



*J. Environ. Nanotechnol.*  
Volume 2 (2013) 22-29 pp.  
ISSN (Print) : 2279-0748  
ISSN (Online) : 2319-5541  
[doi:10.13074/jent.2013.02.nciset33](https://doi.org/10.13074/jent.2013.02.nciset33)

## Documentation of Ethno - Veterinary Practices used for Treatments of Different Ailments in Garhwal Himalayan Region

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### Abstract

This study aims to document information about ethanobotanical information of plant used by the people for the treatment of livestock in different parts of Garhwal region of Uttarakhand state. The documentation of biodiversity and its traditional use(s) by the local inhabitant of this region have assumed priority due to the rampant loss of biodiversity, the increasing patent wars on bio-resources. Traditional use of plant and plant resources has a long history in Uttarakhand and its use is rapidly increasing due to having no side effects, easily available at affordable prices and some time only available to the poor especially in remote regions of Garhwal region. The methods employed during the present study were designed with the sole purpose of eliciting the precious wealth of information on the ethno-veterinary uses of medicinal plants by the people of Garhwal region. Field surveys were conducted in the various thickly populated live-stocks rich places of Garhwal region between 2007-11. Key informants were identified after preliminary discussion with the people. Information on ethanobotanical uses of the plants was collected by interviewing key informants of the community using a semi-structured open –ended questionnaire. Usually, the elderly and experienced members of the society, locally known as ‘Vaidyas’, were interviewed. Often, they were accompanied to the field for the identification of plant species used and their preferred habitats. All the relevant information, in particular the mode of preparation, method of use and dosage of each medicinal plant species was recorded.

Ethno-veterinary practices used by the people are interesting, and have been practiced since long back. In general bleeding, foot and mouth disease, gastrointestinal helminthiasis, mange, myiasis, pain, pediculosis, pneumonia, tick infestation and uterine prolapsed were ten common conditions/ailments of animals for which traditional ethno-veterinary prescriptions are usually being used in the area. The data generated by this study will be helpful for making the maximum and sustainable use of plants as well as animal resources. The disappearance of these practices will not only affect poor villagers and their livestock but also be a permanent loss of our culture, heritage and biodiversity. It is finally hoped that ethno-veterinary practices will be useful to the Department of Animal Husbandry, extension workers, scientists, and policy makers in their efforts towards sustainable livestock farming system and might be able to offer a broader range of animal healthcare options in the different regions of Garhwal Himalaya.

**Keywords :** *Ethano-botanical, Livestock, Traditional knowledge, Ethno-veterinary, Biodiversity, Sustainable livestock farming system*

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## 1. INTRODUCTION

People in different parts of the world depend on plant and plant parts to fulfill their daily needs and developed unique knowledge of their utilization. United Nations University proposal defines this unique knowledge as traditional knowledge or 'local knowledge' is a record of human achievement in comprehending the complexities of life and survival in often unfriendly environments. Traditional knowledge may be technical, social, organizational, or cultural was obtained as part of great human experiment of survival and development. There have been very few studies on the ethno-botanical studies of the plants that are used for the treatment of livestock in Garhwal region of Uttarakhand state. The inhabitants of Garhwal Himalayan region, mainly depend on agriculture and livestock rearing for their livelihood. Major portion of Garhwal region falls within the mountainous region where the altitude ranges from 300 to 7817m asl. The variation in altitude has resulted in enormous diversity in plants and animal genetic resources. Different ethnic groups are living here since long back, having dependence on plant species not only for subsistence of their life, supply of fodder as well as treating certain livestock diseases. The practices and remedies used by people are based on knowledge gained through generations of experience and keen observations and is considered as ethno veterinary approach. Various methods of disease prevention and control like de-worming, first-aid, wound dressing etc. are done by the use of local or traditional knowledge which reduces both morbidity and mortality of livestock and increases their production. Some inhabitants who live in higher remote areas of Garhwal region are the main source of ethno veterinary practices. Ethno-veterinary practices and remedies are cost effective, eco-friendly, easy in application, more effective, suitable option in the remote and in-accessible area of Garhwal Himalayan region of Uttarakhand. Only few reports are available in ethno-veterinary practices in Uttarakhand hills. Therefore, keeping the above facts in mind, the present paper is an

effort towards highlighting this appropriate intervention for Garhwal region.

