

## INDIGENOUS PLANT RESOURCES AND THEIR UTILIZATION PRACTICES IN VILLAGE POPULATIONS OF KASHMIR HIMALAYAS

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### Abstract

Indigenous knowledge systems are culturally valued and scientifically important. The indigenous knowledge of plant resources has deep roots in the lifestyle of locals in mountain populations of Kashmir Himalayas. Preference is given to herbal remedies because of having no alternative choices, poverty and trust in the effectiveness of folklore herbal remedies. Field expeditions were carried out in alpine pastures of district Bagh Azad Kashmir, focusing on ethnobotany, ethnomedicine and diversity of medicinal plants. A total of 71 herb species belonging to 22 plant families were collected from the area. The present study revealed that 45 herbs, up to about 70% of the plants collected from the study area had medicinal value. Asteraceae, Lamiaceae and Polygonaceae were the largest families having 10, 5 and 5 representatives respectively. Results revealed that most of the plant species had multiple uses in the treatment of diseases. Strengthening the use and conservation of indigenous knowledge of useful plants may benefit and improve the public health and living standard of local people.

### Introduction

Indigenous knowledge has become recognized worldwide not only because of its intrinsic value but also because it has a potential instrumental value to science and conservation. Plants have been one of the most important sources of food and medicine since the dawn of human civilization. Ethnobotany is an art of collecting useful plants, understanding and description of their uses through anthropogenic methods (Davis, 1985; Ford, 1978). It is a discipline that deals with people-plant interactions in a multidisciplinary manner, involving collection and documentation of indigenous uses of plant as well as ecology, economy, pharmacology and public health (Gomez-Beloz, 2002).

Until the recent past, humans were mainly dependent upon plants for medicine and therapeutics and still about 70% of the world population depends on medicinal plants for their primary healthcare needs (Ghimire *et al.*, 2006). 10-18% of plant species all over the globe are used medicinally (Farnsworth & Soejarto, 1991). About 60% of the world population and 80% of the population of developing countries, 80% in Nepal 70% in India, 80% in Pakistan, 65% in Sri Lanka, 90% in Bangladesh, 85% in Burma, and 60% in Indonesia rely on traditional medicine (Shinwari *et al.*, 2000; Farnsworth, 1988).

Asian civilizations are the most important centers of knowledge with regard to the use of plant resources in medicinal aspects. Himalayas are one of the planet's biggest biodiversity zones blessed with a great number of plant resources (Kala & Mathur, 2002). The earliest written record of plants used as medicine originating from the Himalayas are found in the 6,500 year old texts of the Rigveda (Malla & Skaky, 1984), followed by Atharvaveda (2000-1000 BC) and Auryveda (600-100 BC) (Kunwar *et al.*, 2006). Studies have revealed that Himalayan region is home for over 10,000 species of medicinal and aromatic plants, supporting the livelihoods of about 600 million people living in the area (Shengi, 2001). Medicinal plants are usually the first choice of

local users in Himalayan region because they provide quality products, immediate and cheap therapy as compared to costly pharmaceuticals. Extensive use of plants as ethnomedicine at higher altitude is attributed to the absence of modern medical facilities (Uninal *et al.*, 2006). In remote and high altitude areas, medicinal herbs are the main ingredients of local medicines; and the traditional health care system is considered as the main lifeline. About 60% of the rural population of Kashmir is reported to use herbal remedies (Dani, 1986). Plants remedies are often used as an alternative or in addition to visiting western health care practitioners (Kunwar, 2002).

Preserving and enhancing the indigenous plant knowledge is actually rescuing a global heritage (Lambert *et al.*, 1997) and is a recognized tool in search for new drugs and pharmaceuticals sources (Sharma & Mujundar, 2003). High priority needs to be given to the documentation of indigenous knowledge and use of plant resources in developing Himalayan countries, to help their conservation (Kumar *et al.*, 2009).

The present study reviews the indigenous knowledge and uses of plant resources of Himalayan alpine pastures of district Bagh Azad Kashmir.

### Materials and Methods

District Bagh lies in the western Himalayas, having subtropical to moist temperate vegetation (Anon., 2007). Four alpine pastures, Sankh, Pir Kanthi, Garang Plani and Ganga were selected for the study. The study sites are located at the line of control between India and Pakistan in Pir Panjal sub-range of Himalayas. Altitude of the study sites ranged from 3048 to 3566m. Summers are cool having average temperatures from 13 to 15° C whereas winters are severe and always below freezing down to -10°C (Anon., 2000). The area studied remains under snow cover from November to March. Locals, nomads and shepherds use the area as their summer pastures from April to August.

