

Ethnobotanical Importance of Some Highly Medicinal plants of District Muzaffarabad, Pakistan with special reference to the Species of the Genus Viburnum

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Abstract: An ethnobotanical exploration was carried out in Muzaffarabad and its adjoining areas including Jhelum Valley of the District Muzaffarabad during 2010-2011. All the plants with the ethnobotanical importance were identified and segregated separately. The region is entirely mountainous, having sub-tropical to dry temperate climate with distinct seasonal variations. This study mainly focused on the information regarding traditional uses of plants over the years by local inhabitants. The informations were then confirmed by Hakims and the old people of the areas. During the survey informations were collected from various sites, i.e. Noon Bagla, Rahim Kot, Danna Kachilee, Kot Terhala, Sanwarran, Chikar, Chikothi, Kathiee, Qazi Nag, Rashian, Daokhun, Mojee, Lamnian, Nardaggian, Pandu, Hatian Balla, Ghahi Dopatta, Chinnari, Rabanee, Bani Hafiz, Domel, Hattian Dopatta, Khanssian, Nandi Ka Sar, Sing Paharee, Nari Bela, Khalla Butt and Leepa. The plants were used medicinally and for other purposes. The investigations resulted that usually one plant or a mixture of two or more plant is used. The unplanned exploitation had resulted in the loss of medicinally important plant species. It was concluded that afforestation programme followed by proper protection is need of time.

Keywords- District Muzaffarabad, Ethnobotanical, Jhelum Valley, Local Community, Viburnum.

I. Introduction

Jhelum Valley is situated in District Muzaffarabad. It is confined to right and left bank of river Jhelum oozes from Chashma Varinag coming from Sirinagar. Jhelum Valley is located between 34° 30 latitude and 77° 98 longitude. It is bounded in the South by Kaffer Khun, in the North by Leepa Valley, in the East by Qazi Nag and West by Domel. It has rugged topography comprising mainly steep slopes and gullies, where limestone rocks are basically common. The climate is variable between lower and higher altitude. January is the coldest month of the year. Usually winter is longer than summer and is very cold. June is the hottest month but generally the summer is pleasant. The average maximum and minimum temperature of the year is 25 through 0°C respectively. Main stream in the valley is Qazi Nag, which joins at Chinari with the river Jhelum.

Jhelum valley and its adjoining areas are rich in medicinal plants yet neglected. This area demands extensive ethnobotanical and floristic survey. The botanist are mainly interested in obtaining such data from the tribes and recording it for further work. Such efforts have been made by Schultes (1960, 1962) and Altschul (1967, 1968, 1970, 1975 and 1977) [1, 2, 3-7]. Who have made significant contribution for the ethnobotanical studies and reported economic and medicinal uses of plants which were not known earlier to scientific world.

Historically, the knowledge of medicinal plants was restricted to a few specialized herbal healers in rural communities; thus, much of their use was seen as being primarily of local interest (Arnold and Perez 2001) [8]. For the past two decades, medicinal plants have been increasingly recognized for their role in improving the economic status of rural people who sell these plants in markets worldwide (Phillips and Meilleur 1998; Ojha 2000; Ticktin et al 2002) [9-11]. Threatened medicinal plant species have become the focus of world attention because they represent an extending flora which need protection and conservation and because of their role as an essential commodity for health care (Gustafsson 2002; Kala 2002) [12, 13]. The Himalayas span eight countries (i.e. Afghanistan, Bhutan, Bangla desh, China, Myanmar, Nepal, Pakistan and India) are reputed to be a rich storehouse of medicinal plant species.

The population of Jhelum valley is entirely rural; few people are engaged in local jobs, trade and employment is higher in cities of the country. Principal tribes in the valley are Gujjar, Kashmiri, Syed, Timbree and Awan. The languages they speak are Gojri, Pahari and Kashmiri.

Since the time of early Neanderthal man, plants have been used for healing purposes, even as modes of medicine changed throughout the centuries, plants continued to be the mainstay of country medicine as method and ideas on plant healing were passed down from family to family and within communities. Thus tribes,

villages, towns, sometime entire countries tended to have similar styles in healing. Many simple people knowing nothing about botany, chemistry or pharmacology have ears better tuned to catch remedies. Rustic lore often hides for years, the treasure that nature secreted in the roots, stem, bark, juice, flowers, fruit and seeds of plants. Some of them are now worldwide remedies.

Laporatti and Lattazi (1994) studied 27 medicinal plants from Makran [14]. Godman and Ghaffoor (1992) conducted ethnobotanical study in Baluchistan of Southwest Pakistan [15].

Plants have played a vital role in human civilization. The Indian subcontinent represents one of the most important region all over the world, from economic and ethnobotanical point of view work has been done among the workers, Harshburger (1896) and others are important [16].

In Pakistan only a few papers have been published in the field of ethnobotany. Khan (1994) described the past and present status of natural thorn forest in Panjab [17]. Hijazi (1984) reported the most common shrub of Margalla Hills National Park [18]. Akbar (1988) analysis the vegetation of Quid-Azam University campus established seven communities [19]. The area has been included in the sub-tropical shrub forest by previous workers (Champion et al 1965) [20]. Hocking (1958, 1962) wrote a series of papers on medicinal plants of Pakistan and included some information on Baluchistan [21, 22].

Shinwari and Malik (1989) concluded a field study of plant utilization of Northern Baluchistan [23]. Shahzad and Qureshi (2001) discussed common ethnobotanical uses of plants in Jatlan area, District Mirpur [24]. Shinwari (1996) reported the present status of ethnobotany in Pakistan [25]. Hamid et al (1998) reported the medicinal plants of Pakistan [26].

