

# Ethno-Veterinary Plants Used in Kumaun Himalaya: Traditional Knowledge and Practices

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## Abstract

The people of far-flung rural areas still depend to a large extent upon plants and household remedies for curing veterinary ailments. The folk knowledge of ethnoveterinary medicine and its significance has been identified by the traditional communities through a process of experience over hundreds of years. Present study elucidate traditional knowledge related to the use of plants for ethno-veterinary purposes in Kumaun Himalaya. Field surveys were conducted in eight tribal villages: four in Almora District (Dharanaula, Duugalkhola, Bukh, and Maal Gaon) and four in Bageshwar District (Garser, Matena, Kaneri, and Tanikhet). Data collection involved interactions with local informants, notably experienced elderly medicine practitioners and Vaidyas, who provided detailed insights into the medicinal plants utilized in livestock healthcare. A total of 60 ethno-veterinary plants, belonging to 39 botanical families, were identified. The Poaceae family was the most prominent, represented by five species, followed by Solanaceae, with four species. Leaves were identified as the most commonly used plant part in remedy preparation, followed by seeds, roots, and whole plant. These plants address a range of livestock ailments, including fever, pain, sprains, gastric issues, cuts and wounds, mastitis, and joint pain. The findings underscore the importance of preserving this rich traditional knowledge and the associated plant biodiversity. Active community participation is vital for conserving these resources and ensuring their sustainable use for future generations.

**Keywords:** Ethno-Veterinary; Traditional Knowledge; Medicinal Plants; Uttarakhand

## Abbreviations

IHR: Indian Himalayan Region; WHO: World Health Organization.

## Introduction

The Indian Himalayan Region (IHR) is recognized as one of the world's richest repositories of biological diversity and is often referred to as a "storehouse" of valuable medicinal plant species. The inhabitants of the IHR rely extensively

on this biodiversity for a wide range of purposes, including medicine, food, fuel, fodder, timber, agricultural tools, fiber, religious rituals, and other daily needs [1,2]. Uttarakhand, an integral part of the IHR, is situated between latitudes 28°43'45"-31°08'10" N and longitudes 77°35'5"-81°02'25" E [3]. Due to the region being a remote and inhospitable one, the medicinal plants found here play a unique role for healthcare practices from time immemorial. According to the World Health Organization (WHO), 80% of the world population use natural resources in healthcare mainly based on plants and plant extracts [4,5]. Animal husbandry is the

backbone of the rural sector of the Himalayan region and development of this sector may improve the living standard of rural communities. Livestock provides a wide range of services and products including animal power, wool and supplementary nutrition [6]. In spite of environmental compulsions and hardships of remote areas, the spectrum of livestock diversity in this region is rich and varied. This is evident from the occurrence of different breeds of sheep, goats, cattle, horses, mules, buffaloes and poultry etc. In these remote areas, where modern veterinary health curative systems are very poor, the traditional societies have evolved several indigenous veterinary health care practices to maintain a variety of livestock populations [7].

Ethnoveterinary science is a comprehensive field that encompasses people's perspectives on veterinary healthcare, including their beliefs, skills, knowledge, and practices [8]. Medicinal herbs, which have been used for centuries to treat animal ailments, play a crucial role in local health practices. In remote areas, particularly in the Himalayan region, where access to modern veterinary services is limited, the use of medicinal plants by local healers is vital for the wellbeing of animals [9]. Consequently, pastoral and agricultural communities, which rely heavily on livestock for income and food security, place significant value on traditional knowledge of ecological resources for veterinary care [10]. Traditional ethnoveterinary knowledge is predominantly passed down orally from generation to generation through traditional remedies, drawings, stories, poems, proverbs, folk myths, and songs. This reliance on oral transmission makes such knowledge vulnerable to loss, underscoring the urgent need for systematic recording and documentation [11]. Systematic documentation of traditional medicinal knowledge related to local biota is essential for preserving indigenous practices, supporting biodiversity conservation, and exploring potential avenues for developing new veterinary medicines. In this context, efforts have been made to compile and document extensive knowledge of plants used in veterinary practices, including their traditional

applications, preparation methods, and therapeutic benefits.