Expeditions to the alpine pastures were conducted during spring and summer 2008-9 using extensive and intensive surveys in accordance with specific procedures for the locality (Cox, 1967; Ford, 1978). Plants were collected and brought to Herbarium of Quaid-i-Azam University where they were identified and accession numbers were allotted. Ethnobotanical information was gathered by making visits to settlements within the study area including *Sairi, Barikot, Kharal Maldiyala, Raikot, Narr Sher Ali Khan, Ratnoi & Bani Maldara*. Traditional knowledge of people from different socioeconomic backgrounds within the study area, including herdsmen, plant collectors, hakims, social activists, traditional healers, and market dealers was collected by means of questionnaire method. The dynamics in distribution and frequency of medicinal plants was elucidated through discussions of the experienced elders.

## Results

The present study provides information on the indigenous uses of 45 ethnobotanically important plants belonging to 22 families. A total of 71 herb species were collected from the area. The present study revealed that 45 herbs, up to about 70 % of the plants collected from the study area had medicinal value. Asteraceae was the biggest family having 10 medicinally important members in the area. Polygonaceae and Lamiaceae have 5 members each and Apiaceae have 3 members. Ranunculaceae, Rosaceae, Geraniaceae, Araceae, Papilionaceae and Valerianaceae have 2 members each. Pteridaceae, Saxifragaceae, Boraginaceae, Fumariaceae, Liliaceae, Rubiaceae, Leguminosae, Malvaceae, Primulaceae, Sambucaceae, Crassulaceae and Violaceae were represented by 1 member each.

### 1. *Arisaema jacquemontii* Blume

**Family:** Araceae

**Vernacular name:** Hathphees

**Parts used:** Fruit and rhizome

**Accession number:** 125606

**Ethnomedicinal uses:** Fruits and rhizomes are poisonous and cause sedation. Very small quantity of rhizome is used during meal for relieving body pain. Dried rhizome powder is also used in small quantities in various preparations by "Hakims" for psychic and nervous disorders.

### 2. *Adiantum venustum* L.

**Family:** Pteridaceae

**Vernacular name:** Kakwa

**Part used:** Leaves, root

**Accession number:** 125607

**Ethnomedicinal use:** Plants are boiled and its decoction is used for body temperature. The fronds are astringent, diuretic, emetic, expectorant and tonic. They are used in the treatment of headaches and scorpion stings. A paste made from the rhizomes is used in to treat cuts and wounds.

### 3. *Ajuga bracteosa* Wall. ex Benth.

**Family:** Lamiaceae

**Vernacular name:** Kauri booti

**Parts used:** Stem, leaves

**Accession number:** 125608

**Ethnomedicinal uses:** The extract of fresh plant is used before dinner for ulcer, colic and jaundice. Dry powder is also used for above purpose.

### 4. *Arisaema flavum* Forssk.

**Family:** Araceae

**Vernacular name:** Sapgugli

**Part used:** Root, leaves

**Accession number:** 125610

**Ethnomedicinal uses:** The tubers are crushed and a paste is made which is applied against foot and mouth diseases in cattle. The paste is also applied for snake bite.

### 5. *Achillea millefolium* L.

**Family:** Asteraceae

**Vernacular name:** Kangi

**Part used:** Whole plant.

**Accession number:** 125611

**Ethnomedicinal uses:** The plant is used as diaphoretic, stimulant and tonic. The plant is also used in fever and cold. Decoctions are used to treat inflammations such as piles (hemorrhoids), and headaches. The aerial parts are used as a bitter digestive tonic to encourage bile flow and as a diuretic. The tincture is used for urinary disorders and menstrual problems.

### 6. *Artemisia vulgaris* L.

**Family:** Asteraceae

**Vernacular name:** Chaagu

**Part used:** Leaves

**Accession number:** 125612

**Ethnomedicinal uses:** Leaves promote suppressed menses. Syrup is taken before and after the full moon by young women just starting menses. Also used for insomnia and nervousness, kills parasitic worms internally.

### 7. *Angelica glauca* Edgew.

**Family:** Apiaceae

**Vernacular name:** Choora

**Part used:** Root

**Accession number:** 125613

**Ethnomedicinal use:** The powdered root is given with hot water for stomach troubles and to check vomiting. It is further believed that the roots, when used to season curry, give strength and vigor to women after delivery. The roots are aromatic and generally used for flavoring as a condiment.

