



## ETHNO-MEDICINAL PLANTS USED BY INDIGENOUS PEOPLE OF KANDA RANGE, CHOPAL FOREST DIVISION, HIMACHAL PRADESH

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### ABSTRACT

The present study was carried out to document traditional knowledge on ethno-medicinal plants used by indigenous people of Kanda range, Chopal Forest Division, Himachal Pradesh. Information on these plants was collected from 109 people including traditional healers of ten different villages through semi-structured interview during May-June, 2016. A total of 57 ethno-medicinal plants recorded from the region belong to 35 families and are used to treat various diseases. Of these, 9 were trees, 7 shrubs, 38 herbs and 3 climber species. It was observed that more than forty percent people interviewed didn't possess any

knowledge about the ethno-medicinal plants, which clearly reflects the diminishing trend in knowledge about the medicinal plants. Hence, documentation of the traditional knowledge is very important and this will help in conservation of knowledge and also opportunity for using it in future.

**KEYWORDS:** Traditional knowledge, Ethno-medicinal plants, Traditional healers, Indigenous people.

### INTRODUCTION

The dependence of human being on plants is from time immemorial, and our knowledge of the intimate relationship between early man and plants has come to us mainly through surviving traditions. Utilization of plants for medicinal purposes in India has been documented long back in ancient literature (Charak Drdhabala, 1999). However, organized

studies in this direction were initiated in 1956 (Rao, 1996) and of late, such studies are gaining recognition and popularity to preserve not only traditional knowledge but also deteriorating useful plant species. The people of the rural areas are the repository of accumulated experience and knowledge about traditional uses of medicinal plants, but due to modern civilization invading in these belts, knowledge about the use of traditional herbal wealth by people is diminishing rapidly. Himachal Pradesh is a hilly state with altitude range from 350m to 7000m above mean sea level and is considered as the veritable emporium of medicinal and aromatic plants in western Himalaya region. The flora included about 8000 species of angiosperm, 44 species of gymnosperm and 6900 species of fungi (Singh and Hajra, 1996). These included some 1600-1800 species of medicinal plants (Samant *et al.*, 2007). The ethno-botanical knowledge possessed by the communities through trial and error is getting depleted, with the advent of modern education and cultural changes. Hence, documentation of ethno-botanical knowledge is highly essential. Moreover, over-exploitation coupled with habitat degradation has already threatened many medicinal plants in its natural habitats. Documentation of such indigenous knowledge is essential for conservation and utilization of biological resources. Several efforts have been made to document the traditional ethno-botanical knowledge of the people in Himachal Pradesh Uniyal and Chauhan (1971), Chauhan (1998), Kapahi (1990), Kala and Manjrekar (1999), Sharma and Rana (1999), Singh (1999), Sood (2001), Singh (2004), Singh *et al.*, (2008), Kumar and Choyal (2102). However, information about the ethno-botanical uses of medicinal plants of study region is lacking, in relation to the floristic diversity. Keeping this in view, the present study was undertaken with the objective to document ethno-medicinal plants used by indigenous people of Kanda range, Chopal Forest Division, Himachal Pradesh.

## MATERIALS AND METHODS

Kanda Range of Chopal Forest Division, Shimla circle of Himachal Pradesh, has three forest blocks and 11 forest beats. The total geographical area of the range is 12481.71 ha, out of which 4177.28 ha is DPF and 8304.87 is UPF (Somal, 2003). The entire area is mountainous and is having heterogeneous mixture of metamorphic and sedimentary rocks with sparse exposure of intrusive igneous granite. Sainj Khand, a small tributary of Tons river drains the region. The climate is temperate with well marked seasons in the subtropical zone. The average annual rainfall of the area is around 1200 mm; the maximum annual average temperature goes up to 33°C in the month of June and average minimum annual temperature falls to 5°C in the month of January. Most parts of the area receive winter snow except for

some lower regions especially area of Sainj beat. Vegetation of the area is subtropical to temperate type (Somal, 2003).

The detailed surveys among the local people were conducted throughout the study area. In total, eleven different villages (one village from each beat) of Kanda forest range of Chopal Forest Division, Shimla circle of Himachal Pradesh were selected. Informants were first identified through informant referral by other informants as knowledgeable. Information on medicinal plants was collected from 109 people including traditional healers through semi-structured interview during May-June, 2016. The uses of each species were cross checked with the different informants. The efforts were made to identify plant species in the field and those which could not be identified in the field were brought to the laboratory and identified with the help of regional floras Hooker (1872), Collett (1921), Chowdhery and Wadhwa (1984), Polunin and Stainton (1984) and herbarium at HFRI, Shimla (H.P). The plant specimens were dried processed and preserved in the form of herbarium.