## Materials and Methods

The present study was conducted through field surveys in eight villages: four in Almora District (Dharanaula, Duugalkhola, Bukh, and Maal Gaon) and four in Bageshwar District (Garser, Matena, Kaneri, and Tanikhet) of the Kumaun Himalaya. The study area is geographically situated between 29.5971°N, 79.6591°E, and 29.8404°N, 79.7694°E. During the surveys, interviews with local informants were conducted to gather information on ethno-veterinary plants and their utilized parts. Data collection involved structured interviews and consultations with experienced elderly medicine practitioners and local vaidyas, who possess extensive knowledge of medicinal plants. Plant specimens were collected and prepared for herbarium documentation using standard botanical methods. Information such as local names, habitats, plant parts used, and specific medicinal applications was meticulously recorded. This data was systematically organized into tables for detailed analysis, ensuring a comprehensive understanding of the traditional knowledge associated with these plants.

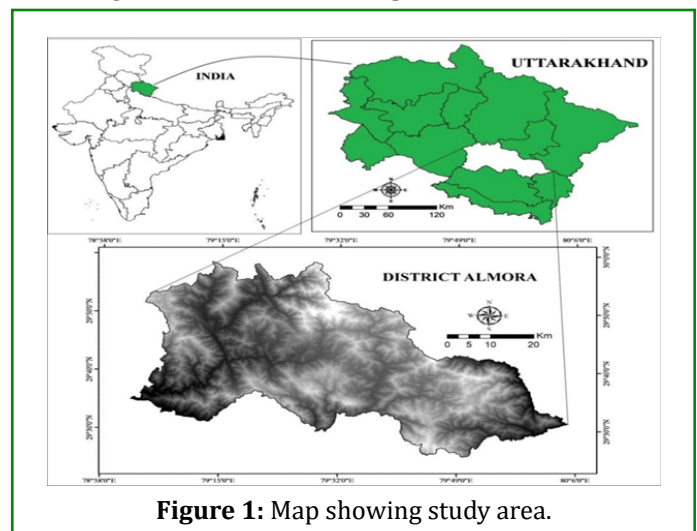


Figure 1: Map showing study area.

Botanical Name	Common Name	Family	Parts Used	Disease Treated	Method of Administration
<i>Achyranthes aspera</i>	Chirchita	Amaranthaceae	Whole plant	For teeth problems	One palmful of whole plant in ½ liter of water is useful in teeth problems.
<i>Aesculus indica</i>	Pangar	Sapindaceae	Fruit	For gastric problems	One palmful of fruit decoction in ½ litre of water given with gur (jaggery).
<i>Allium sativum</i>	Lehsun	Lilliaceae	Leaves	Snake Bite	Mix the leaves of <i>Allium sativum</i> and <i>Azadirachta indica</i> , and juice is applied to drink with water.