For the area like Jhelum valley no information about the plants used in medicine and other purposes by local inhabitants is available. In spite of this all the above mentioned studies mainly emphasis on medicinal importance of all or some of the known plants found in a particular area and no such information is available which can represent the medicinal knowledge of species of a particular genus. As for as genus *Viburnum* is concerned no doubt it has wide range of medicinal uses but very few information is available. The objective of this study was to explore the treasure and also to enlist and confirm the species that are used for different purposes, nationally trade important.

II. Materials and Methods

Medicinal plants continue to be extensively used as a major source of drugs for treatment of many ailments. Pakistan especially Azad Kashmir being rich in indigenous herbal resources offer great scope for ethnobotanical studies.

Plants were collected from Jhelum valley and its adjoining areas of District Muzaffarabad, pressed in presser paper and were dried carefully. Data regarding different ethnobotanical aspects were collected from local people of the area. The collected plants were identified with the help of literature (Nasir and Ali, 1970-1987) [27]. Further identifications were done by comparing the collected plants with reference plants in Herbarium of the Department of Botany, University of Azad Jammu and Kashmir, Muzaffarabad.

The specimen was collected in flowering and fruiting conditions during the field trips and complete information about their local names, parts of the plants utilized, mode of application, specificity and periodicity of doses were properly recorded and actually gathered with the help of local informants and other elders, traditional medicinal practioners. The study has been carried out during the year 2005-2006 in several localities of District Muzaffarabad. A questionnaire was designed to document traditional knowledge of medicinal and economical plants. Field studies were conducted. The number of people with whom the information was collected varied from 50-60 depending upon availability. Majority of people illiterate and about 15% of respondent were primary, matric and college education. More than 30% respondent interviewed were active, cooperative and aged varied from 45-60 years.

The average number of house holds in different villages visited was 52 with a population of about 570-600 heads, where people lived with their own way of life, believe and cultural heritage. The number of dependent per family heads was 10 but the average number of children was 6. Majority of the residents (60-90%) depend on farming.

Per capita land holding varied from 0.37 to 1.20 ha, which was not sufficient to fulfill the basic needs. They were doing other jobs in addition to farming. Respondent benefited from natural resources other than firewood like collection of medicinal plants, morel, grazing and grass cutting. They enhanced their income from the sale of non-timber forest products. Majority of the respondent reluctant to tell the exact quantity of medicinal plants and morel extracted in a season. However, some of them (20%) told that 1-1.5 quintal (fresh wt.) of medicinal plants and morel were collected per family for sale and local uses in a season.

The plant remedies usually employed in common ailments like cough, asthma, dyspepsia, skin diseases, typhoid, malaria, eye-trouble, body pain, cuts and wounds. Thus people saved handsome amount instead of purchasing costly allopathic medicines for the treatment of these diseases. The inhabitants only preferred to visit

hospital/doctors in serious cases. The information collected on crude drugs items sold by local dealers in the recent years are given in Table-I.

Table-I: Crude Drug Items Sold by Local Dealers in the Recent Year.

S.#	Scientific name	Local name	Qty (tonnes)	Rate/Kg (Rs.)	Appox. Value of herbal drugs sold (Rs.)
1	<i>Viola Serpens</i>	Thandi-boot	2.00	175	350,000
2	<i>Paeonia emodi</i>	Mamekh	4.00	50	200,000
3	<i>Berberis Lycem</i>	Kashmal	1.00	100	100,000
4	<i>Valeriana Jatamansi</i>	Mushak bala	0.50	2000	100,000
5	<i>Geranium Wallichiana</i>	Ratan jot	0.20	50	10,000
6	<i>Acorus calamus</i>	Bach	1.20	375	450,000
7	<i>Skimia laureola</i>	Ner	1.00	12	12,000
8	<i>Rhem emodi</i>	Chutial	0.16	50	8,000
9	<i>Zanthoxylum armantum</i>	Timber	0.20	10	2,000
10	<i>Morchela esculanta</i>	Guchi	0.20	600	12, 000, 00
11	<i>Veronia anthelmintica</i>	Kali zeri	0.80	20	16,000
12	<i>Zizyphus vulgaris</i>	Unab	0.60	12	7,200

Total:

24,85,200

III. Result and Discussion

The paper involves the ethnobotanical enumeration of *Viburnum* species, their botanical names, local names, locality, family, distribution, description and uses as medicinal herbs. However, during the survey some of the other medicinal plants of the different genus and families have also been explored and recorded.

Viburnum is a genus of about 200 species of shrubs or (in a few species) small trees that were previously included in the family Caprifoliaceae. Genetic tests by Angiosperm Phylogeny Groups showed however, that they are correctly classified in the family Adoxaceae. They are native throughout the temperate and subtropical regions of Northern Hemisphere, with a few species extending into tropical mountain regions in South America, Asia, North America and Malaysia. In Africa, the genus is confined to the Altas Mountains. Its 200 species are known, including the following.

