

Medicinal Plants Used in Folk Recipes by the Inhabitants of Himalayan Region Poonch Valley Azad Kashmir (Pakistan)

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Abstract: Plants with medicinal properties were held in the highest esteem in indigenous medicine systems all over the world. All indigenous remedies, whether traditional or modern, have originated directly or indirectly from folklore, rituals and folk medicinal knowledge. The objective of this study was to collect the information about how the local people used the plants of their area to cure a wide variety of ailments in human and livestock. Extensive surveys were carried out during the field work; interviews were conducted with the local inhabitants, the herbalists 'Hakims' (local physicians). About fifty informants were interviewed on random basis. The ethnobotanical data obtained was checked and compared with the existing literature and was analysed both qualitatively and quantitatively. In total 68 species of plants belonging to 44 families were recorded as used medicinally for preparations of folk recipes of 68 ailments. During the field study, it was found that the indigenous knowledge related to medicinal uses comes from women age between 30-50 years, whereas the folk medicinal use comes from men. This survey indicated that 72% source of indigenous knowledge related to the medicinal use of plants comes from people between age of 50 years, while 28% of it comes from people between age 30 and 50 years. The survey also indicated that men especially old one's are more informative of folk knowledge of medicinal plants than women in the area. It was also indicated that about 60% of the homemade drugs were used by people above the age of 50 years, 30% by children below age of 15 years especially infants. While remaining 10% of the traditional medicines of plant origin were utilized by people between ages of 15-50 years.

Keywords: Medicinal plants, ethnobotany, traditional medicines, folk knowledge, and folk recipes.

INTRODUCTION

Study Area

The area is situated between 33°– 36° North latitude and 73° – 75° East longitude, guarded by occupied Poonch district of central Kashmir on the east, Rawalpindi city on the west, Tatta Pani and Kotli on the south and Suddhen Gali Muzaffarabad on the north. The total area is 8500 hectares and from administrative point of view, it covers Poonch, Sudhnoti and part of Bagh districts respectively. The region has got an average height of 1750 – 2500 meter from mean sea level, sloping from south north to north east.

The average annual rainfall of the area is about 1600mm. the southwest monsoon advances into the area in the later half of June with 93 % of the annual rainfall during July-September. The climate of the area is of temperate having three seasons namely: winter – October to mid March, summer – from mid March to June and rainy season from July to September.

The mean maximum humidity is 95.16% and the means minimum humidity is 56.75 %. Cold season starts by mid October and lasts up to mid March, December and January being the coldest months. The

average minimum and maximum temperature during the year varies from 3C° to 26 C°. During the summer months temperature rises to as high as 40C° to 45 C°, with the onset of monsoon there is an appreciable drop in temperature. There is heavy snow fall during December to February and is approximately 30 to 90 cm deep and completely covers the area. The vast portion of the area is made up of sandy clay soils capable to retain moisture, helping in good growth of forest. It is followed by loamy soils. River Poonch flows in the east boarder of the investigated area. There are many springs and small streams and nullahs.

Medicinal Plants

Medicinal plants possess active chemical constituent in any of its part like roots, stems, leaves, barks and seeds. These produce a definite curing physiological response in the treatment of various ailments in human and other animals. The various chemicals work together to produce gentle progressive healing within the body tissue. The major hindrance in the amalgamation of herbal medicines into modern medical practices is the lack of scientific and clinical data, and better understanding of efficacy and safety of the herbal products. A simple illustration of synthetic drug verse plant extract is with aspirin and the bark of *Salix alba* (white willow). Saliein, a phenoid glycoside found in the bark of *Salix alba*, was first synthesized in 1899 [1] and formed the basis for making aspirin

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(Acetyl salicylic acid). In many people, aspirin tends to cause stomach irritation as a side effect because the drug is absorbed in the acidic environment of the stomach. By using an extract of *Salix alba* bark, stomach irritation is avoided, as the preparation is absorbed in the alkaline environment of the duodenum, due to its astringent tannin content [2].

The traditional practitioners (herbal doctors) are playing an important role in providing health coverage to 75% of the population residing in villages and rural areas. A variety of herbal products have been used by the herbal doctors for the treatments of various diseases common in the area. The elder people of the area, even in these days, use local plant resources to cure many common diseases of children especially. The knowledge and experience of these elderly people (Men and Women) is a precious wealth of the area.

Siddiqui *et al.* reported that medicinal plants were pharmacologically screened for their cardiac activity on isolated rabbit heart palpitation [3]. Out of these 7 plants showed significant positive cardio tonic activity, along with the effects on the heart rate and coronary flow. In this research crude ethanol and aqueous fractions were used.

Farooq reviewed the medicinal plants of Pakistan [4]. Fifty-two species of indigenous medicinal plants from 25 families of angiosperms were dealt with in accordance to their importance in the traditional medicine of Pakistan and India. In addition to their usages in oriental medicine, a description was given of their applications as drugs in European, American and African countries.

Leporatti and Lattanzi studied 27 medicinal plants ethnobotanically in Makran (Southern Pakistan). They reported and discussed their traditional medicinal uses [5].

Haq and Hussain surveyed the medicinal plants of Palandri, District Poonch and revealed that there were 47 such plants in the area [6]. The local names in Pehari, Urdu, Punjabi and Pashto were given. The local uses of the plants were enquired from the local people and medicinal uses of the plants were also discussed in detail.

Qureshi and Khan conducted the study in Kahuta, Rawalpindi to list the medicinal plants there. In total 25 species of herbs belonging to 18 families were being used medicinally by inhabitants of the area. Some of the most interesting and representative plants of the

area were *Cyperus rotundas* L., mainly used for cholera, dyspepsia and fever. The oil of *Pongamia pinnata* (L.) Merrill was applied to cure herpes and eczema. *Boerhaavia diffusa* L. was useful for jaundice and other liver complaints.