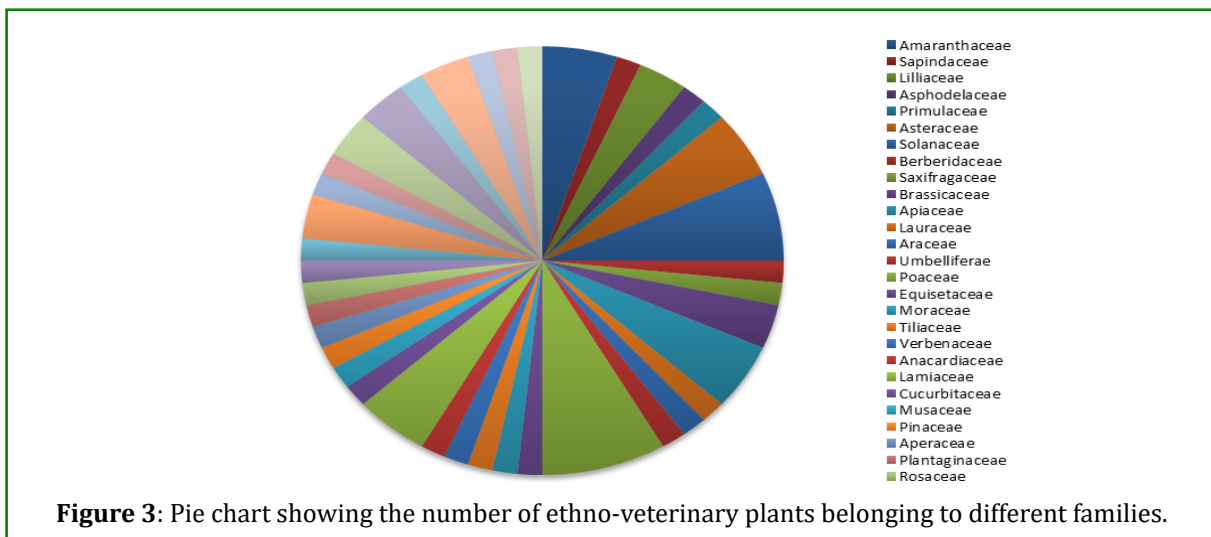
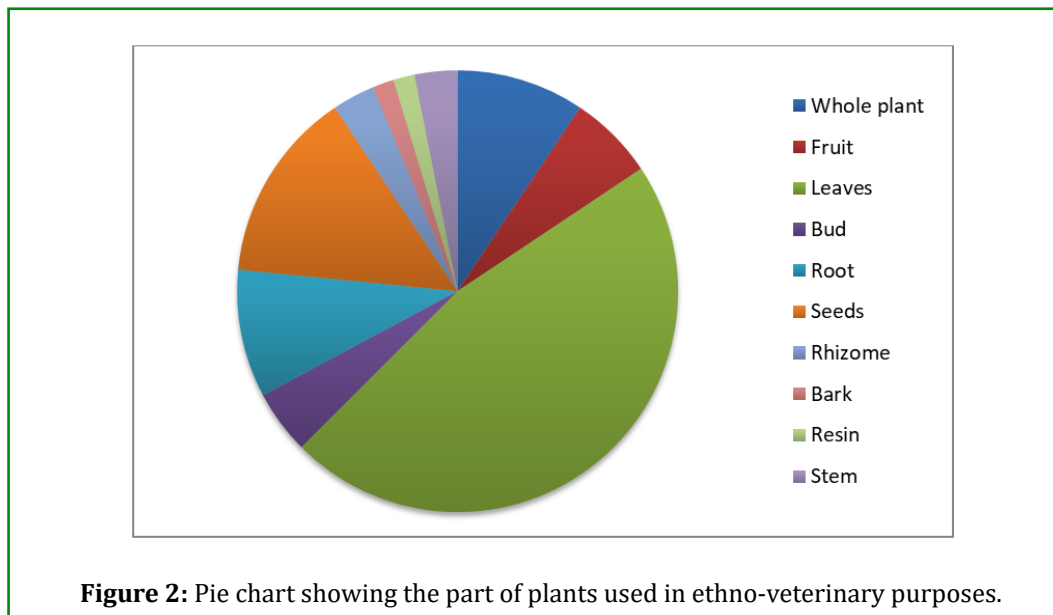
<i>Aloe vera</i>	Ghrit kumari	Asphodelaceae	Leaves	Stomach Problem	Juice of leaves is given ½ cup a day for cattle.
<i>Amaranthus viridis</i>	Chaulai	Amaranthaceae	Leaves	On wounds	Paste of young leaves are used in treating wounds of cattle.
<i>Anagallis arvensis</i>	Vish Khaparia	Primulaceae	Fruit/ leaves	As pain killer	Two palmfuls of fruit/leaves given daily
<i>Artemisia parviflora</i>	Patti	Asteraceae	Leaves/bud	For round worm	One palmful of leaves/bud decoction in a liter of water is given 1/8 liter in one-hour intervals.
<i>Asparagus racemosus</i>	Kairuwa	Lilliaceae	Bud	In Liver Problem	One palmful bud given twice a day.
<i>Atropa belladonna</i>	Dhatur	Solanaceae	Leaves	As pain killer	Pasted of one palmful of leaves burns in oil and acts as an ointment.
<i>Berberis aristata</i>	Kilmori	Berberidaceae	Root and stem	In fever and weakness	One palmful root/stem decoction in ½ litre of water is given one cup daily.
<i>Bergenia ciliata</i>	Silphora	Saxifragaceae	Roots	For hydrophobia	Two palmfuls of root decoction in ½ liter of water are given in one cup thrice a day.
<i>Brassica napus</i>	Kali Sarso	Brassicaceae	Seeds	In poor appetite	Two palmfuls of seed are given with fibrous food and gur twice a day.
<i>Centella asiatica</i>	Brahmi	Apiaceae	Leaves	For brain fever	Apply a paste of green leaves on the forehead during fever.
<i>Chenopodium album</i>	Bethuwa	Amaranthaceae	Leaves/ seeds	For worm	Two palmfuls of seed are given before breakfast (green fodder).
<i>Cinnamomum tamala</i>	Dalchini	Lauraceae	Leaves	Gastric problems	Powder of leaves and bark with half a palmful fiber food is useful
<i>Colocasia esculenta</i>	Pindalu	Araceae	Leaves	For dysentery	Dried leaves are given with salt once a day.
<i>Coriandrum sativum</i>	Dhaniya	Umbelliferae	Seeds	In Poisoning	Seed powder mixed with water and applied to drink.
<i>Cuminum cyminum</i>	Jeera	Apiaceae	Seeds	For indigestion	One palmful of seed in ¼ liter of water is given daily.
<i>Cynodon dactylon</i>	Dhoob	Poaceae	Leaves, rhizome	For indigestion	Leaves mixed with jaggery and paste of fresh rhizome and haldi is made with honey.
<i>Datura metel</i>	Dhatura	Solanaceae	Seeds	As pain killer	25g roasted seed in one liter of oil is used for massage.
<i>Datura stramonium</i>	Dhatura	Solanaceae	Leaves	In injury as pain killer	Pasted of one palmful of leaves acts as ointment.
<i>Eleusine coracana</i>	Maduwa	Poaceae	Seeds	For sterility	Boiled seeds of Maduwa, along with a pinch of salt, are fed to animals.

