Ethnomedicinal Plant Diversity in Kumaun Himalaya of Uttarakhand, India

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Abstract: Kumaun Himalaya of Uttarakhand State is characterized by a rich diversity of ethnomedicinal plants as well as a rich heritage of traditional medicine system. The present study reveals the status of ethno-medicinal flora and their importance preserved by the local population in Kumaun region. During the study it was observed that 102 species of ethno-medicinal plants belonging to 48 families are being used in the folk-medicine system by the indigenous people of this region. For the present study, an intensive and extensive survey was made for four selected districts of Uttarakhand, viz. Almora, Champawat, Bageshwar and Pithoragarh. The neighboring villages of the study areas were also visited for identification of plant species and to explore the traditional knowledge about the use of indigenous medicinal plants. Therefore, the ethnobiological knowledge of people and listing of plants of particular region are important tools that may help in understanding human environment interactions. [Nature and Science. 2010;8(5):66-78]. (ISSN: 1545-0740).

Keywords: ethno-botany; folk medicines; Kumaun region; local communities

1. Introduction
Uttarakhand state encompasses an area of 53,485 sq. km., which accounts for nearly 15.5 per cent of the total geographical area of Western Himalayas. Most of the northern parts of the state are covered by the high Himalayan ranges and glaciers, while the lower reaches are densely forested. Due to these great altitudinal variation, wide array of climatic zones are available, which favors the luxuriant growth of diversified and rich vegetation which also has a number of raw drugs described in Ayurvedic texts. The value of biodiversity as a source of pharmacologically important substances has been the subject of a number of studies, such as Farnsworth and Soejarto (1985), McNeely (1988), Principe (1991) and Pearce and Puroshothaman (1992), while documentation on ethno-botanical knowledge was done by Maikhuri et al. (2000), Nautiyal et al. (2001). While a comprehensive review has described a rich diversity and use of medicinal flora within Uttarakhand (Joshi, 2002), besides a study conducted on the medicinal plant diversity in riparian zone of River Ganga at Haridwar (Gangwar and Joshi, 2006) to understand the use of plant species from Himalayan region to cure various ailments.

Presently, 95% raw materials required by pharmaceuticals and drug manufactures are collected from the wild and remote areas (Kehimker, 2000). The pharmaceutical sector is using 280 medicinal plant species, out of which 175 are from the Indian Himalayan Region (Dhar et al, 2002). This region supports approximately 1748 plant species of known medicinal value (Samant et al, 1998). In India there exists over one million community based traditional workers and about 600,000 licensed medical practitioners of traditional systems like Ayurveda, Siddha and Unani. They diagnose and cure different diseases through their own traditional knowledge (Hafeel and Shankar, 1999). The health care system of 80% population of the developing world is still dependent on their surrounding vegetation/ forests and pastures. They rely on medicinal plants because of their effectiveness, lack of modern healthcare alternatives and cultural preferences (Caniago and Siebert, 1998). Mostly plant products are used by traditional healers as traditional medicine usually collected from the wild and hilly remote areas to accomplish the increasing demand of herbal medicines. The Indian Himalayan Region (IHR) is also the habitat of major tribal communities like Bhotias, Boaxas, Tharus, Rajis, Jaunsaries, Shaukas, Kharvar and Mahigiri. From ancient period these communities mainly rely heavily and directly on the endemic vegetation for their daily needs such as food, fodder and medicines for their illness and various types of ailments. Lack of alternate income sources; push them to over-exploit natural resources of the region. Non-sustainable collection methods cause threat from harvesting and many valuable medicinal herbs are becoming rare due to their continuous utilization (Swe and Win, 2005). Further, we are witnessing a sharp decrease in the biological species all across the globe, especially in the Kumaun region, perhaps as it forms one of the major hotspots and the conservation of high-altitude medicinal plants is of great concern throughout the Himalayan region, because they are important for traditional health care and in large scale collection for...
trade. Hence, there is an immediate need to conserve this natural resource.

**1.1 Significances of ethno-medicinal plants**

Himalayan herbal medicine and their traditional knowledge is a good illustration of poor communities living in the remote areas, fighting even incurable diseases through the traditional methods, and even for their livestock, through these traditional herbal medicines. Medicinal plants are natural resources for new drugs. Plants parts are directly used as medicines by a majority of community in all over world and have no side effect like allopathic medicines. Most of the modern medicines are produced indirectly from medicinal plants.

**2. Study Area**

For the present study of medicinal plant diversity of Kumaon region of Uttarakhand State, four districts viz. Almora, Bageshwar, Champawat and Pithoragarh, were selected and a total number of 29 spots were identified. The study area varies from 1615 msl to 1646 msl. Geographical description of the study areas is given in Table 1.

