

*Full Length Research Paper*

# Ethnomedicinal plant wealth of Mastuj valley, Hindukush range, District Chitral, Pakistan

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**The paper enumerates the traditional uses of 82 plant species belonging to 74 genera and 42 families, which are used by the local inhabitants of Mastuj valley for the treatment of various ailments. Most of the plants were used as stomachic, pain killer and against skin diseases. Of the recorded plants, 56 were herbs, 17 trees and 9 shrubs. Some of these useful species are under serious threats due to unsustainable activities. Effort should be made to implement appropriate conservation measures for preservation and sustainable use of useful medicinal plant species.**

**Key words:** Mastuj valley, ailments, medicinal plants.

## INTRODUCTION

Mastuj valley, District Chitral, lies in between 72°– 0' and 37°– 58' east longitude and 36°– 2' and 36°– 57' north latitude. It stretches about 110 km starting from Reshun up to Ghazin with many other villages. It is the northeastern part of the district which is bounded on the north by Baroghil Pass, on the south by Shandur Pass, on the east by Chumarkhan Pass and on the west by Chitral sub-division. The climate is continental type with hot summer in lower altitude, cool at high elevations and ultimately alpine type above 3000 m. The rural communities of Mastuj valley are still dependent upon wild plants for their primary health care and treatment of ailments. They collect useful plants mostly from rangelands and cultivated fields. The locals have acquired good knowledge on the use and harmful properties of plant species due to their constant association with rangelands and agroecosystems. Hussain et al. (2004) described the ethnobotany of 17 species of fruit plants from Mastuj, District Chitral. Hussain et al. (2007) reported 52 medicinal plants from Mastuj, District Chitral. Islam et al. (2010) described 85 medicinal plants from Khagrachhari District, Bangladesh. Jan et al. (2010) reported 54 medicinal plants from Dir Kohistan valley, which was used for the treatment of jaundice in the area. These plants were used for the treatment of 60 different diseases. Cheikhoussef et al.

(2011) reported 61 medicinal plant species of 25 families from Oshikoto region, Namibia. Majority of the plants were used for mental diseases followed by skin infection and internal injuries. Iqbal et al. (2011) described 69 medicinal plants from Pind Dadan Khan, District Jehlum. Khan et al. (2011) documented 31 plant species belonging to 21 families from Chitral Gol National Park, District Chitral. Kumar et al. (2011) reported 61 medicinal plants from Garhwal Himalaya, India. Qureshi et al. (2011) reported 48 medicinal plants from arid areas of Khushab, Punjab, which were used for treating 45 different diseases in the area. Amri and Kisangau (2012) reported 82 medicinal plants belonged to 29 families from Kimboza forest reserve, Tanzania. Khan et al. (2012) described 68 medicinal plants of 44 families from Poonch valley Azad Kashmir. The plants were used for preparations of folk recipes of 68 ailments. Rauf et al. (2012) reported 34 medicinal plants of 27 families from Islamabad. These species were used to cure 64 ailments of humans and cattles.

## MATERIALS AND METHODS

Field trips were undertaken in the study areas during the years 2006 – 2009 to collect plant species of ethnomedicinal value and to document the indigenous practices. Information was gathered from traditional healers, experienced village elders including midwives and by personal observations. Botanical names, local names, collectors, part used, disease / health problems and preparation of the plants are given. Plant specimens were identified with the help

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**Table 1.** Medicinal uses of plants of Mastuj valley, District Chitral, Pakistan.

