

TRADITIONAL USES OF ECONOMICALLY IMPORTANT PLANTS OF CHITRAL DISTRICT, MALAKAND DIVISION, NWFP, PAKISTAN

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Abstract

Chitral District is situated between 350 2' to 360 50' North latitude and 700 2' to 730 53' East longitude in Malakand Division of N.W.F.P. The altitude ranges from 700 meter at Arundo to 8500 meters at Tirich Mir, the highest peak of Hindukush and one of the highest in the world. Consequently, it has many climatic and vegetational zones or biomes. All these varied ecological zones have wide variety of plants. Information regarding traditional uses of economically important plants was obtained from local questionnaire during fieldwork in different flowering seasons during 1998-2000. As a result recorded 35 plant species having well defined traditional uses over generations. This diversity was due to the difference in climate, altitude, microclimates and other topographic conditions. Hopefully this research paper will generate wide interest in protecting and preserving plant diversity of economically important species. It was also recorded that majority of plants are being utilized in indigenous medicine for remedy of various diseases.

Introduction

Chitral District is situated in Malakand Division of N.W.F.P. It constitutes the northwest corner of this province. It is a district of glaciers with high mountains and narrow side valleys. The whole area is very much rugged and broken consisting of deep valleys with precipitous slopes containing swift streams. Chitral is endowed with a wide variety of medicinal plants. Many of which are used in indigenous medicine. It seems the need of the time that we orient ourselves to the local sources and converted efforts by all the sections involved in this process should be made to use these natural plants in the most benefiting manner in the service of ailing humanity.

Although blessed with extensive natural wealth of resources yet the humans in the mountainous areas suffer the most from scarcity of sustainable livelihood prospects. There are a great many numbers of plants having well defined traditional uses by the locals over generations. This area is unquestionably a centre of paramount importance for diversity of plant species. Over the centuries plants have been traditionally utilized for various purposes. It is amazing that modern botanists/naturalists are learning about useful plants from primitive peoples. Ethnic groups in Chitral are Kalash, Ismaili, Sunni, Gujar, Afghani, Ashriti etc. These groups have their distinct ways of life, beliefs, traditions and cultural heritage. Kalash valleys are situated in the southwest of Chitral town between Kunar River and Afghan border. Unfortunately not a single regional population has been subjected to a complete ethnobotanical analysis and the need to do so becomes more apparent with each passing day. Conservationists often talk about the problems of disappearing species but the knowledge of how to use these species is disappearing more rapidly than the species themselves. As we struggle to protect our forests find

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new and useful plant species for the benefit of humanity, the peoples who best understand these valuable species are dying out and the new generation unfortunately is not interested in the domestic herbs. Majority of the population has been relying upon for generations with considerable success, should not be overlooked as indigenous practice.

Review of literature

The review of literature clearly indicates that although some sporadic information is available about the Flora of Chitral but very little documented record of the economically important plants of this area, with their local names and uses is available in the literature.

These studies generate general awareness about economically important species of Chitral in students, general public, pharmacists and plant scientists for long term preservation and exploitation on sustainable basis.

Materials and methods

Plant collection and data regarding their traditional uses in various areas / localities of Chitral district have been done periodically in various flowering seasons. A number of locals of old age belonging to various ethnic groups have been personally interviewed and asked questions regarding traditional uses of plants, their local names etc. Identification of collected plant material was done with the help of Flora of Pakistan (series 1-204) edited by S.I.Ali and Nasir E. and studying more specimens of Chitral, lying at various existing herbaria of Pakistan.

Results and discussions

As a result recorded 35 plant species having well defined traditional uses over generations. This diversity was due to the difference in climate, altitude, microclimates and other topographic conditions. Hopefully this research paper will generate wide interest in protecting and preserving plant diversity of economically important species.

Traditional uses of economically important plants of Chitral are discussed as under:

Pistacia integerrima J.L. Stewart (Ver. Name : Sweet)

Traditional Uses: Fruit is edible and branches are used as fuel.

Viburnum cotinifolium D. Don

Traditional Uses: The fruit is sweetish and edible.

Capparis spinosa Linn. (Ver. Name : Kawir)

Traditional Uses: Its fruit when ripe is eaten by locals for dysentery, sometimes fruits and are used by locals as pickle. Flowers are used as vegetable.