### 8. *Bergenia ciliata* (Haw.) Sternb.

**Family:** Saxifragaceae

**Vernacular name:** Batweyaa

**Parts used:** Root, flowers and leaves

**Accession number:** 125614

**Ethnomedicinal use:** The rhizome is crushed and used in all kinds of ulcers mainly stomach and duodenal and also in internal infections. Rhizome paste is applied to swollen joints. Bark is antiseptic and is used to heal up cuts and wounds. Powder of the whole plant is used to treat urinary troubles. The root juice is used to treat coughs and colds, hemorrhoids and asthma.

**9. *Caltha alba* Jacq ex Comb****Family:** *Ranunculaceae***Vernacular name:** Neel kanth**Part used:** Leaves**Accession number:** 125615**Ethnomedicinal uses:** Leaves are orally used to stop pain and cramps, for menstrual disorders, as a laxative and diuretic. Leaf extract is used for cleaning skin lesions and sores.**10. *Cichorium intybus* L.****Family:** *Asteraceae***Vernacular name:** Handh**Part Used:** Flowers, leaves, root**Accession number:** 125616**Ethnomedicinal uses:** Leaves are used as a vegetable. The roasted root is used as a coffee adulterant. The root and the leaves are appetizer, depurative, digestive, diuretic, laxative and tonic. A decoction of the freshly harvested plant is used for treating gravel; the latex in the stems is applied to warts in order to destroy them.**11. *Corydalis govaniiana* Wall.****Family:** *Fumariaceae***Vernacular name:** Bhutyata**Part used:** Root**Accession number:** 125617**Ethnomedicinal use:** The root is used as antiperiodic, appetizer, diuretic and skin, tonic. It is used in the treatment of syphilis and cutaneous affections, disorders from poisoning, swelling of the limbs and stomach/intestinal pain due to worm infestation.**12. *Fragaria nubicola* (Hook.f.)Lindl.****Family:** *Rosaceae***Vernacular name:** Knachii**Parts used:** Fruit, leaves, root**Accession number:** 125618**Ethnomedicinal uses:** Fruit has a very pleasant strawberry flavor. The juice of the plant is used in the treatment of profuse menstruation. The unripe fruit is chewed to treat blemishes on the tongue. The leaves and fruit are mixed with the leaves of *Berberis lycium* and used in cure of stomach ulcers, also used as antiseptic. Leaves are mildly astringent and diuretic, used in children's diarrhea and affection of the urinary organs.**13. *Fritillaria roylei* Hook.f.****Family:** *Liliaceae***Vernacular name:** Pari pyaaz**Part used:** Bulb**Accession number:** 125619**Ethnomedicinal uses:** The bulb is antiasthmatic, antirheumatic, and oxytocic. It is boiled with orange peel and used in the treatment of TB and asthma.**14. *Geranium wallichianum* D. Don ex Sweet****Family:** *Geraniaceae***Vernacular name:** Ratanjote**Part used:** Rhizome, Flower**Accession number:** 125620**Ethnomedicinal use:** Rhizome is dried, powdered, boiled in water and used for lowering blood pressure, also used for Leucorrhoea. Rhizome is mixed in a sweet dish and used for backache. Also used as a tonic in various preparations. The herbal tea is used against rheumatic pain. Root extract is used in chronic diarrhea and dysentery.**15. *Gentiana kurroo* Royle****Family:** *Gentianaceae***Vernacular name:** Desibangara**Part used:** Root**Accession number:** 125621**Ethnomedicinal uses:** The root is used in stomachache and urinary infections.**16. *Gallium aparine* L.****Family:** *Rubiaceae***Vernacular name:** Loothar**Part used:** Leaves**Accession number:** 125622**Ethnomedicinal uses:** Leaves are used in jaundice, externally used on wounds as antiseptic.**17. *Gerbera gossypina* Royle****Family:** *Asteraceae***Vernacular name:** Ladrun**Part used:** Root**Accession number:** 125623**Ethnomedicinal uses:** Root juice is used to treat menstrual disorders, blood pressure and gastric. Paste is used to control the bleeding from newly cut wounds.**18. *Geum elatum* Wall. ex G. Don****Family:** *Rosaceae***Vernacular name:** Shoonkar**Part used:** Root**Accession number:** 125624**Ethnomedicinal uses:** Decoction of root is used as astringent, for treatment of dysentery and diarrhoea.**19. *Gnaphalium affine* D.Don****Family:** *Asteraceae***Vernacular name:** Jangli dodal**Part used:** Leaves**Accession number:** 125625**Ethnomedicinal uses:** The whole plant is antiperiodic, antitussive, expectorant and febrifuge. The leaves are used in rice dumplings. A decoction is used in the treatment of influenza, sore throat and weeping pruritis of the skin. The woolly hairs of the dried leaves are used as tinder.**20. *Hackelia uncinatum* (Benth.) C.E.C.Fisch.****Family:** *Boraginaceae***Vernacular name:** Neelaan**Part used:** Flowers**Accession number:** 125626**Ethnomedicinal uses:** The flowers are expectorant, used for healing wounds and treating tumors. Flowers are also used in the treatment of coughs, sores, wounds and swelling of the body.