S/N	Plant species	Local Names	Collector	Parts Used	Disease / health problem	Preparation
<b>A. Pteridophyta</b>						
1.	1. Family Pteridaceae <i>Adiantum venustum</i> D. Don.	Sumbul	Men	Leaves	Cardiac problems	2 g dried powdered leaves are taken with a glass of water once before breakfast.
<b>B. Gymnosperms</b>						
2.	2. Family Cupressaceae <i>Juniperus excelsa</i> M.B.	Sawroz	Men	Shoots	Anthelmintic and abdominal pain	2-3 g dried shoots and fruits are soaked in water for an hour. Extract from shoots is anthelmintic. While fruit extract is drunk in case of abdominal pain.
3.	3. Family Ephedraceae <i>Ephedra gerardiana</i> L.	Somany	Men	Shoots	Skin protection and diseases. Pneumonia and gastric problems.	Extract from boiled shoots is applied on face as sun screen. It is drunk in one spoon in case of pneumonia and gastric problems.
<b>C. Angiosperms</b>						
<b>1. Monocotyledons</b>						
4.	4. Family Alliaceae <i>Allium carolinianum</i> DC.	Latruk	Women	Shoots	Lumbago	Shoots are cooked as vegetable and eaten to treat lumbago.
5.	<i>Allium cepa</i> L.	Thresh-to	Women	Whole plant	Skin diseases	Oil obtained from warmed bulbs is applied on skin to treat skin diseases. The plant is used as condiment and as salad.
6.	<i>Allium sativum</i> L.	Wrezhnu	Women	Whole plant	Skin diseases and blood pressure	Gently warmed bulbs are used as poultice on boils to discharge puss. The fresh leaves are eaten to reduce high blood pressure.
7.	5. Family Iridaceae <i>Iris germanica</i> L.	Sosun	Women	Roots	Rheumatism and fever.	The poultice from dried roots is placed over inflamed parts of the body as spasmodic. Root are boiled in water one glass extract is drunk as antipyretic to reduce temperature and fever.
8.	6. Family Poaceae <i>Zea mays</i> L.	Jawari	Women	Carpel	Kidney problems	5 g carpels are boiled, filtered and one spoon is drunk twice a day to relieve kidney problems and promote urination.

Table 1. Contd.

9.	<b>2. Dicotyledons</b> 7. Family Anacardiaceae <i>Pistacia khinjuk</i> Stock.	Binju	Men	Shoots	Bad eye site	The wood is kept in houses to repel bad eye site.
10.	8. Family Apiaceae <i>Carum capticum</i> L.	Shounj mukh	Women	Fruits	Fever	Herbal tea made from fruits is drunk thrice a day to treat fever.
11.	<i>Carum carvi</i> L.	Hojoj	Women	Fruits	Throat infection	A glass of herbal tea made from fruits is drunk to cure throat infection.
12.	<i>Coriandrum sativum</i> L.	Danu	Women	Shoots	Appetizer, carminative and diuretic	Shoots are mixed with food, cooked and eaten as appetizer, carminative and diuretic agent.
13.	<i>Daucus carota</i> L.	Khashgum	Women	Seeds and roots	Abdominal pain and ophthalmic	A glass of herbal tea from seeds is drunk twice a day to cure abdominal pain. Roots are eaten to enhance eye sight.
14.	<i>Ferula jaeschkeana</i> Vatke.	Rav	Men	Latex	Toothache	Green herbaceous parts are incised and oozing latex is collected on flat stones. The color of the latex changes to brown which is called heeing. It is placed on infected teeth to relive toothache.
15.	<i>Foeniculum vulgare</i> Miller.	Bodyoung	Women	Fruits, leaves and flower	Toothache, cough, abdominal pain and lumbago	Leaves and fruits are chewed to relive toothache and cough. 5-10 g flowers and fruits are mixed with wheat flour, cooked and eaten once a day to treat lumbago.
16.	<i>Prangos pabularia</i> (Lind.) Hiroe.	Shorum	Women	Shoots	Stomachic	10 g fresh and dried shoots are mixed with wheat flour cooked and eaten twice a day as stomachic.
17.	<i>Trachydium roylei</i> Lindl.	Mushin	Men	Leaves	Antidote	Fresh leaves are crushed and applied on scorpion sting after every 30 min.
18.	9. Family Apocynaceae <i>Trachomitum venetum</i> (L.) Woodson.	Bakat	Women	Stems	Rheumatism	The dried stems are peeled off and placed over infected parts and burnt to cure rheumatic pain.
19.	10. Family Asteraceae <i>Artemisia parviflora</i> Roxb ex D.Don	Kharkalich	Women	Seeds	Antidiabetic and wormicide	A glass of 2 g seed extract is drunk once a day to cure diabetes and as wormicide.
20.	<i>Calendula officinalis</i> L.	Bodaki	Women	Flower	Antispasmodic	Crushed flowers are mixed with vegetable oil and the paste is applied on affected joints.