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<tr>
<th>S.NO</th>
<th>Districts</th>
<th>Study Sites</th>
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<tr>
<td>1.</td>
<td>Almora</td>
<td>Danya, Panwanaula, Valachiana, Kausani, Jageshwar</td>
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<td>2.</td>
<td>Bageshwar</td>
<td>Nadi Gaon, Shishakhani, Chhatina, Chandika</td>
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<td>3.</td>
<td>Champawat</td>
<td>Maneshwar, Loha Ghat, Ghat, Marodapur</td>
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<td>4.</td>
<td>Pithoragarh</td>
<td>Dharamgarh, Dhamara, Kanalicheena, Ogla, Jauljeevi, Baluakot, Dharchula, Tapovan, Tawaghat, Chirgala, Sovla, Around Swaminarayan Temple at Chhota Kailash, Aincholi, Dhamora and Dhari villages</td>
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Table 1. Districts Wise Description of Studied Sites for Survey of Ethno-medicinal Plant Diversity

![Fig.1. Map of the Uttarakhand State in India Showing Study Sites](http://wwwsciencepub.net)
3. Methodology

Present study is based on extensive and intensive field surveys made during 2006-08. The neighboring villages were visited for identification of medicinal plant species collected during the survey and to explore the more information about the traditional knowledge with the help of indigenous peoples of the concern areas who have knowledge about the uses of these medicinal plant species. The collected information was re-examined by consulting important works pertaining to medicinal plants and ethno-botany and identification of medicinal plant species was made with the help of available literature (Nair and Mohanan, 1998; Brahmvarchaswa, 2003; Kanjilal, 2004) and local experts.

4. Results

The present study investigates the medicinal uses of plant species and the associated indigenous knowledge preserved by the indigenous community in Kumaun region. The data of medicinal plants were collected from twenty nine selected sites of four districts i.e. Almora, Bageshwar, Champawat and Pithoragarh (Table 1). The documentation of 102 plant species belonging to 48 families collected from study sites and their medicinal use against various ailments are presented in Table 2. The families and the species within a family are arranged in alphabetical order. Species names are followed by vernacular names, local names, habit of plant and plant parts used. The reported species are presented with a highest representative of Asteraceae, Limiaceae and Rosaceae (9 species each) followed by Solanaceae and Poaceae (4 species); Araceae, Euphorbiaceae, Polygonaceae, Ranunculaceae, Scrophulariaceae and Valerianaceae (3 species each); Apiaceae, Apocynaceae, Liliaceae, Meliaceae, Moraceae, Pinaceae, Plantaginaceae, Rutaceae, Saxifragaceae, Verbenaceae and Zingiberaceae (2 species each); and besides these 25 families (1 species each) were found to be used by the local communities for medicinal purposes.

On the behalf of the qualitative analysis, the maximum species were herbs (50) followed by shrubs (24), trees (22) and under shrubs and climbers (3 each) as depicted in Fig 2., while on the basis of plant parts used by the local people, it was observed that whole plants of 21 species, various plant parts used (<1 parts of plant such as leaves, twigs and roots; stems, roots and bark etc.) of 43 species, roots of 14 species, leaves of 08 species, fruits of 04 species, bark, rhizome and seeds of 03 species each, stem of 02 species, and flowers of 01 species used to cure various ailments (Fig. 3).

Fig. 2. Distribution of plant species according to habitat type, used to cure various ailments
Table 2. Ethno-medicinal plants species used by the indigenous people of Almora Bageshwar, Champawat and Pithoragarh districts of Kumaun Himalaya

Species name are followed by vernacular/local names, habitat of the plant and plant parts used as medicine.

4.1. Acanthaceae

4.1.1. Justicia adhatoda Linn./ Basa/Shrub/Leaves
The plant is used for treatment of various ailments of respiratory tract, cough and bleeding piles Inflorescence and leaf liquid is used for fever (Ahmad et al., 2008).

4.2. Agavaceae

4.2.1. Agave Americana Linn. / Rambans /Shrub/Leaves
The sap of agaves is antiseptic, diaphoretic, diuretic and laxative and used internally for the treatment of diarrhea and dysentery (Chevallier, 1996). An infusion of the chopped leaf is purgative and the juice of the leaves is applied to bruises (Duke and Ayensu, 1985).

4.3. Anacardiacae

4.3.1. Mangifera indica Linn./ Aam/Tree/Fruits
Seeds are used to cure asthma, fruits are diuretic, and bark used to cure hemorrhages (Sharma et al., 2006).

4.4. Apiaceae

4.4.1. Centella asiatica Linn./ Mandukparni/Herb / Whole herb
The herb is used to treat inflammatory infections, surgical lesions, damaged skin, slow healing wounds and leg ulcers (Gangwar and Joshi, 2008).

4.4.2. Pleurospermum angelicoides DC. / Chhipi/Herb/ Roots
Roots used to cure fever, stomach pain, body pain, dysentery and spice. Root grounded into powder with seed of jeera and black piper to cure the typhoid fever, stomach pain (Nautiyal et al., 2004).

4.5. Apocynaceae

4.5.1. Holarrhena antidysenterica Linn. / Koraya, kura /Tree/Stems, bark roots & seeds
The plant parts are used to remove constipation and to stimulate discharge of urine. This also controls diarrhoea, dysentery, hemorrhoids, rheumatic arthritis, and skin diseases (Singh et al., 2002).

4.5.2. Carissa spinarum, A. DC / Jungli karonda/Shrub/ Leaves, fruits, bark and roots
The fruit is used as astringent and antiscorbutic and remedy for biliousness. The leaf decoction is used to cure of intermittent fever, diarrhea, oral inflammation and ear ache. The root is employed as a bitter stomachic and vermifuge (Parmar and Kaushal, 1982).