**21. *Indigofera heterantha* Wall. ex Brands****Family:** *Leguminosae***Vernacular name:** Jandi**Part used:** Leaves**Accession number:** 125627**Ethnomedicinal use:** Leaves are crushed and the extract is used in the internal body disorders.**22. *Leucas cephalotes* (Roth.) Spreng.****Family:** *Labiatae***Vernacular name:** Chara**Parts used:** Leaves, shoot**Accession number:** 125628**Ethnomedicinal uses:** A decoction of the plant is used in the treatment of malarial fever. A paste of the plant is boiled with mustard oil and applied externally to boils. The juice of the plant is used in the treatment of urinary complaints. Tender leaves and young shoots are used as vegetable.**23. *Malva neglecta* Wallr.****Family:** *Malvaceae***Vernacular name:** Suchhal**Parts used:** Leaves; seed**Accession number:** 125629**Ethnomedicinal uses:** Decoction of leaves is used as a laxative. Crushed root in water is given to cows and buffaloes to facilitate detachment and expulsion of placenta after delivery. Decoction of the roots is used as an egg-white substitute for making meringue. The plant is an excellent laxative for young children.**24. *Nepeta erecta* (Benth.) Benth.****Family:** *Lamiaceae***Vernacular name:** Peshobotay**Part used:** Leaves**Accession number:** 125630**Ethnomedicinal use:** The paste of leaves is applied to cuttings and wounds, as it is thought to make them heal quickly.**25. *Onopordum acanthium* L.****Family:** *Asteraceae***Vernacular name:** Kandyara**Part used:** Flowers; Leaves; Stem**Accession number:** 125631**Ethnomedicinal use:** Leaves and young plants are cooked and used as vegetables. The flowering plant is cardiogenic. Plant juice is used for the treatment of ulcers. A decoction of the root is astringent and is used to diminish discharges from mucous membranes. The stem hairs are sometimes collected and used to stuff pillows.**26. *Oxyria digyna* (L.) Hill.****Family:** *Polygonaceae***Vernacular name:** Daghrashalkhay**Part used:** Leaves**Accession number:** 125632**Ethnomedicinal use:** The leaves are used to treat scurvy. The roots, stems and leaves are cooked and eaten in the treatment of dysentery. Leaves are also used as a salad.**27. *Pimpinella diversifolia* D.C.****Family:** *Apiaceae***Vernacular name:** Droobra**Part used:** Fruit**Accession number:** 125633**Ethnomedicinal use:** Fruit is stomachic. Fruit decoction is also used for cough and cold.**28. *Pleurospermum brunonis* (D.C.) Clarke****Family:** *Apiaceae***Vernacular name:** Spairkai**Part used:** Leaves**Accession number:** 125634**Ethnomedicinal use:** Leaves are crushed in mustard oil and applied on the body to prevent skin infections. Air dried leaves are used as insect repellent.**29. *Plantago major* L.****Family:** *Plantaginaceae***Vernacular name:** Achar**Part used:** Leaves and seeds**Accession number:** 125635**Ethnomedicinal use:** Fresh leaves are wrapped around the boils, after a day or two the pus drains out and the heal fills up within three days. Leaves are chopped and used for skin discoloration caused by injury. Seeds are used in dysentery. Leaves paste is a safe and effective treatment for bleeding; it quickly staunches blood flow and encourages the repair of damaged tissue. The seeds are used in the treatment of parasitic worm. Traditionally used to prevent uterine bleeding after childbirth (made into a tea and inserted *via* a douche).**30. *Polygonum nepalense* Meissn.****Family:** *Polygonaceae***Vernacular name:** Hulla**Parts used:** Leaves, Seed**Accession number:** 125636**Ethnomedicinal use:** Tender young leaves and shoots - raw or cooked as a vegetable. A juice of the root is used in the treatment of fevers. A paste of the root is used as a poultice on fresh wounds. The squeezed plant is used for washing clothes.**31. *Primula macrophylla* D. Don.****Family:** *Primulaceae***Vernacular name:** Khakhri**Part used:** Flower, leaves**Accession number:** 125637**Ethnomedicinal use:** Flowers are anti-inflammatory and febrifuge and are used in the treatment of diarrhoea, inflammation of the liver, gall bladder, stomach and intestines. It is especially used for children with high fever.**32. *Prunella vulgaris* L.****Family:** *Lamiaceae***Vernacular name:** Chikkal**Part used:** Leaves**Accession number:** 125638**Ethnomedicinal use:** Leaf powder is used especially for the treatment of wounds, ulcers, sores. Leaves are also taken internally as a tea in the treatment of fevers, diarrhoea, sore mouth and internal bleeding.

