

Full Length Research Paper

Diversity and status of ethno-medicinal plants of Almora district in Uttarakhand, India

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The present contribution relates to the diversity of the medicinal flora of the world famous Almora district of the Central Himalaya in the state of Uttarakhand (India). The paper describes distribution and local/traditional uses of the 188 medicinal flora representing 80 families, in which 35 species were trees, 112 were herbs, 35 were shrubs and 06 were climbers. These identify the plants that need conservation and protection. Various parts, such as: whole plant (55), roots (47), fruits (32), stem (11), leaves (41), barks (23), inflorescence (2), rhizome (6), bulbs (8), latex (3), seeds (32), flowers (14) and oil (5) were used in different ailments.

Key words: Almora, biodiversity, ethno-medicinal plants, traditional knowledge system.

INTRODUCTION

Plants have played a key role in day-to-day life support system of human beings from times immemorial. With the present day urge to gather knowledge of natural resources for their scientific and economic exploitation for various uses, the urgency of assessing botanical information at micro-level has received special attention and thus requires afresh surveys to be conducted to know not only the floristic richness of the area but also the ethno-medicinal practices prevalent therein. Keeping in view this need, the authors have surveyed the Almora district for the presence of plants of medicinal importance used locally besides recorded in the ancient and modern texts.

The use of plant species of the Himalaya as medicine has been known for a long time and about 1748 medicinal plants is reported from Indian Himalaya (Samant et al., 1998). The unique diversity of medicinal plants in the region is manifested by the presence of a number of native (31%), Endemic (15.5%) and threatened elements (14%) of total Red Data Book plant species of Indian Himalaya Region (Samant et al., 1998). Plants provide food and other life supporting commodities

and very important for survival of human beings and other organisms, besides they protect our environment and maintain nature. Tropical forests are major reservoir of plant diversity. Those forests inhabit a large number of trees, shrubs, herbs, climbers, faunal wealth and a wealth of non-timber forest products including medicinal and wild edible plants. The increased demand of medicinal plants in drug and pharmaceutical industries have caused the over exploitation of many species. Many of these are close to extinction due to over harvesting or un-skilled harvesting. Some important species that need immediate attention for conservation in India are *Aconitum*, *Angelica*, *Atropa*, *Berberis*, *Dactylorhiza*, *Thalictrum*, *Hedychium*, etc. To maintain the ecosystem equilibrium, awareness of the sustainable utilization of these species is important and their conservation in sustainable environment is urgently needed, keeping in view the demand among the hill communities and their drugs in the global market (Samant et al., 1997; Joshi et al., 2001; Dubey et al., 2004; Semwal et al., 2010). Wide geographical and climatic diversity provides a repository of valuable medicinal and wild edible plants of this region. Therefore, the present study is an effort to identify important ethno-medicinal plants in this region.

Ethno-botany has emerged as an important branch of study which focuses on the utility of different plant species and their properties as food, medicine and other

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uses (Allen et al., 1990; Cotton, 1997). Over the past few decades, the traditional knowledge on the use of medicinal plants has been widely acknowledged across the world. According to the World Health Organization, 80% of the world's population in developing countries uses traditional medicine (Cotton, 1997). In India, the knowledge of traditional herbal medicine is synonymous with its rich cultural heritage and was found in Vedic literature, particularly the Rigveda, Charak Samhita and Susruta Samhita (Vedprakash, 1991). The knowledge and expertise in folk remedies conserved by remote hill communities need to be documented and investigated for modern drug therapeutics. Due to lack of modern medical facilities, expensive drugs and poor transportation, patients of these localities normally suffer for long. In these unfavourable situations traditional herbal healers of this remote locality play a vital role to provide them as an alternate source of therapeutic facilities for their primary healthcare. Subsequently, with the advancement in the techniques of phyto-chemistry and pharmacology, a number of active principles of medicinal plants were isolated and introduced as valuable drugs in modern system of medicine (Joshi, 2004). The manuscript describes distribution and local/traditional uses of the medicinal flora and identifies the plants that need conservation and protection.

Before a description of the diversity of medicinal plants of the area is detailed, it is important to record the geo-climatic features of the district.

TOPOGRAPHY AND GENERAL FEATURES

The Almora district lies between 29°30'N to 30°20'N latitudes and 79°20' E to 80°20'E longitudes. It is located in the central part of kumaun region of Uttarakhand (India). Almora district covers an area of 46 km in north-south in length and 86 km east-west width. The study area covers 3629.66 sq.km. Thus the total area covered ranges from 510 to 2830 m exhibiting great variety of regions extending from tropical moist deciduous forest to moist mixed coniferous forest. In 2001 census report total population of this area was 630446 in which 293576 males and 336870 females. The rivers that flow in this region are Ramganga, Kosi, Gagas and Sarju.

Climate

The mountainous tracts of the whole district have varying altitude and relief which contribute to a great extent for the variation of the climatic conditions. There are three seasons in a year: summer, rainy and winter. In summer season, May and June are the hottest months. During this period the temperature rises from 12 to 28°C. In winter season, January being the coldest month, when the minimum temperature goes down to 2°C, it may go to freezing point or even below. The rainy season is

characterized by heavy rainfall. The rainfall in the district varies during summer and winter between 1500 to 2000 mm and 500 to 700 mm, respectively. Monsoon though uncertain generally breaks in June. July and August receive up to 90% of total precipitation, November being the driest month. Winter rains though erratic, seldom fail altogether. During April-May thunder storms are often accompanied by hailstorms which are fairly frequent. This climatic condition favours buffer plant growth and the vegetation attains its maximum development.

Soil

The soil varies from place to place and is directly related to the factors prevalent in a particular locality. The rock type also plays an important role in the quality of soil and quantum growth of the plant in many localities. The soil texture ranges from sandy loam to clayey loam.

Forest vegetation

There are three main types of forest in this district that is, Subtropical Forest (500 to 1000 m), Temperate Forests (1000 to 2000 m), and Sub Alpine Forests (2000 to 2500 m) with various dominant species like Sal, Khair, Shisham, Haldu, Sagawn, Bamboo, Eucalyptus, Banj-Oak, Rhododendron, Moru, Blue Pine, Low level Silver Fir, Spruce, Deodar and Cypress.

METHODOLOGY

The present study was based on a field survey in Almora district, to find the plants of medicinal values. The work was conducted among local people, rural persons, farmers and *vaidyas* to know the local names and medicinal importance of the mentioned plants. The plants with medicinal values, as known from local people and rural persons were collected, and studies were conducted to know their medicinal uses. These people are apparently very friendly but maintained a deep secrecy about their traditional knowledge. However, after visiting them for several times, they finally shared their knowledge about the medicinal uses of plants growing around them. For collecting the information, an interview schedule was developed. A flexible approach was adopted by using a less structural interview schedule. Data were collected through interview of randomly selected peoples of all blocks of Almora district. The plant species were identified and verified in RRIHF, Tarikhet. The status of the ethno-medicinal plants was compared with Red Data Book (IUCN, 1993).

RESULTS

The following is the list of some important medicinal plants found in the Almora district along with their Local name(s), family, distribution, parts used and ethno-medicinal uses given in Table 1. The present study records 188 species of ethno-medicinal plants representing 80 families. In which 35 species were trees, 112 were herbs, 35 were species shrubs and 06 were species climbers (Figure 1).

Table 1. List of ethno-medicinal plants and their use.

B.N: <i>Taxus baccata</i> Linn. L.N: Thuner F.N: Taxaceae	L.F: Tree A.R: 1500-2000 m Sat: Endangered P.U: Stem, Leaf	E.M.U: Decoction of stem bark is administered orally and power of leaves is administered orally in cough.
B.N: <i>Bombax ceiba</i> Linn. L.N: Semal F.N: Bombacaceae	L.F: Tree A.R: Up to 1500 m Sat: common P.U: Leaf	E.M.U: Paste of leaves is used over wound.
B.N: <i>Cedrus deodara</i> Roxb.ex D. Don L.N: Deodar F.N : Pinaceae	L. F:Tree A.R: Up to 1750 m Sat: Common P.U: Stem	E.M.U: (1) 12-25 ml stem decoction of <i>Tinospora cordifolia</i> with <i>Cedrus deodara</i> administrated orally in fever. (2) Small pieces of heart-wood (100-200 g) of mature tree when dipped over night in 100-200 ml of hot water, the resulting extract is given orally for about 30 days to the patients suffering from piles.
B.N: <i>Pinus roxburghii</i> Sarg. L.N: Chir/ Salla F.N : Pinaceae	L.F: Tree A.R: 500-2500 m Sat: Common P.U: Stem	E.M.U: (1) Used as poultice on boils. (2) Stem powder 1-3 g. administrated orally for one month in bladder stone.
B.N: <i>Celastrus paniculatus</i> Willd. L.N: Papkakani F.N: Celastraceae	L.F: Shrub A.R: 300-1500 m Sat: Rare P.U: Fruits	E.M.U: (1) Oil of seed used for massage in paralysis. (2) Oil seeds are applied to itch.
B.N: <i>Euonymus tingens</i> Wall. L.N: Kunkun F.N: Celastraceae	L.F: Tree A.R: 2000-2900 m Sat: Threatened P.U: Whole plant	E.M.U: 10 g Posta (seeds of opium), Kukul 10 g, Almond 5g, Kali mirch-5g and ban mishri-10 g are mixed into powder. This powder is given orally in kidney stone.
B.N: <i>Ziziphus mauritiana</i> Lam. L.N: Ber F.N: Rhamnaceae	L.F: Shrub A.R: Up to 800 m Sat: Common P.U: Whole plant	E.M.U: (1) Powdered leaf is given in pain in joint pain. (2) Leaves chewed in scorpion sting. (2) Root made into paste is applied to snake bite.
B.N : <i>Berberis asiatica</i> Roxb. ex Dc. L.N: Kilmora F.N: Berberidaceae	L.F: Shrub A.R: 600-2400 m Sat: Threatened P.U: Bark, Leaf, Root	E.M.U: (1) 2-3 drops of decoction of root are used thrice daily in Earache. (2) Decoction of root bark is used as eye drop.