## RESULTS AND DISCUSSION

The present observation revealed that the native people of Kanda range those lived in remote area are largely dependent upon the surrounding plant resources. A total of 57 ethno-medicinal plants recorded from the region belong to 35 families and are used to treat various diseases. Of these, 9 were trees, 7 shrubs, 38 herbs and 3 climber species (Figure 1 & Table 1). The family Ranunculaceae and Rosaceae had maximum four ethno-medicinal species each. Various plant parts such as leaves, bark, roots, flowers, etc are used for medicinal purposes. Of these, the most used part for medicinal purpose was root (37%) followed by leaves (28%) and Bark 9%, seeds, fruits, stem, tuber, flower and whole plants were consists of 26% (Figure 2). A similar study was carried out by Bhat *et al.* (2013), where the consensus of informants for the roots and rhizomes of plants was the most frequently used (68%). It is also reported that roots are the most used plant parts (Singh and Rawat, 2011).

These medicinal plant species are used for the treatment of various ailments like muscle pain, anti-inflammatory, eye disease, stomach-ache, jaundice, kidney stone, gastric ulcers, asthma, constipation, snake and scorpion bites, wound healing, pain reliever, etc. Some of the ethno-botanical uses of plants recorded in the present study have also been mentioned in the study conducted by Singh *et al.* (2008). Local people showed interest to share knowledge about plant used for various purpose, however, some informants were hesitant to share knowledge about medicinal plants. They believe that if they share their knowledge with other peoples the

effect of these plants will result in reducing the healing power of the species. Such hesitation to share the knowledge has also been reported by Rani *et al.* (2013). Regarding the knowledge of the medicinal plants, it was observed that about forty percent people interviewed didn't possess any knowledge about the ethno-medicinal plants (Figure 3). The people themselves say that, compared to them, their forefather knew much more. The most important medicinal plants of the region include; *Angelica glauca*, *Arnebia benthamii*, *Artemisia brevifolia*, *Berberis lycium*, *Bergenia ciliata*, *Dactylorhiza hatagirea*, *Podophyllum hexandrum*, *Thalictrum foliolosum*, *Trillium govonianum*, *Valeriana jatamansi* and *Viola serpens* are most important species. *Angelica glauca* is used for stomach gas trouble, to get relief from vomiting in children and also used as cardiac stimulant, flavouring agent in *Dal* and also gives vitality and strength to women after delivery. It is also reported that *A. glauca* is used for indigestion and constipation (Bhat *et al.* 2013). *Berberis lycium* is used in Ayurveda and Unani for treating eye disorders (Kritikar and Basu, 1981). Besides, eye flu treatment, *B. lycium* also used in treatment of fever and jaundice in the study area. Use of *Berberis* spp for treating of piles has also been reported by (Rani *et al.*, 2013) from Kangra district. Similarly, ethno-medicinal uses of some of medicinal plant species recorded during the present study have been mentioned by Kala and Manjrekar (1999), Sharma and Rana (1999), Singh *et al.*, (2008). However, there are certain variations in the ethno-botanical use of these medicinal plant species. For example, *Origanum vulgare* was reported to have the properties of an insect repellent by (Sharma, 1998) and to cure dizziness (Singh *et al.*, 2008) however, we found that people in the Kanda area uses leaves paste for curing minor cuts and wounds, besides using roots for curing dizziness and fever. Uses of lesser known 35 species like *Capparis spinosa* has not been mentioned much, however we observed that this species is considered medicinally very important and used to cure boils and fungal infection in the head.

