (Miandam watershed) is a 70km² area and best representative of moist temperate forests. The valley is a beautiful summer resort about 56 km from Saidu Sharif, the capital of Swat with an altitude of about 2000 m. Most of the area is mountainous belonging to the Hindu Raj series of the Hindu Kush region. Geographically, the area can be traced on 35, 02 N and 72, 33 E. Total area of Miandam valley is 6,949 ha of which 638 ha is irrigated agricultural area, 1,081 ha un-irrigated agricultural area, 4,388 ha are under forest and 842 ha other area. The watershed of Miandam valley having 4388 ha forest area is the biggest watershed of Miandam Planning unit of District Swat Forest range. The forest area of Miandam watershed is having 25 compartments active with three working circles i.e. 2621 ha of timber production working circle, 460 ha of conservation working circle and 1307 ha of community use working circle. Most of the forest area has been covered by more than 10% conifer forests.

Materials and Methods

The study was conducted between the months of July and October. In the first month available literature was reviewed, relevant line departments and organizations were visited, and questionnaires were developed. Questionnaires were of two types i.e. for plants survey and social survey. Data was collected in the second and third month. In this regard individual and

group meetings were held to gather information from the representatives of 10% of total 2,380 households of the valley. Group data was collected through random sampling by interviewing 250 respondents from different walks of life. Individual questionnaires were filled from 50 locals selected on the basis of their knowledge regarding people, plants and their uses. They were plant collectors, hakeems, shopkeepers, elders and plant traders. PRA technique was used in five villages out of 14 for documentation of different practices regarding deforestation and agriculture of the area. Track visits in mountain were exercised for the documentation of medicinal plants. Lastly the collected data was then analyzed through mean, mode and median methods.

Results and Discussion

Flora of Miandam Valley

Depending upon variations in altitude, temperature, topography, soil type and moisture, vegetation of Miandam Valley can be classified into Olive-White Oak Forests, Blue Pine-Black Oak Forests, Fir-Spruce Forests, Tree Line Iron Oak Forests and Alpine Flora

Miandam valley consists of over 300 plant species. Out of total plant species, 179 are identified so far having medicinal uses (*Annexure 1*) followed by 33 ethno-veterinary, 29 Vegetables, 28 fodder, 15 wild fruit species, 11 fuelwood, 8 timber, 5 thatching plants, 4 mixing with tea species, 4 for gums and resin, 3 narcotic, 2 ornamental, 2 for decoration/handles making, 2 orchards support, 2 bees attractants, 1 specie avoid milk spoilage, 1 tooth cleaning, 1 as fumigant and 1 for graves sleepers. Majority of these species are either domestically consumed or marketed in the form of its produces.

Current Status of Medicinal Plants and its Ethno-Medicinal Uses

Conservation of species diversity is a matter of international concern. People of the area are using plants for medicinal uses since their abundance/frequency in their vicinities. Analysis of the opinion of the people in relation to international standards (Red Data Book of IUCN threatened species 1998) showed that 27 of the reported species are endangered (*Annexure 2*), 13 are rare and 10 are vulnerable in the area. Ethno-medicinal uses of endangered medicinal plants of Miandam valley is shown in annexure 2. Extinction of each endangered species from the area could result in eradicating knowledge regarding century's old traditional methods of curing disease from that particular specie.

Table 1 gives current status of medicinal plants analyzed through social survey. The results showed that majority of the respondents (91%) favored overall decrease in medicinal plants by almost 25% in the last 3-decades. Moreover, it was also found that in the last 30 years about 60% of the forest area has been deforested. Average rate of deforestation thus calculated in last 30 years is 2%/year. It is assumed that deforestation at this rate would take about 20 more years for complete deforestation of the Miandam valley.