4.6. Araceae

4.6.1. Acorus calamus Linn. / Buch /Herb/ Roots
Small dose reduces stomach acidity whilst larger doses increase stomach secretions (Chevallier, 1996), and also recommended in the treatment of anorexia nervosa (Phillips and Foy, 1990). An infusion of the root can bring about an abortion, whilst chewing the root alleviates toothache (Weiner, 1980). It is a folk remedy for arthritis, cancer, convulsions, diarrhoea, dyspepsia, epilepsy (Duke and Ayensu, 1985).

4.6.2. Arisaema tortuosum Wall. Schott / Baank/ Herb/ Whole herb
Herb used to cure various ailments related to digestive tract like constipation, indigestion, abdominal pain and dysentery. It showed anti-nematodal activities and also used treat bone fracture (Choudhary et al., 2008)

4.6.3. Arnebia benthamii Wallich Ex G. Don / Balsamjari/Herb / Roots
Plant having antibacterial, antifungal, anti-inflammatory and wound-healing properties (Manjkhola and Dhar, 2002). The roots yield a red pigment, Shikonin, which has several medicinal properties and is marketed under the trade name Ratanjot (Kirtikar and Basu, 1984). The plant is considered to be useful in the treatment of diseases of the tongue and throat (Singh and Kachroo, 1976).

4.7. Asclepiadaceae
4.7.1. Calotropis procera (Ait.) R.Br. / Akha, Madar/Shrub/ Leaves & flowers
Roots and bark are used as tonic, surdorific, antispasmodic and expectorant. Flowers digestive, stomachic. Milky juice is used in leprosy, asthma, fever with enlarged liver, cough and skin diseases. (Qureshi et al., 2001). Plant latex has cytotoxic, procoagulant, anti-inflammatory and abortifacient activity. Root extract have been reported anti-tumorous and anti cancerous (Mathur et al., 2009).

4.8. Asteraceae
4.8.1. Artemisia annua L./ Quin-ghaosu, Sweet Worm wood/Herb/ Leaves & plant oil
Used as anti-malarial medicine, lowers fevers and checks bleeding (Chevallier, 1996). The leaves are antiperiodic, antiseptic, digestive, febrifuge (Yeung, 1985). An infusion of the leaves is used internally to treat fevers, colds and diarrhoea (Foster and Duke, 1990).

4.8.2. Artimisia nilagirica (Clarke) Pamp./ Nagdona/Shrub/Whole plant
Plant having antimicrobial and antifungal properties. Used in skin diseases, burns cuts, wounds and inflammations.

4.8.3. Aster flaccidus Bung. / Alpine aster/Herb/ Whole plant
Used in bronchitis, cramps, common cold and relieves pain (Wangchuk, 2004).

4.8.4. Cichorium intybus Linn / Kasni /Herb/Seeds, root and leaves
Herb is taken internally to cure liver disorders, spleen problems; decoction of the powdered seeds is used in obstructed or disordered menstruation (Gangwar and Joshi, 2008). The root and the leaves are appetizer, cholagogue, depurative, digestive, diuretic, hypoglycaemic and laxative (Foster and Duke, 1990).

4.8.5. Centipedia minima Linn / Nakh chhikni, Spreading sneezeweed/Herb/Whole herb
Sandy blight, a kind of eye inflammation, in which the eye feels as if it was full of sand, purulent ophthalmia, as well as other eye infections, have been reportedly treated by Aborigines and white alike by bathing the eyes in infusion of decoctions of the plant (Lassak and McCarthy, 2001).

4.8.6. Erigeron asteroids Roxb. / Bangua/ Herb/ Seeds & roots
Herb is used as a stimulating diuretic in febrile condition (Pullaiah, 2006; Gangwar and Joshi, 2008).

4.8.7. Eupatorium odoratum Linn. /Tivra gandha/Under shrub/ Leaves and plant extract
Extract of plant is used to cure cuts and wounds. Decoction of leaves is used to cure soft tissue wounds, burn wounds and skin infections due to anti-inflammatory, anti-microbial and wound healing properties.

4.8.8. Sonchus oleraceus L./ Dudhi /Herb/ Leaves and stem
Leaves and stems are used to control liver disorders (Gangwar and Joshi, 2008).

4.8.9. Xanthium strumarium Linn / Gokhru, Chhota datura/ Under shrub/ Whole plant
Whole plant is used for malarial fever, renal complaints. The infusion of the plant is used to treat rheumatism, diseased kidneys and tuberculosis (Moerman, 1998).

4.9. Berberidaceae
4.9.1. Berberis asiatica Roxb.ex D.C /Rasanjana, Daruhaldi, Kilmora /Shrub/Root bark, stem, wood and fruits
The roots are used for curing diabetes and jaundice. Fresh roots are used to cure diabetes and jaundice (Uniyal et al., 2006).
4.9.2. Podophyllum hexandrum Royle/ Ban Kakri/Herb/Whole plant
The whole plant, but especially the root, is cholagogue, cytostatic and purgative. It is used for treatment of cancer and especially in case of ovarian cancer. The plant has an antimiotic effect and thus prevents the growth of cells. (Uphof, 1959; Polunin and Stainton, 1984; Phillips and Foy, 1990).