Chenopodium album L. (Ver. Name: Shud, Shakhu, Josag)

Traditional uses: Its boiled leaves are eaten as a vegetable.

Artemisia maritime (Ver. Name : Drun)

Traditional Uses: May be used in improving the quality Niswar and for stomach diseases of children.

Juniperus turkestanica Komarov. (Ver. Name : Batharic)

Traditional Uses: It is a source of fuel wood and soil binder.

Juniperus excelsa M. Bieb. (Ver. Name : Saroz)

Traditional Uses: It is a source of fuelwood and soil binder.

Dioscorea deltoidea Wall. ex Kunth (Common name: Yams)

Traditional uses: Its tubers are used for washing shawls, woolen clothes and blankets It is also said to be used for the expulsion of intestinal worms.

Diospyrus lotus Linn. (Ver. Name : Kuki bana)

Traditional Uses: Fruit is edible and a source of fuel wood.

Hippophae rhamnoides Linn. (Ver. Name : Mirghiz)

Traditional Uses: Mirghiz is a multi-pupose shrub grows abundantly in Upper Chitral like Mastuj, Boony etc. The wood is used for fuel. In China, large quantities of berries are utilized in the preparation of of conserves, jams and soft drink. The fruit flesh is also an important raw material for pharmaceutical and cosmetic industries Branches are lopped by the farmers in the month of April/ October and later stacked along the boundry of cultivated fields to protect them from livestock. It is a good fodder and also used as fuelwood for making charcoal. Fruit is a rich source of vitamins and oil. Oil is used for a variety of products in various industries such as cosmetics and pharmaceutical. The fruit, though acidic, when boiled with sugar can be eaten. Syrup is prepared from sour fruit which is relished by the local people in many parts of Chitral region to be a valuable remedy for lung and stomach complanits.

Elaeagnus angustifolia Linn. var. *angustifolia* (Ver. Name : Sinchur)

Traditional Uses: Its fruit is edible.

Ephedra regeliana Florin in Svensk. (Ver. Name: Somani)

Medicinal/ traditional Uses: It is a source of fuel wood and ephedrine nasal drops. It is mixed with tobacco for preparation of good quality Niswar and it is also used for the treatment of asthma.

Ephedra gerardiana Wall. ex Stapf. (Ver.n: Somani)

Traditional Uses: It is a source of fuel wood and ephedrine nasal drops. It is mixed with tobacco for preparation of good quality Niswar and it is also used for the treatment of asthma.

Ricinus communis L. (Common name: Arund, castor oil)

Traditional uses: The oil from the seed has many uses such as an illuminant, purgative, a leather-preservative and a lubricant, especially used in delicate machinery; the oil-cake is used as fertilizer and fuel.

Quercus baloot Griff.

Traditional Uses: The wood is used for construction and fuel purposes and the bark yields tannin. It is also lopped for chrcoal and the leaves are used as fodder.

Quercus incana Roxb.

Traditional Uses: The wood is used for construction and fuel purposes and the leaves are used as a fodder.

Ribes orientale Desf. (Common name: Karan)

Traditional uses: Berries are edible and are sold as currants for making jams, puddings and cakes etc.

Hypericum perforatum Linn.

Medicinal Uses: Preparation of tea. Good for stomach diseases.

Parrotiopsis jacquemontiana (Dcne.) Rehder (Ver.n.: Pashor, Pishor)

Traditional Uses: The wood is strong and is commonlyh used for making handles, walking sticks, bedsteads etc. The twigs are used for making baskets.

Aesculus indica (Wall. ex Camb.) Hook. f. (Ver. Name: Bankhor in Gojri language and Matak in Ashriati language. Common name: Bankhor English name: Horse chestnut)

Traditional Uses: The bark is astringent and used as a tonic and febrifuge. The leaves are used as fodder. The fruit is edible and used in rheumatic pains. The wood is used for fuel purposes.

Juglans regia Linn. (Ver. Name: Birmokh)

Traditional uses: The wood is excellent for furniture, carving and for gun stocks. The bark is also good for the gums and sold in the local market under the name "Dandasa" which is used for cleaning the teeth. Bark is also used as a dye. The seeds yield an oil used for cooking and rheumatic pain. The "Kaghzi" variety of walnut is valued for its thin shell and edible fruit.

Melia azedarach Linn. (Ver. Name : Nasi, Dhrek)

Traditional Uses: Its fruit may be eaten by livestock while stony endocarps are used as beads.