Villages	Number of Respondents	*Current Forest Tree's Area (%)	Current status of medicinal plants after 30 Years			
			Decreased	Increased	Not change	Decrease by
Barampatai	20	25.8	19	-	1	36%
Sukarkata	10	24.7	7	1	2	7%
Serai	5	16.4	5	-	-	14%
Shahtoot	4	33.2	3	-	1	9%
Kotkey	6	31.1	3	-	3	30%
Jukhtai	26	29.9	24	1	1	21%
Dand	7	27.8	7	-	-	40%
Kulakareen	6	39.2	4	2	-	10%
Sanai	20	35.6	18	-	2	44%
Khairabad	25	29.1	25	-	-	35%
Shonga	15	65.0	15	-	-	15%
Gujarookaley	30	58.4	29	-	1	30%
Swatookaley	40	72.2	35	2	3	30%
Miandam	25	67.6	24	-	1	25%
Total/ Average/ Percentages	239	39.71%	218 (91%)	6 (3%)	15 (6%)	24.71%

*Comparison of current forest tree's area to that of 30 years back also implies that about 60% forest area has been deforested

Table 1: Status of Medicinal Plants and its Ethno-Medicinal Uses

Table 2 below gives a clear idea about major reasons behind medicinal plants decrease. 48% respondents were of the view that deforestation is the major reason behind NTFF decrease followed by 32 % favored over and improper collection, 12% grazing and 8% viewed that medicinal plants decreased due to conversion of forest land to agriculture land. Respondents also indicate some other adverse effects of deforestation that resulted decrease in snow and hence waters in river and springs decreased.

Deforestation

Domestic consumption of forest trees at valley’s level was estimated as 28680 trees per annum used as fuel wood and houses construction. The preferred timber species are *Pinus wallichiana*, *Abies pindrow*, *Taxus wallichiana* and *Picea smithiana*. Main commercial uses associated to deforestation are timber and fuel wood selling. About 203,328 cubic feet timber wood equals 877 trees are exporting out each year from the valley. Similarly, an average of 2,828,750 kg fuel wood equals 581 trees are exporting from the whole valley.

Data from management plan reveals that Miandam valley consist a growing stock of 120,079 trees with an annual yield or supply of 2,037 trees from all working circles and outside working circles areas. If a tree is considered to have a weight of 4866 kg, height of 25 meter and DBH of 0.6 m then the current domestic and commercial demand of valley are about 8,053 trees per annum. Supply and demand difference is thus calculated as 6,016 trees (75% more than actual supply). It is presumed that in coming 20 years Miandam valley would be completely deforested due to which a lot of ground flora having majority of medicinal plants would be affected badly. This would ultimately leads towards lowering the preferences of local people towards indigenous ethno-medicinal uses.

Over and Improper Collection, Grazing, and Conversion of Forest Land into Agriculture Land

Another factor putting medicinal plants resources on stake is inappropriate and over collection. The people are unaware about proper collection and harvesting technique. Instead of collecting the desired part of the plant they uproot the entire plant thus making it vulnerable for extinction. About 45% losses have been observed in collection, carrying, cleaning, drying, domestic usage, marketing and grading of medicinal plants.

Free grazing of livestock is another worth mentioning problems contributes to the overall declining population of medicinal plants. 70% of the village livestock graze freely in summer seasons at upland pastures. Moreover, about 100 nomads each year carry 40,000 goats to pastures for which they pay to the owners of the pastures. They remain there for the summer season starting from March/April to Oct/Nov. This also poses a potential threat to the floral regeneration.

Conserving of forest area into agriculture land is one of the most serious problems leading to the loss floral diversity. Data of Swat forest range management plan shows a total of 406 ha of forestland converted into agriculture land.