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|---------------------------------|-------------------------------|
| <i>Viburnum acerifolium</i> | <i>Viburnum atrocyaneum</i> |
| <i>Viburnum betulifolium</i> | <i>Viburnum bitchiuense</i> |
| <i>Viburnum bracteatum</i> | <i>Viburnum buddleifolium</i> |
| <i>Viburnum burejaeticum</i> | <i>Viburnum calvum</i> |
| <i>Viburnum carlessi</i> | <i>Viburnum cassinoides</i> |
| <i>Viburnum cinnamonifolium</i> | <i>Viburnum cordifolium</i> |
| <i>Viburnum corylifolium</i> | <i>Viburnum cotinifolium</i> |
| <i>Viburnum cylindricum</i> | <i>Viburnum dasyanthum</i> |
| <i>Viburnum davidii</i> | <i>Viburnum dentatum</i> |
| <i>Viburnum dilatatum</i> | <i>Viburnum edule</i> |
| <i>Viburnum ellipticum</i> | <i>Viburnum erosum</i> |
| <i>Viburnum erubescens</i> | <i>Viburnum farreri</i> |
| <i>Viburnum foetens</i> | <i>Viburnum foetidum</i> |
| <i>Viburnum furcatum</i> | <i>Viburnum grandiflorum</i> |
| <i>Viburnum harryanum</i> | <i>Viburnum henryi</i> |
| <i>Viburnum hirtum</i> | <i>Viburnum hupehense</i> |
| <i>Viburnum ichangense</i> | <i>Viburnum japonicum</i> |
| <i>Viburnum kansuense</i> | <i>Viburnum lantana</i> |
| <i>Viburnum lantanoides</i> | <i>Viburnum lentago</i> |
| <i>Viburnum lobophyllum</i> | <i>Viburnum macrocephalum</i> |
| <i>Viburnum molle</i> | <i>Viburnum mongolicum</i> |
| <i>Viburnum mullaha</i> | <i>Viburnum nudum</i> |
| <i>Viburnum odoratissimum</i> | <i>Viburnum opulus</i> |
| <i>Viburnum orientale</i> | <i>Viburnum phlebotrichum</i> |

<i>Viburnum pilcatum</i>	<i>Viburnum propinquum</i>
<i>Viburnum refinesquianum</i>	<i>Viburnum recognitum</i>
<i>Viburnum rhytidophyllum</i>	<i>Viburnum rigidum</i>
<i>Viburnum rufidulum</i>	<i>Viburnum sargentii</i>
<i>Viburnum schensianum</i>	<i>Viburnum sempervirens</i>
<i>Viburnum setigernum</i>	<i>Viburnum sieboldii</i>
<i>Viburnum suspensum</i>	<i>Viburnum sympodiale</i>
<i>Viburnum ternatum</i>	<i>Viburnum tinus</i>
<i>Viburnum trilobum</i>	<i>Viburnum urceolatum</i>
<i>Viburnum utile</i>	<i>Viburnum veitchii</i>
<i>Viburnum venosum</i>	<i>Viburnum wilsonii</i>
<i>Viburnum wrightii</i>	

In Pakistan and Azad Kashmir *Viburnum* is represented by the following six species; two species are reported to be cultivated by Rolan Copper in 1914. It is distributed in Himalaya from Sawat eastward to Bhutan, South Tibet. In Azad Kashmir it is distributed in Peer Chanasi, Shudhan gulli, Jhelum valley at 1500-3000 m.

- *Viburnum cotinifolium*
- *Viburnum mullaha*
- *Viburnum grandiflorum*
- *Viburnum cylindricum*
- *Viburnum opulus*
- *Viburnum tinus*

The leaves are opposite, simple and entire toothed or lobed; cool temperate species are deciduous, while most of the warm temperate species are evergreen. Some species are densely hairy on the shoots and leaves with star shaped hairs.

The flowers are produced in corymbs 5-15 cm across, each flower white to cream or pink, small 3-5 mm across, with five petals, strongly fragrant in some species. The gynoecium has three connate carpels with the nectary on top of the gynoecium. Some species have a fringe of large, showy sterile flowers round the perimeter of the corymb to act as a pollinator target.

The fruit is spherical, oval or somewhat flattened drupe, red to purple, blue or black and containing a single seed; they are eaten by birds and other wildlife, and some are edible for humans. The leaves are sometime eaten by the larvae of some Lepidoptera species.

Many species of *Viburnum* become popular as garden or landscape plants because of their showy flowers and barriers and generally good autumn colors.

Information about the plants, which were useful, collected and documented as used by the local people. Medicinal plants are either used singly (mufrad) or in combination with some other plants or plant parts (murrakkab). Natural vegetation of medicinal plants was adversely affected by a number of factors, in the area explored. Vegetation of the area was intensely affected by heavy grazing and fall of trees, unplanned exploitation had resulted in loss of such medicinally important plant species. Some species that were common in the past were rarely found now. It is concluded that local people, hakims and traders collect and use the plants, which are being eradicated and becoming rare. It is suggested that afforestation programme followed by proper protection is the need of time.

The plants of the genus are found to be used in the folk medicine system. It has been employed with benefit in all nervous complaints and debility and used with success in cramps and spasms of all kinds. In convulsions, fits, lockjaw and also in palpitation, heart disease and rheumatism. It is used as remedy for constipation and is highly energetic. The fruit are blood producer and purifier, leaf extract is used as carminative. A drug prepared from the bark which is used for dysmenorrhea and asthma. It prevents the threaded abortion and checks hemorrhage.

Table-II: Ethnobotanical Status of Some Highly Medicinal Plants of District Muzaffarabad with special reference to Genus *Viburnum*.