Table 1. Contd.

B.N: <i>Aesculus indica</i> Colebr. ex (Cambess.) Hook. L.N: Jangli- Pangar, Pangar F.N: Hippocastanaceae	L.F: Tree A.R: 1500-3200 m Sat: Common P.U: Fruits, leaves	E.M.U: (1) Warm paste of fruit is applied on affected part in skin ulcer. (2) A tea made from the leaves is tonic and is used in the treatment of fever and whooping cough.
B.N: <i>Leucas cephalotes</i> (Roth) Spreng. L.N: Guma F.N: Lamiaceae	L.F: Herb A.R: Up to 1800m Sat: Common P.U: Whole plant	E.M.U: (1) Decoction of whole plant is given orally in fever Jaundice. (2) 3-6 g of leaves paste given twice daily in abdominal colic. Fresh leaves with water given in stomachache and diarrhea. (3) Root pounded with black peeper is given twice a day in enlarged liver. (4) Syrup of the flowers is used as a domestic remedy for cough and colds.
B.N: <i>Micromeria biflora</i> (Buch.-Ham. ex D.Don) Benth. L.N: Garur-buti F.N: Lamiaceae	L.F: Herb A.R: 900-2200 m Sat: Common P.U: Whole Plant	E.M.U: Dried powder of the plant used in eczema.
B.N: <i>Abrus precatorius</i> L. L.N: Ratti, Gunj F.N: Fabaceae	L.F: Climber A.R: Up to 1200 m Sat: Common P.U: Leaf, seed, root	E.M.U: (1) Seed powder is given in diarrhea. (2) Root is rubbed on stone with water to make a paste. Paste given with water in fits and paste applied over leucodarma patches
B.N: <i>Acacia catechu</i> (L.f.) L.N: Khair F.N: Mimosaceae	L.F: Tree A.R: Up to 1300 m Sat: Rare P.U: Bark, Hard wood	E.M.U: The root bark of <i>Anogeissus latifolia</i> (DC), <i>Acacia catechu</i> Willd., <i>Ziziphus xylopyrus</i> Willd. and whole plant of <i>Viscum articulatum</i> Burm.f. given orally with water in bleeding piles, as well as when there is bleeding from nose and mouth.
B.N: <i>Acacia nilotica</i> (L.) Delie L.N: Babool F.N: Mimosaceae	L.F: Tree A.R: Up to 1400 m Sat: Common P.U: Pods, Leaves, Bark, Gum	E.M.U: (1) Bark used in Asthma and Bronchitis, decoction is helpful in Leucorrhoea. (2) Leaves eaten in throat infection and poultice used in sore eyes. Paste of leaves effective ointment in itch. (3) Various plant parts used in hair fall, earache, syphilis.
B.N: <i>Achyranthes aspera</i> Linn. L.N: Apamarga F.N: Amaranthaceae	L.F: Herb A.R: Up to 1000 m Sat: Common P.U: Stem, Flower, Root, Seed, Latex	E.M.U: (1) Powder of fruit is administered orally in fever. (2) Root is kept on the bed of a delivering woman for easy child birth during confinement. Root is also given orally in snake bite. (3) Ash of the plant mixed with the extract of bark of Aam (<i>Mangifera indica</i>) is boiled with water and its paste applied over the body of patients suffering from jaundice.

Table 1. Contd.

B.N: <i>Achyranthes bidentata</i> Bl. L.N: Apamarga F.N: Amaranthaceae	L.F: Herb A.R:1600-2500 m Sat: Common P.U: Whole Plant	E.M.U: Paste made of rubbing the root with curd water on the surface of the copper pot applying like kajal in eye diseases.
B.N: <i>Acorus calamus</i> Linn. L.N: Boja,Bach F.N: Arecaceae	L.F: Herb A.R: Up to 2000 m Sat: Threatened P.U: Root, Rhizome (RT,RZ)	E.M.U: Root powder used in children in worm infection.
B.N: <i>Aegle marmelos</i> (Linn.) Correa ex Roxb L.N: Belpatri F.N: Rutaceae	L.F: Tree A.R: Up to 1100 m Sat: Common P.U: Fruit, root	E.M.U: (1) Decoction/powder or unripe fruits of root is administered orally in Diarrhea. (2) Root made into paste and applied in wounds.
B.N: <i>Agave americana</i> Linn. L.N: Gethi,Tarur F.N: Rutaceae	L.F: Herb A.R: Up to 2000 m Sat: Threatened P.U: bulb	E.M.U: Roasted bulbs are administered orally as vegetable in cough.
B.N: <i>Ajuga bracteosa</i> Wall.ex Benth. L.N: Neelkhanth, Ratpatia F.N: Lamiaceae	L.F: Herb A.R: Up to 2800 m Sat: Common P.U: Leaves, Root	E.M.U: (1) The juice of the leaves is used against 'Khasra' and other disease of children. (2) Juice is given to women in gonorrhoea and also used in intermittent fever. (3) Fresh juice of leaves is used as a wound healer. After cleaning the wound with hot water, 5-8 drops of juice applied externally on the wound or some time thick paste also applied on the wound and tightened with a clean thin piece of cloth at every third day. (4) Leaves paste cooked in mustard oil is also applied on head to get relief from chronic headache.
B.N: <i>Allium cepa</i> Linn. L.N: Pyaj F.N: Alliaceae	L.F: Herb A.R: Up to 2000 m Sat: Cultivated P.U: Bulb	E.M.U: (1) At the time of Epilepsy (Mirgi) attack, the crushed pyaj is put in the nostrils of the patient. (2) Roasted warm bulb is eaten in abdominal pain.
B.N: <i>Allium sativum</i> Linn. L.N: Lahshan F.N: Alliceae	L.F: Herb A.R: Up to 2400 m Sat: Cultivated P.U: Bulb	E.M.U: 1-2 drops of Juice of bulb with goat milk used as eye drop.

Table 1. Contd.

B.N: <i>Alternanthera sessilis</i> (L.) R.Br. L.N: Matsyakshil F.N: Amaranthaceae	L.F: Herb A.R: 300-1500 m Sat: Rare P.U: Whole plant	E.M.U: Juice of whole plant is instilled as eye drops.
B.N: <i>Anagallis arvensis</i> Linn. L.N: Jonkmari F.N: Primulaceae	L.F: Herb A.R: Up to 2000 m Sat: Common P.U: Whole plant	E.M.U: Juice of whole plant is administered orally in Mental problem.
B.N: <i>Anaphalis margaritaceae</i> (L) L.N: Bakol F.N: Asteraceae	L.F: Herb A.R: 1700-2600 m Sat: Common P.U: Leaves	E.M.U: The rubbed and rolled dry leaves were used in intestinal disorder. By keeping the flame of rubbed and rolled leaves on the top of the head, the heat passes slowly but continuously to the body through brain and patient gets warm and relief.
B.N: <i>Anaphalis triplinervis</i> (Sims.) C.B. Clarke L.N: Bukki, Bugla F.N: Asteraceae	L.F: Herb A.R: 1600-2600 m Sat: Common P.U: Whole plant	E.M.U: The ventral surface of the leaves is applied locally on wound.
B.N: <i>Argemone maxicana</i> Linn. L.N: Bhatbhamt, Satyanasi F.N: Papaveraceae	L.F: Herb A.R: Up to 1600 m Sat: Common P.U: Whole plant	E.M.U: Latex is used as eye drop in eye disease.
B.N: <i>Arisaema tortuosum</i> (Wall.) Schott Hook.f. L.N: Bang, Sanp-kmakki F.N: Araceae	L.F: Herb A.R: 1800-2500 m Sat: Rare P.U: Root	E.M.U: Wounds are washed with decoction of root. Paste of root is applied on affected part.
B.N: <i>Asparagus adscendens</i> Roxb. L.N: Kairu F.N: Asparagaceae	L.F: Herb A.R: Up to 1400 m Sat: Common P.U: Root	E.M.U: Root pounded in water and administered orally in allergy.
B.N: <i>Asparagus curillus</i> Buch.-Ham. Ex Roxb. L.N: Shatavar F.N: Asparagaceae	L.F: Shrub A.R: Up to 1800 m Sat: Threatened P.U: Root	E.M.U: (1) 50 g root with 5 g zinger boiled with 250 ml milk taken orally thrice a day cures eye disease. (2) Root powder is administered as sexual tonic and also as general tonic.

Table 1. Contd.

B.N: <i>Bacopa monnieri</i> Linn. L.N: Ban-brahmi F.N: Scrophulariaceae	L.F: Herb A.R: Up to 1500 m Sat: Rare P.U: Whole plant	E.M.U: Take 3-6 g powder either with milk or water in debility.
B.N: <i>Baliospermum montanum</i> (Willd.)Muell.-Arg. L.N: Danti F.N: Euphorbiaceae	L.F: Herb A.R: 300-1200 m Sat: Endangered P.U: Root, seed	E.M.U: Small quantity of seeds, taken orally in constipation.
B.N: <i>Bauhinia variegata</i> Linn. L.N: Kutral F.N: Caesalpinaceae	L.F: Tree A.R: 300 -1900 m Sat: Common P.U: Bark	E.M.U: Decoction of bark administered orally in pox.
B.N: <i>Benincasa hispida</i> Thunb. L.N: Bhuj/Petha F.N: Cucurbitaceae	L.F: Herb A.R: Up to 2000 m Sat: Cultivated P.U: Fruit	E.M.U: Nuggets (Bari) prepared by shredding the fruit given to mother after delivery.
B.N: <i>Berberis aristata</i> Dc. L.N: Kilmora F.N: Berberidaceae	L.F: Shrub A.R: 1700-2600m Sat: Common P.U: Root, Bark	E.M.U: (1) Extract of root as eye drop in eye disease. (2) Root decoction is used as mouthwash useful in painful wisdom tooth.
B.N: <i>Bergenia ciliata</i> (Royle.) L.N: Silphor, Pathar-chata F.N: Saxifragaceae	L.F: Herb A.R: 1500-2200 m Sat: Threatened P.U: Rhizome	E.M.U: Root powder or decoction is given orally in kidney stones.
B.N: <i>Boenninghausenia albiflora</i> (Hook.) Rchb. ex Meisn. L.N: Pissumar F.N: Rutaceae	L.F: Herb A.R: 1300-2200 m Sat: Common P.U: Whole plant	E.M.U: Juice of whole plant is applied externally to cure headache, pain in eyes.
B.N: <i>Boerhavia diffusa</i> Linn. L.N: Punryaru F.N: Nyctaginaceae	L.F: Herb A.R: Up to 1800 m Sat: Common P.U: Whole Plant	E.M.U: (1) Juice of fresh roots is used as eye drops. Root juice is administered orally in asthma and Urinal disorder. (2) Watery extract of the root is given orally in jaundice.