Village	No of Respondents	Major Reasons of medicinal plants Decrease			
		Deforestation	Over and Improper Collection	Grazing	Conversion of Forest Area into Agriculture area
Barampatai	20	7	6	3	4
Sukarkata	10	3	5	1	1
Serai	5	3	2	-	-
Shahtoot	4	1	1	-	2
Kotkey	6	4	2	-	-
Jukhtai	26	13	9	3	1
Dand	7	1	4	2	-
Kulakareen	6	3	3	-	-
Sanai	20	15	3	1	1
Khairabad	25	10	7	3	5
Shonga	15	4	9	-	2
Gujarookaley	30	22	4	4	-
Swatookaley	40	17	10	11	2
Miandam	25	11	12	1	1
Total/Average	239	114	77	29	19
Percentages	100%	48%	32%	12%	8%

Table 2: Reasons of medicinal plant decrease

Conclusions

Miandam valley lies in the moist temperate region is stretched over an area of 6,949 ha (1,719 ha agricultural land, 4,388 ha forest area and 842 ha is wasteland). The valley is blessed with a floral diversity of over 300 plant species of which 190 plant species are known for a variety of uses. 179 plant species are being used locally for medicinal purposes as well add significant contribution to local economy in terms of trade. Certain threats are confronting to the existence of medicinal plants that are deforestation, over collection, grazing and conversion of forest land into agriculture area. Medicinal plants have been decreased by 25% in last 30 years for which deforestation has been identified as the major reason. About 8,053 forest trees are deforested each year both for domestic and commercial consumption. Wood consumption statistics of the valley showed that each year almost 75% more trees are cutting than the actual provision from all working circles and out side working circles area. Species decreasing quickly are *Pinus wallichiana*, *Abies pindrow*, *Taxus wallichiana*. With this deforestation rate the stocking could hardly be sustained for the next coming 20 years thus would make happen further substantial decrease in medicinal plant's wild production. Moreover, medicinal plants are free to access everywhere in the wild. The policy is not much effective to conserve them in the wild. It is concluded that ethno-medicinal uses of some important medicinal plant species are under severe threat of extinction that needs proper attention through addressing the above threats and problems.

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- Annexure 1
Medicinal Plants of Miandam Valley

<i>Acacia modesta</i> Wall.	<i>Colchicum luteum</i> Baker.	<i>Melia azedarach</i> L.	<i>Rubus fruticosus</i> Linn.
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<i>Acacia nilotica</i> Delile,	<i>Corydalis govaniana</i> Wall.	<i>Mentha longifolia</i> Z.K. Shinwari & M.N. Chaudhri	<i>Rumex dentatus</i> L.
<i>Achillea millefolium</i> L.	<i>Corydalis stewartii</i> Fedde,	<i>Mentha spicata</i> L.	<i>Rumex hastatus</i> D. Don,
<i>Achyranthes aspera</i> L.	<i>Corylus jacquemontii</i> Decne.	<i>Micromeria biflora</i> Benth.	<i>Salvia lanata</i> Roxb.
<i>Aconitum violaceum</i> Jacquem. ex Stapf,	<i>Cuscuta reflexa</i> Roxb.	<i>Morchella conica</i> Pers.	<i>Salvia moorcroftiana</i> Wall. ex. Benth.
<i>Acorus calamus</i> L.	<i>Cynodon dactylon</i> Steud.	<i>Morchella elata</i> Fr.	<i>Sambucus wightiana</i> Wall.
<i>Adhatoda vasica</i> Nees	<i>Cynoglossum lanceolatum</i> Heyne, ex Wall.	<i>Morchella esculenta</i> L.	<i>Sapindus detergens</i> Roxb.
<i>Adiantum capillus-veneris</i> L.	<i>Cyperus brevifolius</i> Hassk.	<i>Morchella ultima</i>	<i>Sarcococa saligna</i> Muell. Arg.
<i>Adiantum incisum</i> Forsk.	<i>Daphne mucronata</i> Royle,	<i>Morus alba</i> L.	<i>Saussurea lappa</i> C. B. Clarke,
<i>Adiantum venustum</i>	<i>Daphne oleoides</i> Schreb.	<i>Myrsine africana</i> L	<i>Sesamum indicum</i> L.
<i>Aesculus indica</i> Coleb. ex Wall.	<i>Datura inoxia</i> Mill.	<i>Myrtus communis</i> L.	<i>Silene vulgaris</i> Garcke,
<i>Ajuga bracteosa</i> Benth.	<i>Datura stramonium</i> L.	<i>Nasturtium officinale</i> R.. Br.	<i>Sisymbrium irio</i> Linn.
<i>Allium cepa</i> Linn.	<i>Dioscorea deltoidea</i> Wall.	<i>Neolitsea chinensis</i> Chun	<i>Skimmia laureola</i> Sieb. & Zucc. ex Walp.
<i>Allium sativum</i> Linn.	<i>Diospyros lotus</i> Linn.	<i>Nepeta govaniana</i> Benth.	<i>Solanum nigrum</i> L.
<i>Amaranthus viridis</i> Linn.	<i>Dryopteris jaxtaposta</i> christ.	<i>Olea ferruginea</i> Royle,	<i>Solanum surattense</i> Burm. f.
<i>Arenaria griffithii</i> Boiss.	<i>Echinops echinatus</i> Roxb.	<i>Onosma hispidum</i> Wall.	<i>Solanum xanthocarpum</i> Schrad. & Wendl.
<i>Arisaema flavum</i> (Forssk.) Schott	<i>Elaeagnus umbellata</i> Thunb.	<i>Otostegia limbata</i> Benth. ex Hook. f.	<i>Sonchus asper</i> Wolf. ex DC.
<i>Arisaema jacquemontii</i> Blume,	<i>Equisetum arvense</i> L.	<i>Paeonia emodi</i> Wall.	<i>Spiraea chinensis</i> Maxim.
<i>Artemisia scoparia</i> Waldst. & Kit.	<i>Eruca sativa</i> Mill.	<i>Papaver dubium</i> L.	<i>Stachys parviflora</i> Benth.
<i>Artimisia brevifolia</i> Wall.	<i>Euphorbia helioscopia</i> Linn.	<i>Periploca aphylla</i> Decne.	<i>Stellaria media</i> Cyrill.