<i>Equisetum arvense</i>	Horsetail	Equisetaceae	Whole plant	For urinary problems	Half palmful whole plant decoction in one liter water given.
<i>Ageratina adenohora</i>	Kala basa	Asteraceae	Leaves	Cuts and wounds	Extract of leaves is used to cure cuts and wounds.
<i>Ficus auriculata</i>	Timil	Moraceae	Leaves	For energy and strength	Slightly dried leaves are boiled with husk and given to cattle just after delivery as an energetic food.
<i>Grewia optiva</i>	Bhimal	Tiliaceae	Bark	On factures	Bark paste is applied as a plaster on fractures of cattle.
<i>Hordeum vulgare</i>	Jau	Poaceae	Leaves	For sterility	Leaves of Jau pounded with cooked grains of Madira and Methi seeds are administered orally once or twice a day for one month.
<i>Lantana camara</i>	Kuri	Verbenaceae	Leaves	For joint pain	The tender leaves and twigs are ground, and then a decoction of leaves is given to cattle for relieving joint pain.
<i>Lycopersicon esculentum</i>	Tamatar	Solanaceae	Fruit	In bloating of stomach	Fruit juice is applied for treatment of bloating of cattle stomach.
<i>Mangifera indica</i>	Aam	Anacardiaceae	Leaves	Infection of mouth	By directly chewing leaves for treatment of cattle mouth infection.
<i>Mentha arvensis</i>	Pudina	Lamiaceae	Leaves	Dysentery	Milled fresh leaves and mixed with black salt and used to eat with water.
<i>Momordica charantia</i>	Karela	Cucurbitaceae	Leaves	Treat anemia	Extract of leaves is used to treat anemia for cattle.
<i>Musa paradisiaca</i>	Kela	Musaceae	Leaves	In blotting	Chop 3-4 leaves and feed them to the animal twice a day in the early stages of blotting.
<i>Trachyspermum ammi</i>	Ajwain	Lamiaceae	Whole plant	Indigestion	Four palmfuls of whole plant with fibrous food twice a day.
<i>Pinus roxburghii</i>	Pine	Pinaceae	Resin	Broken horns	Pine resin is applied on broken horns of livestock.
<i>Piper nigrum</i>	Kaali mirch	Aperaceae	Seeds	Indigestion	Grind and mix with black salt with water and use to drink.
<i>Plantago ovata</i>	Esabgol	Plantaginaceae	Seeds	In dysentery	One palmful of seed in ½ liter of water makes a semisolid paste given thrice a day.
<i>Prunus persica</i>	Aadu	Rosaceae	Leaves	On wounds	Leaf paste is externally used to cure wounds.
<i>Psidium guajava</i>	Amrood	Myrtaceae	Leaves	Cuts and wounds	Extract of boiled leaves is used to cure cuts and wounds.
<i>Punica granatum</i>	Darim	Lythraceae	Fruits	As antimicrobials	One palmful skull of fruit decoction in ½ liter of water is given in one cup three times a day with gur (jaggery).