Zaman and Khan described hundred medicinal plants of West Pakistan with their family, botanical name, distribution, description, constituents and uses [8].

Khan carried out another survey and reported that 95 species were used by Hakims and the annual consumption of medicinal plants was more than 5.65 million kg which valued approximately up to Rs. 36 million [9].

Haq surveyed Mansehra District and collected 53 wild and 17 cultivated medicinal plants [10]. He enlists these plants with botanical, English and vernacular names, families, parts used, distribution, constituents, medicinal and local uses.

Hundreds of ethnic groups inhabit the huge mountain region of the world with unique cultural traditions in the use of biological resources of their environment. This indigenous knowledge and its material base are now under high pressure and danger of disappearing forever [11].

Therefore, there is pressing need for documentation of this precious knowledge of local informants. The present investigation has been undertaken to collect the information about how the local people use the plants to cure a wide variety of ailments. Various plants have been effectively used by the people to cure the disease prevailing in the area using drugs prepared by folk recipes of their own.

MATERIAL AND METHODS

Ethnobotanical information was obtained through general conversation with local inhabitants of Poonch Valley. A number of locals belonging to different age and ethnic groups were interviewed during the field work regarding traditional folk uses of plants. Three questionnaires were used during the survey for information about the plant resources, qualities used, rate of consumption, availability and percentage of plant species found and their utilization by the people (Appendix: 1 and 2).

The ethnobotanical data obtained was checked and compared with the herbalists, hakeems (local

Table 1: Shows Some Important Folk Recipes Used in Poonch Valley

S/No	1. Botanical Name, 2. Local Name, 3. Common Name, 4. Family, 5. Part Used. 6. Flowering Period	Folk Recipes
1.	1 <i>Adhatoda vesica</i> . Nees, 2. Bahker, 3. Adhatoda. 4. Acanthaceae, 5. Leaves and roots 6. March-April.	The aqueous extract of leaves and roots used for curing asthema. About 20ml. of extract is used on each occasion.
2	1. <i>Dicliptera roxburghiana</i> Nees. 2 Churu. 4. Acanthaceae. 5. Root 6. Whole year.	Powder of roots is sprinkled over wounds thrice in a day.
3	1, <i>Barleria cristata</i> Linn. 2, Churu. 4, Acanthaceae 5, Roots and Leaves 6 July-August.	The extract of root and stem is mixed with juice of onion bulbs and is used on snake bite.
4	1, <i>Achyranthus aspera</i> Linn. 2 Puth Kunda., 3 Prickly chaff flower 4 Amaranthaceae, 5 Whole plant., 6 March-November.	The decoction of both leaves and roots are used in toothache and abdominal pain. The juice of the herb is given in dysentery, rheumatism and skin diseases. The paste of the fresh leaves is applied over insect bite. The ash of the plant is mixed with honey is used in cough and asthema. Leaves mixed with ripen fruits of <i>Rubus fruticosus</i> are crushed and juice is applied in eye diseases.
5	1. <i>Pistacia integerrima</i> J.L. Sewert ex. Brandis, 2. Kakara., 3. Pistacia galls. 4. Anacardiaceae, 5. Fruit galls. 6. April-September.	The powder of galls is mixed with Ginger (<i>Zingiber officinale</i>) and honey and is given in dyspepsia and disorder of the digestive system. A mixture of galls powder and honey is taken thrice a day to recover from asthma and pneumonia. A mixture prepared with the powder of the galls, iodine salt, Opium (<i>Papaver somnifera</i>), Ginger and peppermint is given thrice a day in skin diseases. A cream paste of gall powder is given twice a day to cure dysentery.
6	1. <i>Nerium indicum</i> Mill. 2 Kanair3. Oleander. 4. Apocynaceae. 5. Root, Stem and Leaves 6. Mar-Jun.	A paste of bark of root is used for a day to cure arthritis. Leaves are extremely poisonous
7	1. <i>Carissa caranta</i> Linn., 2. Garanda., 3. Karanda (U.), 4. Apocynaceae, 5. Root, 6. March-April	The root paste mixed in 200 ml skimmed milk is given in jaundice. The root paste is massaged to reduce muscle strains, twice a day, for two days.
8	1. <i>Calotropis procera</i> (Willd.) R. Br., 2. Ak, 3. Mudak. 4. Asclepiadaceae, 5. Bar latex and flower., 6. March-April.	10 grams of latex is boiled with 100 grams of <i>Curcuma</i> in half kg water till complete evaporation of water. One gram of this dried mixture of latex and <i>Curcuma</i> is given thrice a day to cure tuberculosis. The latex is applied for reducing swelling caused by scorpion bite. The powdered flowers are used in cold, cough and asthma.
9	1. <i>Ceterach dalhousiae</i> (Hk) C. Chr., 2. Alfhadna., Male shield fern 4. Aspleniaceae, 5. Frond, 6. March-May.	The aqueous extract of the fronds is given thrice a day for three days in snake bite. It is also used as antihelmintic and vermifuge.
10	1. <i>Achillea millefolium</i> Linn., 2. Kungi., 3. Devils nettles 4. Asteraceae, 5. Whole plant. 6. March-April	Aqueous extract is used to cure urinary tract infection and also given for the release of kidney stone. The 20ml. of decoction is advised twice a day for 3 or 4 days to control the disorder of menstruation in females. It is also an active febrifuge.
11	1. <i>Calendula officinalis</i> L. 2. Sadberga. 3. Marigold. 4. Asteraceae 5. Whole plant 6. Jun-Aug.	The extract of young branches is used to relieve kidney pain and release of kidney stones.
12	1. <i>Cichorium intybus</i> L. 2. Kasni. 3. Chicory. 4 Asteraceae 5. Whole plant. 6. Jul-Aug	The roots are boiled in water and the extraction after cooling is used for curing fever and vomiting.
13	1. <i>Sonchus asper</i> (L) Hill 2. Hundh. . 3. Dodak (U) . . 4 Asteraceae 5. Leaves 6. Jul-Aug.	Leaves are cooked and used for abdominal pain.
14	1. <i>Artemisia roxburghiana</i> Wall ex. Besser, 2. Jangli ajwan., 3. Worm wood. 4. Asteraceae, 5. Leaves and inflorescence., 6. July-October.	The decoction of the leaves is given for treatment of liver and stomach disorder. The poultice of inflorescence is used as antihelmintic particularly for children.
15	1 <i>Berberis lyceum</i> Royle , 2 Kali sumbali., 3. Berbery 4. Berbaridaceae., 5. Bark of roots., 6 March- April.	The powder of the dry bark is sprinkled on wound even because of cancer for quick healing. The powder of the roots is used for intestinal colic and for the treatment of pharyngitis. It is also a cooling agent .The bark is astringent used for healing internal wounds, cracks of bones, urine burning and also used as tonic in pregnancy. The bark powdered is mixed with desi ghee and given for the treatment of hidden wounds.