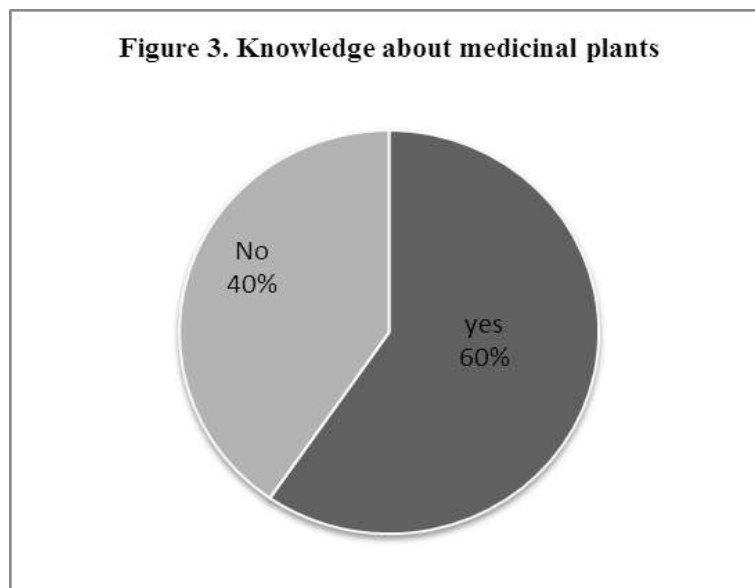
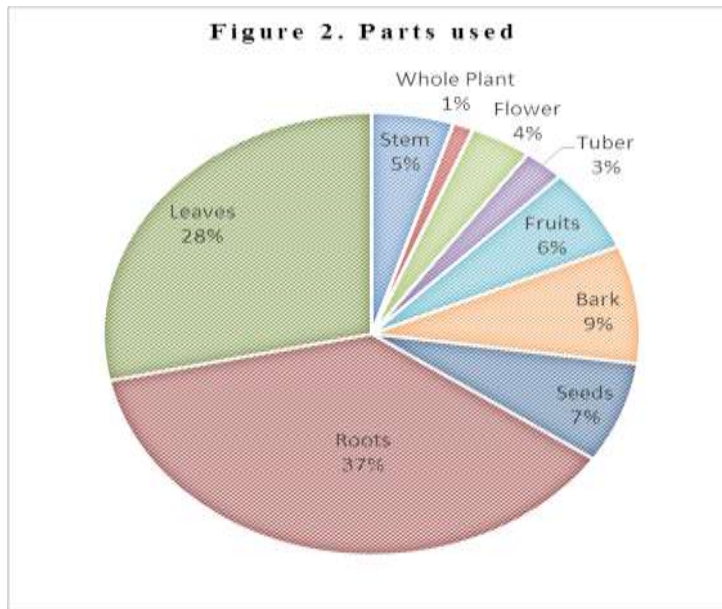
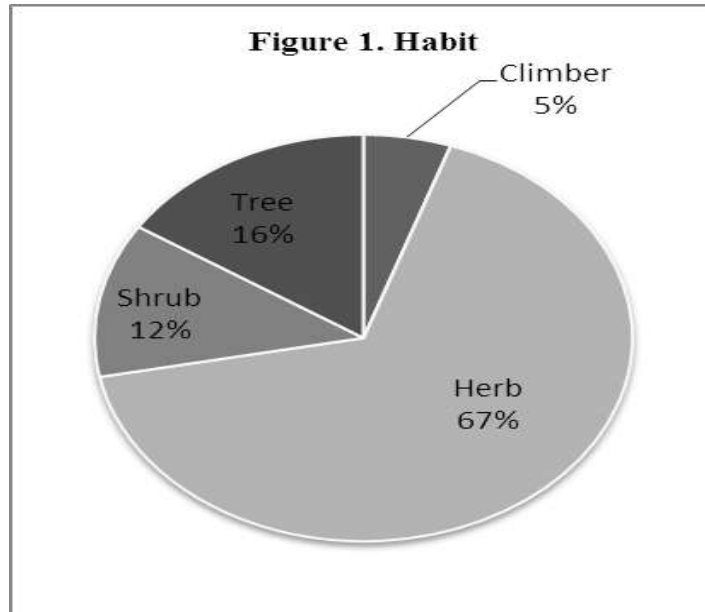


Table 1: The ethno-medicinal plant species of Kanda range, Chopal Forest Division (H.P)