4.10. Cupressaceae
4.10.1. Cupressus torulosa D.Don / Surai /Tree/ Oil of cones
Oil shows antimicrobial activity (Sellappan et al., 2007).

4.11. Dioscoreaceae
4.11.1. Dioscorea deltoidea Wall / Ban tarur /Climber/ Tuber
The extract of the root tuber is taken in the treatment of urino-genital disorders (Gangwar and Joshi, 2008), control of roundworm and to alleviate constipation (Manandhar, 2002).

4.12. Dipsacaceae
4.12.1. Morina longifolia Wall. ex DC. / Kandru/Herb/ Shoot & roots
Used to cure worm infected wounds in animals (Pande et al., 2007). Juice of the root is used to treat dysentery and diarrhea (Malla and Chhetri, 2009).

4.13. Ephedraceae
4.13.1. Ephedra gerardiana Wall. ex Stapf / Tut gatha/ Herb/ Stem
The herb is widely used in preparations for the treatment of asthma and catarrh, reduces swellings of the mucous membranes and has antispasmodic properties (Bown, 1995). The herb also used to treat fever wounds, injuries, bleeding and heals every fever including malaria (Wangchuk, 2004).

4.14. Ericaceae
4.14.1. Rhododendron arboretum Smith / Buransh, brasht/ Tree/ Flower extract
Flower extract is used to cure stomach diseases (Brahmverchas, 2003) and snuffed to stop nasal bleeding (Uniyal et al., 2006).

4.15. Euphorbiaceae
4.15.1. Emblica officinalis Gaerth /Aonla, Aonwala /Tree/ Bark and Fruits
Bark decoction is used for treating diarrhea, dysentery, cholera and jaundice. Fruits are used in the Ayurvedic medicine ‘triphala’ as one of the ingredient (Brahmverchas, 2003).

4.15.2. Euphorbia royleana Boiss / Sulu/ Shrub/ Latex
Latex showed antiseptic and germicidal activity, stop bleeding, ear complaints and hollow cavities of tooth (Gangwar and Joshi, 2008).

4.15.3. Ricinus communis L/ Arand /Shrub/ Leaves, seeds and oil
The leaves are used to cure pain, wounds, disuria, cough and worm infestations. Fruit used to cure epilepsy, piles, asthma, bronchitis, skin diseases, jaundice, nervous diseases; rheumatism and bacterial infections (Katewa et al., 2004; Luseba et al., 2007). The seed oil is given to the children in case of constipation. The decoction of leaves is applied to the breasts of women, act as glactagogue, i.e. increase milk secretion (Gorsi and Shahzad, 2002).

4.16. Fabaceae
4.16.1. Bauhinia variegata Linn./ Kachnar/ Tree/ Roots & bark
Roots are carminative, decoction prevent obesity. Bark is anathematic and used in scrofula and coetaneous troubles (Sharma et al., 2006).

4.17. Fagaceae
4.17.1. Quercus leucotrichophora Cam/ Banj, rein/Tree/ Rhizome and wood
Corm is used as astringent and diuretic. It is also given in diarrhea, indigestion, asthma and gonorrhea (Gorsi and Shahzad, 2002).

4.18. Gentianaceae
4.18.1. Swertia chirata Roxb.Ex Flem/ Bhucharitta, Kariyata, Chirata/ Shrub/Whole plant
Roots are used to cure malarial fever (Ahmed et al., 2004), leprosy, leucoderma, scabies, menstrual disorders, urinary and heart disorders. Flowers, stem and roots are used in asthma, jaundice and anemia (Gangwar and Joshi, 2008).

4.19. Guttiferae
4.19.1. Hypericum podocarpoides N. Robson/ Tikua/Shrub/Whole plant
Used as a wound healing agent, prepared ointments from dried extracts of the leaves and stems (Butola, et al., 2007).

4.20. Hippocastanaceae
4.20.1. Aesculus indica (Wall Ex. Camb) Hook. f./ Pangar/ Tree/ Fruits
Oil extracted from fresh fruits is externally used against wounds and bruises (Ahmed et al., 2004).

4.21. Lamiaceae
4.21.1. *Ajuga bracteosa* Wall ex Bent/ Ratpatia, kori booti/ Herb/ Leaves & roots
A bitter astringent given in the treatment of fevers and is also regarded as diuretic (Gorsi and Shahzad, 2002).

4.21.2. *Colebrookea oppositifolia* Smith/ Binda/ Shrub/ Leaves & roots
Root juice is given to treat in epilepsy. Leaf juice is used to relieve fever, headaches and wounds. The juice of the young inflorescence is given to treat gastric problems and is also put in the nose for sinusitis. The plant is lopped for fodder to cattle (Malla and Chhetri, 2009).

4.21.3. *Mentha longifolia* Linn. / Wild pudina /Herb/ Whole herb
The herb is used for its antiseptic properties and it is beneficial for antifertility, antiinflammatory, gastrointestinal disorders, cough, cold and chronic fever. The leaves and flowering stems are antiasthmatic, antispasmodic, carminative and stimulant (Brahmverchas, 2003).

Used to treat dryness, dysentery and haematuria in animals (Pande et al., 2007).