<i>Artemisia vulgaris</i> L.	<i>Euphorbia wallichii</i> Hook.F.	<i>Picea smithiana</i> Boiss.	<i>Swartia alata</i> Royl. ex D. Don,
<i>Asparagus adscendens</i> Roxb.	<i>Fagonia arabica</i> Linn.	<i>Pimpinella diversifolia</i> DC.	<i>Taraxacum officinale</i> Weber,
<i>Atropa acuminata</i> Royle.	<i>Ficus palmata</i> Roxb.	<i>Pinus wallichiana</i> H. Ohba & M. Suzuki	<i>Taxus wallichiana</i> Zucc.
<i>Avena sativa</i> Linn.	<i>Foeniculum vulgare</i> Mill.	<i>Pistacia integerrima</i> Stew. ex Brand.	<i>Thymus linearis</i> Benth.
<i>Berberis lycium</i> Royle.	<i>Fragaria vesca</i> Linn.	<i>Plantago lanceolata</i> L.	<i>Thymus serpyllum</i> L.
<i>Bergenia ciliata</i> (Haw.) Sternb.	<i>Fumaria indica</i> Pugsley	<i>Plantago major</i> L.	<i>Trachyspermum ammi</i> Sprague
<i>Berginia stracheyi</i> Stein,	<i>Geranium wallichianum</i> D. Don,	<i>Platanus orientalis</i> L.	<i>Tribulus terrestris</i> L.
<i>Bistorta amplexicaulis</i> (D. Don) Greene	<i>Gynandris sisyrinchium</i> Parl.	<i>Podophyllum emodi</i> Wall.	<i>Trigonella foenum-graecum</i> Linn.
<i>Bunium persicum</i> B. Fedstch.	<i>Hedera nepalensis</i> K. Koch,	<i>Podophyllum hexandrum</i> Royle,	<i>Urtica dioica</i> L.
<i>Bupleurum longicaule</i> Wall.	<i>Heracleum candicans</i> Wall.	<i>Polygonatum aviculare</i> L.	<i>Valeriana jatamansi</i> Jones.
<i>Butea frondosa</i> Roxb.	<i>Hyoscyamus niger</i> L.	<i>Polygonatum multiflorum</i> All.	<i>Valeriana wallichii</i> DC.
<i>Calotropis procera</i> Dryand.	<i>Hypericum perforatum</i> Linn.	<i>Polygonatum verticillatum</i> All.	<i>Verbascum thapsus</i> L.
<i>Caltha alba</i> Jacquem.	<i>Hyssopus officinalis</i> Linn.	<i>Polygonum aviculare</i> L	<i>Verbena officinalis</i> L.
<i>Cannabis sativa</i> L.	<i>Indigofera heterantha</i> Wall.	<i>Portulaca oleracea</i> L.	<i>Viburnum grandiflorum</i> Wall.
<i>Capsella bursa-pastoris</i> (L.) Medik.	<i>Isodon rugosus</i> Codd	<i>Primula denticulata</i> Sm.	<i>Viola biflora</i> L.
<i>Caralluma edulis</i> Benth. ex Hook. f.	<i>Jasminum officinale</i> Linn.	<i>Pteridium aquilinum</i> (L) Kuhn.	<i>Viola serpens</i> Wall.
<i>Carum carvi</i> Linn.	<i>Juglans regia</i> Linn.	<i>Punica granatum</i> L.	<i>Vitex negundo</i> L.
<i>Cedrus deodara</i> (Roxb. ex Lambert)	<i>Juniperus communis</i> Linn.	<i>Pyrus pashia</i> Buch.-Ham. ex D. Don,	<i>Withania coagulans</i> Dun.
<i>Celtis australis</i> Linn.	<i>Lathyrus aphaca</i> Linn.	<i>Quercus dilatata</i> Lindl.	<i>Withania somnifera</i> (L.) Dun.