Sr. No	Scientific Name	Local Name	Habit	Family	Parts Used	Ethno-medicinal Uses
1.	<i>Acorus calamus</i> Linn.	Shilbhow, Buch	Herb	Acoraceae	Leaves and roots	Root paste is used to treat joint pain; wound healing on applying the affected part. Root paste is also applied on the body of children and also pinch of paste is given orally to cure fever. It is believed that teeth of infants emerge easily on tying garland of root pieces around their neck.
2.	<i>Angelica glauca</i> Edgew.	Chora, Choreyi	Herb	Apiaceae	Roots	Root powder is used for stomach gas trouble, to get relief from vomiting in children and also used as cardiac stimulant. Besides, it is also used as flavouring agent in <i>Dal</i> . It gives vitality and strength to women after delivery.
3.	<i>Arisaema flavum</i> (Forssk.) Schott	Onchada, Sanpkifali, Jhamusha	Herb	Araceae	Tubers	Tubers are used in preparation of medicine for snakebite, boils and piles.
4.	<i>Arnebia benthamii</i> (Wall. ex G.Don) I.M.Johnst.	Ratanjot	Herb	Boraginaceae	Roots	The herb is considered useful to treat ailments of the tongue and throat. Dry roots are mixed in mustard oil and applied as anti hair fall tonic.
5.	<i>Artemisia brevifolia</i> Wall. ex DC.	Chhamber	Herb	Asteraceae	Leaves	Leave extracts/juice is use for wound healing. Aerial parts of the plant are boiled with mustard oil and used for massaging to get relief from bodyache.
6.	<i>Atropa belladonna</i> L.	Dhatura	Shrub	Solanaceae	Leaves and roots	It used as pain reliever, muscle relaxer and anti-inflammatory.
7.	<i>Berberis lycium</i> Royle	Kashmal	Shrub	Berberidaceae	Roots	Roots are chopped and boiled in water and allowed to cool then strained through muslin cloth and solution is used to cure eye flue. It is also given to cure fever,

						jaundice and piles.
8.	<i>Bergenia ciliate</i> (Royle) A.Br. ex Engl.	Dhaklamu, Patharthod	Herb	Saxifragaceae	Roots	Roots are used in fever and applied on boils. Root powder is taken orally for dissolving bladder stones.
9.	<i>Cannabis sativa</i> Linn.	Bhang	Herb	Cannabaceae	Whole plant	Leaves are wrapped in cloth and heated, and then pile patient has to apply warm cloth on affected part give warm. Seeds roasted and mixed with rice meal are useful in curing dysentery. Seed oil or leaves paste is useful in curing burn.
10.	<i>Capparis spinosa</i> Linn.	Ninai	Shrub	Capparaceae	Leaves, stems and roots	Plant material is grinded and paste is applied on head to cure boils. This paste can also be applied on forehead to get relief from headache.
11.	<i>Cedrus deodara</i> (Roxb. ex D.Don) G.Don	Deodar	Tree	Pinaceae	Roots and stem.	Cedar oil is used to treat itching skin.
12.	<i>Chenopodium album</i> Linn.	Bathu	Herb	Amarantha-ceae	Leaves and flowers	It is used in the treatment of rheumatism, bug bites, sunstroke, urinary problems, skin problems etc.
13.	<i>Clematis vitalba</i> Linn.	Bale, and Old man Beard	Climber	Ranunculaceae	Leaves	Leave paste is used to cure piles by applying it on affected part.
14.	<i>Cocculus villosus</i> DC.	Naaldhal Jari	Climber	Menisperm-aceae	Roots	Root paste is taken orally in empty stomach in morning time for curing dislocated stomach and navel.
15.	<i>Cryptolepis buchanani</i> Roemer et Schultes	Nirbhishi	Climber	Apocynaceae	Roots and stems	Root paste is used in snake- bite and dog bite. It also cures cut and wounds.
16.	<i>Curcuma domestica</i> Valetton	Haldi	Herb	Zingiberaceae	Roots/Rhizomes	Turmeric powder is taken to heal stomach infection and in stomach-ache, Powder mixed with mustard oils is applied on cut and wounds to stop bleeding.
17.	<i>Dactylorhiza hatagirea</i> (D.Don) Soo	Hath Panja	Herb	Orchidaceae	Roots/Rhizomes	Juice extracted from tuber is used as tonic and aphrodisiac. Root extract is also given

