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Ethno-veterinary Practices For Livestock Owners: A Study in Pithoragadh District of Uttarakhand

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ABSTRACT

Background: Livestock plays a vital role in the farmer's life. They provide farm power, rural transport, manure, fuel, milk and meat. It provides income and employment to the small farmers. Thus, livestock has major role in rural economy. In Uttarakhand, medical facilities are very less in number. Due to unavailability of modern health facilities, poverty, connectivity with urban centre, awareness, *etc.* people in hilly and rural areas are still depend on traditional medicines for their health care. Some of the communities are using wild plant parts for healthcare. The indigenous knowledge of the veterinary health care system acquired by traditional herbal healers and elderly learned farmers and is orally transformed from one generation to other.

Methods: Thus, a study was conducted to document the medicinally important plants used in treatment of cattle diseases by rural people living in Pithoragadh District of Uttarakhand. Interview Schedule, Participatory Rural Appraisal, Group Discussion techniques were used to identify plants and their medicinal information. Out of 219 villages under tehsil *Munsyari*, total five villages *viz*; total three villages *viz*; *Alam, Arkhet, Baidu Mahar* were selected purposively. Participatory Rural Appraisal, Group Discussion techniques were used to document the medicinal plants.

Result: The investigator recorded 30 plants species to have ethnoveterinary value. These medicinal plants are highly valuable and appropriate for animal health care and management. People are dependent upon food, fruits, fodder, and medicinal plants for their healthcare. Hilly people use these traditionally available medicinal plants for animal health and believe that these are easily available, less expensive and have no side effects as compare to modern medicine. Present scenario as deforestation, tourism affects medicinal plants. Thus, conservation of these species is necessary. Proper policies should be needed to conserve the forests and medicinal plants. Attention should be made on scientific validation and proper exploitation and utilization of these medicinally important plants in animal health care.

Key words: Animal, Health care, Medicinal plants.

INTRODUCTION

Ethnoveterinary medicine, deal with traditional animal health care practices which covers the knowledge, skills, methods, practices and beliefs about animal health care. Ethnoveterinary medicine is developed by farmers in fields, rather than by scientists in laboratories and clinics.

The ethno veterinary practices rely on folk beliefs, traditional knowledge and skill used for animal health care practices and are transmitted from generation to generation through oral communication without any documentation. (Mishra, 2013). According to Tabuti *et al.* (2003) total 80 per cent of people in developing countries rely on traditional medicine based on plants and animal for their primary health care. Eswaran (2013) reported that people are using many traditional methods of healing for their domestic animals. Large amount of plants are used in preparation of drugs. Due to over population, urbanization and continuous exploitation of the herbal reserves, the natural resources and their related traditional knowledge are depleting day-by-day. Very few traditional knowledge has been documented in the country and ethnoveterinary knowledge generally ignored in mainstream veterinary medicine. But in remote areas, increasing attention has been paid to ethnoveterinary knowledge and local veterinary practices due to lack of veterinary health care centers. Moreover the supply of veterinary health services and dedications is constrained by scarcity, erratic supply and prohibitive cost. (Khan, 2009). According to Sharma *et al* (2020) the community of Uttarakhand state exercises the use of available medicinal herbs that particularly rely on the conventional

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knowledge as a primary resource for their medical care. Plant materials have several medicinal properties that identified and used for treating the animals. (Sayee *et al,* 2016). India has large livestock population and it is the major income source of tribal, rural and semi urban peoples. Livestock rearing in rural and tribal areas is quite different than urban areas due to their economical status, at the same time to keep their animals healthy, traditional healing practices have been applied for centuries and passed down orally from generation to generation (Kaur *et al*, 2015). Traditional knowledge of ethnoveterinary medicinal plants and their use by indigenous cultures are not only useful for conservation of cultural traditions and biodiversity but also for community healthcare and drug development in the present and future. Documentation of indigenous knowledge and evaluation of the use of plants for a variety of purposes assume greater significance, not just to retain it, but also to keep it alive and make it available for future use because of rapid socio-economic and cultural changes that are taking place across the traditional community of the region (Verma, 2017).

