



THE STUDY OF ETHNOVETERINARY USES OF SOME IMPORTANT MEDICINAL PLANTS OF BHATWARI BLOCK, DISTRICT UTTARKASHI, UTTARAKHAND

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ABSTRACT

Livestock are the important part of our economy and therefore their health perspectives are equally important. Majority of farmer community deals with their traditional procedure for healing and treatment for their livestock. Such traditional procedures include ethnoveterinary knowledge. This paper deals some commonly used ethnoveterinary medicinal plants used by the farmer community to cure animal disease in Uttarkashi District of Uttarakhand. Four villages, Gawana, Jaspur, Dharali and Purali were randomly selected for study. Ethnoveterinary information was gathered through individual interviews and personal observations among the farmer community. A total of 45 species of ethnoveterinary belongs to 32 families and 40 genera were recorded in the study with the help of ethnoveterinary traditional healers. During the survey, it was noted that these ethnoveterinary plants used to treat various veterinary diseases such as basic first aid for food poison, indigestion, snake bite, bone fracture, anti-bacterial, antifungal activity over cuts and wounds, insect repellent, deworming in cattle, diarrhea, reproduction and increase cattle lactation. The information provided in this study would bring new insights on the development of environment friendly, effective medicines to control veterinary diseases in the future. In addition, this study may be highly useful to protect and conserve medicinal plants as well as traditional knowledge of farmers of Uttarkashi District of Garhwal Himalaya.

Keywords: Ethnoveterinary, Medicinal

1 INTRODUCTION

Plants are the backbone of life on this earth and are central to livelihood of human being. People in different parts of world depends on plants and its parts to fulfill their daily needs and developed unique knowledge and practice of their utilization (Kala *et al.*,2006). India has a very rich heritage of traditional healthcare system for livestock through medicinal plants which has been used since time immemorial. Ethno medicine is an age-old practice that has evolved from collective wisdom accumulated over generations by mankind and it deals with beliefs and those practices, relating to the disease, which are the product of indigenous cultural development and not derived from the concept of modern medicines. Ethnoveterinary medicine includes the use of medicinal plants, surgical techniques and management practices to prevent livestock disease (Sollod and Knight-1983). The preparation of herbal medicines remains an important part of health care system for both humans and livestock especially for small scale farmers who lack access to modern veterinary facilities and are unable to afford allopathic medicine due to their sky rocketing prices.

Ethnoveterinary medicines are not only cost effective but are socially compatible and easily available. The traditional knowledge is concerned with actual application of the thinking people for an area and as such in general cost of veterinary medicine may be of particular value in providing animal health care at farmers door. Mc Corkle *et al.*, (1986) define Ethnoveterinary Medicine as dealing with the folk belief, skills, knowledge, practices and methods pertaining to the health care of animals.

Ethnoveterinary medicine is a holistic interdisciplinary study of the local knowledge and the sociocultural structures and environment associated with animal health care and husbandry (Tiwari 2010). Hence to keep animals healthy, traditional healing practices have been applied for centuries and have been passed down orally from generation to generation (Toyang *et al.* 2007 and Phondani 2010). Traditional veterinary knowledge is generated and acquired through observation, practiced experience. Ethnoveterinary medicine contrast the knowledge developed by local livestock holder from scientific experimentation. Farmers established this branch in field written record was not maintained. Ethnoveterinary medicines are not as fast working and potent as Allopathic veterinary medicine. Although less effective to control and treat epidemic farmers and ethnic people prefer ethnoveterinary medicine and endemic, in colds, skin diseases worms, reproductive disorder, nutritional deficiencies, diarrhea, food poison, indigestion, snake bite, bone fracture, antibacterial, antifungal activity over cuts and wounds, insect repellent, swelling of udder and teat and increase cattle lactation (Rawat *et al.*,2021). It is less systematic, less formalized and not universally recognized as valid method for disease control in animals. In many countries there has been little documentation of traditional knowledge. It has been transmitted across generation by an oral tradition. Ethnoveterinary knowledge is acquired over many years through trials and errors. However due to rapid cultural changes, this information is being lost. They do not exist as written knowledge. Generally, these systems of medicine depend on old people's experiences. So, the priority should be to given the documentation of traditional knowledge and conservation of existing plant species and their habitats. Therefore, keeping this in mind, an attempt has been made to explore and compile the exhaustive

knowledge of plants and plant parts used in veterinary practices by people of Uttarkashi district, Garhwal Himalaya.

Little research work has been endeavored earlier in the study area. In view of this present investigation was undertaken to fulfill the following objectives.