						in intestinal disorders and stomach-ache.
18.	<i>Delphinium vestitum</i> Wall. ex Royle	Kaligatti	Herb	Ranunculaceae	Fruit.	Root powder is used in stomach-ache and to cure fever.
19.	<i>Eleusine coracana</i> (L.) Gaertn.	Koda	Herb	Poaceae	Seeds	<i>Eleusine coracana</i> flour <i>chapatti</i> are eaten to control diabetes.
20.	<i>Fragaria vesca</i> Linn.	Bhumbal	Herb	Rosaceae	Roots	Roots are given to women to cure infertility.
21.	<i>Gentiana kurroo</i> Royle	Karvi	Herb	Gentianaceae	Roots.	Root powder is used to cure jaundice, stomach-ache and diabetes problems.
22.	<i>Girardinia heterophylla</i> (Vahl) Decne.	Bhabhar	Shrub	Urticaceae	Roots	Root paste is used to cure pimple and boils.
23.	<i>Hedychium spp</i>	Kachoor	Herb	Zingiberaceae	Roots/ rhizomes	Root powder is used for stomachache.
24.	<i>Hordeum vulgare</i> L.	Joe, Jau	Herb	Poaceae	Seeds	Seed boiled in water and taken in empty stomach to dissolve kidney stone.
25.	<i>Kalanchoe spathulata</i> DC.	Noon	Herb	Crassulaceae	Barks and leaves	Leaf paste is used to cure bone fracture. Leaves are crushed, and mixed with butter and applied on boils.
26.	<i>Lactuca spp</i>	Dhudhiyamoru	Herb	Ranunculaceae	Roots and leaves	The entire plant is used as medicine. It is used in the treatment of snake and scorpion bites, contagious infections and inflammation of the intestines.
27.	<i>Macrotyloma uniflorum</i> (Lam.) Verdc	Kulath	Herb	Fabaceae	Seeds	Locally known as Kulth <i>dal</i> is home remedy for eliminating kidney stones from body. Kulth soup is also effective in getting relief from jaundice.
28.	<i>Nicotiana tabacum</i> Linn.	Tambakhoo	Herb	Solanaceae	Roots and leaves	Roots and leaves paste is used to cure boils & pimple.
29.	<i>Ocimum sanctum</i> Linn.	Tulsi	Herb	Lamiaceae	Leaves	Crushed leaves are very effective in fever, cough, bronchitis and other diseases of lung.
30.	<i>Origanum vulgare</i> Linn.	Katia, Jakjodi, Van-tulsi	Herb	Lamiaceae	Leaves and roots	Roots are smelled to cure dizziness and also used to cure fever in children. Leaves paste



						is effective in curing minor cuts and wounds.
31.	<i>Oxalis corniculata</i> Linn.	Katisar, Biraiki Sash, Katti-mitthi	Herb	Oxalidaceae	Leaves and roots	Leave extract is used to cure eye infection. Leaves paste is also applied on forehead to get relief from headache. It is believed that with citation of <i>mantaras</i> , it is used to cure herpes zoster ( <i>bhramsutri</i> ).
32.	<i>Pinus roxburghii</i> Sarg.	Chir, Saral	Tree	Pinaceae	Roots and bark.	Roots paste is used to treat joint pain. Dry root powder is used to cure asthma. The bark of small stem is tied on fracture part of arms and legs to cure the bone fracture.
33.	<i>Plantago ovata</i> Phil.	Isabgoal	Herb	Plantaginaceae	Seeds	Seeds are used in gastric complication, burning sensation in stomach, other stomach disorders and dysentery.
34.	<i>Podophyllum hexandrum</i> Royle	Makori. Bankakri	Herb	Berberidaceae	Fruits and roots	The root powder is administered internally for gastric ulcers. It is applied as a paste on cut and wounds for regeneration of the tissue. Fruit are edible and have anti-cancer property.
35.	<i>Prunus cerasoides</i> D.Don	Pajja	Tree	Rosaceae	Flowers and leaves	Flower juice extract is used to cure high blood pressure, ear problem and act as anti-hair fall. Leaves are offered to local deity during <i>Shivaratri</i> .
36.	<i>Quercus dilatata</i> Royle	Moru	Tree	Fagaceae	Leaves	Young leaves (when it red color) are chewed to cur sore mouth and throat
37.	<i>Quercus semecarpifolia</i> Sm.	Khoreyu, Kharsu	Tree	Fagaceae	Bark and roots	Root and bark extract is used to treat kidney stone.
38.	<i>Rhododendron arboreum</i> Sm.	Buras	Tree	Ericaceae	Bark, flowers and leaves	Flowers are used for making cold drinks and jams. Tender leaves are crushed and applied on the forehead to get relief from headache. Bark is immersed in water over night and sieved and drunk in morning to