Morus alba (Common name : Toot)

Traditional Uses: Fresh & dried fruit is edible and sold in the market and dried one is best source of income for locals.

Boerhaavia procumbens Roxb.

Traditional uses: Favourite fodder of livestock. The roots are said to be medicinal and used as purgative The juice extract from the plant is used as diuretic.

Fraxinus xanthoxyloides (G.Don) DC.

Traditional uses: The hwood is hard, white and close-grained; used for tool handles and walking sticks. The foliage is used as fodder.

Olea ferruginea Royle

Traditional uses: The wood is very hard and heavy, used for making ploughs, sticks etc.

Paeonia emodi Wall. ex Royle. var. *emodi* (Ver. Name : Mamekh)

Traditional uses: The underground tubers are useful in nervous disorders. The dried flowers are used for stomach complaints. The seeds are purgative and emetic.

Papaver pavoninum Schrenk.

Medicinal Uses: Narcotic and sedative.

Indigofera heterantha Wall. ex Brandis. (Ver. Name : Kanthi, Kust)

Traditional uses: Its branches are used for basket making and in the roof material of mud houses.

Robinia pseudo-acacia Linn. (Vernacular name: Robinea, Kiker)

Traditional uses: Cultivated as a roadside tree for shade and to prevent soil erosion.

Sophora mollis (Royle) Baker (Ver. Name: Baishu)

Traditional Uses: Source of fuel wood and best soil binder.

Pinus wallichiana A.B. Jackson. (Ver. Name: Patupar)

Traditional Uses: It is used for preparation of body of the truck. The wood is not so durable but is easily available and therefore used for construction and fuel purposes. It is also used for furniture.

Pinus gerardiana Wall. ex. Lamb. (Ver. Name: Chalghoza Dove, Chozone, Jalghoza)

Traditional Uses: It is valuable for resin extract. Its seeds locally known as chalghoza are edible, also used for preparation of body of the truck. The wood is not so durable but is easily available and therefore used for construction and fuel purposes. It is also used for furniture.

Abies pindrow Royle. (Ver.n: Peech in Kawar langue)

Traditional Uses: The wood is used for construction purposes.

Picea smithiana (Wall.) Boiss. (Ver.n: Achar)

Traditional Uses: The wood is used for construction purposes.

Cedrus deodara (Roxb. ex D. Don) G. Don. (Ver.Name: Rogh (Chitrali); Lomuth in Ashrit langue.)

Traditional Uses: The wood is used for construction purposes and best for furniture.

Platanus orientalis Linn. (Ver. Name : Chanar)

Traditional uses: The wood is used in some places for making gun-carriages, small painted boxes and for cabinet work and paneling.

Punica granatum Linn. (Ver. Name : Dahlum)

Traditional uses: Its fruit is delicious to eat; the juice is used as a tonic in fever. Dried seeds "Anardana" are used for adding taste to certain foods like "Chatni". A number of dyes can be obtained from it; black writing ink is also made from it. Bark of the root and wood is used as a vermifuge for tapeworms; also used for diarrhoea and dysentery.

Skimmia laureola (DC.) Sieb. (Common Name: Ner)

Traditional uses: The leaves are used in medicine.

Sambucus wightiana Wall. ex Wight & Arn. (Common Name: Gandala)

Distribution: Chitral: Lowari, 26801 (RAW); Ziarat, A. R. Beg 1616 (RAW)

Traditional uses: Different parts of the plant are used in medicine.

Solanum nigrum L. (Common name: Kachmach)

Traditional uses: Its fruit is edible while the young shoots are cooked as a vegetable. Plant parts contain the alkaloid solanine. The juice of this plant is said to be diuretic, and used in the treatment of enlarged livers.

Solanum tuberosum L. (Common name: Alu, Potato)

Traditional uses: The Potato is widely cultivated for its edible tubers in Chitral. The green part of the plant contains poisonous alkaloid, solanine, which is soon lost on boiling the tubers; sprouting or green tubers should be avoided for edible purposes. Apart from starch, the potato is also a rich source of protein and vitamin C.

Withania somnifera (L.) Dunal in DC.

Medicinal uses: The plant parts have alkaloids with sedative properties. The root is used in rheumatism. The leaves are used in fevers while roots are useful for ulcers, boils etc. The fruit is said to be diuretic.