This study aims to document information about ethanobotanical information of plant used by the people for the treatment of livestock in different parts of Garhwal region of Uttarakhand state. The documentation of biodiversity and its traditional use(s) by the local inhabitant of this region have assumed priority due to the rampant loss of biodiversity, the increasing patent wars on bio-resources. Traditional use of plant and plant resources has a long history in Uttarakhand and its use is rapidly increasing due to having no side effects, easily available at affordable prices and some time only available to the poor especially in remote regions of Garhwal region. The traditional knowledge of plants and plant resources is limited to certain key member of the society. They communicate their knowledge to limited members of their periphery if they show interest. Not only that, the younger generations show less interest in this field, that's why we are in a danger of losing the traditional knowledge forever. So the priority should be given to the documentation of traditional knowledge and conservation of existing species and habitats.

## 2. MATERIALS & METHODS

The methods employed during the present study were designed with the sole purpose of eliciting the precious wealth of indigenous traditional knowledge i.e. wealth of information on the ethno-veterinary uses of medicinal plants used by people of Garhwal region of Uttarakhand state. Field surveys were conducted in the various localities inhabited by people during different seasons between 2007-2011. Scientists and students of the college, visited different places. Officials of Animal Husbandry department Government of Uttarakhand were contacted for guidance. For identification of key respondents a small scale rural rapid appraisal (RRA) phase was conducted. A list of veterinarians, local healers and farmers, identified by RRA was prepared.

The documentation presented in this paper are the outcome of several years of experience of authors and trips conducted among the villages of remote areas. Details of plant species included their botanical name and vernacular name. Parts of plants used in the preparation, mode of application, and weather the plants were used alone or in combination with other indigenous components e.g. animal part, honey, common salt, digestive salt, ash, jiggery and soil are also mentioned.

### 3. RESULTS

Ethno-veterinary practices used by the people are interesting, and have been practiced since long back. In general bleeding, foot and mouth disease, gastrointestinal helminthiasis, mange, myiasis, pain, pediculosis, pneumonia, tick infestation and uterine prolapsed were ten common conditions/ailments of animals for which traditional ethno-veterinary prescriptions are usually being used in the area. According to the village members, mastitis is a very common problem in present study area and they had used traditional medicines to treat this disease. Different species are used to treatment: *Artocarpus heterophyllus*, *Asperagus racemosus*, *Eclipta prostrate*, *Solena heterophylla* and *Trichosanthus anguina* are used to treat the mastitis. Most of the medicinal plants are used in juice form which is extracted from different parts of plants followed by paste, fresh plants and powder form. All most all the species are common plants and are found in nearby forest area and grasslands. However, in recent years, the informants have to walk far to collect these plants that had earlier been easily available close to their villages. According to them, rapid deforestation and expansion of agricultural lands are the main reasons for loss of medicinal plants. This study reports some new findings which were not mentioned in previous studies.

The most frequently reported plant species used for ethno-veterinary practices were *Allium sativum*, *Trachyspermum amni*(L.) Sprague, *Brassica campestris*, *Eclipta prostrate*, *Cedrus*

*deodara*, *Zea mays*, *Vitex negundo*, *Prunus persica*, *Daphne mucronata* and *Zingiber zerumbet*. Seeds leaves, root, bark, bulb, oil extract, fruit and rhizome were the frequently used parts of the plants. Ethnoveterinary prescriptions were commonly prepared by grinding, crushing, preparing the decoction in water or any vegetable oil (preferably *Brassica campestris* oil and mixing the ingredients as such. The commonly used modes of administration were feeding, drenching and tropical application

Some important ethno-veterinary treatments are given below:

#### *Acacia katechu*

Katha (*Acacia katechu*) powder sprinkled on injured horn to check bleeding.

#### *Alium cepa*

Bulb paste prepared in 250ml mustard oil is given to animal to cure hoof disease.

#### *Alium sativa*

Dry ginger (*Zingiber officinalis*) powder 10 gm, Ajwaine (*Carum capticum*) seeds 10 gm, Lahsun/Garlic (*Alium sativa*) 10 gm ground and melt with Jaggery 250 gm. This material boiled in one liter milk and lukewarm tea drench to the animal twice daily for treatment of cold attack.

#### *Aloe bera*

Leaves of Aloe 500 gm and Zinger 50 gm ground in very small quantity of water to make it as a paste. Paste is applied over the udder and teats of affected animal for a week period.