Table 1. Contd.

B.N: <i>Brassica campestris</i> Linn. L.N: Sarsoo F.N: Brassicaceae	L.F: Herb A.R: 500-2800m Sat: Cultivated P.U: Seed	E.M.U: (1) 2-4drops of seed oil put in ear in sepsis . (2) Paste of seed powder with curd given orally in early morning for 3 days in Worms' infection. It will be completely checked specially in children.
B.N: <i>Butea monosperma</i> (Lam.) L.N: Dhak F.N: Fabaceae	L.F: Tree A.R: Up to 1600 m Sat: Rare P.U: Flower, Leaves, Stem	E.M.U: (1) Flowers mixed in water are applied on the sole, palms in Insomnia. (2) Regular mouth wash with the extract of Juice of leaves(soft stem) will fix the loose teeth. (3) 2-4 petiole after grinding with water given twice for 4-5 days after menstrual period causes sterility.
B.N: <i>Cajanus cajan</i> Linn. L.N: Arhar F.N: Fabaceae	L.F: Shrub A.R: Up to 1500m Sat: Cultivated P.U: Leaves Seed	E.M.U: Root is rub with water and applying as anjana in eye swelling
B.N: <i>Callicarpa macrophylla</i> Vahl L.N: Dai,Giwai F.N: Verbenaceae	L.F: Shrub A.R: 300-1500 m Sat: Rare P.U: Fruits, Leaves, Seed	E.M.U: Leaves heated and applied on affected part in Rheumatoid Syphilis. Fruits are eaten in Urinary Disorders.
B.N: <i>Calotropis procera</i> (Ait.)R.Br L.N: Aak,Madar F.N: Asclepiadaceae	L.F: Shrub A.R: Up to 800 m Sat: Common P.U: Whole plant	E.M.U: Juice of whole plant is administered orally in Abortification.
B.N: <i>Cannabis sativa</i> Linn. L.N: Bhang,Bhangir F.N: Cannabaceae	L.F: Herb A.R: Up to 1900 m Sat: Common P.U:Leaf, Bark,Seed, Flower, Fruit	E.M.U: Paste of leaf is applied on wisdom tooth.
B.N: <i>Capsicum annuum</i> Linn. L.N: Mircha F.N: Solanaceae	L.F: Herb A.R: 300-2000 m Sat: Cultivated P.U: Leaf, Fruit	E.M.U: Paste of fruit is applied on scorpion sting.

Table 1. Contd.

B.N: <i>Carissa carandas</i> Linn. L.N: Karonda F.N: Apocynaceae	L.F: shrub A.R: 400-1500 m Sat: Cultivated P.U: Fruits	E.M.U: The fruits are taken in raw form orally in suitable quantity for 3-4 days in Jaundice.
B.N: <i>Cassia absus</i> Linn. L.N: Banar, Chaksu F.N: Caesalpinaceae	L.F: Herb A.R: Up to 1800 m Sat: Common P.U: Leaves, Seeds	E.M.U: Seed rubbed in water and applied in eye disease.
B.N: <i>Cassia fistula</i> Linn. L.N: Kirala, Amaltas F.N: Caesalpinaceae	L.F: Tree A.R: Up to 1200 m Sat: Rare P.U: Seeds, fruits, root	E.M.U: (1) Fruit pulp is used in constipation. (2) Root is ground into a paste with water, 1-2 g given twice daily in rabies. (3) Powder of seeds is given orally 2-3 times for 3-4 days in abdominal colic.
B.N: <i>Cassia occidentalis</i> Linn. L.N: Kasodi F.N: Caesalpinaceae	L.F: Herb A.R: Up to 1300 m Sat: Common P.U: Whole Plant	E.M.U: (1) Fermentation of leaf is administered in dropsy. (2) Extract of flower given in night blindness. (3) Leaves ground and applied over ringworm. (4) Paste of leaves given in snake bite.
B.N: <i>Centella asiatica</i> (L.) Urban L.N: Brahmi F.N: Apiaceae	L.F: Herb A.R: Up to 1500 m Sat: Common P.U: Whole Plant	E.M.U: (1) Decoction of whole plant is used orally in mental disorder. (2) Leaf is roasted in ghee and given twice daily with 3-4 g salt in weak eye sight.
B.N: <i>Chenopodium album</i> Linn. L.N: Bethuwa F.N: Chenopodiaceae	L.F: Herb A.R: Up to 3800 m Sat: Common P.U: Seed, Leaves	E.M.U: It is green vegetable used in bladder stone.
B.N: <i>Cicer arietinum</i> Linn. L.N: Chana F.N: Fabaceae	L.F: Herb A.R: Up to 2000 m Sat: Cultivated P.U: Whole plant	E.M.U: The herb is taken out from field early morning and put into a pot containing fresh water and shaken vigorously. The water becomes sour in taste and then administered orally in Dyspepsia.
B.N: <i>Cinnamomum tamala</i> Nees & Eberm. L.N: Dalchini, Kikari F.N: Lauraceae	L.F: Small tree A.R: 1200-2500 m Sat: Rare P.U: Leaf, Bark	E.M.U: Bark is used in gonorrhoea and leaves used as stimulant, carminative and useful in colic, diarrhoea and diabetic.

Table 1. Contd.

B.N: <i>Cissampelos pareira</i> Linn. L.N: Pari F.N : Menispermaceae	L.F: Shrub A.R: Up to 2600 m Sat: Common P.U: Whole plant	E.M.U: (1) Whole plant is grounded and administered orally in Hyper –Acidity, Diarrhea and Burning sensation. (2) Root of this drug with root of <i>Hemidesmum indicus</i> is tied to the neck in fever.
B.N: <i>Citrus medica</i> Linn. L.N: Nimmu F.N: Rutaceae	L.F: Shrub A.R: Up to 1800 m Sat: Cultivated P.U: Fruits, root	E.M.U: The root of <i>Solanum xanthocarpum</i> (Kantkari) grinding with Juice of <i>Citrus medica</i> applied in eyes like anjana cures week eye sight.
B.N: <i>Cleome gynandra</i> Linn. L.N: Parhar, Safed -hulhul F.N: Capparaceae	L.F: Herb A.R: Up to 1500 m Sat: Rare P.U: Leaf, Seed	E.M.U: Juice of flowers is use in earache.
B.N: <i>Cleome viscosa</i> Linn. L.N: Kumkum, Jakhya F.N: Capparaceae	L.F: Herb A.R: Up to 1500 m Sat: Common P.U: Leaf	E.M.U: Leaves juice used in earache.
B.N: <i>Clerodendrum serratum</i> (L.) Moon L.N: Ban-bakri F.N: Verbenaceae	L.F: Herb A.R: 900-2000 m Sat: Rare P.U: Root, Leaf	E.M.U: The root is given in insanity as well as bites of dog.
B.N: <i>Coelogyne cristata</i> Lindl. L.N: Gondya F.N: Orchidaceae	L.F: Herb A.R: Up to 1600 m Sat: Common P.U: Fruit ,Bulb	E.M.U: Fruits resin is used to heal the bone fractures of domestic animals, Some people also apply its resin externally on the injured portion of the body for decocting the blood.
B.N: <i>Coleus forskohli</i> Will. L.N: Badda Jari F.N: Lamiaceae	L.F: Herb A.R: 600-2000 m Sat: Common P.U: Root	E.M.U: Root juice is administrated orally in constipation.
B.N: <i>Coriandrum sativum</i> Linn. L.N: Dhania F.N: Apiaceae	L.F: Herb A.R: Up to 2000 m Sat: Cultivated P.U: Whole Plant	E.M.U: 7-14ml.juice with 7-10 g honey administered orally in weak eye sight.

Table 1. Contd.