<i>Chamomilla recutita</i> Rauschert.	<i>Launaea procumbens</i> Amin	<i>Quercus incana</i> Roxb.	<i>Zanthoxylum alatum</i> Roxb.
<i>Chenopodium album</i> L.	<i>Lepidium sativum</i> L.	<i>Rheum australe</i> D. Don,	<i>Zanthoxylum armatum</i> DC.
<i>Chenopodium botrys</i> L.	<i>Lotus corniculatus</i> L.	<i>Rhus semialata</i> Murr.	<i>Ziziphus sativa</i> Gaertn.
<i>Cichorium intybus</i> L.	Male fern	<i>Ricinus communis</i> L.	<i>Zizyphus mauritiana</i> Lam.
<i>Citrullus colocynthis</i> Schrad.	<i>Mallotus philippensis</i> Karst.	<i>Rosa moschata</i> Benth.	<i>Zizyphus vulgaris</i> Lam.
<i>Colchicum autumnale</i> L.	<i>Melia azedarach</i> L.	<i>Rubia cordifolia</i> Hochst. ex A. Rich.	

Annexure 2

Ethno-medicinal Uses of Endangered Medicinal Plants of Miandam Valley

S#	Botanical Name	Family Name	Local Name	Ethno-medicinal Uses
1	<i>Aesculus indica</i> Coleb. ex Wall.	Sapindaceae	Jawaz	Bark and seeds contain glucosid aesculin, faxin used as tonic and astringent, relieves haemorrhoea
2	<i>Arisaema flavum</i> (Forssk.) Schott	Araceae	Marjarey	Small amount of ground rhizome is given orally in bolus form to cows and buffaloes for acute respiratory tract infection with cough
3	<i>Artemisia brevifolia</i> Wall.	Compositae	Tarkha	Dried young shoot and leaves internally in bolus form is applied for promoting digestion and killing worms
4	<i>Bistorta amplexicaulis</i> (D. Don) Greene	Polygonaceae	Tarwa Pana, Anjabar	The powdered rhizome is taken with a glass of water for the treatment of rheumatism and gout
5	<i>Caralluma edulis</i> Benth. ex Hook. f.	Asclepiadaceae	Pamankai	Juicy stem is bitter tonic, febrifuge, stomachic and carminative useful in rheumatism. As a vegetable cooked with minced meat
6	<i>Colchicum autumnale</i> L.	Liliaceae	Sarba Zeala	The bulb contains viscid milky juice, infaming the mouth, tounge; in small doses it acts as diuretic; in large doses it is strong sedative and cathartic; given in gout and rheumatism
7	<i>Colchicum luteum</i> Baker.	Liliaceae	Qaimat guallay	Its fried corms are used for arthritis and rheumatism. Both its bark and seed are sold for its precious rates in the drug markets