**33. *Ranunculus muricatus* L.****Family:** *Ranunculaceae***Vernacular name:** Keerun**Part used:** Leaves**Accession number:** 125639**Ethnomedicinal use:** The plant is used in the treatment of intermittent fevers, gout and asthma. A decoction of the plant is used as a purgative for goats.**34. *Rumex hastatus* D. Don****Family:** *Polygonaceae***Vernacular name:** Khatta Hulla**Part used:** Leaves, Seeds**Accession number:** 125640**Ethnomedicinal use:** Juice of leaves act as cooling, astringent, diuretic, aperients; also used in snakebites. Seeds are cooling, used in dysentery and scorpion sting. Leaves rubbed on the affected parts for relief from irritation caused by stinging nettles (*Urtica dioica*). Also cooked and consumed as vegetable. Fresh leaves are crushed and used to stop bleeding from wounds. Locally used to clean rusted vessels and as fodder for cattle.**35. *Rumex nepalensis* Spreng.****Family:** *Polygonaceae***Vernacular name:** Hulla**Part used:** Leaves, Root.**Accession number:** 125641**Ethnomedicinal use:** Tender young leaves and shoots are used as a vegetable. The root is purgative. A strong decoction of the root is applied to dislocated bones. A paste of the root is applied to swollen gums. The leaves are used in the treatment of colic. The juice of the leaves is applied externally to relieve headaches. A decoction of the plant is used to wash the body in order to alleviate body pain.**36. *Sambucus whightiana* Wall.****Family:** *Sambucaceae***Vernacular name:** Ghnoola**Parts used:** Leaves stem**Accession number:** 125642**Ethnomedicinal use:** The leaves are diuretic, expectorant and laxative. The fruit is also sometimes used, but it is less active than the leaves. The herb is commonly used in the treatment of liver and kidney complaints. Root is dried, then powdered and made into a tea, it is considered to be one of the best remedies for dropsy.**37. *Senecio chrysanthemoides* D.C.****Family:** *Asteraceae***Vernacular name:** Chahl**Parts used:** Root, Flower**Accession number:** 125643**Ethnomedicinal use:** Aqueous extract is used as antipyretic and calmative. It's root extract is given to children against cholera and lungs diseases. Flowers are crushed and applied on wounds as antiseptic. Root powder is used against rheumatic pain.**38. *Sedum ewersii* Ledeb.****Family:** *Crossuaceae***Local name:** Kupadd jari**Parts used:** Whole plant**Accession number:** 125644**Ethnomedicinal use:** The plant is crushed and applied on forehead to provide cooling and soothing effect. This plant is given to cattle to increase milk production.**39. *Taraxacum officinale* Weber.****Family:** *Asteraceae***Vernacular name:** Haand**Part used:** Flowers; Leaves; Root**Accession number:** 125645**Ethnomedicinal use:** It is effective and valuable as a diuretic. Root is slightly depurative, strongly diuretic, hepatic, laxative, stomachic and tonic. The tea made up of flowers is used internally in the treatment of gall bladder and urinary disorders, gallstones and jaundice, distilled water made from the ligules (thin appendages at the base of the leaf blades) is used cosmetically to clear the skin and is particularly effective in fading freckles.**40. *Tussilago farfara* L.****Family:** *Asteraceae***Vernacular name:** Bann Hulla**Part used:** Flowers; Leaves**Accession number:** 125646**Ethnomedicinal use:** Flower buds are used as vegetables. The dried and burnt leaves are used as a salt substitute. The plant is astringent, emollient, expectorant, stimulant and tonic. It is widely used in the treatment of coughs and respiratory problems. A poultice of the flowers is used for a range of skin disorders including ulcers, sores, bites and inflammations.**41. *Thymus linearis* Benth.****Family:** *Lamiacea***Vernacular name:** Sew**Part used:** Whole plant**Accession number:** 125647**Ethnomedicinal use:** Whole plant is boiled in water and used for stomach disorders. It is also considered as carminative and tonic. Leaves are dried and are mixed in tea for its taste.**42. *Trifolium repens* L.****Family:** *Papilionaceae***Vernacular name:** Shtall**Parts used:** Flowers; Leaves; Root.**Accession number:** 125648**Ethnomedicinal use:** The plant is antirheumatic and depurative. An infusion is used in the treatment of coughs, colds, fevers and leucorrhoea. A tincture of the leaves is applied as an ointment to gout. An infusion of the flowers is used as eyewash.**43. *Valeriana pyrolifera* Medik****Family:** *Valerianaceae***Local name:** Murma**Part used:** Root**Accession number:** 125649**Ethnomedicinal use:** The roots and dried rhizomes are grinded and mixed in water to wash the hair to get rid of dandruff.