Table 1: Continued

S/No	1. Botanical Name, 2. Local Name, 3. Common Name, 4. Family, 5. Part Used. 6. Flowering Period	Folk Recipes
16	1. <i>Trichodesma indicum</i> (Linn.) R. Br., 2. Handusi, 3. Trichodesma, 4 Boraginaceae., 5. Root and Stem, 6. May – June.	Aqueous extract of the plant is mixed with wheat flour and sugar and cooked in desi ghee and given for the treatment of abdominal pain. Curry is prepared by roots and the stem of plant, a cup of it is advised thrice a day for the treatment of backache. Aqueous extract of the root is given for the release of kidney stone. It is also used as tonic and febrifuge.
17	1. <i>Cannabis sativa</i> .Linn. 2. Bhang 3. Hemp. 4. Cannabinaceae 5. Leaves. 6 June- August.	The crushed leaves are mixed with onion and used for poils in the form of poultice. It is used as refrigerant. It is smoked to relive pain.
18	1. <i>Dioscorea deltoidea</i> Wall.ex Kunth. 2. Kala ganda 3.Potato yam 4. Dioscoreaceae, 5. Root (rhizome) 6. July-October.	The powder (5g.) of the dry rhizome along with 20 black pepper is taken thrice a day as antipruritic and blood purifier. It is used as carminative agent. The powder (5g) is taken for treatment of toxemia and many diseases of children.
19	1. <i>Mallotus philippensis</i> (Lam) Muell 2. Kamella. . 3 Rauni (U).4 . Euphorbiaceae 5. Fruits and stem 6.Apr –Sep.	Loc The red powder obtained The red powder obtained from the surface of the fruits is used to cure mumps and measeals in children
20	1. <i>Ricinus communis</i> Linn. 2. Harnoli 3. Castor-oil plant. 4. Euphorbiaceae 5. Fruit (Seed) and leaves. 6. April-May.	The powder of the seed is used as purgative for children. The hot leaves are applied over abdomen of children to relieve flatulence. The leaves are also made into poultice and used on poils. The dry seeds are crushed for extracting oil. The oil is given to children for checking constipation.
21	1. <i>Fumaria indica</i> (Hauskkn) H.N. Pugsley. 2. Papara 3. Fumikory 4. Fumariaceae 5. Whole plant. 6. March-April.	The aqueous extract (20ml) of the fresh leaves and the stem of the plant is given twice a day as antipruritic. It is used as blood purifier and cooling agent.
22	1. <i>Swertia chirayita</i> (Wall) C.B.Cl 2. Chirayita. 3.Chirtta.4. Gentianaceae. 5. Whole Plant 6. July-August.	The decoction of the plant (20ml) is given twice a day for a week for the treatment of boils. It is used as tonic, antihelmintic and laxative.
23	1. <i>Geranium wallichianum</i> D. Don ex Sweet. 2. Ratanjo 3. Alkanet 4. Geraniaceae 5. Root (Rhizome) 6. June-September.	The aqueous extract of the roots (50ml) is takes twice a day to recover from rheumatism. It is also used as aphrodisiac and for the treatment of sexual disability. The rhizome powder is taken to recover from general weakness.
24	1. <i>Julans regia</i> Linn. 2. Khor 3. Walnut 4. Juglandaceae 5. Nuts 6. March-April.	The mixture of nut pericarp Gram seeds and Almond (in equal amount) is fried in Desi Ghee and given for the treatment of asthma and bronchitis. Nuts are used as aphrodisiac and also for checking high blood pressure.
25	1. <i>Mentha viridis</i> (Linn.) Huds. 2. Kala Pudina 3. Horse mint 4. Lamiaceae, 5. Leaves 6. June-August.	The part of fresh leaves mixed in the egg and fried with sugar and is used as stomachache and carminative. The powder of leaves is used with green tea to control vomiting and diarrhea.
26	1. <i>Elsholtzia fruticosa</i> (D.Don) Rehder, 2. Mushk buti 3. Elsholtzia 4. Lamiaceae, 5. Leaves, 6. July-September	The dry leaves (5grams) along with tobacco are smoked for three or five days to cure cough and cold. The fumes of fresh leaves are respired for release of mucus from the respiratory tract in lung infection.
27	1. <i>Allium humile</i> Kunth 2. Jangli Thom. 3. Rosy Garlic 4. Liliaceae 5. Bulbs 6. April-July.	Fresh bulbs are roasted with ginger in Desi Ghee and used as carminative and gastric stimulant. Fresh bulbs are consumed to recover from rheumatism.
28	1. <i>Asparagus filicinus</i> Ham 2. Kandiali 3.Asparagus 4. Liliaceae 5. Root 6. September-October.	The aqueous extract of roots (100ml) is taken orally, twice a day for two to three days to recover from general weakness due to prolonged illness. The powder of the dry bark of the root is taken with milk as aphrodisiac.
29	1. <i>Colchicum luteum</i> Baker 2. Kamba. 3. Meadow saffron 4. Liliaceae 5. Bulb 6. February-June.	The powder of dry rhizome mixed with powder of ginger and pepper in equal amounts is given to the persons suffering from joint pain. It is also used as aphrodisiac. The powder of rhizome is taken as carminative and laxative.
30	1. <i>Jasminum humile</i> L. 2. Chamba zard. 3. Yellow Jasmine . 4. Oleaceae 5. Root. 6.Jul –Sep	A decoction of roots is used for curing ringworm.
31	1. <i>Olea ferruginea</i> Royle. 2. Kuhu. 3.Wild Olive 4. Oleaceae. 5. Leaves. 6. March-September.	The decoction of the leaves is given for treatment of toothache. It is also used as astringent and antiseptic. Fresh leaves are chewed to cure stomachache and sore throat.