4.21.5. *Mentha sylvestris* L./ Pudina /Herb/ Leaves
The herb is used for digestive disorders, particularly for flatulence, all kind of pain, headache in particular (Pullaiah, 2006).

4.21.6. *Micromeria biflora* Benth./ Lemon scented thyme/Herb/ Whole herb
The plant is used as a relief from pain of joints in human (Gorai and Shahzad, 2002) and treat worm infested wounds, shoulder wounds and lock jaws (tetanus) in animals (Pande et al., 2007).

4.21.7. *Ocimum kelimand-scharicum* Guerke./ Kilimanjaro basil, Kapoor tulsi /Herb/ Leaves & oil
Oil showed significant protection efficiency against *Anopheles gambiense* ss (Kweka et al., 2009).

4.21.8. *Ocimum sanctum* Linn. / Ram tulsi /Herb/ Leaves, twigs & oil
Plant has antibacterial, anti-inflammatory and wound healing properties and also used in diarrhea, astringent and rheumatism (Brahmverchas, 2003). Leaf paste applied on skin to treat infections cuts and wounds (Gangwar and Joshi, 2008). Oil used to treat pains and sprains.

4.21.9. *Thymus serpyllum* Linn./ Ajwain/Herb/ Leaves & floral shoots
The plant has sharp pleasant taste; the leaves are used as laxative, stomachic, and useful in purifying the blood (Gorsi and Shahzad, 2002). The oil is a remedy in toothache. The herb is given in weak vision, complaints of liver and stomach, suppression of urine and menstruation (Qureshi et al., 2007).

4.22. *Liliaceae*
4.22.1. *Asparagus filicinus* Buch.-Ham. Ex D. Don /Sharanoi/Climber/ Roots
The roots of herb are used to cure diarrhoea, dysentery and diabetes (Dhiman, 2005).

4.22.2. *Asparagus recemosus* Willd./ Satawar, Sahasmuli /Climber/ Flashy roots & cladodes
Roots and cladodes are useful in leucorrhoea, seminal debility, general debility, headache, hysteria, reduced blood pressure also useful in acidity and ulcer, extract of cladode is anticancerous. Dried root powder is used to cure liver disorders and to enhance lactation of cattle and women (Singh et al., 2002; Brahmverchas, 2003).

4.23. *Lythraceae*
4.23.1. *Woodfordia fruiticosa* (L.) Kurtz/ Dhaula, Phooldahawai/Shrub/ Flowers & fruits
Flower paste is used in skin diseases and leucorrhoea. Flower and fruit paste/decoction are used to cure bowel complaints, menorrhagia, haemorrhage, seminal weakness and for cooling (Singh et al., 2002; Sharma et al., 2006).

4.24. *Malvaceae*
4.24.1. *Malvastrum coromandelianum* Garcke. / Bala/Herb/ Leaves and stem
Ulceroprotective and antipyretic plant (Dahanukar et al., 2002). Emollient and decoction are given in dysentery (Sharma et al., 2006).

4.25. *Meliaceae*
4.25.1. *Toona ciliate* M.Roem. /Toon /Tree/ Stem bark
The extract of stem bark have antibacterial and antifungal activity (Chowdhury, et al., 2003), and is used to cure infantile dysentery, cough, bronchitis, intermittent fever, verminosis, leprosy and ulcer (Sharma et al., 2006).

4.25.2. *Albizia lebbeck* Benth./Siris/ Tree/Seeds & leaves
The seed are reported to be used as tonic to the brain. The leaves are used in relieving tooth ache and strengthen the gum and teeth (Gorsi and Shahzad, 2002).

4.26. *Moraceae*
4.26.1. *Ficus carica* L./ Anjir/ Tree/ Fruits and bark
Fruits and bark powder are used to control diabetes by reducing blood sugar (Chakraborty, 2004). The root is useful in leucoderma and ring worm. The fruit is useful in inflammation, weakness, paralysis, thirst diseases of liver and spleen, cure piles and stimulate growth of hair (Gorsi and Miraj, 2002).

4.26.2. *Ficus religiosa* L./ Peepal /Tree/ Leaves, fruits, seeds & bark
Fruit powder is laxative and is used to cure asthma and bark powder is used to cure gonorrhea and scabies (Singh et al., 2002). Plant showed anti-protozoal properties and plants part used to control diabetes by reducing blood sugar (Chakraborty, 2004).

4.27. *Myricaceae*
4.27.1. *Myrica esculanta* Buch Ham./Kaphal/Tree/ Bark
Used in chronic cough, asthma, painful dental gin and ear ache, external application in healing of chronic and malignant ulcers (Gangwar and Joshi, 2008).

4.28. *Orchidaceae*
4.28.1. *Dactylorhiza hatagirea* (D. Don) Soo/ Hathajari Herb/ Roots
Root paste is used to treat burns and cuts. Provides supplements to the body and builds tissues (Wangchuk, 2004).

4.29. *Paeoniaceae*
4.29.1. *Paeonia emodi* Wall ex Hooker,f. / Hilto, Himalayan Peony /Herb/ Rhizome
The powdered rhizome is used to cure backache, general weakness, headache, dizziness, vomiting and to aid pregnancy (Khan et al., 2007).