Sr. No.	Family Name	Botanical Name	Local Name	Status	Ethnobotanical Uses
1	Amaranthaceae	<i>Aerva javanica</i> Juss ex Scult	Booh	Herb	The decoction of the plant is used to remove swellings.
		<i>Amaranthas viridus</i> Linn.	Ganhar	Herb	Leaves used as vegetable, roots laxative, seeds for curing backache.
2	Aceraceae	<i>Acer caesium</i> wall ex Brandis	Tarkanna/killu	Tree	Leaves used for fodder, wood used as fuel and For making furniture.
3	Alliaceae	<i>Allium humile</i>	Pari pyaz	Herb	Fresh leaves used as vegetable, dried leaves as flavoring agent, used in gastric problems.
4	Asteraceae	<i>Achillea millefolia</i> Linn.	Sultani booti	Herb	Stomachache, diuretic, leaves are chewed in acute toothache, tea made from roots to treat fever.
		<i>Artimisia scoparia</i> L.	Jahoo	Herb	Powdered root used to treat epilepsy, tea made to treat sore throat.
		<i>Saussurea costus</i> (falc.) Lipsch	Kuth	Herb	Dried root is used to treat asthma and in certain cardiac complaints, dried roots with sugar are used to treat backache problem.
		<i>Echinops echinatus</i> Roxb.	Tik	Herb	The plant is bitter; stomachic, antipyretic, analgesic, anti-inflammatory, appetizer; stimulates the liver.
		<i>Eclipta alba</i> (L.) Hasskl.	Tik	Shurb	The plant has a bitter sharp dry taste, tonic, expectorant, antipyretic, anodyne, and stomachic, useful in diseases of the spleen, stomatitis, and hepatitis; cures vertigo. In tattooing the natives after puncturing the skin rub the juicy green leaves over the part which gives the desired indelible color viz., a deep bluish black.
5	Acanthaceae	<i>Blepharis indica</i> Stocks ex Anders.	Assad	Herb	The seeds are used as cure for Otaglia.
6	Asclepiadaceae	<i>Calotropis procera</i> R. Br.	Ak	Tree	The bast fiber obtained from the stem is used for making ropes and cordage. The silky coma of seeds is used for stuffing pillows, making shawls and handkerchiefs. Leaves are also used as poultice for sprains. Flowers useful in cholera. Milky juice (latex) is useful for toothache. The whole plants are used for the fencing and fodder for goats (<i>Capra hircus</i>).
		<i>Oxystelma esculenta</i> (L. f) R. Br.	Dudhi	Shurb	The fruit is bitter; tonic, expectorant, anthelmintic; juice is useful in gleet, gonorrhoea, pain in the muscles, cough, leucoderma; milky sap forms a wash for ulcers. The natives eat the fruit in famine. The whole plant is fodder for goats (<i>Capra hircus</i>) and sheep (<i>Ovis aries</i>).
7	Arecaceae	<i>Nannorrhops ritchieana</i> H. Wendl.	Pish	Shurb	The young leaf or cabbage is eaten, also used in the treatment of diarrhoea and dysentery. Mats, sandals, ropes, fans, baskets, and brooms are made from the leaves. The reddish moss like wool of the petioles is used as tinder. The seeds are used into rosaries.
8	Apocynaceae	<i>Nerium oleander</i> L.	Zangi Gul	Herb	Decoction of leaves in paste form is

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					applied externally on the skin to cure certain skin diseases. The root is bitter aphrodisiac, tonic, good for chronic pain in the abdomen and pain in the joints; very poisonous but an antidote to snake venom. Flowers are sacred to Hindu deity Siva and are used by Hindus in religious ceremonies. Highly toxic for humans as well as livestock, camels (<i>Camelo dromedarium</i>) sometimes eat the leaves of the plant but they always prove fatal.
		<i>Rhazya stricta</i> Dcne.	Sainwar	Herb	The infusion of fresh leaves is used in bath water as cooling agent. The powdered leaves and fruits are applied on skin to treat rashes. The extract from fresh fruits is used in treating sore eyes. The fruits and leaves are considered efficacious in cases of boils and eruption. Also remedy for snake bite, tooth and eye diseases. The roots are used as a febrifuge.
9	Boraginaceae	<i>Arnebiabenthamii</i> Wall ex G. Don	Gao zaban	Herb	Roots used in backache, tea made from roots carminative.
		<i>Cordia gharf</i> (Forssk.) Ehren. ex Asch.	Lyar	Tree	The decoction of the bark possesses astringent properties and is used as a gargle. The wood is used for making small agricultural implements (ploughs & yokes) and household articles. Ripe fruit (drupe) is eaten.
		<i>Trichodesma indicum</i> L.	Gaozaban	Herb	The whole plant as poultice is used as emollient. Leaves are anti-venom used to cure snakebite.
10	Brassicaceae	<i>Capsella bursa</i> <i>pastoris</i> L.	Bun paincha	Herb	Juice of whole plant used in chest problems and to stop nose bleeding.
11	Burseraceae	<i>Commiphora wightii</i> (Arn.) Bhandari	Guggul, Mukul	Herb	The gum is aphrodisiac, demulcent, aperients, carminative; useful in nervous diseases, urinary disorders and skin diseases. Dry gum resin is used in religious ceremonies. Hindus as they believe that fumes of resin ward off evil spirits. The gum is also used to cement the broken pottery.
12	Bignoniaceae	<i>Tecomella undulata</i> Roxb.	Lohiro	Tree	The wood used for building items (pillar, beam, rafter) and agricultural implements (ploughs, yokes, shafts, beams). The bark of the young branches of the tree is employed as remedy in syphilis. It is also used to cure hepatitis, leucorrhoea and fevers. Fresh branches lopped as fodder for goats (<i>Capra hircus</i>) and camels (<i>Camelus dromedarius</i>).
13	Cannabaceae	<i>Canabis sativa</i> Linn.	Bhang	Herb	Leaves and flowers used as narcotic, in combination with tobacco to treat asthma, fiber from stem is used to make ropes. Oil is edible and used in cold season to keep body warm, seed used as poultry feed to enhance egg production.
14	Caprifoliaceae	<i>Viburnum grandiflorum</i>	Ikloo/Guch	Shrub	Leaves purgative and diuretic, bark used against malaria; fruit edible, used for menorrhagia and metorrhagoa, blood purifier.