Table 1: Continued

S/No	1. Botanical Name, 2. Local Name, 3. Common Name, 4. Family, 5. Part Used. 6. Flowering Period	Folk Recipes
32	1. <i>Oxalis latifolia</i> H.B. &K. 2. Jandoro. 3. Garden Pink Sorrel 4. Oxalidaceae. 5. Whole plant. 6. March-June.	The aqueous extract of plant is taken as drink for stomach problem and as cooling agent. The extract of the leaves is used for reducing the swelling and redness of eyes and to relieve the pain. The paste of the fresh leaves is used to stop bleeding from wound.
33	1. <i>Papaver somniferum</i> .Linn, 2. Postt., 3. Opium poppi, 4. Papavaraceae., 5. The capsules, latex. 6. March-April.	The dried empty capsules are roasted and crushed into powder and mixed in sugar. This mixture is given for the treatment of pneumonia, diarrhoea, dysentery and some forms of cough in children. It is used as the best hypnotic and sedative drug, frequently used to relieve pain and calm excitement. The coagulated latex obtained from the incisions of the green capsule is used as hypnotic, sedative, astringent, expectorant, diaphoretic and antispasmodic.
34	1. <i>Argyrobolium roseum</i> (Camb.) Jaub &Spach 2. Mukhan Butti. 4. Papilionaceae, 5. Whole plant, 6. March-April.	The aqueous extract of the plant is taken orally once a day in the morning in empty stomach as aphrodisiac, diuretic and sedative for a week continuously. It is believed that the juice of the plant is an effective sex stimulant and remedy of sexual disability. It is used as a cooling agent.
35	1. <i>Desmodium podocarpum</i> DC. 2. Sukhy-ni-Jari. 4. Papilionaceae, 5. Roots. 6. July-September.	The aqueous extract of the roots is given to the children suffering from weakness and stunted growth. The drug is taken once in a morning for twenty one days. The drug is believed to cure the weakness and make the children more energetic.
36	1. <i>Abies pindrow</i> Royle. 2. Tung. 3. West Hamalayan. Silveo Fir, 4. Pinaceae. 5. Bark 6. April-June.	The powder of the inner flesh red bark is mixed with honey. The mixture so made is given twice a day to cure cough and chronic asthma.
37	1. <i>Polygala abyssinica</i> R. Br. ex. Fresen. 2. Zair-ni-buti. 3. Milkwort 4. Polygalaceae. 5. Rhizome 6. June-August.	It is said that if rhizome is kept in the mouth and juice sucked immediately after the snake bite, the poison from the place of bite can not spread further.
38	1. <i>Polygonum amplexicaulis</i> D.Don. 2. Masloon. 3. _ 4. Polygalaceae. 5. Rhizome 6. July-August.	Dried rhizome is used for making (Masloon) tea. This tea is used as tonic. The decoction (50ml) of the rhizome is taken once a day in the evening for treatment of rheumatic pain, bachache and gout.
39	1. <i>Rumex hastatus</i> D. Don. 2. Khatimal. 3. Yellow soak 4. Polygalaceae 5. Leaves, dried and fresh 6. March-June.	A mixture prepared with the aqueous extract of leaves and vinegar in equal quantity is given thrice a day to cure jaundice and stone in kidney. The powder of dry leaves is used as refrigerant, diuretic and antiscorbutic. A mixture of fresh leaves and seeds of <i>Punica granatum</i> equal quantity is given as a treatment of sunstroke.
40	1. <i>Punica granatum</i> Linn. 2. Daruna. 3. Pomegranate 4. Punicaceae. 5. Fruit, rind of fruit, bark, leaves and flower. 6. March-May.	The powder of dry rind of fruit (5gms) is mixed with sugar and used three times a day for treatment of epidemic diseases such as diarrhoea and dysentery. The bark powder is given stomachic, antiemetic and antihelmintic. Powder of dry flower (5gms) is given thrice a day with water for the treatment of all types of leucorrhoea in women. It is also given to cure vomiting due to pregnancy and diarrhoea.
41	1. <i>Aconitum heterophyllum</i> Wall. 2. Atish. 3. Ranunculaceae. 4. Rhizome. 5. Mar-April.	The extract of the shoot is use for curing laprosy
42	1. <i>Thalictrum cultratum</i> Bl 2. Marcir. 3. Common meadow-rue. 4. Ranunculaceae. 5. Stem and leaves. 6. July-August.	The juice and extract yield a fluid called "mamira". It is used in drops (2 or 3) thrice a day to cure ophthalmia and other eye troubles.
43	1. <i>Zizyphus oxyphylla</i> Lamb. 2. Tukbari. 3. Rhamnaceae. 4. Root. 5. Jul-Sep.	Root bark is used to cure hypertension
44	1. <i>Zizyphus oxyphylla</i> Edgew. 2. Tuckbari. 3. Root 4. Rhamnaceae. 5. Root bark 6. July-September.	Aqueous extract of root bark is mixed with extract of <i>Citrus medica</i> (lemon) in equal quantity and given twice a day to cure hypertension.
45	1. <i>Zizyphus mauritiana</i> Lam. 2. Jand ber. 3. Ber (U), 4. Rhamnaceae. 5. Leaves and bark 6. July-September.	Leaves are crushed and mixed with ghur (Desi sugar) and soap and applied as poultice on boil. Decoction of leaves and bark is used in dysentery.
46	1. <i>Zizyphus nummularia</i> (Burm.f), Weight and Arn. 2. Brnehi. 3. Unab 4. Rhamnaceae. 5. Fruit 6. July-September.	Locally the fruit are used as emollient expectorant and blood purifier. Decoction of dry fruit is taken thrice a day as a treatment of bronchitis and influenza.
47	1. <i>Agrimonia pilosa</i> L. 2. Agrimony . 3. Rosaceae. 4. Root. 5. Apr- May	The liquid extract of roots used as astringent, tonic, diuretic and is very good for blood diseases