Nicotiana tabacum Linn. (Common name: Tumbaku, tobacco)

Traditional uses: Commonly used for smoking and for insecticidal purposes for woolen clothes.

Tamarix korolkowii Regel et Schmalb. ex Regel.

Traditional Uses: Source of fuel and best soil binder. Branches of the plant may be used as fodder for livestock.

Celtis australis (Ver. Name : Binju)

Traditional uses: Leaves are used as fodder for livestock, best as a plant for shade. Grapes are grown on this tree. Its wood is a source of fuelwood and agricultural implements are prepared from wood of this tree.

Ferrula assa-foetida Linn (Ver. Name : Raw)

Traditional uses: Raw (hing) of commerce is extracted from the cut end of the root below the stem region of this plant. It is used in veterinary field. It is also used for flavouring.

Coriandrum sativum Linn. (Ver. Name : Dano)

Traditional uses: It is a common cultivated herb in Chitral. The leaves and the fruits are used as a spice. The fruits are also used in digestive ailments.

Pimpinella stewartii (Dunn) E. Nasir

Traditional uses: The roots are scented and fruits are used as carminatives.

Daucus carota L.

Traditional Uses: Used as a vegetable, carminative and condiment

Urtica dioica Linn.

Traditional uses: Leaves may be used as vegetable.

Valeriana jatamansi Jones.

Medicinal uses: The rhizome yields aromatic oil, which is used in the preparation of tranquilizers and a remedy for the suppression of urine and an important ingredient in perfumed powders.

Viola serpens Linn.

Medicinal uses: It is used in cough and cold conditions and in lung diseases.

Vitis vinifer Linn.

Traditional uses: Fruit is edible and is used for preparation of wine.

Peganum harmala Linn. (Ver.n. Aspandur)

Medicinal uses: Seed powder is used in asthma, jaundice and as an anthelmintic against tapeworms and reducing temperature in chronic malaria. Seeds are used as narcotic. It increases the flow of milk in livestock and is stimulant. The smoke is considered to be antiseptic and wounds are fumigated by burning of seeds and leaves.

Tribulus terrestris Linn. (Ver.n: Koru jokhu)

Traditional uses: The plant is used as a diuretic, demulcent, tonic, aphrodisiac and aperient. The fruit is used in painful micturition, urinary diseases, impotence, cough and heart diseases.

Medicinal Plants from Chitral are described in tabulated form (Table 1).

Table 1: Medicinal plants, part used and their medicinal value from Chitral.