**44. *Valeriana jatamansii* Jones.****Family:** *Valerianaceae***Vernacular name:** Murma**Part used:** Root, Rhizome**Accession number:** 125650

**Ethnomedicinal use:** The root is antispasmodic, carminative and stimulant. It is used to treat hysteria, nausea, pimples, rheumatism and cholera. The juice of the root is applied to the forehead in the treatment of headaches, and is dripped into the eyes for treating eye problems. A paste of the plant is applied externally to boils, used internally in the treatment of painful menstruation, cramps, hypertension, and irritable bowel syndrome. The dried rhizome is used as incense.

**45. *Viola canescens* Wall ex Roxb.****Family:** *Violaceae***Vernacular name:** Banafsha**Part used:** Whole plant**Accession number:** 125651

**Ethnomedicinal use:** Flowers and leaves are used in cough, cold, fever and jaundice. Young leaves and flower buds are cooked and used as a vegetable. The leaves are emollient and laxative. The stems and fragrant blossoms are placed in the clothes cupboard to impart a nice smell to the clothes.

**Discussion and Conclusion**

People have now begun to realize and understand the important role played by these indigenous plant resources in modern world. Local people have remarkable detailed knowledge of species identity and characteristics (Shaheen & Qureshi, 2011). Traditional medicine has maintained its popularity in a number of Asian countries including Pakistan as the local people have centuries old indigenous knowledge of traditional uses of most of the plant of the area. This indigenous knowledge of plants is transferring among them from generation to generation (Qureshi *et al.*, 2009).

Results of the present study reveal that most of the plant species had multiple uses in the treatment of diseases. At the time of the ethnobotanical information of medicinal plant in study area, it was noted that a single disease was treated by number of different plant species. Similarly a single plant was used to cure a number of diseases.

Plant resource and indigenous knowledge of their utilization have been severely degraded in the recent decades due to socio-economic transformations and change in local perceptions. This impact is inevitable to the Himalayan zone (Jan *et al.*, 2009; Shaheen *et al.*, 2011) Indigenous knowledge systems are Valuable assets for the cultures from which they evolve as well as for scientists and planners striving to improve the living conditions in developing countries. Besides medicinal uses, plant resources have a high potential as a sources of income for the rural hilly populations of the region (Shrastha & Dhillion, 2003). Therefore, sustainable use of the resources and conservation of indigenous knowledge of medicinal plants may compliment the income of local people. Medicinal plants are mainly harvested in the wild, traded, and eventually consumed as processed form in

lowland cities. Up to 50% of the rural population is involved in commercial collection of medicinal and aromatic plants (Shinwari *et al.*, 2006).

Ethnobotanically important plant species appear to be restricted to conserved and isolated habitats in the forests and pastures. The anthropogenic unsustainable activities such as deforestation, habitat destruction and urbanization are posing a serious threat to these precious plant resources (Jan *et al.*, 2008). Hence, priority should be given to the screening and documentation of the useful species and their habitats and development of an integrated conservation management strategy for these plant resources. Multidisciplinary approaches will allow us better access to science, medicine and literature. It is the need of the hour that the precious ethnobotanical knowledge about the plants should be collected, documented and transferred to the younger generation. The data can be used in future for pharmacological studies.

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