Table 1: Continued

S/No	1. Botanical Name, 2. Local Name, 3. Common Name, 4. Family, 5. Part Used. 6. Flowering Period	Folk Recipes
48	1. <i>Rosa brunonii</i> L. 2. Tarnari. 3. Rose. 4. Rosaceae. 5. Root and flower. 6. Mar-Apr.	The powder of flowers sprinkled over skin infections. The extract of roots uses to care eczemia.
49	1. <i>Fragaria nubicola</i> Lindl. Ex Lacaíta. 2. Good meiva. 3. Wild strawberry 4. Rosaceae. 5. Whole plant 6. March-April.	The aqueous extract of leaves is used as laxative diuretic and astringent. The berries are of great benefit for rheumatic gout. Sunburn could be relieved by rubbing a cut strawberry over a freshly washed face. Decoction of leaves and roots are used to stop diarrhoea and dysentery.
50	1. <i>Galium elegans</i> Wall. 2. Jari Pneumonia. 3. Yellow bed-straw 4. Rubiaceae. 5. Roots 6. March-April.	The aqueous extract of roots (5ml) given thrice a day for treatment of pneumonia in children.
51	1. <i>Bergenia ciliata</i> (Haw) Sternb. 2. Butpio 3. Yeo. 4. Saxifragaceae 5. Rhizome 6. March-August.	The dried rhizomes are used for making tea. It is used as tonic and relief of muscular pain. The powder of rhizome is used to cure fever and diarrhea.
52	1. <i>Solanum nigrum</i> Linn. 2. Kachmach 3. Black night shade. 4. Solanaceae, 5. Whole plant. 6. March-May.	The aqueous extract of the plant (20ml) is given thrice a day for treatment of chronic enlargement of liver, in bleeding piles and dysentery. The fruits are used to cure fever, diarrhoea, eye diseases and hydrophobia.
53.	1 <i>Solanum surattense</i> Shord & Wendl. 2. Mohkri 3. Mamoli 4. Solanaceae 5. Roots, leaves and fruits. 6. March- April.	The fruits are used for the preparation of curry. This curry (50ml) is given for the treatment of backache and fever. The aqueous extract of the bark of roots (20ml) is given for the treatment of kidney stone and backache. It is also used to cure cough and asthma. A decoction of leaves is used for the treatment of rheumatism.
54	1. <i>Daphne papyracea</i> Wall. ex Steud. 2.--3. Wild pepper. 4. Thymeliaceae 5. The bark of root, stem and leaves. 6. November-April.	The bark and leaves are crushed and converted into paste. This paste is used as poultice for tumor and swellings. An ointment of the bark of stem and root is used to promote discharge from indolent ulcers, and it is also used for snake and other venomous bites. It is taken internally for chronic rheumatism. The tincture is used to ease neuralgic pain and toothache.
55	1. <i>Debregeasia longifolia</i> (Don) Rendle 2. Sandari. 3. Debregeasia. 4. Urticaceae 5. Leaves 6. March-April.	The decoction of the young leaves is taken for the treatment of stomachs.
56	1. <i>Caryopteris odorata</i> (Ham) B. L. Robinson. 2. Bahata jari. 3. Caryopteris. 4. Verbenaceae 5. Leaves and bark 6. February-March.	The powder of dry leaves and bark is sprinkled on the wounds 2-3 times a day. The application of the drug speedily cures the wounds. It is said that drug is highly effective on cancerous tumors.
57	1. <i>Verbascum thapsus</i> Linn. 2. Gidar tomaku. 3. Donkey, s ears 4. Verbenaceae 5. The leaves. 6. June-September.	The dried leaves are smoked to remove irritation of the mucous membrane, the cough associated with bronchitis, asthma, whooping and spasmodic coughs in general. It can also be good for diarrhoea, inflammation of the urinary system. After placing bruised mullein leaves in olive oil and leaving it for a period, the oil can be used for relieving pain of earache.
58	1. <i>Vitex negundo</i> (Linn.) Hausskn 2. Bana. 3. Chinese Chase tree 4. Verbenaceae 5. Leaves 6. June-September.	The juice obtained by squeezing the young leaves is given for the treatment of gum diseases. It is also used to cure sore throat and diseases. Fresh leaves are used as bandage for pain in chest and back.
59	1. <i>Viola biflora</i> Linn. 2. Banafsha. 3. Sweet Violet. 4. Violaceae 5. The dried Leaves and flowers and whole plant when fresh, 6. March-April.	The infusion of the fresh leaves is used as antiseptic, expectorant and laxative. The aqueous extract of the herb (30ml) is used thrice a day to cure jaundice and fever. The decoction of the dried plant is given as blood purifier refrigerant, purgative and diuretic. The flower possesses expectorant properties and used to treat coughs.
60	1. <i>Lepidium sativum</i> L2. Haleon 3. GardenCress. 4. Brassicaceae 5. Leaves, 6. Mar-Apr.	Seeds are soaked in water and used as eye cleaner.
61	1. <i>Buxus papilosa</i> C.K.Schn. 2. Kangi 3. Box . 4 Buxaceae 5. Stem and Leaves 6. May-Aug	The stem is used for toothbrush and is a remedy for toothache.
62	1. <i>Diospyros lotus</i> Linn 2. Amlock. 3. Black Ebony. 4 Ebenaceae 5. Fruits 6. May –Aug.	Fruits are used as purgative and laxative agent.
63	1. <i>Elaegnus parvifolia</i> Wall 2. Kankoli . 3. Oleander 4. Elaeagnaceae 5. Whole plant 6. Apr -Jun	Fruit is considered a good for cancer patient. Leaves infusion is used as diuretic
64	1. <i>Quercus dilatata</i> Lindle. ex Royle 2. Rianh.. 3), Moru 4 Fagaceae . 5. Nuts. 6. Apr –Sep.	Seeds are edible, astringent Seeds are edible, astringent and diuretic, used in diarrhoea, indigestion and asthma.