- (1) To study ethnoveterinary medicinal plants used by the farmer community to cure animal disease in Uttarkashi District of Garhwal Himalaya
- (2) To study local traditional herbal treatment
- (3) To document and analyze the rational knowledge of ethnoveterinary plants

STUDY AREA

Uttarkashi ($30^{\circ}44'2''\text{N}$ $78^{\circ}17'2''\text{E}$ and 30.73°N 78.45°E) is the border district of the state of Uttarakhand, and is bounded with Tibet and Kinnaur district of Himachal Pradesh to its north, Tibet and China to the east, Tehri Garhwal to the south and the district of Dehradun and part of Himachal Pradesh to the west (Fig.1). The district covers a total area of 8,016 sq. kms, with a total population of 330,086 (2011 Census). More than 92% of the population live in rural areas. The maximum stretch from east to west is 154 km and from north to south is 109 kms respectively. The district comprises 6 Tehsils, 6 blocks, 677 revenue villages & 427 Gram Sabhas. This paper deals some commonly used ethnoveterinary medicinal plants used by the farmer community to cure animal disease in Uttarkashi District of Garhwal Himalaya. Four villages, Gewanla, Ganeshpur, Daang and Netala were randomly selected for study

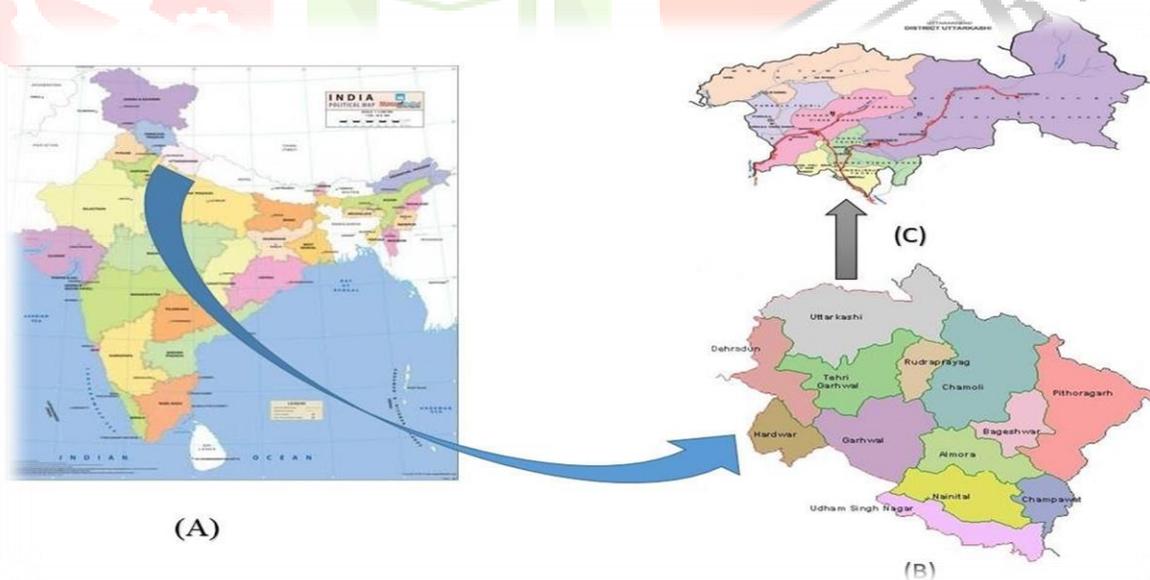


Fig. 1. (A) Location of Uttarakhand in India (B) Map of Uttarakhand (C) Map of Uttarkashi District.

2 RESEARCH METHODOLOGY

For the collection of data random sampling was carried out. Field surveys were conducted during the study period for collection of data on the traditional uses of medicinal plant species used to cure animal diseases across selected villages. Information about the type of diseases and method of treatment of these diseases were collected by questionnaire. Plant specimens were collected and then identified with the help of local flora.

RESULTS AND DISCUSSION

Garhwal Himalaya region has tremendous potential for medicinal plants cultivation and it may be one of the important options for sustainable livelihood for hilly area (Bhatt 2018). The disappearance of this ethnoveterinary knowledge not only effect poor villagers and their livestock but will also be the permanent loss of our traditional culture, heritage and biodiversity. For remote and hilly areas of Uttarakhand, there is urgent need of identification of existing biodiversity and traditional knowledge which can become future backbone of Uttarakhand.

Total 80 villagers (20 from each village) were interviewed in four selected villages. Out of these plants some are herbs (47%), some are shrubs (18%), climbers (4%) and some are trees (31%). Herbs are most commonly ethnoveterinary medicinal plants. A total of 42 species of ethnoveterinary belongs to 32 families and 40 genera were recorded in the study with the help of ethnoveterinary traditional healers. During the survey, it was noted that these ethno veterinary plants used to treat various veterinary diseases such as basic first aid for food poison, indigestion, snake bite, bone fracture, anti-bacterial, antifungal activity over cuts and wounds, insect repellent, deworming in cattle, diarrhea, reproduction and increase cattle lactation.