						cure asthma.
39.	<i>Rosa moschata</i> Benth.	Kujain. Kuja	Shrub	Rosaceae	Flowers	Flowers yield essential oils and used as perfumes. Flowers are offered to local deity.
40.	<i>Rubus niveus</i> Thunb.	Achhe	Shrub	Rosaceae	Roots	Root paste is mixed with leaves of <i>Origanum vulgare</i> and boiled in water.
41.	<i>Rumex nepalensis</i> Spreng.	Janglipalak, Garash. Shuchri. Kharash.	Herb	Polygonaceae	Roots and leaves	An infusion of the leaves is applied on ulcers for quick healing. Leaves are used to get relief from constipation. Root paste is used to cure, boils, pimples and tonsil.
42.	<i>Saccharum munja</i> Roxb	KanshGhaas	Herb	Poaceae	Roots	Root powder is used to enhance fertility in women. Decoction of root is also taken to cure piles.
43.	<i>Solanum tuberosum</i> Linn.	Aaloo	Herb	Solanaceae	Leaves and tubers	Paste of the leaves is applied to cure skin infection. The herb also possesses diuretic and laxative properties. Tubers paste is effective against burn.
44.	<i>Terminalia bellirica</i> (Gaertn.) Roxb	Baheda	Tree	Combretaceae	Fruits	Fruit powder is used for getting relief from constipation and gastric problems.
45.	<i>Terminalia chebula</i> Retz.	Harad	Tree	Combretaceae	Fruits	Fruit powder is used for getting relief from constipation and gastric problems.
46.	<i>Terminalia Spp.</i>	Rasnayi, Noon	Tree	Combretaceae	Bark	Bark powder paste is used for treating sprain and bone fracture. It is tied with the help of cloth on affected part.
47.	<i>Thalictrum foliolosum</i> DC.	Pilii-jarin	Herb	Ranunculaceae	Roots	Root paste is applied on snake sting and also taken orally. Roots are boiled and stained and taken to cure weak liver.
48.	<i>Tinospora cordifolia</i> Miers	Giloe	Herb	Menispermaceae	Bark and stem	Fresh stem powder is effective against rheumatism. It is considered as best blood purifier.
49.	<i>Thymus serpyllum</i> Linn.	Van ajwain	Herb	Apiaceae	Seeds	Mixture of van-ajwain and honey mixed with rice is taken to cure dysentery

50.	<i>Trillium govianianum</i> Wall.	Nagchhatri, Satwa	Herb	Melanthiaceae	Leaves and roots	Leaves and root paste is used to cure minor cuts, bounds and foot cracks.
51.	<i>Urtica dioica</i> Linn.	Kukua, Karla	Herb	Urticaceae	Leaves	Boil leaves in water, add some turmeric powder and salt to it and extract obtained is taken to treat cold. Leaves paste mixed with kerosene oil is useful in treating sprain. Leaves boiled and cooked as vegetable adding common salt is useful in curing constipation.
52.	<i>Urtica spp.</i>	Angari	Herb	Urticaceae	Leaves	Leaves paste is applied to cure burn wounds.
53.	<i>Valeriana jatamansi</i> Wall.	Pekhu, Mushkbal, Nihani	Herb	Valerianaceae	Roots and leaves	Decoction of the roots and leaves is a beneficial remedy in acute stomachache.
54.	<i>Vernonia anthelmintica</i> (L.) Willd.	Kaliziri	Herb	Asteraceae	Seeds	Regard as tonic, stomachic, astringent, also used to cure asthma and bronchitis.
55.	<i>Viola serpens</i> Wall.	Vanakhsa	Herb	Violaceae	Leaves and flowers	Decoction of the leaves and flower is given to cure fever and stomachache. Decoction is also effective to cure sore throat.
56.	<i>Zanthoxylum armatum</i> Druce	Timur, Tirmir	Shrub	Rutaceae	Bark, leaves and fruits	Leaves are chewed to get relief from gum and teeth pain. Decoction of leaves, fruits is used to treat cold, cough and fever. Leaves are also used as spices with meat and <i>dal</i> . Stems are used for brushing teeth and it gives relief from toothache.
57.	<i>Zingiber officinale</i> Roscoe	Adruk	Herb	Zingiberaceae	Rhizomes/roots	Rhizomes taken with honey is used to treat cough and cold. Juice extracted from rhizome is mixed with honey and applied on eye-lids to get relief from pain in eyes.

## CONCLUSION

Traditional knowledge of medicinal plants and their use by indigenous healers and drug development during the present scenario are not only useful for conservation of cultural tradition and biodiversity but also for community health care and drug development in the local area. It is imperative to document ethno-botanical knowledge on medicinal plant species systematically, before it is lost with urbanization, modernization and fast dwindling of natural resources. Besides, phyto-chemical and pharmacological studies on medicinal plants should be carried out. Such studies are important since sizeable rural population still uses these plants for medicinal purposes. It is therefore important to document the ethno-medicinal knowledge systematically before it is lost with urbanization.

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