8	<i>Corylus jacquemontii</i> Decne.	Cupuliferae	Zangali Badam	Generally used as brain tonic
9	<i>Dioscorea deltoidea</i> Wall.	Dioscoreaceae	Kaneez	Employed in the treatment of bilous colic; as diuretic, expectorant
10	<i>Geranium wallichianum</i> D. Don,	Geraniaceae	Srazel	Root decoction is used with pods of <i>pesticia chinensis integrima</i> used for curing of kidney disease, cough and fever
11	<i>Hyssopus officinalis</i> L.	Labiatae	Goli Zofa	Considered as general body and brain tonic
12	<i>Juniperus communis</i> L.	Coniferae	Awbeer	Used as stimulant, diuretic and carminative
13	<i>Neolitsea chinensis</i> Chun	Lauraceae	Pewand zeala	Bark is demulcent, astringent and used in diarrhea, and dysentery. Also considered as Tonic
14	<i>Paeonia emodi</i> Wall.	Ranunculaceae	Mamekh	Used for Backache weakness
15	<i>Podophyllum emodi</i> Wall.	Berberidaceae	Kakora	The powdered rhizome with some other plants is used to control jaundice and other liver disease.
16	<i>Podophyllum hexandrum</i> Royle,	Berberidaceae	Kakora	The powdered rhizome with some other plants is used to control jaundice and other liver disease.
17	<i>Polygonatum multiflorum</i> All.	Liliaceae	Nooreallam	Infusion of its Rhizome is used for inflammation of bowels and stomach used in chronic dysentery. It is referred as aphrodisiac
18	<i>Polygonatum verticillatum</i> All.	Liliaceae	Nooreallam	The decoction of fresh rhizome is mixed with sugar and used for treatment of joint pain
18	<i>Primula denticulata</i> Sm.	Primulaceae	Mamera	Locally the infusion form young stem base is used in eye for ophthalmia
20	<i>Pteridium aquilinum</i> (L) Kuhn.	Pteridaceae	Kwanjai	Used in stomach disorder
21	<i>Rubia cordifolia</i> Hochst. ex A. Rich.	Rubiaceae	Srajara	Root is astringent and tonic also used for Back Pain
22	<i>Saussurea lappa</i> C. B. Clarke,	Compositae	Sharshamay	Root is tonic, stomachic, stimulant, carminative and used as spasmodic in asthma, cough and cholera

23	<i>Skimmia laureola</i> Sieb. & Zucc. ex Walp.	Rutaceae	Nazar Panra	Its leaves are burnt as incense and to expel evils and evil eyes. Tea made from the leaves used for dyspepsia, smoke used as antiseptic.
24	<i>Solanum nigrum</i> L.	Solanaceae	Kamacho	Leaves in past form is applied to skin for treatment of eczema, fruits edible and are used in fever
25	<i>Taxus wallichiana</i> Zucc.	Coniferae	Banrya	Powdered bark is used as emmenagogue and antispasmodic. Dried leaves are sold for its use in shampoo
26	<i>Valeriana jatamansi</i> Jones.	Valerianaceae	Mushk-e-Bala	Unknown local uses, it is sold in the drug market for preparation of some anti spasmodic and carminative drugs.
27	<i>Viburnum grandiflorum</i> Wall.	Caprifoliaceae	Amoch	Locally the fresh fruit of <i>Viburnum grandiflorum</i> is eaten for the curing of stomachache