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		<i>Viburnum nervosum</i>	Guch	Shrub	Blood producer and purifier, leaf extract is used as carminative, bark is used for dysmenorrhea and asthma, and prevents threaded abortion and checks hemorrhage, decoction of root used for cure uterine disease.
		<i>Viburnum cotinifolium</i>	Guch	Shrub	Barries are poisonous but when cooked is used as laxative and blood purifier, leaves extract is used for the treatment of menorrhagia, the stem bark is sedative and antispasmodic reducing muscular cramps.
		<i>Viburnum coriaceum</i>	Guch	Shrub	Root and stem bark possessed antispasmodic activity.
		<i>Viburnum foetidum</i>	Guch	Shrub	Various parts of the plant are credited with astringent properties. The juice of the leaves is administrated for menorrhagia. Aerial parts of the plant showed hypothermic and cardiovascular activities.
		<i>Viburnum jucundum</i> Morton	Guch	Shrub	Used to treat cancer.
		<i>Viburnum luzonicum</i> Rolfe.	Guch	Shrub	Used to treat cancer.
		<i>Viburnum nudum</i> L.	Guch	Shrub	Bark preparation is used as tonic and employed to treat uterine disorders, malaria and promoting uterine flow.
		<i>Viburnum opulus</i> L.	Sunaira Phul	Shrub	The dried bark is used as diuretic and as uterine sedative, Purgative, emetic, hysteria, infection, scurvy, uteritis, spasms, good for liver disorders, decoction of root taken for entire body pain, bark used for swollen glands and mumps, decoction of plant is used for sore eyes, fruit is used for food, infusion of plant is taken for cold and fever, roots are given to babies in fever, decoction of branches taken for fallen womb after birth, compound decoction of bark taken by fat people who have difficulty in breathing, analgesic, inner bark is taken for stomach cramps.
		<i>Viburnum erubescens</i>	Guch	Shrub	The juice of the fruit is used in the treatment of coughs. The flowers are deliciously scented.
		<i>Viburnum prunifolium</i> L.	Blackhaw	Tree	Used for complains of dysmenorrhea. The Plant has spasmolytic effects. Root bark is used for asthma. Antispasmodic, curative in menstrual irregularities, in pain threatening absorption, amenorrhea and vomiting in pregnancy, convulsions, hysteria, stress and spasms, menstrual cramps, uterine tonic, high blood pressure, chills, fever, palpitation, heart diseases, hysterical fits, arthritis and rheumatic complaints, heart tonic, improves blood circulation.
		<i>Viburnum lantana</i>	Twistwood	Shrub	Leaves are used for making an excellent gargle. Large quantity of fruit can cause vomiting and diarrhea, the fruit causes mild upsets when eaten unripe or in large quantities. Young

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					stem can be used as twine, good indicator of limy soil. Hemolytic and hypotensive effects.
		<i>Viburnum alnifolium</i>	Guch	Shrub	Uterine sedative action.
		<i>Viburnum trilobum</i>	Guch	Shrub	Growth regulations.
		<i>Viburnum awabuki</i>	Guch	Shrub	Antioxidant.
		<i>Viburnum tinus</i>	Guch	Shrub	Hemolytic and weak Hypotensive effects.
15	Chenopodiaceae	<i>Chenopodium album</i> Linn.	Bathwa	Herb	Young leaves and branches used as vegetable. Dried leaves used in pain.
		<i>Sueda fruticosa</i> (L.) Forssk.	Lanee	Tree	Khar (crude soda) is prepared from this plant for washing purpose. The leaves are applied as poultice in ophthalmia and used sometimes infused in water as an emetic.
16	Cupressaceae	<i>Juniperus communis</i> Pallas.	Bhantari	Shrub	Branches used as fuel. Fruit used to increase mucous secretion and helps in digestion and relieves gas.
17	Cuscutaceae	<i>Cuscuta europea</i>	Neela dhari	Twinner	Poultice made from plant used against insect sting and piles.
		<i>Cuscuta reflexa</i> Roxb.	Bepari, Kasus	Tree	The plant is purgative. The seeds have a bitter bad taste sedative, Emmenagogue, diuretic; useful in diseases of the liver, spleen, quartan fever, chronic fevers, griping, hiccoughs. Seeds are bruised they are used for washing the hair.
18	Cyperaceae	<i>Cyperus rotundus</i> Linn.	Jabbay gha	Herb	Leaves used to make rope, root paste used in wounds and fever.
19	Capparidaceae	<i>Capparis decidua</i> (Forssk.) Edgew.	Kirur	Tree	The bark is used as an analgesic, diaphoretic, laxative, anthelmintic, antitussive. The fruit is useful in cardiac troubles and also used in pickles. Wood is used for agricultural implements (ploughs and yokes) and for making roofs of huts and for household articles like spoons, dippers and stirrers. Fodder for goats (<i>Capra hircus</i>) and camels (<i>Camelus dromedarius</i>).
20	Cucurbitaceae	<i>Citrulus colocynthis</i> (L.) Schrad.	Truh	Tree	Root is useful in mastitis, arthritis. The fruit is bitter pungent cooling, purgative, anthelmintic antipyretic, carminative, cures tumors, ascites, leucoderma, ulcers, asthma, bronchitis, jaundice, enlargement of spleen, tuberculosis glands, dyspepsia, constipation, anemia, laryngitis. Fruit is administrated to cattle for intestinal disorders.
		<i>Coccinea grandis</i> (L.) Voigt.	Golaru, Kanduri	Tree	The fresh juice extracted from the roots and leaves are given in the treatment of diabetes. The leaves of this plant are boiled in gingelly oil and applied externally in ringworm. The fruit is an aphrodisiac; allays thirst; useful in biliousness.
21	Convolvulaceae	<i>Convolvulus arvensis</i> L.	Naro	Shrub	The roots possess the cathartic properties. Whole plant used as fodder for goats (<i>Capra hircus</i>) and sheep (<i>Ovis aries</i>).
22	Dipsacaceae	<i>Dipsacus inermis</i> Wall ex Roxb.	Oppalha	Herb	Leaves used as vegetable, folder and sexual tonic for females.
23	Euphorbiaceae	<i>Euphorbia helioscopia</i> Linn.	Dodhal	Herb	Dried root used to stimulate secretion, fever, abdominal pain and blood