B.N: <i>Costus speciosus</i> (Koenig. Ex Retz.) J.E. Smith. L.N: Kewati F.N: Zingiberaceae	L.F: Herb A.R: Up to 1000 m Sat: Endangered P.U: Rhizome	E.M.U: Fried rhizome is administered orally with Gur for Abortion.
B.N: <i>Cryptolepis buchanani</i> Roem. & Schult. L.N: Dudil, Dudhi-bel F.N: Asclepiadaceae	L.F: Shrub A.R: 900-1900 m Sat: Common P.U: Whole plant	E.M.U: (1) Root ground with water is given early morning in intermittent fever in malaria. (2) Powdered root with 10 ml water for two days in gonorrhoea.
B.N: <i>Curculigo orchoides</i> Gaerth L.N: Kali musli F.N: Hypoxidaceae	L.F: Herb A.R: Above 2000 m Sat: Endangered P.U: Rhizome	E.M.U: (1) Powder of root (1-3 g) is given twice a day in abdominal colic. (2) Root powder is given with milk in general debility. (3) Root is given in impotency as an aphrodisiac.
B.N: <i>Curcuma longa</i> Linn. L.N: Haldi F.N: Zingiberaceae	L.F: Herb A.R: Up to 2000 m Sat: Cultivated P.U: Rhizome, Leaf	E.M.U: (1) Mixture of 1g rhizome powder with 10ml boiled water (filtered) use as eye drop in eye diseases. (2) 50ml juice of crushed raw Haldi cooked in 200ml mustard oil after filtering it proves useful in flowing ear.
B.N: <i>Cuscuta reflexa</i> Roxb. L.N: Amerbel F.N: Boraginaceae	L.F: Climber A.R: 900-2000 m Sat: Common P.U: Whole plant	E.M.U: (1) This parasitic climber is warmed sufficiently over gentle fire then the mesh is tied over Nabhi for 30-50 minutes. The process shall result in abortion. (2) Whole plant is pounded with bark of Aam and Mahuwa. Paste thus obtained is boiled in water. The water is used for bath of the patient of jaundice. (3) Paste of the plant applied to painful joints.
B.N: <i>Cynodon dactylon</i> Linn. L.N: Dub F.N: Poaceae	L.F: Herb A.R: Up to 2400 m Sat: Common P.U: Whole plant	E.M.U: (1) Paste of fresh leaves applied in eye disease. (2) Few drop of fresh plant juice is put in nose bleeding. Juice of whole plant is applied externally on affected part in bleeding.
B.N: <i>Dahlia rosea</i> Cav. L.N: Dalia F.N: Asteraceae	L.F: Herb A.R: 1400-2700 m Sat: Cultivated P.U: Whole Plant	E.M.U: Whole plant is used as snuff in disease of Nose.
B.N: <i>Daphne papyracea</i> Wall. ex Steud. L.N: Salpura, Satpura F.N: Thymelaeaceae	L.F: Shrub A.R: 1600-2900 m Sat: Common P.U: Whole Plant	E.M.U: 10-25ml juice administered orally twice daily in high blood pressure.

Table 1. Contd.

B.N: <i>Datura stramonium</i> Linn. L.N: Kala-Dhatura F.N: Solanaceae	L.F: Herb A.R: 900-2200 m Sat: Common P.U: Flowers, Seeds	E.M.U: (1) Juice of flowers is used in earache. (2) The paste prepared of roasted seeds in mustard oil is applied locally in wound.
B.N: <i>Daucus carota</i> Linn. L.N: Gajar F.N: Apiaceae	L.F: Herb A.R: Up to 1600 m Sat: Cultivated P.U: Seed	E.M.U: (1) 100 g of 3 years old seed stock of Gajar is collected and boiled in 1 liter of water to make a final decoction. 100-150 ml. is given as one dose for abortion. (2) Eating carota daily improve weak eye sight.
B.N: <i>Delphinium denudatum</i> Wall.ex Hook. f & Thoms L.N: Nirbisi F.N: Ranunculaceae	L.F: Herb A.R: Above 1800 m Sat: Endangered P.U: Roots	E.M.U: (1) Used as stimulant, alterative and bitter tonic. (2) Used in liver problem and snake bite (3) Seeds are used as insecticides and treatment of skin eruption.
B.N: <i>Desmodium gangeticum</i> (L.) DC. L.N: Salparni F.N: Fabaceae	L.F: Herb A.R: Up to 1500 m Sat: Rare P.U: Leaves	E.M.U: (1) Paste of fresh leaves is applied on wound for healing. (2) Roots are used as tonic and used in fever, dysentery.
B.N: <i>Desmodium triflorum</i> (L.) DC. L.N: Jangli methi F.N: Fabaceae	L.F: Herb A.R: Up to 1800 m Sat: Common P.U: Whole plant	E.M.U: Root is given with warm water in delayed parturition.
B.N: <i>Dicliptera bupleuroides</i> Nees L.N: Kulartore F.N: Acanthaceae	L.F: Herb A.R: 900-2200 m Sat: Common P.U: Seed, Leaves	E.M.U: Decoction of seed or leaves with water is given orally to children in dysentery.
B.N: <i>Dioscorea deltodea</i> Wall.ex Kunth. L.N: Gethi, Tarur F.N: Dioscoriaceae	L.F: Herb A.R: Up to 2000m Sat: Endangered P.U: bulb	E.M.U: Roasted bulbs are administered orally as vegetable which is relieving in cough.
B.N: <i>Dolichos lablab</i> Linn. L.N: Sem F.N: Fabaceae	L.F: Herb A.R: Up to 700 m Sat: Cultivated P.U: Whole plant	E.M.U: Fresh juice is dropped in Earache.

Table 1. Contd.

B.N: <i>Dolichos biflorus</i> L. L.N: Kulthi, Gahat F.N: Fabaceae	L.F: Herb A.R: 1200-2500 m Sat: Cultivated P.U: Seed	E.M.U: Boiled seed is administrated orally thrice daily in kidney stone and localized abdominal tumor.
B.N: <i>Eclipta alba</i> Linn. L.N: Bhangra F.N: Asteraceae	L.F: Herb A.R: 300-1600 m Sat: Common P.U: Whole plant	E.M.U: In general disability, take 3-4g powder with 250 ml. milk twice daily.
B.N: <i>Eclipta prostrata</i> (L.) L. L.N: Bhangru F.N: Asteraceae	L.F: Herb A.R: Up to 1050 m Sat: Common P.U: Leaves	E.M.U: Paste of leaves is applied on wounds and whole plant boiled in oil is used orally.
B.N: <i>Elsholtzia strobilifera</i> Benth. L.N: Ruli F.N: Lamiaceae	L.F: Herb A.R: 500-3000 m Sat: Common P.U: Leaves, Flower, Inflorescence	E.M.U: Leaves and inflorescence are used in internal burns.
B.N: <i>Embllica officinalis</i> Gaerth. L.N: Anonla F.N: Euphorbiaceae	L.F: Tree A.R: Up to 1500 m Sat: Common P.U: Fruits, Leaf	E.M.U: (1) 2-4 drop of fresh fruit juice used as eye drop. Eating anonla daily helps improve weak eye sight. (2) Leaf boiled in water and salt is given in constipation. (3) Juice of bark is dropped in the ear in earache.
B.N: <i>Euphorbia royleana</i> Boiss. L.N: Dudhibish F.N: Euphorbiaceae	L.F: Shrub A.R: 600-1500 m Sat: Common P.U: Latax	E.M.U: One drop of plant milk is put on gum boil in mouth.
B.N: <i>Evolvulus alsinoides</i> (Linn.) L.N: Shankhapushpi F.N: Convolvulaceae	L.F: Herb A.R: Up to 1800 m Sat: Rare P.U: Whole plant	E.M.U: Whole plant made into powder or paste given with sugar in syphilis.

Table 1. Contd.

B.N: <i>Ficus auriculata</i> Lour. L.N: Timul F.N: Moraceae	L.F: Tree A.R: 500-1800 m Sat: Common P.U: Flower, Leaf, Root, Latex	E.M.U: Used as vegetable in constipation.
B.N: <i>Ficus racemosa</i> Linn. L.N: Gullar F.N: Moraceae	L.F: Tree A.R: Up to 1000 m Sat: Rare P.U: Latex, Fruit, Root, Leaf, Bark	E.M.U: Juice of 250 g of unripe fruit is boiled with water and given to pregnant women thrice a day for 10-12 days for preventing conception.
B.N: <i>Foeniculum vulgare</i> Mill. L.N: Saunf F.N: Apiaceae	L.F: Herb A.R: Up to 2000 m Sat: Cultivated P.U: Seeds	E.M.U: Eat 1 g saunf daily in worm infection.
B.N: <i>Fumaria indica</i> (Hausk.) Pugsly L.N: Pit-papara F.N: Fumariaceae	L.F: Herb A.R: Up to 2200 m Sat: Common P.U: Whole Plant	E.M.U: 5-10 ml. juice of Coriander sativum L and Fumaria indica is administered orally in fever.
B.N: <i>Galium asperifolium</i> Wall. L.N: leswakuri F.N: Rubiaceae	L.F: Herb A.R: 1500-2000 m Sat: Rare P.U: Whole plant	E.M.U: Whole plant is grinded in water, used in worm infestation.
B.N: <i>Gloriosa superba</i> Linn. L.N: Kalihari, Langhi F.N: Liliaceae	L.F: Herb A.R: Up to 1500 m Sat: Endangered P.U: Seed, bulb	E.M.U: (1) Paste of root is applied externally on joints. Shodhit oil with root bulb is applied on affected parts in rheumatoid syphilis. (2) Root ground to paste in water is given 250-500 g dose in abdominal colic.
B.N: <i>Habenaria edgeworthii</i> Hook. f. ex Collett L.N: Vridhi F.N: Orchidaceae	L.F: Herb A.R: 1500-2400 m Sat: Endangered P.U: Whole Plant	E.M.U: As an ingredient of Chyavanparsh, blood purifier and rejuvenator.
B.N: <i>Habenaria intermedia</i> D.Don L.N: Ridhi F.N: Orchidaceae	L.F: Herb A.R: 1500-2700 m Sat: Endangered P.U: Whole Plant	E.M.U: Decoction is useful as health tonic.

Table 1. Contd.