Plant species	Part used	Medicinal value
<i>Artemisia absinthium</i> Linn. Family :Compositae	Flowers	Mixed with almond oil useful in ear diseases. Santonine is extracted from this plant which is used as vermifuge.
<i>Artemisia indica</i> Willd. Family :Compositae	Leaves	For ear diseases.
<i>Artemisia vulgaris</i> Linn. Family :Compositae	Leaves/ Flowers	Leaves and flowering tops are useful in nervous disorders.
<i>Berberis lycium</i> Royle Family : Berberidaceae	Roots	Its roots are said to be used for skin diseases. in chronic diarrhoea and for piles.
<i>Cannabis sativa</i> Linn. Family : Canbaceae	Plant	Used as narcotic, sedative; analgesic and intoxicant.
<i>Capparis spinosa</i> Linn. Family : Capparidaceae	Root bark	Useful in mental disorder, enlarged spleen and tubercular glands, analgesic, tonic etc.
<i>Carum carvi</i> Linn. Family : Umbelliferaeae	Fruits	Seeds of this plant are used as anti-spasmodic, carminative, stomach diseases, expectorant and diuretic.
<i>Cedrus deodara</i> (Roxb. Ex D. Don.) G. Don Family : Pinaceae	Root	Oil extract from the root is used for skin diseases of goats.
<i>Centaurea behen</i> Linn. Family :Compositae	Roots	Used in Jaundice, heart tonic etc.
<i>Chenopodium album</i> Linn. Family :Chenopodiaceae	Plant	It is used as anthelmic.
<i>Cichorium intybus</i> Linn. Family : Compositae	Plant	Used in fevers and diarrhoea and enlargement of spleen
<i>Citrullus colocynthis</i> Sch. Family : Cucurbitaceae	Fruit & Seeds	Purgative, antidote to snake poison. Roots used in jaundice and urinary diseases.
<i>Colchicum luteum</i> Baker Family :Colchicaceae	Bulbs	It is famous remedy for rheumatism and diseases of liver and spleen. It is also used for bronchial diseases.
<i>Coriandrum sativum</i> Linn. Family : Umbellifereae	Seeds	The fruits are also used in digestive ailments.
<i>Cyperus scariosus</i> R.Br. Family :Cyperaceae	Plant	It is diuretic, large dose as anthelmintic, externally for ulcers; used to make the hair grow thin, heart tonic.
<i>Daphne mucronata</i> Royle Family : Thymelliaceae	Bark	The bark is used in diseases of bones and for washing hair.
<i>Daucus carota</i> Linn. Family : Umbelliferae	Seeds	Aromatic, carminative; useful in kidney diseases. nerve tonic given in uterine pain.
<i>Dioscorea deltoidea</i> Wall. Family : Dioscoriaceae	Tubers	It is said to be used for the expulsion of intestinal worms. Used to kill lice, fish poison.
<i>Echinops echinatus</i> Roxb. Family :Compositae	Roots	Carminative, diuretic, used in cough. Powdered roots mixed with Acacia applied to the hair to kill lice.
<i>Ephedra regeliana</i> Florin in Svensk Family : Ephedraceae	Plant	It is used for asthma.
<i>Ephedra Gerardiana</i> Wall. ex Stapf. Family : Ephedraceae	Plant	It is also used for asthma.
<i>Elaeagnus angustifolia</i> Linn Family : Elaeagnaceae	Fruit	Its fruit is used for cough and cold as a ingredient of "Joshanda".
<i>Ferula assa-foetida</i> Regel Family : Umbelliferae	Latex	It is chiefly in veterinary work. It is also used for flavoring and rheumatic pain. Poultice for wound cure; carminative in hysteria and epilepsy.
<i>Ficus carica</i> Linn. Family : Moraceae	Fruit	Expectorant; used to remove kidney stone; to remove obstructions of the liver and spleen.
<i>Foeniculum vulgare</i> Mill.	Fruit	Carminative; aromatic, stomach diseases, it decoction

Family : Umbelliferae <i>Hippophae rhamnoides</i> Linn. Family : Eleagnaceae	Plant/fruit	good for eyesight. Useful as blood purifier; skin diseases, diarrhoea and anthelmintic. Fruit is a rich source of vitamins and oil. Oil is used for a variety of products in various industries such as cosmetics and pharmaceutical. The fruit flesh is an important raw material for pharmaceutical and cosmetic industries. A syrup is prepared from sour fruit which is relished by the local people in many parts of Chitral region to be a valuable remedy for lung and stomach complaints.
<i>Hyoscyamus niger</i> Linn. Family : Solanaceae	Leaves	Sedative; narcotic; antiseptic, employed in irritable conditions and nervous affections; used in asthma and whooping cough.
<i>Melia azadirachta</i> Family : Meliaceae	Whole plant	Used as antiseptic, poultice used to cure boils and skin diseases for hair growth. Bark is a bitter tonic, astringent.
<i>Mentha sylvestris</i> Linn. Family : Labiateae	Leaves and flowers	Used as carminative
<i>Morus nigra</i> Family : Moraceae	Fruit	Useful for sore throat.
<i>Morus alba</i> Linn. Family : Moraceae	Fruit	Useful for sore throat.
<i>Nepeta hindostana</i> Roth. Family : Labiateae	Plant	Used in fevers and cardiac tonic, blood purifier, decoction used as gargle in sore throat, in chest and back pain.
<i>Nerium odorum</i> Soland. Family : Apocyanaceae	Leaves and Roots	Its leaves are used in piles diseases; reduces swelling. Roots paste with water applied to ulcers on the penis.
<i>Paeonia emodi</i> Wall. Family : Paeoniaceae	Tubers	The underground tubers are useful in nervous disorders. The dried flowers are used for stomach complaints. The seeds are purgative and emetic. To relieve body pain, useful for uterine disorders, for children as blood purifier. Juice of twigs and leaves is used in many skin diseases.
<i>Peganum harmala</i> Linn Family : Zygophyllaceae	Seed	Powder is used in asthma, colic, jaundice and as an anthelmintic against tapeworms and reducing temperature in chronic malaria. Seeds are used as narcotic. It increases the flow of milk in livestock and is stimulant. The smoke is considered to be antiseptic and wounds are fumigated by burning of seeds and leaves. Blood purifier with olive oil for ear diseases, as a remedy for tapeworm. Leaves are used for rheumatic pain. Roots are applied to kill lice.
<i>Pimpinella stewartii</i> (Dunn) E. Nasir.	Root & Seed	The roots and seeds are scented and fruits are used as carminative and also for stomach diseases.
Family : Umbelliferae <i>Pistacia integerrima</i> Stew. Family : Anacardiaceae	Galls	Its galls may be used for bronchial diseases; asthma; antidote to snake venom and scorpion sting
<i>Plantago lanceolata</i> Family : Plantaginaceae	Seeds & Leaves	Seeds are used as purgative and in many diseases related to stomach while leaves are applied to wounds.
<i>Plantago major</i> Linn. Family : Plantaginaceae	Leaves	Leaves are said to be diuretic; used in inflammatory conditions of the mucous membrane of gastrointestinal and urinary tracts; in chronic dysentery; diarrhoea and constipation; powdered seed in vinegar with castor oil is useful for headache.
<i>Podophyllum emodi</i> Wall. Family : Podophyllaceae	Rhizomes	Rhizomes may be used as stimulant, purgative, for stomach diseases. The rhizomes are used in liver and bile diseases.
<i>Polygonum viviparum</i> Linn.	Roots	Roots may be used for chest and lung diseases; good gargle