Table 1: Continued

S/No	1. Botanical Name, 2. Local Name, 3. Common Name, 4. Family, 5. Part Used. 6. Flowering Period	Folk Recipes
65	1. <i>Melia azedarach</i> Him. 2. Dharek. 3. Pride of India . 4. Meliaceae 5. Wood and nuts. 6. Apr –Sep	Roots are bitter and used as antihelmintic. A decoction of leaves is said to be astringent and stomachic.
66	1. <i>Zanthoxylum alatum</i> Roxb. 2. Timber. 3. Kababe. 4. Rutaceae. 5. Fruit and seed. 6. Apr-May	Rind of fruit is converted into powder and used to cure diarrhea. Seeds are carminative
67	1. <i>Sapindus mukorossi</i> Gaertn. de Fruct. 2. Raintha. 3. Soap nut. 4. sapindaceae. 5. Fruit. 6. Apr-May.	Extract of fruit skin is used for the treatment of piles. Powder of the soap nut is used as aphrodisiac.
68	1. <i>Onoclea sensibilis</i> .L.2. Bamchar 3. Fern, 4. Woodsiaceae 5. Whole plant 6. Whole year	The aqueous extract of plant is a tonic and sedative.

physicians) quantitatively and qualitatively. The indigenous knowledge about plant resources and cultural aspects were also documented [12, 13]. The collected plant material was labeled, identified and preserved at ISL herbarium of Quaid-i-Azam University Islamabad.

RESULTS

A large proportion of the population of the valley living in the far-flung areas still relies on medicinal plants for curing different ailments. The people of these areas depend on the local medicinal plants because no medicinal facilities are available in these areas. Medicinal plant collectors are usually poor villagers. Plant collections are their part time activity besides farming and live stock rearing.

The collectors included men, women, children, gipsy and professional quacks. The woman and children collect plants while on their way to work in the fields and surrounding area of their work place. The women and children of gipsy families collect medicinal plants while grazing their livestock.

The men collectors are mostly the quacks and 'hakims' of the area. They are selective in their collection and collect only those plants, which are profitable and can be sold easily in the local markets.

Present study includes 68 medicinal plants. Which make 40.23 % of the total plant species used in area for folk recipes (Table 1). Some important medicinal plants were collected and used in the area are *Galium elegans*, *Bergenia ciliata*, *Dioscoria deltoidea*, *Viola biflora*, *Trichodesma indicum*, *Pistacia integerrima*, *Podophyllum emodi*, *Polygonum amplexicaule*, *Geranium wallichianum*, *Achillea millefolium*, *Desmodium podocarpum*, *Melia azedarach*, *Onoclea vecunifolium*, *Punica granatum*, *Rumex hirsuta*, *Zanthoxylum alatum* and *Micromeria biflora*.

A survey was conducted in order to see the source of indigenous knowledge about medical uses of plants in the research area. The data revealed that 72% of folk medicinal knowledge comes from people above the age of 50 years while 28% of it comes from people between ages of 30 and 50. Gender wise, men especially old ones are more informative of traditional knowledge of medicinal plants than women in the area. The survey also indicated that about 45 % of the local population is dependent on medical plants for curing different ailments. The dependency on medicinal plants dropped over the last five year as the area was ramified by link roads and shops of allopathic drugs were opened. It was also observed that about 60 % of the home made drugs were used by people above the age of 50 years, 30 % by children below age of 15 years especially infants. While remaining 10% of the traditional medicines of plants origin are utilized by people between age of 15 and 50 years Figure 2.

Some Folk Preservation Techniques

During the survey it was observed that people adopted local methods to preserved plant parts for future use. Some of these techniques for preservation of commonly used plants are:

Dioscoria Deltoidea

The corm of the plant is dug out from the soil. The rough and hairy skin of the corm is peeled off and converted into very thin slices. These slices are beaded into a necklace and dried under the sun. These dried slices are stored as such or converted into powdered form and stored in the jars.

Bergenia ciliata, *Geranium wallichianum* and *Trichodesma indicum*

The rhizome of these plants are cleaned with warm water and dried under the sun. The rhizomes are then stored in bags in the store rooms for 3 to 4 months.