B.N: <i>Hedychium spicatum</i> Buch.-Ham. ex Sm. L.N: Ban-haldi F.N: Zingiberaceae	L.F: Herb A.R: 1400-2500 m Sat: Threatened P.U: Root	E.M.U: (1) Root – stock powder or decoction is used orally in body ache. (2) 1-3 g powder take orally twice daily in inflammation. (3) Small pieces of fresh root (about 10g.) is partially cooked in burning flame and chewed with one glass of hot milk for the treatment of asthma and internal injury. The paste with hot water is given orally to the cattle and other domestic animals in case of stomach disorder. Some time it is also chewed by the local inhabitants to remove the bad smell from their teeth or mouth.
B.N: <i>Helianthus annuus</i> Linn. L.N: Surajmukhi F.N: Asteraceae	L.F: Herb A.R: Up to 2000 m Sat: Cultivated P.U: Medicinal (SD)	E.M.U: 2-4 drop of fresh leaf juice in Earache.
B.N: <i>Hibiscus rosa-sinensis</i> Linn. L.N: Gurhal F.N: Malvaceae	L.F: Shrub A.R: Up to 1800 m Sat: Cultivated, P.U: Leaves, Stem	E.M.U: Flower buds pounded in water kept overnight and made into paste, if given before intercourse causes male sterility, large amount may cause impotency. The paste is also applied over penis as local contraceptive.
B.N: <i>Hordeum vulgare</i> Linn. L.N: Jau, Barley F.N: Poaceae	L.F: Herb A.R: 300-2600 m Sat: Cultivated P.U: Seed	E.M.U: (1) Grain washed with water and then given to women for easy child birth. (2) Seed is burn in a pan and then mix it with oil of <i>Sesamum indicum</i> Linn. This paste is applied over burn area.
B.N: <i>Hypericum japonicum</i> Thunb.ex Murray L.N: Chhingewali F.N: Hypericaceae	L.F: Herb A.R: 1200-1600 m Sat: Rare P.U: Whole plant	E.M.U: Powder of whole plant is used as snuff in Nose Diseases.
B.N: <i>Ichnocarpus frutescens</i> (L.)R.Br. L.N: Kalidudhi F.N: Apocynaceae	L.F: Climber A.R: Up to 1300 m Sat: Rare P.U: Whole plant	E.M.U: (1) Root ground and made into pills given 0.5-1g twice daily with warm water in liver enlargement. (2) Whole plant given to nursing mother for lactation.
B.N: <i>Impatiens balsamina</i> Linn. L.N: Gulmendi F.N: Balsaminaceae	L.F: Herb A.R: up to 2000 m Sat: Common P.U: seed	E.M.U: Paste of seed is applied externally in Skin disease

Table 1. Contd.

B.N: <i>Ixeris sagittarioides</i> (C.B.Clark) Stebb. L.N: Garurbooti F.N: Asteraceae	L.F: Herb A.R: 300-800 m Sat: Rare P.U: Root	E.M.U: Decoction of root used in Snake Bite.
B.N: <i>Jatropha curcas</i> Linn. L.N: Pahari-arand F.N: Euphorbeaceae	L.F: Shrub A.R: Up to 1300 m Sat: Common P.U: Juice, Seed	E.M.U: Milky juice of plant is applied on affected part to check bleeding.
B.N: <i>Juglans regia</i> Linn. L.N: Akhor, Akhrot F.N: Juglandaceae	L.F: Tree A.R: 1600-2000 m Sat: Common P.U: Bark, Root, Leaves)	E.M.U: The bark is boiled in water. After filtration it is used as mouthwash, very useful in Loose teeth.
B.N: <i>Lannea coromandelica</i> Houtt. L.N: Jhinghan F.N: Anacardiaceae	L.F: Tree A.R: Up to 1200 m Sat: Rare P.U: Bark, fruit, leaf	E.M.U: Juice of bark is applied on cuts to stop bleeding. Paste of bark is applied over affected part.
B.N: <i>Lawsonia inermis</i> Linn. L.N: Mehndi F.N: Lythraceae	L.F: Shrub A.R: Up to 900 m Sat: Cultivated P.U: Leaves	E.M.U (1) Powdered roasted seed mixed with gingerly oil to make a paste. The paste is useful in ring worm. (2) Decoction of leaves is used for washing wounds and healing.
B.N: <i>Leucas lanata</i> Benth. L.N: Pipswas F.N: Lamiaceae	L.F: Herb A.R: 1000-2000 m Sat: Common P.U: Leaves	E.M.U: Leaf paste is applied externally in septic wounds and also to check bleeding and heating.
B.N: <i>Lobelia pyramidalis</i> Wall. L.N: Bhanguri F.N: Lobeliaceae	L.F: Herb A.R: 1500-3000 m Sat: Endangered P.U: Inflorescence	E.M.U: Smoke of inflorescence is used in asthma
B.N: <i>Lycopersicon lycopersium</i> (L.) L.N: Tamater F.N: Solanaceae	L.F: Herb A.R: Up to 2500 m Sat: Cultivated P.U: Leaves, Fruit	E.M.U: Fruit juice administrated orally in bleeding gum.

Table 1. Contd.

B.N: <i>Malaxis acuminata</i> D.Don L.N: Lasania F.N: Orchidaceae	L.F: Herb A.R: 1300-2400 m Sat: Rare, P.U: Leaves, Root	E.M.U: Used as a tonic and to cure tuberculosis and enhance sperm production.
B.N: <i>Mallotus philippensis</i> (Lam.) Muell.- Arg. L.N: Rolli,Ruin F.N: Euphorbiaceae	L.F: Small Tree A.R: Up to 1500 m Sat: Common P.U: Fruits	E.M.U: Powder of the ripe fruit mixed with cow's Ghee is applied on wounds.
B.N: <i>Mangifera indica</i> Linn. L.N: Am F.N: Anacardiaceae	L.F: Tree A.R: Up to 1200 m Sat: Cultivated P.U: Bark	E.M.U: 2-4 drop of fresh leaf juice put in earache. The leaf should be used in luck worm.
B.N: <i>Melia azedaracht</i> Linn. L.N: Bhetun, Betain F.N: Meliaceae	L.F: Small tree A.R: Up to 1500 m Sat: Rare P.U: Root, Fruit oil	E.M.U: (1) Paste of roots is applied in headache. (3) Fruit- oil is claimed to be effective in worm infestation when administered orally.
B.N: <i>Mentha piperata</i> Linn. L.N: Podin F.N: Lamiaceae	L.F: Herb A.R: Up to 1600 m Sat: Common P.U: Leaves, Seed	E.M.U: Crushed leaves are also used in nausea and vomiting.
B.N: <i>Momordica charantia</i> Linn. L.N: Karela F.N: Cucurbitaceae	L.F: Herb A.R: Up to 2000 m Sat: Cultivated P.U: Fruits, Seeds, Leaves	E.M.U: (1) Paste of leaf applied on forehead in headache. (2) Juice of fruit is useful in diabetes.
B.N: <i>Morina longifolia</i> Wall. ex DC. L.N: Bishkandara F.N: Morinaceae	L.F: Herb A.R: 2000-3000 m Sat: Threatened P.U: Whole plant	E.M.U: Decoction of whole plant is administered orally for healing.
B.N: <i>Musa paradisiaca</i> Linn. L.N: Kela F.N: Musaceae	L.F: Shrub A.R: 300-2000 m Sat: Cultivated P.U: Whole Plant	E.M.U: (1) 2-4 drop of fresh leaf juice is taken in earache. Plant juice is claimed to be effective in case of dysentery. (2) Just sprouting stem is pounded and its watery juice is given in snake bite. (3) Root & stem decoction(20ml) are taken in the morning for one month as tonic in blood and venereal disease

Table 1. Contd.

B.N: <i>Myrica esculenta</i> Buch.-Ham L.N: Kaphal, Kaphaw F.N: Myricaceae	L.F: Tree A.R: 1600-2400 m Sat: Common P.U: Bark	E.M.U: Bark powder inhale is useful in headache.
B.N: <i>Myrsine africana</i> Linn. L.N: Ghani F.N: Myrsinaceae	L.F: Shrub A.R: 1400-2300 m Sat: Common P.U: Fruits	E.M.U: Fruit powder is used orally in children to kill worms.
B.N: <i>Nerium indicum</i> Miller. L.N: Kaner F.N: Apocynaceae	L.F: Shrub A.R: Up to 1800 m Sat: Cultivated P.U: Leaves, Root	E.M.U: (1) 2-4 drop of soft leaf juice as eye drop in eye diseases. (2) Paste of bark mixed with mustard oil and applied on effected part in leprosy.
B.N: <i>Nyctanthes arbor-tristis</i> Linn. L.N: Har singar F.N: Oleaceae	L.F: Tree A.R: Up to 1400 m Sat: Common P.U: Leaves	E.M.U: (1) 50 ml decoction of leaves is administered orally twice daily for forty days in Sciatica. (2) A leaf boiled in water and made into a thick decoction and is given in stomachache thrice a day. (3) 2-3 leaves made into a paste given thrice a day with warm water in malaria.
B.N: <i>Origanum vulgare</i> Linn. L.N: Bantulsi F.N: Lamiaceae	L.F: Herb A.R: 1700-3600 m Sat: Rare P.U: Whole Plant	E.M.U: Decoction of whole plant is given orally in urinary Disorders.
B.N: <i>Oroxylum indicum</i> (L) Vent. L.N: Pharkat F.N: Bignoniaceae	L.F: Tree A.R: Up to 1200 m Sat: Rare P.U: Leaf, root, bark, seed	E.M.U: Powder of <i>Rivea hypocrateriformis</i> Desr. and root of this plant are powdered and given 1-2 tea spoons with milk in gonorrhoea.
B.N: <i>Oxalis corniculata</i> Linn. L.N: Chilmora F.N: Oxalidaceae	L.F: Herb A.R: 1400-2600 m Sat: Common P.U: Whole plant	E.M.U: (1) Juice of herb is used as eye drops in cataract. Paste of top shoots along with black pepper is applied to boil, abscesses, wound and weeping eczema. Leaves and roots are treat dysentery and diarrhea. (2) Root is washed and given shape of a ring. This ring along with vermilion (Sindur) and sesamum oil is rubbed on a brass plate. An 'Anjan' is thus prepared which is applied on eyes in conjunctivitis.

Table 1. Contd.