#### *Anaphalis monocephala*

Paste of the leaves is used as antiseptic in cattle.

#### *Arisaema costatum*

Paste of the root is applied on the worm infested wound of cattle to kill worms.

#### *Arisaema intermedium*

Paste of the roots is applied on the wounds of the cattle to hasten the healing process.

#### *Asparagus filicinus*

The roots Sansbai (*Asparagus filicinus*) are

fed to cattle in order to increase their milk production.

*Avena sativa*

Oat (*Avena sativa*) flour 500 gm mixed with 2 liter water and offered to the animal showing poisonings symptoms.

*Azadirachita indica*

Paste prepared from neem (*Azadirachita indica*) leaves applied daily over horn injury for quick healing.

*Bistorta officinis*

To check abnormal growth of bones in cattle, crush leaves of Eran (*Bistorta officinis*) are applied externally on the affected portions.

*Blumea mollis*

Paste of leaves and fruit of Basoor (*Blumea mollis*) is applied on the wounds of the cattle to hasten up the healing

*Boerhuavia indica*

Extraction of entire plant of puneru (*Boerhuavia indica*) is given orally to cure so many urinary disorders.

*Brassica spp*

Mustard seeds (*Brassica spp*) 500 gm crush and cook in 2 litre water, offer to the animal with an-estrous sign for 15 days to overcome the problem.

*Cedrus deodara*

Oil extracted from Dayar/Devdar (*Cedrus deodara*) wood used to cure skin disease in sheep and goat.

*Centella asiatica*

Apply paste of Brahmi (*Centella asiatica*) leaves on forehead of cattle affected with brain fever.

*Chirayata swertia*

Heinge 10 gm, Chirayata (*Chirayata swertia*) 50 gm khana soda 50 gm mix and provide 25 gm weight with lukewarm water thrice daily to cure typanitis for three days.

*Citrus aurantifolia*

Lime fruit (*Citrus aurantifolia*) cut and put 10 gm salt on it and rubbed on papillae in the mouth of the animals once a day and repeated for 4 to five days.

*Coriandrum sativum*

The Dhania (*Coriandrum sativum*) seeds are soaked in water over night. At morning ground with one litre water and drench to the animal to regulate the urinary flow.

*Cucurbita maxima*

Kaddu (*Cucurbita maxima*) fruit chopped, boiled and put under open sky over night. Fed at morning the repeat breeder female after mating for consecutive 5 days

*Cuminum cyminum*

One palmful seed of Jeera (*Cuminum cyminum*) is given in ¼ litre water for curing indigestion problem.

*Cuscuta reflexa*

Extract of Amarbel (*Cuscuta reflexa*) applied on lesions of FMD to enhance healing process and cure secondary infection.

*Debregeasia saeneb*

The paste made by mixing the leaves of Sansaru (*Debregeasia saeneb*) and Ashwagandha (*Withania somnifera*), is given with sugar and black pepper to cure fever in cattle.

*Delphinium vestitum*

Root powder of Swali (*Delphinium vestitum*) is useful in healing of ulcers and wounds in cattle.

*Dendrocalamus spp*

Decoction prepared from dry Ginger (*Zingiber officinalis*) powder 50 gm, Ajwain (*Carum copticums*) 60 gm, Bamboo or Baans (*Dendrocalamus spp*) leaves 100 gm and Jaggery 500 gm. Drench this decoction twice a day to overcome the problem of retention of placenta.

*Dhatura stremonium*

Seed of Dhatura (*Dhatura stremonium*) fried and make it powder form. Seed of Urd (*Vigna mungo*) 500 gm soak in water for 5 hours and ground. Mix dhatura powder in the mash and fed to the affected animal once daily for 3 days to cure prolapse.

*Digitalis purpurea*

One palmful leaves of Tilpushpi (*Melilotus alba*) is roasted with oil and used as ointment

in burning.

*Eclipta prostrata*

Paste prepared from the whole plant of Bhringraj (*Eclipta prostrata*) is applied on mastitis infected part.

*Euphorbia heterophylla*

It is observed that feeding of Dudhli (*Euphorbia heterophylla*) increases the production of milk in cattle.

*Euphorbia royleana*

If the corneal opacity is on the left eye, the milky juice of Siundi Ko Kanda (*Euphorbia royleana*) is massaged at the left side of a forehead and vice versa.