Family : Polygonaceae <i>Prunus domestica</i> Linn. Family : Rosaceae	Fruit	for sore throat and spongy gums; good lotion for ulcers. Its fruit may be used in combination with other drugs for irregular menstruation and debility following miscarriage.
<i>Punica granatum</i> Linn. Family : Punicaceae	Seeds & Bark	The juice of seeds may be used as a tonic in fevers. Bark of the root and wood is used as a vermifuge for tapeworms; also used for diarrhoea and dysentery; a number of dyes can be obtained from it. It is also used in many stomach diseases. Dried bark is usually used for relief of strain and stress.
<i>Quercus baloot</i> . Family : Fagaceae	Nut	The nut is used for urinary problems, cough and cold.
<i>Ricinus communis</i> L. Family : Euphorbiaceae	Seeds	Castor oil extracted from the seed has many uses such as purgative.
<i>Saussurea lappa</i> C.B. Clarke. Family : Compositaeae	Roots	Roots are used as tonic, carminative, in asthma, cough and cholera. It may be used in chronic skin diseases and rheumatism, useful in epilepsy, paralysis, vermicide and diuretic.
<i>Saxifraga ligulata</i> Wall. Family : Saxifragaceae	Rhizomes	Its rhizomes are supposed to dissolve stones in kidney; diuretic; tonic; useful in diarrhoea and pulmonary affections; rubbed with honey and applied to gums of children when teething.
<i>Sisymbrium irio</i> Linn. Family : Brassicaceae	Seeds	Seeds may be used for cough, in asthma.
<i>Solanum nigrum</i> Linn. Family : Solanaceae	Seeds	Seeds are used by the women, to save their cheek from sunlight as well as a makeup cream for their face; juice of plant is diuretic; in chronic enlargement of liver, in blood spitting piles and dysentery.
<i>Sophora mollis</i> Family : Papilionaceae	Seeds & Branches	Its oil is used for skin diseases while branches and leaves are used as fodder by livestock. Local also uses it as a fuel.
<i>Swertia chirata</i> Family : Gencianaceae	Plant	Bitter tonic, stomach diseases, laxative and blood purifier.
<i>Tribulus terrestris</i> Linn Family : Zygophyllaceae.	Plant & Fruit	The plant is used as a diuretic and tonic. The fruit is used in painful micturition, urinary diseases, cough and heart diseases.
<i>Tribulus pentandrus</i> Forsk. Family : Zygophyllaceae.	Seeds	Seed powder is used in asthma, colic and jaundice and as an anthelmintic against tapeworms and for reducing temperature in chronic malaria. The smoke is considered antiseptic and wounds are fumigated by burning seeds and leaves.
<i>Valeriana jatamansi</i> Jones. Family : Valerinaceae	Rhizome	The rhizome yields aromatic oil, which is used in the preparation of tranquilizers and a remedy for the suppression of urine and an important ingredient in perfumed powders. Stimulant, carminative, antiseptic, useful in hysteria, shock and neurosis.
<i>Viola odorata</i> Linn. Family : Violaceae	Plant & Petals	In cough and cold. Petals are used for preparation of drug, which is used used as remedy for infantile disorders.
<i>Vitis vinifera</i> Linn. Family : Vitaceae	Fruit	Fruit may be given to children in measles, in constipation, cooling, useful in thirst and heat of body.