4.30. *Parnassiaceae*
4.30.1. *Parnassia nubicola* Wallich ex Royle/ Mamira, Nirbansi /Herb/ Roots
Root paste is taken to get relief from cuts & wounds. Leaf juice is applied to treat eye problems and inflammation (Kunwar and Adhikari, 2005).

4.31. *Pinaceae*
4.31.1. *Cedrus deodara* Roxb.Loud./ Deodar, Dyar/Tree/ Bark wood- oil
Bark wood- oil is used as aphrodisiac(Ahmed et al., 2004).

4.31.2. *Pinus roxburghii* Roxb/ Chir, Sarala/Tree/ Wood & resin
Wood is used to cool burning sensation of the body. Wood and Resin wood used in snake bite and scorpion sting. Water with a small amount of resin in it is used as antiseptic (Ahmed et al., 2004). The green needles are ground and sap is extracted. It is taken to increase the flow of urine (Uniyal et al., 2006).

4.32. *Plantaginaceae*
4.32.1. *Plantago ovata* Forsk/ Isabgoal/ Herb/ Husk of seeds
The seeds are cooling, demulcent, useful in inflammatory and applied as poultice to rheumatic and gouty swelling, good in dysentery and decoction useful in cough and chronic diarrhea and constipation (Gorsi and Miraj, 2002).

4.32.2. *Plantago lanceolata* Linn/Jangli isabgoal/Herb/ whole herb
Seeds are chewed as carminative and used against dyspepsia (Ahmed et al., 2004) and the herb is used to cure sore wounds, dysentery, purgative mouth disease and chicks (Matin et al., 2001).

4.33. *Poaceae*
4.33.1. *Cenchrus biflorus* Roxb./ Chirchitta, Kutta ghass, Bur grass/Shrub/ Stem & seeds
Fresh crushed stem and seed powder are used for easy child birth and abortion (Bozzini, 1991).

4.33.2. *Cynodon dactylon* (Linn.)Pers./ Doov/ Herb/ Whole plant
Entire aboveground parts are crushed with water. Two to three drops of this extract are poured in the nostril to cure nasal bleeding (Uniyal et al., 2006).

4.33.3. *Dendrocalamus hamiltonii* Nees et Arn. ex Munro /Phulrua/Herb/ Leaves and roots
Leaves and roots used to reduce blood sugar level (Kar et al., 2003).

4.33.4. *Eulaliopsis binata* (Retz.) Hubb./Bhabhar ghas/Herb/ Roots
The herb is used to treat papillae and internal injuries (Pande et al., 2007).

4.34. *Polygonaceae*
4.34.1. *Rheum australe* D. Don/ Chhirchey/Tree/ Aerial parts
Whole plant is crushed and poultice is made in a cotton cloth. This is then heated and applied to cure swelling, which has developed as a result of fractured bone (Uniyal et al., 2006). Plants parts are also used to cure alimentary disorders, cuts, wounds, bone fracture, indigestion, cough, dysentery, haematuria, eye disease, skin disease, sprain, constipation, mastitis, hoof diseases, broken horn and internal injuries in animals (Pande et al., 2007).

4.34.2. *Rumex histatus* D. Don/ Chalmori, almoru/ Herb/ Leaves
Leaves are believed to have cooling properties and help in stopping nasal bleeding (Uniyal et al., 2006).
4.34.3. *Rumex nepalensis* D. Don./ Khatura, jungali palak/ Herb/ Leaves
Leaf extract is antiseptic and used to stop bleeding. It is also used against allergy caused by leaves of *Acacia nilotica* (Ahmed et al., 2004).

4.35. **Punicaceae**
4.35.1. *Punica granatum* Linn./ Anar/ Shrub/ Juice, fruit bark & flower
Pulp is used as cardiac and stomachache (Ahmed et al., 2004). Fruit juice used in piles, flower juice used in nose bleeding, bark and flowers in diarrhea and dysentery, decoction of flower buds used in bronchitis and vaginal discharges (Gangwar and Joshi, 2008).

4.36. **Ranunculaceae**
4.36.1. *Aconitum heterophyllum* Wall ex Royle/ Ativisha, atees/ Herb/ Bark & roots
Dried roots are powdered and taken orally to cure stomach ache and fever (Uniyal et al., 2006), good in periodic and intermittent fevers, useful in diarrhea and vomiting (Gorsi and Miraj, 2002).

4.36.2. *Ranunculus sceleratus* L. / Celery-leaved buttercup, Jaldhania/Herb/ Whole herb
Herb used to treat dysuria, asthma and pneumonia (Gangwar and Joshi, 2008).

4.36.3. *Thalictrum foliolosum* DC./ Mamira/ Herb/ Roots
Herb used to control external parasites (Pande et al., 2007). Dried root powder mixed with *Thymus linearis* in equal proportion is taken regularly to cure stomach pain and gastric trouble (Uniyal et al., 2006).

4.37. **Rosaceae**
The stolons are used as an astringent (Qureshi et al., 2007).

4.37.2. *Fragaria nubicola* Lindley /Bhi kaphal, bud mava/ Herb/ Fruits and leaves
Powdered leaves with leaves of *Berberis lyceum* are used against gastric ulcer, as antiseptic and against wounds (Ahmed et al., 2004). Decoction of plant is consumed to cure fever. (Uniyal et al., 2006).