CONCLUSION

The survey indicated that Garhwal Himalaya region has a number of medicinal plants treat a wide spectrum of livestock diseases. The people of this area have a rich and age old plant related culture and knowledge base. In general, eye diseases, urinary disorder, udder and teat swelling, easiest expulsion of placenta, sikka disease, fever, galghontu, deworming, diarrhea, reproduction and increase lactation are different condition of animals for which ethnoveterinary medicinal plants are usually being used in the area. The information provided in this paper would bring new insights on the development of environment friendly, effective medicine to control veterinary diseases future. In addition this study may be highly useful to protect and conserve medicinal plants as well as traditional knowledge of farmers of Uttarkashi District, of Garhwal Himalaya.

Table.1: Details of ethno- veterinary plants and their application

S.No.	Plant Name	Habits/life forms	Common name	Family	Ethnoveterinary practices and mode of application
1	<i>Aloe barbadensis</i>	Herb	Ghrit Kumari	Asphodelaceae	Paste prepared by fresh leaves of ghrit kumari, fresh root of shatawari, fresh leaves of tulsi is applied on udder and teat swelling twice daily for ten days
2	<i>Asparagus racemosus</i>	Climber	Shatawari	Asparagaceae	Shatawari root powder 100 gm and 50 gm ghrit kumari pulp offer once a day after mating for a week to increase the chance of conception
3	<i>Berberis aristate</i>	Shrub	Kilmori	Berberidaceae	Root extract of <i>Berberis aristate</i> used as eye drop 2-3 times daily to cure eye diseases
4	<i>Bergenia ligulate</i>	Herb	Paashaanbhed	Saxifragaceae	Powder of paashanbhed root 100 gm drench with one litre lukewarm water once daily for fifteen consecutive days to cure urinary disorders
5	<i>Bombax cebia</i>	Tree	Semal	Bombacaceae	An infusion of the semal bark is fed to cattle after calving for easy expulsion of placenta.
6	<i>Brassica compestris</i>	Herb	Sarson	Brassicaceae	Brassica oil 500 ml mixed with 50 ml of turpentine oil drench to the animal to cure timpanists.
7	<i>Cannabis sativa</i>	Shrub	Bhang	Cannabaceae	Fresh leaves are kept in water for 1-2 hours and then grinded and fed twice a day to cure dysentery
8	<i>Capsella bursa-pastoris</i>	Herb	Torighas	Brassicaceae	<i>Capsella</i> whole plant decoction used for sikka disease
9	<i>Carum copticum</i>	Herb	Ajwaine	Apiaceae	Fumigation of Ajwain seeds near the mouth of animals affected galghontu to pull off cough and provide relief in respiration.
10	<i>Centella asiatica Linn</i>	Herb	Brahmi	Apiaceae	Apply paste of Brahmi leaves on forehead during fever
11	<i>Citrus limon</i>	Tree	Neembu	Rutaceae	50gm red chilli powder with 1 teaspoon lemon juice mixture rubbed inside the swelled throat of affected animal by hand to cure galghontu.
12	<i>Myrica esculenta</i>	Tree	Kaphal	Myricaceae	Bark of this plant and leaves of Bhang are crushed together and made in to paste and this paste applied on vagina 2 times a day for a week during the prolepses of uterus
13	<i>Colebrrookea oppositifolia</i>	Shrub	Binda	Lamiaceae	The leaves are grinded and the decoction thus obtained is filled in syringe and sprinkle is made to eye of cattle to cure redness of eyes