Table 1. Contd.

21.	<i>Cichorium intybus</i> L.	Khasti	Men	Roots	Febrifuge	Root are boiled and the extract is drunk to treat intermittent fever.
22.	<i>Matricaria chamomilla</i> L.	Shrisht	Women	Flower	Abdominal pain	Herbal tea made from the dried flowers is taken twice a day to cure abdominal pain.
	11. Family Brassicaceae					
23.	<i>Lepidium sativum</i> L.	Troak khardachi	Women	Shoots	Stomachic	Fresh shoots are eaten as stomachic.
24.	<i>Nasturtium officinale</i> R.Br.	Shiakoshak	Men	Shoots	Stomachic	Fresh shoots are eaten as stomachic.
25.	<i>Raphanus sativus</i> L.	Muli	Women	Roots	Jaundice	Roots are eaten to cure jaundice and used as salad and vegetable.
	12. Family Berberidaceae					
26.	<i>Berberis lycium</i> Royle.	Chouch	Women	Fruits and roots	Febrifuge and abdominal pain	Syrup from fresh and dried fruits is taken twice a day to cure fever. Roots are boiled in water and the extract is drunk to relieve abdominal pain.
	12. Family Boraginaceae					
27.	<i>Arnebia hispidissima</i> (Lehm.) DC.	Phusuk	Women	Roots	Dandruff problem	5 to 10 g roots are immersed in hair oil and applied on hairs as coloring agent and to prevent hair loss.
	13. Family Cannabinaceae					
28.	<i>Cannabis sativa</i> L.	Boung	Men	Seeds	Weakness	Seeds are warmed and eaten as stimulant and tonic. It is also used for making hashish.
	14. Family Capparidaceae					
29.	<i>Capparis spinosa</i> L.	Kaveer	Children	Flower and fruits	Fever and Sunburn	10 to 20 g floral buds, meshed with wheat flour are cooked and eaten to cure fever. 20 to 40 g floral buds are soaked in water for a week. The extract is taken to treat fever. The fruit pulp is applied on face as sun screen.
	15. Family Caryophyllaceae					
30.	<i>Silene conoidea</i> L.	Apopar	Women	Leaves	Stomachic	Cooked fresh and dried leaves are used as vegetable and as stomachic.
	16. Family Convolvulaceae					
31.	<i>Convolvulus arvensis</i> L.	Mishk	Women	Leaves	Constipation	Fresh leaves are cooked as vegetable and eaten to relieve constipation.
	17. Family Cucurbitaceae					
32.	<i>Cucurbita maxima</i> Duch ex Lam.	Alok	Women	Seeds	Cough	Herbal tea made from seeds is drunk to cure cough.

Table 1. Contd.