4.37.3. *Geum urbanum* Linn/ Bohay, clove wort / Herb/ Roots
Roots are used to control fever (Matin et al., 2001).

4.37.4. *Potentilla fulgens* Wall Ex Hook/ Bazra danti / Herb/ Roots
Leaves are chewed for strengthening the tooth (Singh, 2008).

4.36.5. *Prinsepia utilis* Royle./Jhatalu/ Shrub/ Roots
Root extract is taken orally as an antidote to neutralize the effect of poison intake. Root paste after heating at low temperature in an earthen pot is applied on wounds (Uniyal et al., 2006).

4.37.6. *Prunus persica* Stokes./ Aru / Tree/ Leaves
The fruit is antipyretic, tonic to the brain, enriches the blood, flowers are said to be used as laxative (Gorsi and Shahzad, 2002).

4.37.7. *Pyracantha crenulata* D.Don./ Ghigharu/ Shrub/ Fruits
Used to cure burns (Pande et al., 2007)

4.37.8 Pyrus malus L. /Seb / Tree/ Fruits & barks
The poultice made of rotten apple is used for weak eye and brain tonic (Gorsi and Shahzad, 2002). An infusion of apple tree bark is given in intermittent, remittent and bilious fevers (Gorsi and Miraj, 2002).

4.37.9. *Rubus ellipticus* Smith./ Hisal, hisalu / Shrub/ Fruits & roots
Roots used to control blood pressure and diarrhea in human (Dhiman, 2005) and haematuria in animals (Pande et al., 2007) and fruits purifies blood and very effective for heart patients (Matin et al., 2001).

4.38. **Rutaceae**
4.38.1. *Murraya koenigii* (L.) Spreng./ Kadli nimb, Karwil, Curry leaves /Tree/ Leaves & fruits
Leaves used to cure diarrhea, dysentery and vomiting (Sharma et al., 2006) and are also known to be good for hair, for keeping them healthy and long (Palanisamy and Pillai, 2007).

4.38.2. *Zanthoxylum armatum* DC./ Timur/Shrub/ Stem & fruits
Used to control gastric disorders, constipation and external parasites (Pande et al., 2007).

4.39. **Sapindaceae**
4.39.1. *Sapindus mukorossi* Gaertn./ Reetha/ Tree/ Seeds
Used to control external parasites, hair and skin diseases and to expel leach (Pande et al., 2007)

4.40. **Saxifragaceae**
4.40.1. *Bergenia ligulata* (Wall.)Engl./ Pashanbheda/ Herb/ Leaves & rhizome
The plant has been recognized for its role in dissolving kidney and bladder stone. Rhizome is useful in cough and cold, cardiac problems, fever, ulcer, swelling, old
wounds, cuts and burns, septic, laizi, gastrointestinal problems, colitis and eye ailments (Chowdhary et al., 2009).

4.40.2. Berginia strachyi Hook f. & Thoms. Engl. /Pashanbheda/ Herb/ Rhizome and bark
The herb is used in curing several ailments like old wounds, kidney stones, opthalmia, cough and colds, tonsils etc (Chowdhary et al., 2009).

4.41. Scrophulariaceae
4.41.1. Bocopa monieri Linn./ Brahmi, Jal neem/Herb/ Whole herb
Used to control dyspepsia, cough, fever, insomnia, epilepsy, debility after heart attack, hoarseness of voice, less memory tension and blood purifier (Brahmverchas, 2003; Dhiman, 2005).

4.41.2. Picrorhiza kurroa Royle/ Kutki/ Shrub/ Roots
Roots used to cure dyspepsia, asthma, biliousness, fever, piles, blood troubles, burning sensation, inflammation, ring worm, jaundice, anemia, heart disease, malarial fever, worms infestation in children, indigestion (Brahmverchas, 2003; Dhiman, 2005).

4.41.3. Verbacum thapsus Linn./ Ekalveer/Herb/ Whole herb
Leaves are useful in fever. Leaves and flowers are useful in pulmonary diseases, cough, bleeding of lungs and bowels. Dried corolla of the flower is used in gout and rheumatism (Gorsi and Miraj, 2002).

4.42. Solanaceae
4.42.1. Datura stramonium Linn./ Datura/ Herb/ Whole plant
The seeds have an acid and bitter taste, used as tonic, febrifuge. The leaves after roasting are applied locally to relieve pain (Gorsi and Shahzad, 2002).

4.42.2. Solanum indicum Linn Syn.S.ferox Linn./ Bhrata kattar/Shrub/ Fruits
Fruits and roots used to cure asthma, dry cough, colic, disuria, chronic fever, alopecia, dropsy and toothache (Dhiman, 2005).

4.42.3. Solanum nigrum Linn/ Makoi/Herb/Whole herb
Decoction of leaves is used for liver and skin diseases. Fruits are used to treat eye diseases, dysentery and fever. Seeds and roots are used to treat liver related problems, (Chakraborty, 2004; Dhiman, 2005).