<i>Raphanus sativus</i>	Muli	Brassicaceae	Roots	For dysentery	5-6 fresh roots crushed in 1 liter of water are fed orally.
<i>Rheum emodi</i>	Dolu	Polygonaceae	Roots	For Blood purification, energy	One matured root decoction in one liter of water is given three times for vigor.
<i>Ricinus communis</i>	Arandi	Euphorbiaceae	Leaves	For internal injury	Oil of this plant is useful. Use of leaves in heat therapy.
<i>Rumex hastatus</i>	Bhilmora	Polygonaceae	Whole plant	For Skin disease in fever	One palmful of whole plant decoction in 3/4 liter of water is given one cup thrice a day.
<i>Tinospora cardifolia</i>	Giloy	Menispermaceae	Stem	For skin disease	The stem of this plant and <i>Glycine max</i> are ground together and prepared into a thick paste to cure skin disease of livestock.
<i>Trigonella foenum</i>	Methi	Fabaceae	leaves	In Pneumonia	Seeds of ajwain, rhizomes of haldi, leaves of methi, and bamboo are ground and mixed with black pepper and used to eat with water.
<i>Urtica dioica</i>	Sisauna	Urticaceae	Leaves	Skin disease, for lactation	One palmful of leaves is given with fibrous food in a 1h interval.
<i>Glycine max</i>	Bhatt	Fabaceae	Seeds	Weakness	Seeds of <i>Glycine max</i> and <i>Hordeum vulgare</i> boiled with water and used to eat.
<i>Verbascum thapsus</i>	Akalvir	Scrophulariaceae	Leaves	In bronchitis	One palmful of leaves decoction in 3/4 liter of water is given one cup thrice a day.
<i>Zingiber officinalis</i>	Banhaldi	Zingiberaceae	Roots	For internal injury	Paste of roots is given with Jau flour for the treatment of internal injury.
<i>Urtica parviflora</i>	Bicchu ghas	Urticaceae	Leaves	Sprain	Fresh leaves are rubbed on the infected part.
<i>Angelica glauca</i>	Choru	Apiaceae	Root	Acidity	Roots powder mixed with tea and used to drink to cure acidity for cattle.
<i>Hordeum vulgare</i>	Jau	Poaceae	Leaves	Vomiting	Fresh green leaves are directly applied to cure vomiting.
<i>Agave americana</i>	Ramban	Agavaceae	Leaves	Bone fracture	Leaf fibers used to tie the fractured bone.
<i>Tagetes erectus</i>	Genda	Asteraceae	Leaves	Broken horns	Fresh leaves extract is applied for the treatment of broken horns.
<i>Curcuma domestica</i>	Haldi	Zingiberaceae	Rhizome	Mastitis	Rhizome of <i>Curcuma domestica</i> mixed with oil of <i>Brassica campestris</i> is used to cure mastitis.
<i>Origanum vulgare</i>	Jangali tulsi	Lamiaceae	Whole plant	Indigestion	Whole plant with fiber food is used in indigestion.