B.N: <i>Paris polyphylla</i> Smith L.N: Sufed vach F.N: Liliaceae	L.F: Herb A.R: 1200-2000 m Sat: Endangered P.U: Whole Plant	E.M.U: (1) A decoction of the roots(4.5 g) is used in the treatment of poisonous snake bite . Roots have antibacterial activity. (2) Ground into powder with water or apply mixed powder with vinegar and then apply to affected part of boils, ulcers.
B.N: <i>Pedicularis pectinata</i> Wall.ex Benth. L.N: Lugro-marpo F.N: Scrophulariaceae	L.F: Herb A.R: Up to 2000 m Sat: Common P.U: Leaves, seed, root	E.M.U: Decoction of the plant used in snake bite.
B.N: <i>Peristrophe bicalyculata</i> (Retz.)Ness. L.N: Chota Hansia, Chirchiri F.N: Acanthaceae	L.F: Herb A.R: Up to 1400 m Sat: Common P.U: Whole plant	E.M.U: Paste of root bulb is applied on affected part in bleeding.
B.N: <i>Phoenix acaulis</i> Roxb. ex Buch.-Ham. L.N: Thakal, Khajuri F.N: Areaceae	L.F: Shrub A.R: Up to 1500 m Sat: Rare P.U: Stem, Root	E.M.U: Root is washed and taken 2-4 g twice a day for abortion.
B.N: <i>Phyllanthus fraternus</i> Webster. L.N: Bhoomi anonla F.N: Euphorbiaceae	L.F: Herb A.R: Up to 500 m Sat: Rare P.U: Roots, Leaves	E.M.U: (1) Fresh roots are beneficial in Jaundice, also used in stomach-troubles, dropsy, and urine-genital disease. (2) Young leaves are used in cough and mild forms in intermittent fever.
B.N: <i>Plantago lanceolata</i> Linn. L.N: Kashur-gula F.N: Plantaginaceae	L.F: Herb A.R: 1500-2400 m Sat: Common P.U: Leaves, Root, Seed	E.M.U: About 5-10 g seeds are used by the local people orally once a day with one small glass of hot water for the treatment of amoebic dysentery, blood dysentery and chronic diarrhea.
B.N: <i>Plantago major</i> Linn. L.N: Isopgoal F.N: Plantaginaceae	L.F: Herb A.R: Up to 3300 m Sat: Common P.U: Seed, Leaf	E.M.U: Seed powder is useful in dysentery. Seeds are also used as tonic by mixing it with honey.
B.N: <i>Plectranthus rugosus</i> Wall. L.N: Thithra/Chichara F.N: Lamiaceae	L.F: Shrub A.R: 900-2400 m Sat: Rare P.U: Leaves	E.M.U: Juice of leaves is dropped in Earache.

Table 1. Contd.

B.N: <i>Plumbago zeylanica</i> Linn. L.N: Cheel, Chitrak F.N: Plumbaginaceae	L.F: Herb A.R: Up to 1500 m Sat: Common P.U: Root	E.M.U: (1) Decoction of root is administered orally in Abortion. (2) Paste of root is applied on affected part.
B.N: <i>Polygonatum cirrhifolium</i> (Wall.) Royle L.N: Meda F.N: Liliaceae	L.F: Herb A.R: 1500-3000 m Sat: Endangered P.U: Root	E.M.U: Root powder is administered orally as tonic.
B.N: <i>Polygonatum verticillatum</i> Linn. L.N: Maha-meda F.N: Liliaceae	L.F: Herb A.R: Above 2000m Sat: Endangered P.U: Root	E.M.U: Rhizome is administered orally as Tonic.
B.N: <i>Polygonum amplexicaule</i> Don L.N: Banmadua F.N: Polygonaceae	L.F: Herb A.R: Up to 1800 m Sat: Common P.U: Root	E.M.U: 1-2 g of the fresh root is boiled with tea for the treatment of cold and cough and to restore the body strength. In case of chronic cold and cough, roots are also used in the form of decoction.
B.N: <i>Premna barbata</i> Wall.ex Schauer. L.N: Agneo, Agtum F.N: Verbenaceae	L.F: Tree A.R: Up to 1500 m Sat: Rare P.U (LF,FR,BR,ST)	E.M.U: (1) Plant decoction is given in arthritic pain. Leaves are rubbed on the body in dropsy. (2) Wood used in herpes complex disease.
B.N: <i>Prunus persica</i> (L.) L.N: Aru, Aadu F.N: Rosaceae	L.F: Tree A.R: 600-2000 m Sat: cultivated P.U: Seed, fruit, stem, leaf, flower, bark	E.M.U: Make tea with 20 g leaves and 250 ml water, administered orally in worm infection.
B.N: <i>Psidium guajava</i> Linn. L.N: Amrood F.N: Myrtaceae	L.F: Tree A.R: Up to 1800 m Sat: Cultivated P.U: Leaves Root, Fruits	E.M.U: Fruits roasted in hot ash and then administered orally in cough.
B.N: <i>Pueraria tuberosa</i> (Roxb.ex Willd.) DC. L.N: Biralu F.N: Fabaceae	L.F: Shrub A.R: 300-1200 m Sat: Common P.U: bulb	E.M.U: (1) bulb is given in difficult urination. (2) Taken orally 3-6 g powder with 250 ml. milk in tuberculosis.

Table 1. Contd.

B.N: <i>Punica granatum</i> Linn. L.N: Darim F.N: Punicaceae	L.F: Shrub A.R: Up to 2000 m Sat: Cultivated P.U: Fruit, Seeds, Flower	E.M.U. (1) Juice of fresh red flower and leaf is put in nose in bleeding. (2) Fruits and stem bark is cooked with jiggery and administered orally in asthma. (3) Juice of the fruit boiled with podina is administered orally to children in worm infection.
B.N: <i>Quercus leucotrichophora</i> A. Camus L.N: Banj F.N: Fagaceae	L.F: Tree A.R: 1200-2500 m Sat: Common P.U: Leaves, Bark, Juice	E.M.U: Boil 25g bark in 100ml, water, gargle it in tonsillitis.
B.N: <i>Raphanus sativus</i> Linn. L.N: Muli F.N: Brassicaceae	L.F: Herb A.R: Up to 2000 m Sat: Cultivated P.U: Root and fruit	E.M.U: (1) The roots are taken in raw form orally in suitable quantity for 3-4 days in Jaundice. (2) 2 -4 drop of fresh juice of root is taken in earache.
B.N: <i>Rhododendron arboreum</i> Sm. L.N: Burans F.N: Ericaceae	L.F: Tree A.R: 1800-3300 m Sat: Common P.U: Flower, Leaves, stem, bark	E.M.U: (1) Dried flower powder is given in dysentery. (2) Leaf paste is applied on forehead in headache.
B.N: <i>Ricinus communis</i> Linn. L.N: Erandi F.N: Euphorbiaceae	L.F: Shrub A.R: Up to 2000 m Sat: Cultivated P.U: Leaves	E.M.U: (1) Make Paste of leaf with paste of Ocimum leaf in equal quantity applies on affected area in Mastoiditis. Fermentation of leaves is done in backache.
B.N: <i>Rosa macrophylla</i> Lindl. L.N: Ban gulab F.N: Rosaceae	L.F: Shrub A.R: 2000-3000 m Sat: Rare P.U: Flower, fruit	E.M.U: Fresh juice flower is dropped in Earache.
B.N: <i>Roscoea procera</i> Wall. L.N: Kakoli F.N: Zingiberaceae	L.F: Herb A.R: 2000-3000 m Sat: Rare P.U: Root	E.M.U: (1) Root powder mixed with black pepper is applied on boils for quick healing. (2) Decoction of root used in jaundice.
B.N: <i>Royalea cinerea</i> D.Don L.N: Kaural, Titpatia F.N: Lamiaceae	L.F: Herb A.R: 600-1600 m Sat: Rare P.U: Whole Plant	E.M.U: (1) Infusion of leaves is given in disease of throat. (2) Fresh juice of plant given for syphilis.

Table 1. Contd.

B.N: <i>Rubia cordifolia</i> Linn. L.N: Mangitha F.N: Rubiaceae	L.F: Climber A.R: 300-1500m Sat: Rare P.U: Root	E.M.U: Paste of root applied externally in leucoderma.
B.N: <i>Rubus ellipticus</i> Smith L.N: Hisalu F.N: Rosaceae	L.F: Shrub A.R: 800-2200 m Sat: Common P.U: Fruits	E.M.U: Juice of fruits is administered orally in cholera.
B.N: <i>Rumex hastatus</i> D Don L.N: Chilmora, Bhilmora ,Khatti-mitti F.N: Polygonaceae	L.F: Herb A.R: Up to 3000 m Sat: Common P.U: Whole Plant	E.M.U.: (1) Root decoction is administered orally in rheumatoid. (2) Leaves juice is given in abdominal colic.
B.N: <i>Saccharum spontaneum</i> Linn. L.N: Kusha F.N: Poaceae	L.F: Herb A.R: Up to 1600 m Sat: Common P.U: Root	E.M.U: The 12-15 ml decoction (25g root boiled in 200ml water) taken twice daily in burning sensation.
B.N: <i>Satyrium nepalensis</i> D.Don L.N: Salam-misri, Mishri F.N: Orchidaceae	L.F: Herb A.R: Up to 2000 m Sat: Rare P.U: Root	E.M.U: (1) About 20-25 g fresh root is ground and cooked just like 'Chapati' and eaten to increase body strength particularly at old age. (2) Roots are used to treat malaria and dysentery.
B.N: <i>Senecio nudicaulis</i> Buch.-Ham ex D Don L.N: Ratpatia F.N: Asteraceae	L.F: Herb A.R: 1000-2000 m Sat: Common P.U: Whole plant	E.M.U: (1) Juice of leaves is dropped in eyes in conjunctivitis. (2) Paste of herb and leaves is applied on wound.
B.N: <i>Sesamum orientale</i> Linn. L.N: Til F.N: Pedaliaceae	L.F: Herb A.R: Up to 1600 m Sat: Common P.U: Seed	E.M.U: Small quantity of oil is administered orally in dysentery.
B.N: <i>Shorea robusta</i> Gaertn. L.N: Sal F.N: Dipterocarpaceae	L.F: Tree A.R: Up to 1700 m Sat: common P.U: Bark, leaf, fruit, resin	E.M.U: (1) Red resin given with cow's milk in blood dysentery and the white resin with cow's milk in ordinary dysentery. (2) Seeds are fried in gingerly oil & its paste applied externally in skin disease.

Table 1. Contd.