33.	18. Family Elaeagnaceae <i>Elaeagnus angustifolia</i> L.	Shounjur	Men	Bark and Fruits	Dyspepsia and throat problems	Herbal tea made from fresh bark is drunk to improve digestion. The fruits are warmed and eaten to treat throat problems.
34.	<i>Hippophae rhamnoides</i> L.	Mirghenz	Men	Fruits	Skin diseases	The fruit juice is applied on face as sun screen.
35.	19. Family Fumariaceae <i>Fumaria indica</i> (Hauskn.) L.	Shatara	Men	Shoots	Abdominal pain	Shoots are shade dried, crushed and herbal tea is made, which is drunk to relive abdominal pain.
36.	20. Family Juglandaceae <i>Juglans regia</i> L.	Birmough	Men	Leaves and bark	Insecticide	Leaves and root bark are used for cleaning teeth and as antimicrobial agent. These are locally called dandasa.
37.	21. Family Lamiaceae <i>Mentha longifolia</i> (L.) Huds.	Ben	Women	Whole plant	Febrifuge and stomachic	Green herbal tea from fresh roots is drunk to treat fever. Raw fresh leaves are eaten to improve digestion.
38.	<i>Nepeta cataria</i> L.	Sosambar	Women	Leaves	Toothache	Fresh leaves are chopped and applied on affected teeth to relive toothache.
39.	<i>Ocimum basilicum</i> L.		Women	Shoots	Stomachic	Shoots are cooked as vegetable and eaten as stomachic.
40.	<i>Ocimum sanctum</i> L.	Suspru	Women	Leaves	Antipyretic and febrifuge	Green herbal tea made from fresh leaves is used to reduce fever. 5 to 10 g leaves are meshed with wheat flour are cooked and eaten as febrifuge.
41.	<i>Salvia rhytidea</i> Benth.	Korach	Women	Shoots	Stomachic and abdominal pain	Shoots are cooked as vegetable and eaten as stomachic and to relive abdominal pain. It is also used as condiment and salad.
42.	<i>Thymus serpyllum</i> L.	Sew	Men	Shoots	Febrifuge and stimulant	Green herbal tea from shoots is drunk to reduce fever and also as stimulant.
43.	22. Family Linaceae <i>Linum usitatissimum</i> L.	Shentak	Women	Seeds	Lumbago	Oil is extracted by heating the seeds, which is added with wheat flour and cooked. It is taken as a cure for lumbago.
44.	23. Family Malvaceae <i>Alcea rosea</i> L.	Lain	Women	Leaves	Piles	Poultice made from warmed leaves is placed on infected parts to discharge the puss.
45.	<i>Malva neglecta</i> Wallr.	Suwachal	Women	Shoots	Constipation	Shoots are cooked as vegetable and which also solves constipation problems.

Table 1. Contd.

46.	24. Family Moraceae <i>Morus alba</i> L.	March	Women	Fruits	Gastric problems and rheumatism	Fruits are boiled for an hour and then cooled. The preparation is locally called shrene and is taken to treat gastric problems and to treat painful joints.
47.	<i>Morus nigra</i> L.	Shatoot	Women	Fruits	Body pain	The fruits are eaten to treat body pain.
48.	25. Family Oleaceae <i>Fraxinus xanthoxyloides</i> (Wall ex G. Don.) DC.	Toor	Men	Bark	Stimulant	2 to 3 g bark is soaked in water and a cup of this extract is given twice a day to pregnant women at the time of delivery to reduce labour pain.
49.	26. Family Papaveraceae <i>Papaver somniferum</i> L.	Ofyun	Women	Seeds and Latex	Cough and sedative	Herbal tea made from seeds is drunk to relieve cough. The latex obtained from the incised capsule is eaten as sedative.
50.	27. Family Papilionaceae <i>Astragalus psilocentros</i> Fisch.	Garmenzu	Men	Roots	Toothache	Roots are used as tooth brush to relieve toothache.
51.	<i>Glycyrrhiza glabra</i> L.	Moyou	Men	Roots	Abdominal pain	5 to 10 g roots are boiled to get extract and a glass is drunk once a day to cure abdominal pain.
52.	<i>Melilotus officinalis</i> (L.) Desv.	Zarwak	Women	Flower	Anthelmintic	The flowering shoots are cooked and eaten as deworming agent.
53.	<i>Sophora mollis</i> (Royle) Baker.	Besho	Men	Shoots	Skin diseases	Oil obtained from burning dried shoots and branches is used to cure skin diseases.
54.	28. Family Paeoniaceae <i>Paeonia emodi</i> Wall ex G. Don.	Mameki	Women	Fruits	Lumbago	Powdered fruits are mixed with wheat flour, fried in vegetable oil and eaten to treat lumbago.
55.	29. Family Plantaginaceae <i>Plantago major</i> Aitch.	Ustanbash	Women	Seeds	Diarrhea	2 to 5 g seeds are soaked in water with some sugar and a glass is taken once a day to treat diarrhea.
56.	30. Family Plumbaginaceae <i>Psyllisotachys suworowii</i> (Regd.) Roshk.	Asqarbash	Men	Leaves	Respiratory problem	Leaves are cooked as vegetable and eaten twice a day to heal respiratory problems.
57.	31. Family Polygonaceae <i>Polygonum dumetorum</i> L.	Pindoro mish	Women	Leaves	Constipation	Fresh leaves are cooked and eaten to treat constipation.

Table 1. Contd.