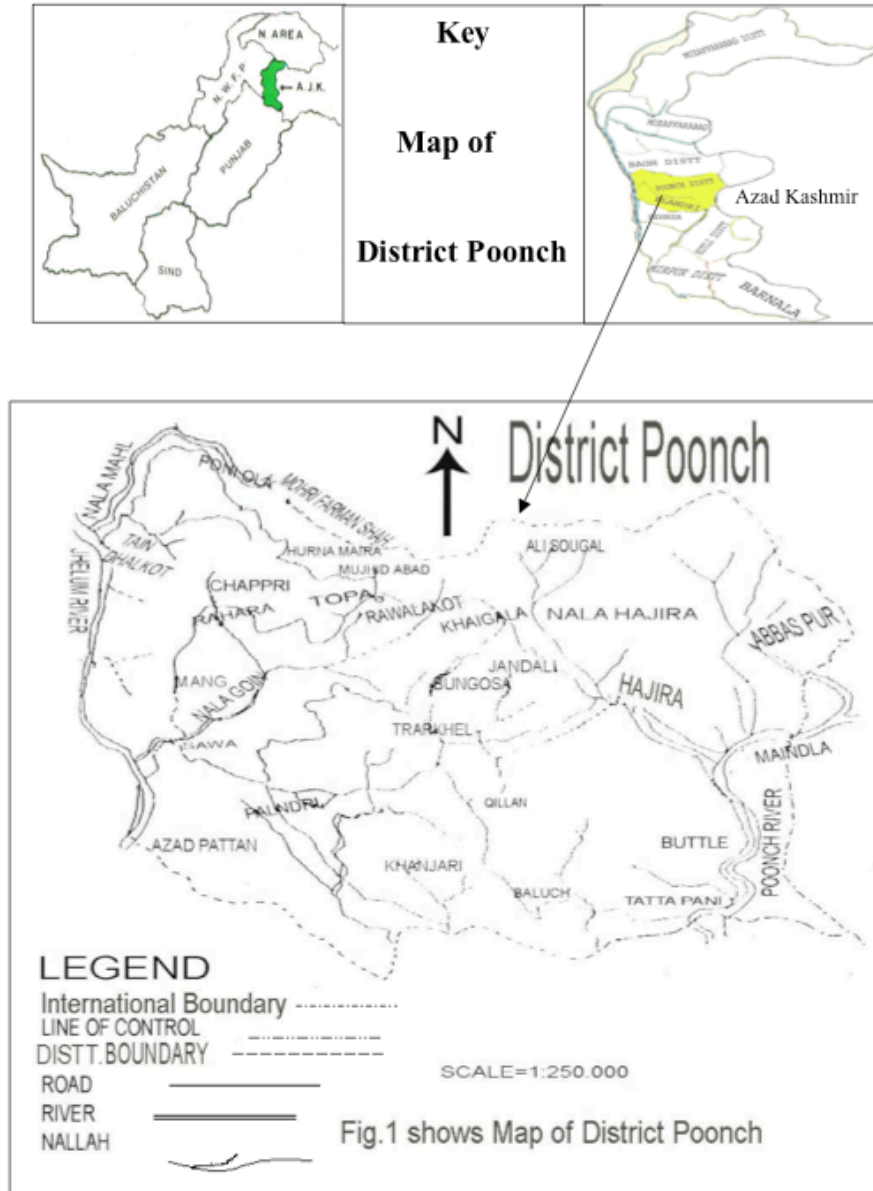


Figure 1: Shows map of district Poonch.

Berberis lyceum* and *Ziziphus oxyphylla

The roots of these plants are dug out, cleaned and the bark is peeled off. The barks then dried and stored.

Caryopteris odorata*, *Rumex hirsuta* and *Daphne papyracea

The leaves of these plants are dried under the sun. The leaves then converted into powder and stored in bottles.

Mallotus philippensis

The fruit of these plants are naturally coated with a reddish material (Kaisar) collected in large amount

during the month of November. The red coat of the fruit is removed by washing with warm water in a container. The excess water is removed and red material is dried under the sun and stored in bottles.

Common Folk Recipes of Poonch Valley

Medicinal plants are used by humans for curing different ailments in almost all parts of the world. The trends of its usage have drastically decreased with the introduction of allopathic drugs but still they provide bulk of medicine in developing countries of Asia, Africa and Latin America. Medicinal plants play an important role as it, not only provide crude drugs for curing different ailments but also support the weaker economy

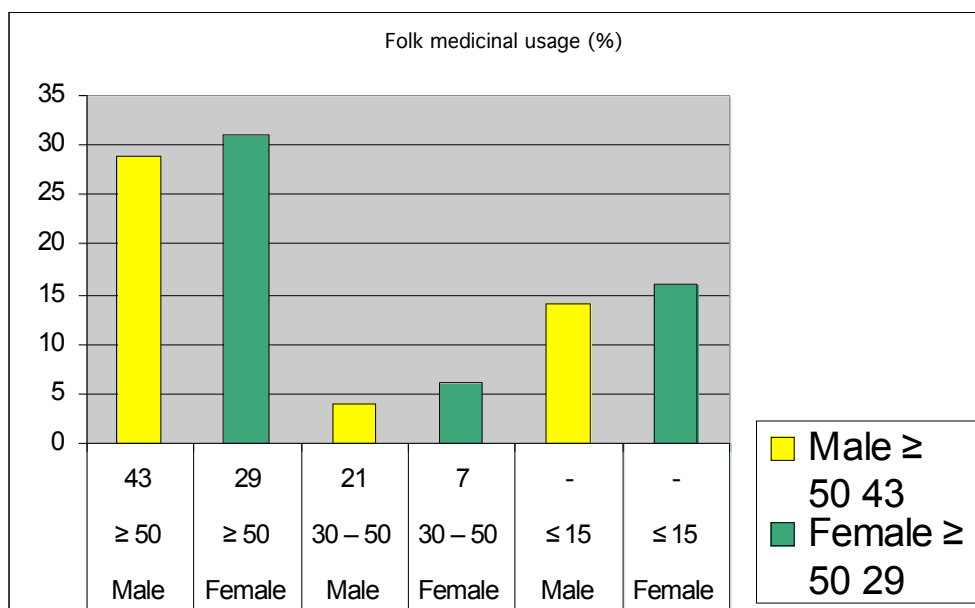


Figure 2: Gender and age wise distribution of folk medicinal knowledge and its utility in Poonch valley.

of the area. During the present study, frequently used recipes were also documented. Some important folk recipes used in Poonch valley are given in Table 1.