4.42.4. Withania somnifera Dunal./ Ashwaganda, aksun/ Herb/Roots
To improve memory and weakness in humans (Brahmverchas, 2003).The leaves are applied to tumors. The roots are regarded as useful in rheumatism and dyspepsia. The fruits are diuretic (Gorsi and Shahzad, 2002).The tuberous roots are also effective in treating leucoderma, constipation, insomnia, tissue-building and nervous breakdown. Leaves are recommended for fever, painful swellings and opthalmitis (Sharma et al., 2006).

4.43. Taxaceae
4.43.1. Taxus baccata Linn/Thun/Tree/ Bark
Decoction of the stem is used early morning to cure tuberculosis (Ahmed, et al., 2004).

4.44. Theaceae
4.44.1. Camella sinensis (L.) Kunize / Chahua, Chai/Shrub/Leaves and seeds
Leaves and seeds used to treat asthma, angina pectoris peripheral vascular disease and coronary artery diseases. Tea extract have antibacterial activities (Gangwar and Joshi, 2008).

4.45. Urticaceae
4.45.1. Urtica dioica Linn/ Bichchhua, Bichhu ghas/Herb/Leaves
The leaves are used to cure uterine hemorrhages, bleeding from nose and blood vomiting (Dhiman, 2005; Gangwar and Joshi, 2008), regulate menstrual period (Matin et al., 2001).

4.46. Valerianaceae
4.46.1. Nardostachys grandiflora DC./Masi, / Herb/Leaves
The herb is used in chronic fevers and heart disorders (Wangchuk, 2004), stem used as a contraceptive and combat stress condition (Chakraborty, 2004).

4.46.2. Valeriana wallichii DC / Samoy/Herb/ Whole herb
The plant used in treatment of inflammatory disease habitual constipation, insomnia, epilepsy, neurosis, anxiety and as a diuretic, hepatoprotective, analgesic and cytotoxic (Subhan et al., 2007).

4.46.3. Valeriana jatamansi DC / Sugandhbala, jatamasi / Herb/Rhizome & roots
This wild herb is being exploited for its roots and rhizomes which contain valepotriates, which are highly effective against leprosy (Kaur et al., 1999).used in hysteria, epilepsy, cholera, dysentery (Matin et al., 2001).

4.47. Verbenaceae
4.47.1. Vitex negundo Linn./ Nigundii/ Shrub/Leaves and bark
Used in asthma and urinary diseases. Leaves yield a tonic and febrifuge, smoked for relief in catarrh and
headache. Flowers astringent, used in diarrhea, fever and liver complaints (Sharma et al., 2006)

4.47.2. **Lantana camera** L.var. aculeate/ Baramasi, Phoolwari/Shrub/Whole plant

Whole plant is used for the treatment of bronchitis; leaf decoction is used in treating constipation (Singh et al., 2002).

4.48. **Zingiberaceae**

4.48.1. **Roscoea alpina** Royle / Safed musli,kakoli /Herb/ Roots

Roots of herb are used to cure rheumatism (Gangwar and Joshi, 2008).

4.48.2. **Hedychium spicatum** Buch. Ham Ex. Smith./ Kapoor kachri, Van Haldi/Shrub/rhizome

The powder as well as decoction of root is carminative and digestive. Decoction is expectorant; stimulant and stomachic. The powder of root is useful in the treatment of liver complaints, and is also used in treating fevers, vomiting, diarrhea, inflammation, pains and snake bite. The root is given for heating potency to the female. It is used in the treatment of indigestion and poor circulation due to thickening of the blood (Bhatt et al., 2007).

5. **Discussion**

Traditional knowledge of Himalayan medicine is a good illustration of poor communities, fighting even incurable diseases through the traditional methods and even for their livestock, through these traditional herbal medicines. The indigenous traditional knowledge of medicinal plants and therapies of various local communities has been transmitted orally for centuries is becoming extinct, due to changes in traditional culture and introduction of modern technologies. Hence, these traditional practices need proper documentation and the present study is an attempt to collect/ explore, preserve and proper documentation of medicinal plants which are being used traditionally. The investigation revealed that the local people, herbalist and vaidyas have explored a number of plant species to cure various ailments. Qualitative analysis of present study reveals that a total of 102 plant species were identified, of which 49.02% were herbs; 23.53% shrubs; 21.57% trees and 2.94% climbers and under shrubs each (Fig. 2).While on the basis of the plant parts used, it was observed that the maximum plant species (42.16%) were found to be used as various parts such as leaves, roots, stems and bark etc. followed by whole plants (20.59%), roots (13.73%), leaves (7.84%),fruits (3.92%), bark, rhizome and seeds (2.94% each) and flowers (0.98%) to cure various diseases (Fig. 3.).

6. **Conclusion**

Despite the development of rural health services, villagers still use medicinal herbs to a large extent for treatment of common ailment like cough, cold and fever, headache and body ache, constipation, dysentery, cuts and burns, boils, ulcer, skin and respiratory diseases etc. Further herbal medicines have no side effects, easily available and economically viable Hence; there is an urgent need of detailed investigation and documentation of indigenous knowledge about medicinal plants and therapies which were being passed orally from generation to generation.

**Acknowledgement**

The authors are thankful to University Grants Commission, New Delhi, for their financial assistant to carry out this research work successfully, under Special Assistant Programme (SAP).The authors also acknowledged the local people for providing their kind cooperation during field study.

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