58.	<i>Polygonum glabrum</i> Willd.	Basirjoush	Men	Shoots	Rheumatism	The peeled off stem pieces are placed over inflamed parts and warmed to treat rheumatic problems.
59.	<i>Rheum emodi</i> Wall ex Meissn.	Ishpar	Men	Floral scape	Cough and flu	The flowering scape is eaten as a remedy for cough and flu.
60.	<i>Rumex hastatus</i> D. Don. 32. Family Portulacaceae	Cherkonzur	Women	Leaves	Laxative	The cooked leaves are eaten as a laxative.
61.	<i>Portulaca oleracea</i> L.	Pecheli	Women	Shoots	Stomachic	The plant is cooked as vegetable and eaten as stomachic and to improve digestion.
62.	33. Family Punicaceae <i>Punica granatum</i> L.	Dalum	Men	Fruit rind	Vulnerary	Paste of dried rind is applied over affected parts of the body as vulnerary.
63.	34. Family Rosaceae <i>Cotoneaster nummularia</i> Fisch. and Mey.	Mekin	Men	Fruits	Anemia	The fruits are eaten to combat anemia.
64.	<i>Cotoneaster affinis</i> var. <i>bacillaris</i> (Lindl.) Schneider.	Badur	Men	Fruits	Indigestion and abdominal pain	Fresh fruits are crushed to get extract which is sweetened and is drunk to improve digestion and to cure abdominal pain.
65.	<i>Crataegus songarica</i> C. Koch.	Ghoni	Women	Bark	Labour pain	5 g bark is soaked in a jug of water for an hour and a spoonful of this extract is given to pregnant women twice a day to reduce labour pain.
66.	<i>Prunus amygdalus</i> L.	Badam	Men	Seeds	Brain tonic	Seed are mixed with milk and eaten as brain tonic.
67.	<i>Prunus armeniaca</i> L.	Zuli	Women	Fruits and gum	Weakness and lumbago	The dried fruits are soaked in water and eaten as tonic. The gum is eaten to cure lumbago.
68.	<i>Prunus persica</i> (L.) Batsch.	Gerwalough.	Women	Fruits and Seeds	kidney problems and wound healing	The dried fruits are eaten to treat kidney problems. Powered seeds are mixed with water and usually applied on hands as vulnerary during winter.
69.	<i>Pyrus malus</i> L.	Palough	Men	Seeds and Fruits	Loss of Appetite	Seeds are eaten as appetizer. Fruits are nutritious and tonic.
70.	<i>Rosa webbiana</i> Wall ex Royle.	Throny	Men	Petals	Stomachic	Dried powdered petals are used as herbal tea, which is considered as stomachic. Rose tea is prepared from petals.
71.	<i>Rubus fruticosus</i> L.	Acho	Men	Fruits	Anemia	Fresh fruits are eaten to enrich the blood.

Table 1. Contd.

72.	35. Family Salicaceae <i>Salix acmophylla</i> Boiss.	Chekar	Men	Leaves	Malaria	10 to 15 g fresh leaves are crushed in water and a cup of tea of this extract is drunk thrice a day to treat malaria.
73.	36. Family Saxifragaceae <i>Bergenia ciliata</i> (Haw.) Sternb.	Besabur	Women	Roots	Sun screen and skin diseases	Paste from roots are applied on skin as sun screen and to treat skin diseases.
74.	37. Family Scrophulariaceae <i>Verbascum thapsus</i> L.	Ghordoughkaro	Men	Leaves	Wound healing	Fresh leaves are placed over affected parts to cure wounds and inflammations.
75.	38. Family Solanaceae <i>Datura stramonium</i> L.	Porol	Women	Shoots	Rheumatism	The peeled off dried stems and shoots are placed over affected joints and burnt to treat rheumatic problems.
76.	<i>Nicotiana tabacum</i> L.	Tamako	Women	Leaves	Intestinal worms and insecticide	2 g of leaves are soaked in a glass of water and a spoonful is drunk once a day as deworming agent. The leaves are kept among clothes and papers to repel insects.
77.	<i>Solanum nigrum</i> L.	Pirmelic	Women	Leaves and fruits	Fever and ophthalmic	Cooked leaves are eaten to reduce fever. Fruit juice is applied to treat sore eyes and other ophthalmic diseases.
78.	39. Family Tamaricaceae <i>Tamarix dioica</i> Roxb ex Roth.	Hinju	Men	Flower	Wound healing	Paste from dried flowers are applied on wounds as vulnerary.
79.	40. Family Violaceae <i>Viola serpens</i> Wall ex Roxb.	Milkhon	Women	Flower	Cough	5 g dried flowers are soaked in water and a glass is drunk twice a day to relive cough.
80.	41. Family Vitaceae <i>Vitis vinifera</i> L.	Droach	Men	Fruits	Typhoid and dyspepsia	The juice extracted from fresh fruits is drunk to cure typhoid fever and to heal dyspepsia.
81.	42. Family Zygophyllaceae <i>Peganum harmala</i> L.	Ispandur	Men	Seeds	Evil eye repellent	Dried seeds are burnt to smoke to repel evil eyes.
82.	<i>Tribulus terrestris</i> L.	Koluzoakh	Men	Fruits	Spermatosis	5 to 10 g fruits are soaked in water and a glass of this extract is drunk to cure spermatosis.