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					purifier.
24	Fabaceae	<i>Quercus dilatata</i> Griffth.	Choor	Tree	Leaves used as fodder for cattle, sour mouth, seed used to cure sour mouth and throat.
		<i>Acacia senegal</i> (L.) Willd.	Babur	Tree	The powdered gum is used to check severe epistaxis. The wood is used for making agricultural implements i.e. ploughs / yokes, huts (pillar) and household articles also used for fuel by the tribals. Young branches are lopped for goats (<i>Capra hircus</i>) and sheep (<i>Ovis aries</i>) as fodder.
		<i>Albizia lebbeck</i> (L.) Benth.	Sireenh	Tree	The bark is bitter cooling, anthelmintic cures leucoderma, itching and piles; also used by the tribals for tanning leather which is black to brown color. The flowers are used as a cooling medicine and also externally applied in boils eruption and swellings. The leaves are useful in ophthalmia and nyctalopia. The wood has high local timber value for agricultural implements, furniture, for huts and houses (beam and doorframe).
		<i>Alhahi maurorum</i> Medic.	Kas kundero	Shrub	The extract from fresh leaves is used as eye-drops to relieve soreness and redness. The powdered roots are taken as anti-diabetes. As fodder relished by camels (<i>Camelus dromedarius</i>) and goats (<i>Capra hircus</i>). It is also used in making door screens.
		<i>Crotalaria burhia</i> Ham. ex. Bth.	Sim	Tree	Bast fiber extracted from the stem by the tribals used for ropes and cordage. The tribals make huts (walls, roof) using dry plants. The branches and leaves are used as a cooling agent to alleviate fever.
		<i>Prosopis cineraria</i> (L.) Druce	Kandee	Tree	The pod is considered astringent. The bark is used as a remedy for rheumatism. Women eat the flowers during pregnancy to safeguard them against miscarriage. The ashes are rubbed over the skin to remove hair. The natives eat mealy pulp contained in the pod having a sweetish taste, either raw or cooked as a vegetable. Hindus worship trees during the Dussera festival. The wood is used for making agricultural implements viz., ploughs, yokes and beams. Branches lopped as fodder for goats (<i>Capra hircus</i>).
25	Flacourtiaceae	<i>Flacourtia indica</i> (Burm.) Merrill.	Bhutankas	Tree	The fruits are sweet, appetizing and digestive are useful in jaundice and enlarged spleen. Seeds are ground to a powder with turmeric and rubbed all over the body after parturition, to prevent rheumatic pains.
26	Gentianaceae	<i>Swertia paniculata</i> Wall.	Jabba jarri	Herb	Whole plant used to diarrhea, malarial fever and weakness.
		<i>Gentianoides kurroo</i> Royle	Jarri	Herb	Whole plant is used as blood purifier.
27	Geraniaceae	<i>Geranium wallichianum</i>	Ratan -jot	Herb	Burnished root used in hay fever, diabetic and urinary disease.
28	Hydrocharitaceae	<i>Hyocyanus niger</i>	Ajwain	Herb	Used for narcotics also used in asthma

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					and whooping cough.
29	Labiataeae	<i>Ajuga bracteosa</i> Wall ex Benth	Maneer	Herb	Leaves used in stomachache and as blood Purifier.
		<i>Mentha longifolia</i> L.	Poodna	Herb	Leaf extract used against vomiting and dysentery. Leaf in dry powdered form used in asthma and as condiment.
		<i>Thymus linearis</i>	Bun Jamain	Herb	Decoction of leaves and flowers used against dysentery and in stomach problems. Tea made from flowers is carminative.
30	Lorantaceae	<i>Vuscum album</i> L.	Neela	Parasite on trees	Leave diuretic, fruit used as glue, used as fodder for goats and sheep.
31	Lamiaceae	<i>Ocimum basilicum</i> L.	Nazbo, Sabajhi	Herb	The plant is pungent and dry stomachic, anthelmintic, antipyretic, improves the taste useful in diseases of the heart and blood. The juice of the leaves forms an excellent nostrum for the cure of ringworm and bruised leaves for scorpion stings. The flowers possess stimulant, diuretic and demulcent properties. The seeds are mucilaginous and cooling given in infusion in gonorrhea, diarrhea and chronic dysentery. A cold infusion is said to relieve the after pains of parturition. The powder (dried leaves) is used in culinary.
32	Moraceae	<i>Ficus palmate</i> Wall.	Phagwar toot	Tree	Fruit edible, laxative, wood used as fuel and milk used to cure warts.
		<i>Morus alba</i> L.	Toot	Tree	Fruit used in fever and sour throat young branches used in making baskets, wood used in making furniture.
33	Morinaceae	<i>Morina lonicaule</i> Wall ex D. C.	Jer	Herb	Roots used to treat wounds and kills worms.
34	Menispermaceae	<i>Cocculus pendulus</i> Diels.	Zamhar	Herb	Whole plant is used in the treatment of intermittent fevers.
35	Oleaceae	<i>Jasminum humile</i> Linn.	Chamba	Shrub	Flowers used in perfumes, roots used against worms, flower extract used in eye problems.
		<i>Olea ferruginea</i> Royle	Khau	Tree	Leaves used in toothache, astringent, antiseptic, diuretic, anti-periodic, sore throat. The root is applied for scorpion sting. Fruit is eaten, anti-diabetic. Wood is used for making agricultural tools (ploughs and yokes) also fuel.
36	Orchidaceae	<i>Habenaria pectinata</i> D. Don.	Nar madi	Herb	Root used as blood purifier, also used to increase sexual power in males.
37	Papilionaceae	<i>Trifolium repens</i> L.	Sinja	Herb	Used as vegetable, as fodder.
		<i>Indigofera hetranth</i> Wall ex Brandis.	Kanthi	Shrub	Branches used in making baskets, as fuel, as making miswak and as fuel.
38	Pinaceae	<i>Abies pindrow</i> Royle.	Rewar	Tree	Wood used in furniture, house making and fuel.
		<i>Pinus wallichiana</i> A. B. Jakson	Biarr	Tree	Wood used in furniture, shoot used as fuel, resin used in paints. Fruit edible.
39	Plantaginaceae	<i>Plantago lanceolata</i> Linn	Chamchi patra	Herb	Leaves used as vegetable applied on wound and burns. Seed used against constipation.
40	Poaceae	<i>Saccharum spontanium</i> Linn.	Narri	Herb	Used as fodder and for making pen (Qalam).
		<i>Saccharum bengalense</i> Retz.	Sirkee	Tree	Culms are cooling, aphrodisiac useful in burning sensations, thirst, erysipelas, blood troubles urinary