B.N: <i>Sida cordifolia</i> (Burm.f) Boss. L.N: Denusha F.N: Malvaceae	L.F: Shrub A.R: Up to 1500 m Sat: Rare P.U: Root, Stem, Leaf, bark	E.M.U: (1) Root powder is used as tonic. (2) It is used for fever, fits, leucorrhoea, nervous disorder and heart irregularity. (3) Bark is effective in curing facial paralysis and sciatica. (4) Leaves are used for curing the bloody flux, improve sexual strength.
B.N: <i>Smilax aspera</i> Linn. L.N: Kukundara F.N: Smilacaceae	L.F: Shrub A.R: 900-2100 m Sat: Rare P.U: Root	E.M.U: Paste of root is given orally with water in case of Diarrhea.
B.N: <i>Solanum ferox</i> Linn. L.N: Chitrika, Cahar F.N: Solanaceae	L.F: Herb A.R: Up to 1400 m Sat: Common P.U: Leaves, Root	E.M.U: Decoction of root is administered orally in Fever.
B.N: <i>Solanum nigrum</i> Linn. L.N: Makoi, Giwai F.N: Solanaceae	L.F: Herb A.R: Up to 2000 m Sat: Common P.U: Whole plant	E.M.U : (1) Juice of whole plant is administered orally in Fever. (2) Paste made of leaves, black pepper and goat's milk is applied over boils and pimples. (3) Cooked leaves also given in skin diseases.
B.N: <i>Solanum tuberosum</i> Linn. L.N: Aal, Aalu F.N: Solanaceae	L.F: Herb A.R: Up to 2200 m Sat: Cultivated P.U: Leaves, bulb	E.M.U: bulb pounded to make paste and applied to burns.
B.N: <i>Swertia alata</i> (Royale ex D. Don) C.B.Clarke L.N: Chiratta F.N: Gentianaceae	L.F: Herb A.R: 1200-1800 m Sat: Common P.U: Whole Plant	E.M.U: Whole plant infusion is useful in malaria.
B.N: <i>Syzygium cuminii</i> (Linn.)Skeels. L.N: Jamun F.N: Myrtaceae	L.F: Tree A.R: Up to 1400 m Sat: Common P.U: Bark, Leaves, Fruits	E.M.U: (1) Ash of dried bark is used as pest in bleeding gum. (2) Take 7-14ml. juice of leaves with 5-10 g sugar orally twice in excessive thirst.
B.N: <i>Tagetes erecta</i> Linn. L.N: Hazari F.N: Asteraceae	L.F: Herb A.R: 300-1800 m Sat: Cultivated P.U: Leaves, Flower	E.M.U: Paste of leaves is applied on cuts.

Table 1. Contd.

B.N: <i>Terminalia alata</i> Heyna ex Roth. L.N: Saij F.N: Combretaceae	L.F: Tree A.R: Up to 1200 m Sat: Common P.U: Bark, leaf	E.M.U: (1) Stem bark made into a paste, 3-6 g is given in diarrhea and dysentery. (2) Bark made into paste with water, given 2-6 g, twice a day in liver enlargement.
B.N: <i>Terminalia chebula</i> Retz. L.N: Harar F.N: Combretaceae	L.F: Tree A.R: Up to 1300 m Sat: Common P.U: Fruits, Root	E.M.U: (1) Root is boiled in water and used to check abortion, miscarriage. (2) Fruits rubbed in water on a clean stone and made into a paste are applied to eyes in irritation and burning. (3) Fruits powder or decoction is used as laxative.
B.N: <i>Thalictrum foliolosum</i> DC. L.N: Mamiri, pilijari F.N: Ranunculaceae	L.F: Herb A.R: 1000-2500m Sat: Rare P.U: Whole Plant	E.M.U: (1) Paste of plant is used in skin disease. (2) Root is used in Jaundice.
B.N: <i>Thymus serpyllum</i> Linn. L.N: Balamjhar, Van ajwain F.N: Lamiaceae	L.F: Herb A.R: 1600-2500 m Sat: Endangered P.U: Whole plant	E.M.U: Leaf decoction is administrated orally in digestive disorders.
B.N: <i>Tinospora cordifolia</i> (Willd.) Miers. L.N: Guduci F.N: Menispermaceae	L.F: Climber A.R: Up to 1500 m Sat: Rare P.U: Whole Plant	E.M.U: (1) Stem and leaves juice is used in Fever, body heat, burning sensation, diabetic, urinary problem and anemia. (2) Leaves extract is used in leprosy
B.N: <i>Toona ciliata</i> Roem. L.N: Tun, Tuni F.N: Meliaceae	L.F: Tree A.R: Up to 1600 m Sat: Common P.U: Bark, flower	E.M.U: The decoction (25 g bark boiled in 200 ml water) administrated orally in malarial fever.
B.N: <i>Tribulus terrestris</i> Linn. L.N: Gokharu F.N: Zygophyllaceae	L.F: Herb, A.R: Up to 600 m Sat: Rare P.U: Whole plan	E.M.U: Used to remove kidney stone
B.N: <i>Trichosanthes bracteata</i> (Lam.) Voigt. L.N: Indrayani F.N: Cucurbitaceae	L.F: Climber A.R: Up to 2000 m Sat: Common P.U: Root	E.M.U: Decoction of root is administered orally in Fever.

Table 1. Contd.

B.N: <i>Tridax procumbens</i> Linn. L.N: Kateri F.N: Asteraceae	L.F: Herb A.R: 1000-2000 m Sat: Common P.U: Whole Plant	E.M.U: (1) The juice of herb is dropped in eyes to cure conjunctivitis and other eye diseases. (2) Leaves boiled and made into paste are applied to the affected part in glandular enlargement.
B.N: <i>Trigonella foenum-graecum</i> Linn. L.N: Methi, Mutti F.N: Fabaceae	L.F: Herb A.R: Up to 2000 m Sat: Cultivated P.U: Leaves, Seeds	E.M.U: (1) Boiled seeds in milk and filter it, after filtration 2-4 drop of milk is put in ear disease. (2) Decoction is made by 5 g leaf in 250 ml water and keeps gargling useful in Phlegum
B.N: <i>Urena lobata</i> Linn. L.N: Bara Mamas, Vanabhenda F.N: Malvaceae	L.F: Herb A.R: Up to 1500 m Sat: Common P.U: Whole plant	E.M.U: Paste of whole plant is administered orally with milk as tonic.
B.N: <i>Urtica parviflora</i> Linn. L.N: Sin, Siun, Swina F.N: Urticaceae	L.F: Shrub A.R: Up to 3600 m) Sat: Common P.U: Leaf	E.M.U: Flogging by leaf in bone fracture.
B.N: <i>Valeriana hardwickii</i> Wall. ex Roxb. L.N: Nahani F.N: Valerianaceae	L.F: Herb A.R: 2000-3600 m Sat: Threatened P.U: Root, Leaves	E.M.U: (1) Root is used as nerve tonic. It is also used internally in the treatment of painful menstruation cramps, hypertension. (2) Leaves are used as a poultice to treat boils.
B.N: <i>Valeriana jatamansi</i> Jones L.N: Samyo F.N: Valerianaceae	L.F: Herb A.R: 1800-3600 m Sat: Threatened P.U: Root, Leaf, Flower	E.M.U: (1) The essential oil of the root and rhizome is having antibacterial property. (2) Used as a remedy for hysteria, hypochondria, nervous unrest and emotional troubles.
B.N: <i>Verbascum thapsus</i> Linn. L.N: Jakhmvir F.N: Scrophulariaceae	L.F: Herb A.R: Up to 3000m Sat: Common P.U: Leaves	E.M.U: (1) Leaf paste is rub on chest to relieve pain due to cold. (2) Inflorescence smokes used in bronchitis
B.N: <i>Vernonia cinerea</i> Linn. L.N: Kalgira, Sahadevi F.N: Asteraceae	L.F: Herb A.R: 1000-2000 m Sat: Rare P.U: Whole Plant	E.M.U: Decoction of whole plant use orally in Mental disorder.

Table 1. Contd.

B.N: <i>Viola serpens</i> Wall. L.N: Gule-banaksha F.N: Violaceae	L.F: Herb A.R: Up to 1800 m Sat: Rare P.U: Whole plant	E.M.U: Useful in asthma, bleeding piles, cancer of the throat, constipation.
B.N: <i>Viscum articulatum</i> Burm.f. L.N: Budu F.N: Loranthaceae	L.F: Shrub A.R: Up to 2700 m Sat: Rare P.U: Whole plant	E.M.U: (1) Whole plant or seed 1-2 g ground in water if given 3-4 days during menstruation period it causes permanent sterility. Decoction of whole plant also has similar affect. (2) Whole plant ground in water and given 1-3 g with jiggery twice a day in epitasis and twice daily for 2-4 days in hemorrhoids.
B.N: <i>Vitex negundo</i> Linn. L.N: Sewae, Moudi F.N: Verbenaceae	L.F: Shrub A.R: Up to 1400 m Sat: Common P.U: Leaves	E.M.U: (1) Leaf juice put into ear disease. (2) Leaves are used in the form of poultice locally. (3) Leaves are pounded with Brice and water, made into syrup, given to patients suffering from syphilis. (4) Decoction of whole plant mixed with salt and ginger is applied on wound.
B.N: <i>Woodfordia fruticosa</i> (Linn.) L.N: Dhaur F.N: Lythraceae	L.F: Shrub A.R: Up to 2000 m Sat: Common P.U: Stem, bark	E.M.U : (1) Stem bark is chewed in cough. (2) Testing of root and brushing teeth by or chewing of root cures impotency. The stem is used as a dental brush. (3) It is believed that if root is kept in between the teeth of lower and upper jaw during sexual intercourse, it stops early discharge. Semen will not discharge till the root or juice of it will remain in the mouth.
B.N: <i>Xanthium strumarium</i> Linn. L.N: Chotagokhru F.N: Asteraceae	L.F: Herb A.R: 500-2000 m Sat: Common P.U: Root, Leaves, Fruits, Seeds	E.M.U: Fruit is worn in form of necklace in style.
B.N: <i>Zanthoxylum armatum</i> DC. L.N: Timur, Tumburu F.N: Rutaceae	L.F: Shrub A.R: Up to 2100 m Sat: Rare, P.U: Whole Plant	E.M.U: (1) 3 or 4 very tender leaves devoid of thorns are mixed with Besan and fried in oil to make pakora and these pakoras are eaten for 3 to 4 days by the patient in allergy. (2) Leaf is chewed by carries teeth.
B.N: <i>Zea mays</i> Linn. L.N: Makai F.N: Poaceae	L.F: Herb A.R: Up to 2200 m Sat: Cultivated P.U: Fruit	E.M.U: Fruit boiled in water and administrated orally twice daily in renal colic.