DISCUSSION

Majority of the world population currently depends on tradition medicine for their primary health and needs. The world market for herbal products based on traditional knowledge is now estimated to be worth US \$ 60 million [14]. A growing awareness of this new contributor to the foreign exchange reserves of several national treasuries is beginning to emerge. To satisfy growing market demands, surveys are being conducted to unearth new plant sources of herbal remedies and medicines [15].

Hamalayas, for example, has an extraordinary diversity of plant species and has been regarded as a treasured groove of medicinal plants. The study area of Poonch valley was also gifted with a variety of herbs and medicinal plant resources. Medicinal plants had continued to be used extensively as a major source of drugs for the treatment of many ailments.

The people of Poonch valley like most other native people had dependent upon plant resources for their medicinal requirements and in this way a traditional system of folk recipes had evolved in the area over a period of time. As discovered in present research, people used 68 plant species for curing different ailments and more than 50% of the local population is dependent on medicinal plant for primary health care.

People utilize different parts of the plant for medicinal purposes. For instance, the powder of leaves and bark of *Caryopteris odorata* is sprinkled on the wounds for speedy cures. The drug is highly effective on cancerous tumors. Similarly the paste of bark and leaves of *Daphne papyracea* is used as poultice for tumor and swellings. An ointment of the bark of stem and root is used to promote discharge from indolent ulcers, and it is also used for snake and other venomous bites. It is taken internally for chronic rheumatism. The tincture is used to cure neuralgic pain and toothache. Hamayun *et al.* reported that medicinal plants collected in district Buner (Pakistan) are used by the inhabitants to cure various ailments [16]. For instance leaves decoction of *Ajuga bracteosa* used for the treatment of jaundice, hypertension and sore throat. Root of *Justicea adhatoda* is used in rheumatism, pneumonia and cough, while leaves are used as antiseptic, expectorant, antispasmodic and demulcent. As pointed out by local people the roots of *Adhatoda vesica* emerged as the excellent remedy for rheumatism. Further research is required on this aspect. Gum of *Acacia modesta* is used as tonic and stimulant. Leaves of *Datura innoxia* is used in toothache, headache and epilepsy. The seeds are antipyretic and narcotic. Similar reports were also documented from other parts of Pakistan [17-19].

The majority of medicine preparations were drawn from mixture of different species for the treatment of a single ailment. Various methods of medicine preparations were apparent in this study. However, the most frequently used methods were aqueous extract

followed by powdering as well as decoction. Similar result was reported by Shinwari [17].

In conclusion it is necessary to point out that what remains of folk uses of medicinal plants survives and still plays a role in public health of the study area must be preserved and documented.

Suggestions and Recommendations

The folk knowledge on medicinal plants from this area will contribute for the efforts as already being initiated for the documentation of ethnobotanical knowledge from all parts of Pakistan.

For sustainable and long term of the valley natural resources there is a need to actively involve acquiescence of local people in maintenance of biodiversity monitoring and documentation of ethnobotanical knowledge. There is also a need to develop awareness among the people of the area that they should fulfill their requirements keeping in mind that biodiversity of the local area may not be exploited.

Efforts are needed to identify endemic, endangered, threatened medicinal plants of the area and to point out ways and means for conservation of endangered medicinal plants.

The following suggestions and recommendations are proposed for further research in the area.

1. Sustainable use of natural resources is crucial for the well being of local communities. The resources are being exploited in a very unsustainable manner. In order to develop an effective strategy it is necessary to deal with the following points:
 - i. Information on cultivation techniques should be made available to people interested in cultivating medicinal plant species that have been shown to be an economic importance.
 - ii. Cultivation of threatened medicinal plants should be encouraged by the local community in order to relieve pressure on these plants
2. Chemical analysis and screening of medicinal plants needs to be done to determine a correlation between the chemical constituents and the disorders treated by the herbalists. This information is not available in the area.

This study explored in detail the traditional folk uses of the medicinal plants of the area. There is, however, still a need and scope to enlighten the unexplored aspects of folk uses of medicinal plants in relation with their constituents and ailments. A more comprehensive research work is needed to explore the folk knowledge about medicinal plants of the area. It is hoped that this study will provide useful information about ethnopharmacology of the medicinal plants of the area.

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APPENDIX -1

Questionnaire for Ethno Botanical Survey (General)

Date:

Name: _____ Age: _____ Gender: _____

Education: _____ Locality: _____

Information about Potential Plant Species used in the Area

Local name of the species: _____ Locality: _____

Uses in the Area:

Quantities harvested each year:

Who collected the plant? (Women/ Men/Children)

Why collected?

Which part is collected?

How the plant is collected:

Is it sold? _____ To whom it is sold: _____

Whether the plant material is stored: _____ Why? _____

For how long it is stored and why?

Local price per Kg. (Rs.) _____ Quantity sold each year: _____

Availability status of the plant in last 10 years: (Increased/Decreased)

Any conservation effort on the part of locals:

Others Observations:

APPENDIX -2

Questionnaire for Medicinal Plants Used by the Practitioners (Hakims)

Date: Name of Informant: Experience

Q.1. How many patients have investigated by you so far?

Q.2. What type of ailments you have observed in the local population?

Q.3. Name the ailments you have dealt with?

Q.4. What was the result of your treatment?

Q.5. Description of the medicinal plant:

Local name:

Botanical Name:

Time of harvesting:

Why plant is medicinal?

Q.6. How the plant is converted into drug?

Q.7. How the plant is stored?

Q.8. What is the dosage and forms used?

Q.9. Methods of external use?

Q.10. Methods of internal use?

Q.11. Therapeutic indications if any?

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