*Ficus roxburghii*

Fruits of Timul (*Ficus roxburghii*) 250 gm ground in one litre water add salt (10 gm) and drench to the animal to cure acute dysentery.

*Ficus benghalensis*

The ash of leaves of Vadlo (*Ficus benghalensis*) is given with water to the cattle in indigestion (Afra) diseases

*Foeniculum vulgare*

Powder of Sounf (*Foeniculum vulgare*) seeds 30 gm, kali mirch (*Piper nigrum*) 30 gm mix with clarified butter 50 gm and fed to the animal having restlessness at the 6 hours interval for two days.

*Glycine max*

Black Bhat/Soyabean (*Glycine max*) flour 500 gm and Ragi/Finger Millet (*Eleusine coracana*) flour 500 gm soak in 2 litre water for 3 to 4 hours and fed to the animal twice a day for 2 to 3 days during diarrhea.

*Gossypium herbaceum*

The Til (*Sesamum orientale/indicum*) Ksapas (*Gossypium herbaceum*) cake obtained after oil extraction from the seeds is fed to the milch animals to enhance milk yield and fat percentage.

*Grewia optiva*

Paste prepared from Bheemal (*Grewia optiva*) bark applied on burn area twice daily

*Hordeum vulgare*

The flour of Jau (*Hordium vulgare*) is fed to the animals as a general tonic particularly goat, milking dairy animals and breedable bulls.

*Justicia adhatoda*

Leaves of Basooti (*Justicia adhatoda*) are given to cattle for expulsion of gas.

*Linum usitalissimum*

Drenching of Linseed or Alsi (*Linum usitalissimum*) oil 500 ml with mixture of ginger (*Zingiber officinalis*) dry powder 25 gm, Haldu (*Curcuma longa*) powder 25 gm and Heing/Asfoetida 5 gm mixture is given for tympaniti

*Meconopsis aculeate*

Powdered roots of Gudi (*Meconopsis aculeate*) are sprinkled over the wounds of the cattle for rapid healing.

*Melia azedarach*

The juice derived from leaves and bark of Bakain (*Melia azedarach*) is fed to animals as 200 ml for 3-4 days which work as anthelmintic.

*Mellettia extensa*

Juice obtained from the Gaujo plant is applied to the mastitis infected part twice a day for one week.

*Melilotus alba*

One palmful whole plant of Banmethi (*Melilotus alba*) given three times in a day for providing relief to animal affected with stomach problem.

*Mentha piperata*

The 100 ml juice obtained from green leaves of Pudina (*Mentha piperata*) is drench to the animal affected with respiratory ailment morning and evening time daily for a week.

*Micromeria biflora*

Powdered aerial part of Bhaneri (*Micromeria biflora*) is applied or sprinkled on the worm infested wounds of cattle, acting as disinfectant.

*Mirabilis jalapa*

200 ml juice obtained from Lankeshwari (*Mirabilis jalapa*) roots fed to animals to treat urinary disorders.

*Murraya koenigil*

Curry (*Murraya koenigil*) leaves powder 100 gm per day is fed after mating continued for a week for better fusion of male and female gamete.

*Nepta laevigata*

About 250gm dried inflorescence of Longir (*Nepta laevigata*) are boiled in two litre of water. The concentrated decoction is given to cattle suffering from intestinal disorders and urine infection.

*Ocimum sanctum*

The leaves of Tulsi (*Ocimum sanctum*) are fed to plant twice a day to cure fever.

*Perilla frutescens*

Bhangjira (*Perilla frutescens*) seeds are ground with water and fed to affected animals for cure of diarrhea.

*Punica granatum*

Ground 250 gm leaves of Anar (*Punica granatum*) in one litre water and drench to the diarrhea affected animal twice a day. Treatment continued for 3 days.

*Quercus dilate*

Bark powder decoction of Banj (*Quercus dilate*) is given one cup twice a day to cure dysentery

*Salmelia malabarica*

Paste prepared from red soil 1 part and semal (*Melilotus alba*) bark 10 parts, applied over the injured horn to quick recovery.

*Salvia lanata*

Two palmful whole plant of Sania (*Salvia lanata*) mix with Gur and fibrous food to cure vomiting.