Table 1. Contd.

B.N: <i>Zingiber officinale</i> Rosc. L.N: Asd, Adrak F.N: Zingiberaceae	L.F: Herb A.R: Up to 1600 m Sat: Cultivated P.U: Rhizome, Leaf	E.M.U: (1), 2-4 drop of leaf juice (luck warm) put in Earache. (2) 5 ml fresh juice taken orally twice a day.
B.N: <i>Terminalia bellirica</i> (Gaertn.) Roxb L.N: Barar F.N: Combretaceae	L.F: Tree A.R: Up to 1200 m Sat: Common, P.U: Bark, fruit, seed	E.M.U: (1) Stem bark ground with water given in heart burn. (2) Fruit is given 2-3 times a day in hyper acidity.

B.N: Botanical name, L.N: local name, F.N: family name, L.F: life form, A.R: altitudinal range, Sat: status, P.U: parts used, E.M.U: ethno-medicinal uses.

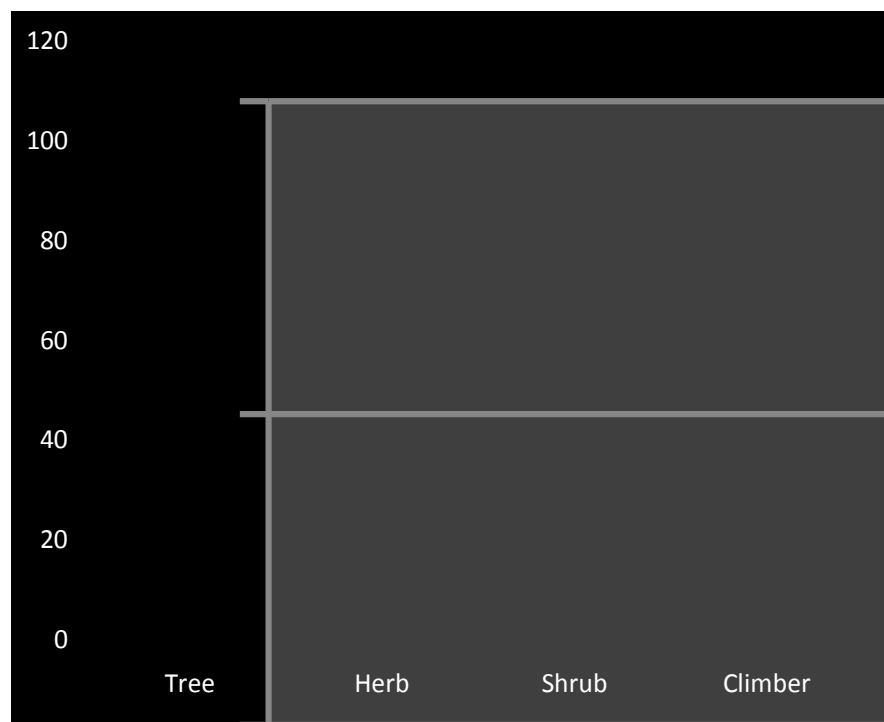


Figure 1. Life form of ethno-medicinal plants.

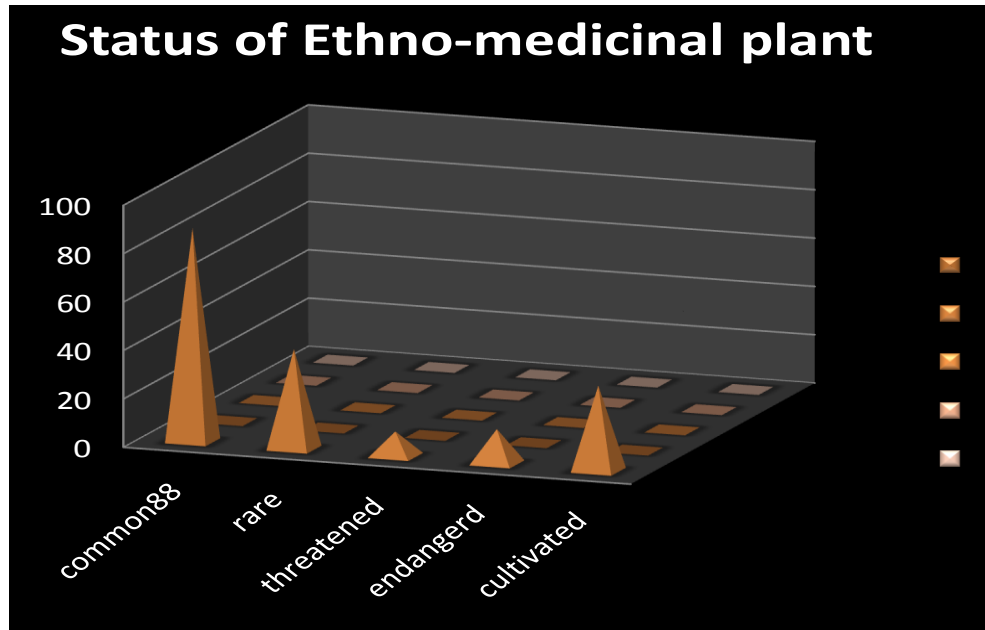


Figure 2. Status of ethno-medicinal plants.

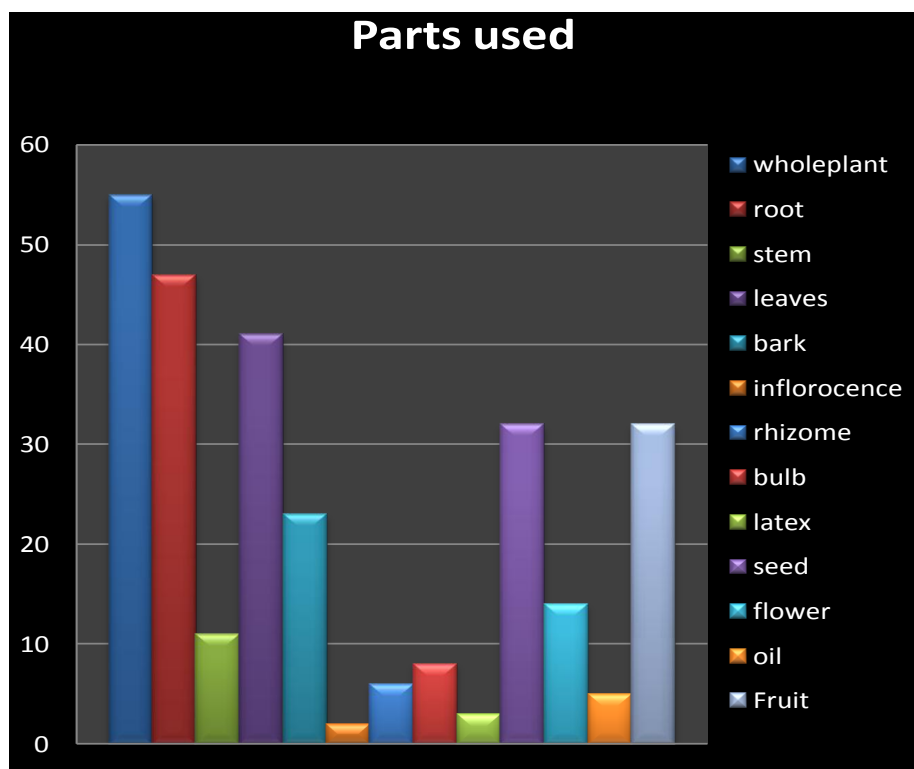


Figure 3. Parts used in different ethno-medicine.

The analysis of the status of the species indicated that 41 are rare, 10 are threatened, 88 are common, 14 are endangered and 35 are cultivated (Figure 2). Various parts of these species such as: whole plant (55), roots

(47), fruits (32), stem (11), leaves (41), barks (23), inflorescence (2), rhizome (6), bulbs (8), latex (3), seeds (2), flowers (14) and oil (5) were used in different ailments (Figure 3).

DISCUSSION

A large number of medicinal plants of great commercial value grow spontaneously in the forests. Some of these grown in the valleys, some in sub-mountain tracts while some other in various altitudes. Forestry plays an important role in the economy of the district. A number of workers have explored the utility of Himalayan flora (Duthie, 1906; Osmaston, 1927; Gupta, 1968; Rau, 1975). But, however, more emphasis was laid on their systematic rather than their ethno-medicinal used (Gupta, 1960; Shah et al., 1971; Pangtey, 1980). The present attempt has been designed to explore the diversity and ethno-medicinal significance of the floral habitat of this region. The list given in Table 1, shows that a large number (188 species) of local flora are used in the traditional medicine system besides local/folkloristic system of medicine in Almora district, comparison to nearby Nainital area have 166 species having medicinal importance (Kharkwal, 2009). Few of the species have been exploited to such an extent that their existence is threatened due to over-exploitation. There are a large number of plants in this region, which can be exported on commercial scale and can be source of income generation. It will also benefit the local inhabitants residing in the interior and remote areas. However, the collection of such plants should preferably be done in a planned and systematic manner through experts in government organizations so that the herbal wealth is not over exploited. Due to unscientific collection and over exploitation many of the medicinal plants are on the verge of extinction. All the forest based medicinal herbs can be cultivated in congenial agro-climatic conditions under the guidance of technical experts. Most of crude medicinal plants have yet not been taken up for regular cultivation on commercial scale.

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