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					complaints, eye disease, also used for hut making, Cheeks (screen), fencing and pens (Kilks). On the occasion of Holi and Diwali festivals Hindus worship the culms bearing inflorescence (arrows) called Hira Moti with the belief that the year will bring prosperity and fortune. Stems and leaves fiber is obtained by maceration and beating which is made in to good serviceable ropes for cots and cordage.
		<i>Cynodon dactylon</i> L.	Chhabbar	Shrub	The extract of whole plant is useful in curing diarrhea and ophthalmia. The decoction from roots is used to treat gonorrhea and other urogenital ailments. It affords fodder for horses (<i>Equus caballus</i>) and onagers (<i>Equus heminous onager</i>).
		<i>Desmostachya bipinnata</i> (L.) Stapf.	Dabh	Herb	The root is sweet cooling useful in thirst, asthma, jaundice, biliousness, diseases of the blood, The plant is sweet acrid, cooling, oleaginous, aphrodisiac, diuretic. The culms are said to posses diuretic and stimulant properties. Hindus keep the grass at the time of solar and lunar eclipses in the belief that edible things will not be affected by harmful radiation.
41	Podophyllaceae	<i>Podophyllum emodi</i>	Khakhri	Herb	Fruit edible. Root paste applied on ulcers, cuts and wounds, used to treat vaginal warts. Powdered roots used to increase yield of butter.
42	Polygonaceae	<i>Polygonum amplexicaule</i>	Masloon	Herb	Leaf extract is used to beautify the skin. Tea made from root against asthma also fodder for animals.
		<i>Rheum webbiana</i> Royle	Chotyal	Herb	Roots used in headache and stomach pain.
		<i>Rumex nepalensis</i> Linn.	Hola	Herb	Decoction and leaves and roots used in cuts.
43	Primulaceae	<i>Androsece hazarica</i> R. r. Stewart.	Hazari boti	Herb	Leaves in combination with sugar and ghee used in correcting menstrual flow in females of age group 20-30.
		<i>Anagallis arvensis</i> L.	Bili booti.	Herb	It is used in cerebral affections, leprosy, hydrophobia, dropsy, epilepsy and mania.
44	Ranunculaceae	<i>Aconitum chasmanthum</i>	Mohree	Herb	Roots used to treat fever and pain in body, in piles, gulqand made from flowers used in different diseases.
		<i>Anemone neelamiana</i>	Neeli jari	Herb	Roots and leaves used in toothache and measles.
		<i>Caltha palustris</i> L.	Kalari patra	Herb	Leaves very bitter, used as febrifuge.
		<i>Aconitum heterophyllum</i>	Patrees	Herb	Roots used as tonic, in diarrhea, cough and vomiting in children. Roots useful against bites of snake and scorpions.
45	Rosaceae	<i>Potentilla eriocarpa</i> Wall ex Linn.	Malli chaw	Herb	Roots used as tea, paste made from roots is used to cure toothache, carminative.
		<i>Rubus fruticosus</i> Smith	Grachha	Shrub	Leaf extract used in diarrhea. Root decoction used in cough and sore throat.
		<i>Rosa macrophylla</i> L.	Shingari	Shrub	Fruit edible.
46	Rhamnaceae	<i>Zizyphus nummularia</i> W. Arn.	Ber	Tree	The plant is used live and dead in field and hut fencing due to its straight stout and hooked spines. Branches lopped as