<i>Triticum aestivum</i>	Gehu	Poaceae	Whole plant	Burning	Seeds are ground and made into a paste used externally for burning of cattle skin.
<i>Calotropis procera</i>	Aak	Asclepiadaceae	Leaves	Arthritis	Leaves of <i>Calotropis procera</i> and the bulb of <i>Allium sativum</i> mixed with mustard oil are rubbed on the infected part.
<i>Lyonia ovalifolia</i>	Anyar	Ericaceae	Buds	Foot and mouth disease	Buds of <i>Lyonia ovalifolia</i> mixed with the bark of <i>Juglans regia</i> with mustard oil are applied externally.

**Table 1:** List of Plants used for Ethno-veterinary Purposes.



## Results and Discussion

The present study highlights the rich diversity of medicinal plants in the study areas, where local communities rely

extensively on ethno-veterinary plants to address livestock ailments. A total of 60 ethno-veterinary plants, spanning 39 botanical families, were identified as being traditionally used for veterinary purposes. The Poaceae family was the

most prominent, represented by five species, followed by Solanaceae, with four species. Leaves were the most frequently used plant part in remedy preparation, followed by seeds, roots, and whole plant. These plants were traditionally employed to treat various livestock conditions, including fever, pain, foot sprains, gastric problems, snake bite, cuts and wounds, mastitis, and joint pain. Similar observations have been reported by other researchers [12-16]. Traditional veterinary herbal medicines in the western part of Almora were previously explored by [17], while indigenous veterinary practices in the Darma Valley of Pithoragarh district was documented by [18]. The present study provides a comprehensive documentation of each plant, detailing their local names, botanical families, plant parts utilized, and specific ethno-veterinary applications. The findings contribute to the preservation and understanding of traditional ethno-veterinary practices in the region, offering valuable insights for future research, sustainable use, and conservation of medicinal plant resources.

## Conclusion

The communities within the study area exhibit a profound respect for their environment and its rich biodiversity, particularly for medicinal plants integral to addressing livestock health challenges. A deep connection exists between the elderly population and these plants, as they possess extensive knowledge of traditional practices passed down through generations. This wisdom reflects a blend of experience and experimentation, offering insights into animal health and evolution that modern allopathy sometimes struggles to address. Medicinal plants in the region hold significant potential for treating a wide range of diseases and disorders, including those considered challenging or incurable by conventional medicine. To safeguard this invaluable heritage, active community participation is crucial. Local involvement can play a pivotal role in the conservation and sustainable use of veterinary medicinal plants, ensuring their availability for future generations. Furthermore, targeted efforts are needed to restore, conserve, and manage vulnerable and critically endangered medicinal plant species. Such initiatives will ensure their sustainable utilization, promote biodiversity conservation, and secure the long-term survival of these vital resources.

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