*Sasura costus*

Powder of Kut (*Sasura costus*) root 100 gm and Gehun (*Triticum aestivum*) flour mix and add some water and make a bolus. Offer this bolus to pneumonia affected animal at evening time for ten consecutive days

*Solanum nigrum*

Makoi (*Solanum nigrum*) leaves boiled in 2 litre water. Drench decoction once daily and repeated the treatment for one week to cure urinary troubles in cattle.

*Swertia chirayita*

Dried fruits of Pipali (Piper longum) 5 gm ground with green leaves of Chirayita (*Swertia chirayita*) 20 gm, and fed to the animal to cure indigestion.

*Thalictrum fouliolosum*

Powder of Mameera (*Thalictrum fouliolosum*) root 50 gm and Kala Bhat (*Glycine max*) flour 500 gm soak in 2 litre water for 5 hours. Add common salt 10 and drench to the diarrhea affected animal twice daily for 3 to 4 days.

*Triticum aestivum*

Sprouted Gehun (*Triticum aestivum*) 500 gm fed to the female animals to induce heat.

*Utrica dioica*

One palmful leaves of Kandali (*Utrica dioica*) is given with fibrous food to cattle to get relief in skin diseases during lactation.

*Valeriana jatamansi*

Rhizomes of Mushki bala (*Valeriana jatamansi*) are used to treat muscular pain, dryness and reddening of eyes in the cattle especially to calves and lambs.

*Verbascum thapsus*

Aerial parts of Wantamoo (*Verbascum thapsus*) especially inflorescence, are first dried and then boiled for about 2 hours. The decoction prepared is added to the paddy chaff (Kush/bhusa) to cure flatulence in cows, buffaloes.

*Viscum album*

Six fruits of Bana (*Viscum album*) with milk twice a day is recommended for curing heart and faint problem in calves.

*Withania somenifera*

Powder of Ashwagandha (*Withania somenifera*) seeds or root 50 gm mix in 1 litre water and drench once daily for a week for quick recovery of horn injury.

*Zingiber officinale*

Dried fruit of Pipali (*Piper longum*) 5 gm ground with Sounth (*Zingiber officinale*) 100 gm and add Jaggery to cure indigestion problem.

**4. DISCUSSION**

The present study has reported the ethno-veterinary medicinal uses of above described plant species by the people of Garhwal Himalayan region. Different plant parts, such as leaves, inflorescences, seeds, rhizomes, roots, etc are used. These plants grow in diverse range of habitats, such as

valley plains, mountain forests, subalpine and alpine pastures. In general, these, plant species through different modes of preparation to form crude drugs are fed as food supplements to promote faster weight gain, to soothe burns, abrasions and wounds, used as laxative, diuretic, antipyretics; and for the treatment of digestive, respiratory, locomotory and reproductive disorders.

Attempts should, therefore be made to explore the new possible species having medicinal importance especially for veterinary and to grow them in suitable areas so as to meet national demands. It is now well established that one major potential area, amongst some others were Botanist, Plant breeders, Taxonomist, Plant Physiologists, Biochemists and Biotechnologist etc can make a positive contribution, in the field of molecular medicines and drug research, is that of topological and topographical analysis and system analysis. Development of such analysis leads to a fundamental understanding of the mechanisms of action of biochemically important compounds, including their side effects. The data generated by this study will be helpful for making the maximum and sustainable use of plants as well as animal resources.

## 5. CONCLUSION

There is still a paucity of quantitative data on ethno-veterinary use of plants. People of Garhwal Himalayan region have close relationship with nature. Generally, they believe that disease are caused by the supernatural powers and they treat them through natural products like plants, herbs, shrubs, trees, soil etc. The people living in different parts of Garhwal region have developed excellent traditional knowledge due to long term association with forests. These valuable information needs to be documented before it disappears. The disappearance of these practices will not only affect poor villagers and their livestock but also be a permanent loss of our culture, heritage and biodiversity. In addition to medicinal use, plant resources can be linked to the preservation of biodiversity and alleviation of poverty.

It is finally hoped that ethno-veterinary practices will be useful to the Department of Animal Husbandry, extension workers, scientists, and policy makers in their efforts towards sustainable livestock farming system and might be able to offer a broader range of animal healthcare options in the different regions of Garhwal Himalaya.

## ACKNOWLEDGEMENTS

I am thankful to local respondents for sharing their knowledge with us. Thanks to anonymous reviewers for their useful comments for final publication of this paper.

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