of Flora of Pakistan. Nomenclature used in this paper follows Nasir and Ali, 1971 – 1995; Ali and Qaisar, 1995 – 2011.

## RESULTS AND DISCUSSION

During the field survey, 82 medicinal plants belonging to 74 genera and 42 families were compiled from various villages of Mastuj valley (Table 1). The study showed that skin disease, fever, rheumatism, abdominal pain and toothache are the major health problem in the area. During the treatment of the diseases various forms of preparation are used. Herbs (56, 68.29%) were found to be most used plants followed by trees (17, 20.73%) and shrubs (9, 10.97%). Fruits were mostly used (19, 23.17%) followed by shoots (17, 20.73%) and leaves (15, 18.29%).

Due to the lack of modern communication, as well as poverty, ignorance and unavailability of modern health facilities, most people especially rural people are still forced to practice traditional medicines for their common day ailment. In ancient times, people had knowledge of medicinal plants. Several hundred species were used as herbal remedies in indigenous system of medicines that used the whole plant or an extraction (Hussain et al, 2008). In Chitral valley, the use of plant resources is also a source of income, besides fulfilling their various utilitarian needs. The plant collectors are often herders, Shepard or other poor village dwellers of the population. The local people are ignorant about the importance of these plants at global level. Sometimes they collect plant in excess quantity and in most cases the whole plant is uprooted (Ali and Qaisar, 2009). Out of about 258,650 species of higher plants reported from the world, more than 10% are used to cure ailing communities. Majority of the people in Pakistan rely on medicinal plants to find treatment for their minor, even in some cases major diseases. In most instances, certain plant species are considered specific for a particular illness but occasionally they have mixed usage. Women followed by children are the principal collector of medicinal plants. Due to over-collection several species have gone extinction in the Hindukush Himalayan regions. Though medicinal plants from wild are important source of income for local communities, but if not properly managed, this may lead to the destruction of habitat and in return extinction of species (Shinwari, 2010). Starting the pre-historic era to date, people healed themselves with local plants remedies. In the recent days, one can observe an international drift of significance in the long established structure of medicines. Evaluation of therapeutic herbs has turned into a latent basis of biodynamic substances of curative value (Mahmood et al., 2011). Rapid urbanization and unplanned exploitation have resulted in loss of medicinal plant species. It is therefore, imperative to find ways to encourage practices for promoting conservation. There is need of coordination and cooperation among various agencies such as forest

department and the pharmaceutical firms interested in the utilization of these medicinal plants and to initiate regeneration work in degraded or areas devoid of vegetation. By doing so, we can change the economic and social conditions of the local inhabitants positively (Qureshi et al., 2011).

The people of Mastuj valley have been using plant resources for their various ailments since time immemorial. The local people know the beneficial plants and preparation of raw drugs through personal experience and ancestral prescription. Mastuj valley is a remote area and therefore, people of the valley are more dependants on plant resources as compared to other adjacent areas. The present study showed that the local people of the area are rich in indigenous knowledge of plants and their uses to treat many ailments.

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