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					fodder for goats (<i>Capra hircus</i>). The fruit is sweet, sour; wholesome, appetizer and stomachic. The leaves are used for the treatment of scabies and boils. Decoction of leaves used in washing of Muslim dead bodies.
47	Rutaceae	<i>Skimmia laureola</i>	Kner	Herb	Used as incense and fumigant.
48	Scrophulariaceae	<i>Verbascum thapsus</i> L.	Gadhi kan	Herb	Crushed leaves are used in rheumatism, mature leaves smoke against asthma and sore throat, used against snake bite.
49	Solanaceae	<i>Solanum nigrum</i> L.	Kach mach	Herb	The juice of whole plant is used against ulcers, fever, asthma and sore throat of babies, fruit edible.
		<i>Datura metel</i> L.	Dhaturo	Herb	Extract of leaves is helpful in toothache, headache and epilepsy. Leaves extract effect the nervous system, overdose may induce vomiting, coma and even death. Seeds are antipyretic anti-rabies and narcotic.
		<i>Withania somnifera</i> L.	Koori Chinothi	Herb	The leaves are applied to tumors and to tuberculosis glands. The roots are useful in rheumatism, dyspepsia and lumbago.
50	Salvadoraceae	<i>Salvadora oleoides</i> Dcne.	Khabbar	Tree	The plant is adapted to xeric conditions and is used for hut fencing. The fruit has sharp pungent, acrid and sweet sour taste with a flavor; appetizer, laxative, carminative, useful in piles, tumors, bronchitis, biliousness, ascites. The root bark is used as a vesicant. The leaves are used as an antitussive and as a purgative. Fodder for camels (<i>Camelus dromedarius</i>).
		<i>Salvadora persica</i> L.	Khabbar	Tree	The fruit is deobstruent, carminative and diuretic. Bark of the root is vesicant. The shoots and leaves are pungent and are used as an antidote to poisons of all sorts. Fodder for camels (<i>Camelus dromedarius</i>). The juice of the leaves is given in scurvy. The natives use root as toothbrush as it strengthens the gums, keeps them from becoming spongy, and improves digestion.
51	Tiliaceae	<i>Corchorus depressus</i> (L.) Stocks	Mundhiri	Herb	The plant is sweetish hot sharp acrid; removes tumors and pain; cures piles. It is given as a cooling medicine in fevers. The leaves are emollient. The seeds in decoction with milk and sugar are given as a tonic.
		Tamaracaceae <i>Tamarix aphylla</i> L.	Lai	Tree	Branches used locally for basket making or partition screens. Galls obtained from the tree are used as an astringent and as a dye. The wood is used in turnery, for making agricultural implements (ploughs/yokes). The bark is bitter, astringent and aphrodisiac it is also used in treating eczema and capitis.
		<i>Tamarix indica</i> Willd.	Lai	Tree	The bark is bitter and an astringent, tonic. Fruit and leaves are useful for dysentery and chronic diarrhea. The wood is of the greatest utility as fuel

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					by the natives. Branches are used for basket making. Bark is astringent and tonic.
52	Umbellifereae	<i>Angelica glauca</i> E.	Chora	Herb	Dried roots and seeds are used as spices and condiments. Root extract used in different cattle diseases. Useful in dyspepsia and constipation.
		<i>Bunium persicum</i>	Kalazera	Herb	Used as spice in curries, carminative and useful in headache.
53	Urticaceae	<i>Urtica dioica</i> L.	Kairi	Herb	Root extracts used in easy delivery in females. Causes irritation when touched. Decoction of leaves is useful in rheumatic pain, while paste of peeled leaves and twinges applied externally for skin diseases.
54	Verbenaceae	<i>Clerodendrum phlomoides</i> L.f.	Gharayat	Shrub	The root is used as a bitter tonic and is given in the convalescence of measles. The juice of the leaves is useful in syphilis.
		<i>Phyla nodiflora</i> L.	Bukan	Shrub	The plant is hot and dry; diuretic, useful in fevers and colds. A poultice of fresh plant is maturant for boils. Infusion of tender stalks and leaves is useful to children suffering from indigestion and to women after parturition. Chutney made from the leaves and fruit is eaten to relieve the irritation of internal piles. It is fodder for goats (<i>Capra hircus</i>) and sheep (<i>Ovis aries</i>).
55	Vahliaceae	<i>Valeriana jatamansi</i>	Mushk-bala	Herb	Stimulant tonic and useful in cough, epilepsy and neurosis.
56	Violaceae	<i>Viola biflora</i> Wall	Banafsha	Herb	Leaves are laxative, roots emetic, tea made from roots and leaves used to treat fever.
57	Zingiberaceae	<i>Zizphus vulgaris</i>	Unab	Herb	Seeds edible and useful in pectoral and lung diseases.
58	Zygophyllaceae	<i>Fagonia bruguieri</i> DC	Drummahu	Tree	Whole plant is acrid and bitter cooling useful in asthma, fever, thirst, vomiting; cures dysentery, ophthalmia, toothache, stomatitis, leucoderma, biliousness and snakebite.
		<i>Peganum harmala</i> L.	Hurmali	Herb	The seeds contain the alkaloids Harmalin, Harmalol and Harmine; the seeds are antispasmodic, narcotic, hypnotic, anodyne, emetic, emmenagogue, stimulant, aphrodisiac, lactagogue, anthelmintic and abortifacient; they are also used in remittent and intermittent fevers, colics, retention of urine, cough and other pectoral disorders. A decoction of crushed seeds is also useful in mouthwash in laryngitis. The seeds yield a dye, which tribals use for dyeing the hair of sheep (<i>Ovis aries</i>) and goats (<i>Capra hircus</i>) as an identification mark.
		<i>Tribulus terrestris</i> L.	Bhurt	Herb	The leaves are used as gargle for stomatitis. The fruits are cooling, diuretic, tonic and aphrodisiac. Also used in painful maturation, calculous affections, urinary disorders and impotence. Tribals eat the fruit as food especially in times of famine.

		<i>Zygophyllum simplex</i> L.	Alethi	Herb	The seeds are anthelmintic; swept up off the ground and eaten by the poor as food. It is camel's heartiest fodder. An infusion of leaves is useful in ophthalmia and leucoma.
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The use of plants is indicative of intimate and relationship of the people of hilly areas with the vegetation in their vicinity. However, there is an ample traditional knowledge of medicinal plants, which need to be fully documented for the restoration of disappearing knowledge as cultural heritage can be used as a source of new medicine.

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