14	<i>Curcuma longa</i>	Herb	Haldi	Zingiberaceae	Haldi powder mixed with water and then applied to udder and teats for one week to overcome the problem of udder swelling and mastitis
15	<i>Dendrocalamus spp.</i>	Shrub	Baans	Poaceae	Young leaves of bamboo fed to cows and buffaloes after calving for easy expulsion of placenta.
16	<i>Eleusine coracana</i>	Herb	Mandua/Ragi	Poaceae	The seeds of ragi boiled and add jaggery fed to cows and buffaloes after calving for easy expulsion of placenta.
17	<i>Euphorbia heterophylla</i>	Herb	Milk weed	Euphorbiaceae	Leaves and seeds are grounded together and mixed in water and given to a livestock in case of food poisoning
18	<i>Ficus roxburghi</i>	Tree	Timul	Moraceae	Fruits of Timul crushed and dissolved with one litre water, add 10 gm salt and drench to the animal to cure dysentery.
19	<i>Grewia optiva</i>	Tree	Bhimal	Tiliaceae	The bark decoctions are used as vermifuge in animals
20	<i>Hedichium spicatum</i>	Herb	Van Haldi	Zingibaraceae	Powder of van haldi with lukewarm water given twice a day for one week to cure respiratory problems and pneumonia.
21	<i>Hippophae rhamnoides</i>	Shrub	Aamil	Elaeagnaceae	Juice of Aamil ripe fruits used as an antidote agent against poisonous grass eaten by domestic animal
22	<i>Juglans regia</i>	Tree	Akhrot	Juglandaceae	Extract of akhrot leaves applied thrice daily on cleft of the hooves to cure foot and mouth diseases
23	<i>Lantana camera</i>	Shrub	Lantana	Verbenaceae	The tender leaves and twigs are grinded and then decoction of leaves are given to cattle for relieving joint pain.
24	<i>Melia azedarach</i>	Tree	Pahadi Neem/Chin berry	Meliaceae	50 gm resins of neem and 50 gm of molasses mixture (50 gm/day) fed daily for a week to cure teat block, hardness of teat and udder.
25	<i>Menta arvensis</i>	Herb	Pudina	Lamiaceae	A fresh leaf of this plant used for digestive disorder.
26	<i>Murraya koenigii</i>	Tree	Karripatta	Rutaceae	The crushed bark and roots are used externally to treat skin eruptions and bites of poisonous animals
27	<i>Ocimum Americanum</i>	Herb	Vantulsi	Lamiaceae	Whole plant of vantulsi and tulsi are crushed and their juice twice a day for one week given to cure animal suffered from respiratory problem and pneumonia
28	<i>Oryza sativa</i>	Herb	Dhaan	Poaceae	Rice and ragi flour cooked and make paste and applied over bone fracture with the help of wood splinters and bandage
29	<i>Oxalis corniculata</i>	Herb	Khatti buti	Oxalidaceae	Green leaves of khatti buti crushed and used few drops twice a daily to cure eye disease.

30	<i>Perilla frutescens</i>	Herb	Bhangira	Lamiaceae	Bhangijira seeds are grinded with water and fed to affected animals for the cure of diarrhea.
31	<i>Pinus roxburghii</i>	Tree	Cheed/pine	Pinaceae	5 ml Pine oil pored in one tub boiled water and offer vapour treatment to the sick animal to cure pneumonia.
32	<i>Populus nigra</i>	Tree	Black Poplar	Salicaceae	Leaves are used for digestive disorder.
33	<i>Rhus parviflora</i>	Herb	Samakdana	Anacardiaceae	The fresh leaves are grinded and paste applied to cure wound and cut.
34	<i>Sasurea costus</i>	Herb	Kuth	Asteraceae	Powder of kuth with wheat flour fed to animal affected with respiratory problems and pneumonia
35	<i>Swerita chirayita</i>	Herb	Chirayata	Gentianaceae	Whole plant dried in shade and make a fine powder. 100 gm powder drench with 1 litre lukewarm water twice a daily for fever
36	<i>Termenalia bellarica</i>	Tree	Bahera	Combretaceae	Powder of bahera fruit used to cure loss appetite and also proved anti diarrheal.
37	<i>Tinospora cardifolia</i>	Climber	Giloya	Menispermaceae	Stem of this plant and glycine max are grinded together and prepared in to thick paste. This paste is applied to skin of livestock to cure skin disease.
38	<i>Urtica dioca</i>	Herb	Kandali, Nettle	Urticaceae	Boiled nettle leaves fed to lactating animals commonly for buffaloes to enhance milk production
39	<i>Viola odorata</i>	Herb	Vanapsa	Violaceae	Two tea spoon whole plant twice a day to avoid heart attack in calf.
40	<i>Xanthoxylum armatum</i>	Shrub	Timru	Rutaceae	Leaves and seed uses as vermifuge for animals
41	<i>Zingiber officinalis</i>	Herb	Adruk	Zingiberaceae	30 gm Powder of dry ginger, 20 gm kali mirch When drench to animals, it acts as purgative
42	<i>Zizyphus mauritiana</i>	Tree	Ber	Rhamnaceae	Bark of ber boiled with water and used few drops twice a daily to cure eye disease

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A. *Hippophae rhamnoides*



B. *Murraya koenigii*



C. *Bergenia ligulata*



D. *Berberis aristata*



E. *Aloe barbadensis*



F. *Ficus roxburghii*



G. *Perilla frutescens*



H. *Xanthoxylum armetum*

Fig.2. Ethnoveterinary medicinal plants