Medicinal plants continue to be extensively used as a source of drugs for the treatment of many ailments and such their procurement, cultivation and propagation is of great importance. The American consumer paid 3 million dollars during 1959-74 for drugs derived solely from higher plants. About sixty varieties of drugs are

being exported by Nepal, which include *Swertia*, *Gentiana*, *Rawulfia*, *Lycopodium*, *Morchela* (*Ghuchi*), *Ephedra*, *Hyoscyamus*, *Artemisia* and *Valleriana*. A number of countries are engaged in research on the investigation of medicinal plants and their cultivation, propagation and manufacture of pure drug. China is extensively using the herbs in medicine and is known to be leading country in the utilization of herbs in the medicinal preparations. South China is the leading medicinal plant-producing region where more than 200 species are being grown.

Eighty percent of the population lives in the villages and rural areas and mostly depend on Unani system of medicine, therefore, there is a dire need to carry out chemical and pharmacological work of such useful plants and scientifically prove and substantiate the observation of Hakim. Chitral has some very high and cold areas and many intermediate zones. Consequently, it has many climatic zones or biomes. All these varied ecological zones have distinct flora and plants of ethnobotanical importance. These plants are not only important for the economy of a country, but they also act as useful tools in defence. For example, plants have been used since long as a material for camouflage, both for men and machinery. Similarly plants have provided food and shelter, both in times of war and peace, for the army. There are a great many number of plants from Chitral which have well defined medicinal value, and these too have been used for defence personnel in war where "regular" medication is not available. There are a great many numbers of plants having well defined traditional uses by the locals belonging to various ethnic groups over generations. These ethnic groups are Kalash, Ismaili, Sunni, Gujars, Pathans, Afghans etc. These groups have distinct ways of life, belief, traditions and cultural heritage. Kalash valleys are situated in the southwest of Chitral town between Kunar River and Afghan border. Medicinal plants have a rich resource base, which is spread over a wide range of Chitral. About 67 medicinal plants species (including higher and lower plants) are known from Pakistan. Over the years medicinal plants are being utilized. In some areas the forest department auctions the collections of limited quantity of herbs to the highest bidder, with the result that the medicinal plants are collected indiscriminately (mostly rooted out) leaving little room for their regeneration. Similarly biochemists / pharmacologists/ pharmaceutical companies use tones of medicinal plants to get a few grams of alkaloids. This has resulted in the depletion of medicinal plants in those areas where they used to be abundant. The examples of *Colchicum*, *Digitalis*, *Dioscorea*, *Paeonia*, *Podophyllum* and *Saussurea* may be cited in this connection. In fact, there is no clearly definable medicinal plant sector formulating policies that regulate the trade practices, the promotion of innovative conservation measures and the sustainable utilization of medicinal plants. The great majority of the plants used in medicines, especially in developing countries are still collected from the wild. The demand is increasing, the habitats are declining, and so inevitably many plants are coming under threat. On the basis of recent studies it is reasonable to predict that 35 or more plant species used in medicines today are threatened from Chitral.

1. Land may be put under fast growing and more economic tree species, but always without much disturbing the root zone of the natural vegetation. Not only this will provide a stable plant cover, timber, fuel wood and fruit to the locals but help to improve the financial position of the locals.

2. Improvement of literacy rate and to achieve this purpose free education and some incentive for students and guidelines regarding improvement of vegetation/ forests may be provided on top priority.
3. Local inhabitants must be provided gas cylinders free of cost to save their forest / vegetation.
4. A comprehensive survey is required to conduct the Ethnobotanical studies of Dir District, Malakand Division.
5. A Red Data list of Plants of Pakistan should be prepared indicating the status of threatened species (documenting all the record and status of threatened species).
6. A crash programme is required to have a sufficient trained manpower (Taxonomists, Phytochemists, ecologists and foresters) to obtain a scientifically accurate data.

More national parks are necessary for insitu conservation of species. In this regard high mountain coservancy projects may be initiated on top priority.

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