Keeping all these points in mind a research investigation was designed with the following objectives: [1] To document the ethno-medicinal plants of the area and to collect information regarding ethno-medicinal use of plants. [2] To make a platform for future research.

MATERIALS AND METHODS

The study was performed at Pithoragarh district of Uttarakhand located at 29.58° North latitude and 80.22° East latitude. It lies in the revenue Division of Kumaon and situated in the centre of the western half of the Saur Valley. Uttarakhand has a total area of 53,483 km^2 of which 86 per cent is mountainous and 65 per cent is covered by forest. Uttarakhand has a multiplicity range of flora and fauna. It has a recorded forest area of 34,666 km^2, which constitutes 65 per cent of the total area of the state. Uttarakhand is home to rare species of plants and animals, many of which are protected by sanctuaries and reserves. About 18,000 plant species have been recognised in the state out of which 1,800 are deemed to be of medicinal value. Herbal Research and Development Institute helps conserve medicinal herbs that are found in abundance in the region. Local traditional healers still use herbs, in accordance with classical Ayurveda texts, for diseases that are usually cured by modern medicine.

Very little attention has been paid of Ethnoveterinary practices in Uttarakhand. Keeping in view the paper is an attempt to compile the ethno-veterinary medicines of Pithoragadh district of Uttarakhand.

RESULTS AND DISCUSSION

The present study compiles 30 ethno-medicinal plants species for various medicinal purposes. The present study explores the therapeutic uses of medicinal plant species and the associated traditional knowledge preserved by the indigenous community in Kumaun region.

Table 1: Indigenous uses of medicinal plants for curing veterinary ailments.

Name of ailments	Local name	Symptoms	Affected animals	Plant species used (Vernacular name-Family)	Use pattern
Arthritis	Joddard	Swelling in the joints and hamstrung mussels	Buffalo, Cow, Oxen, Sheep, Horse, Mule	*Calotropis procera* (Aak-Asclepiadaceae)	Leaves of *Calotropis procera* and bulb of *Allium sativum* fried with mustard oil and rubbed on infected part.
Anorexia	Bhook nalagna	Stops eating fodder	Buffalo, Cow, Oxen, Sheep, Goat, Horse, Mule, Dog	*Terminalia chebula* (Haira-Combretaceae)	Seeds of *Trachyspermum ammi* and bark of *Terminalia chebula,* Rhizome of *Cuminum cyminum*, seeds of *Raphanus sativus* grind and mixed with black salt and used to eat.
Blot	Afara	Gloating of stomach	Buffalo, Cow, Oxen, Sheep	*Trachyspermum ammi* (Ajawain-Umbelliferae)	Seeds of *Trachyspermum ammi* and rhizome of *Zingiber officinale*, *Ferula asafoetida* and fruit of *Piper nigrum* mixed and grinded with water and paste is used to cure blot.
				Lycopersicon esculentum (Tamater-Solanaceae)	Fruit is applied.
				Citrus medica (Nimbu-Rutaceae)	Fruit juice is applied.
Mastitis	Thanela	Blocking of the milk hole udder	Buffalo, Cow, Goat	*Lyonia ovalifolia* (Anyar-Ericaceae)	Bark of *Lyonia ovalifolia* is grinded to powder and mixed with ash of *Quercus leucotricophora* and its smoke is used.

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				Curcuma domestica (Haldi-Zingiberaceae)	Rhizome of *Curcuma domestica*is mixed with oil of *Brassica campestris* and rubbed to cure mastitis.
				Bombax ceiba (Semal-Bombaceae)	Bark of *Bombax ceiba* mixed with seeds of *Glycine max* and grind with water to eat.
Cough	Khansi	Frequent coughing	Buffalo, Cow, Oxen, Sheep, Goat, Horse, Mule, Dog	*Dendrocalamus strictus* (Banss-Poaceae)	Green leaves of *Dendrocalamus strictus* grind with seeds of *Hordeum vulgare* and used to eat.
				Oryza sativa (Dhan-Poaceae)	Seeds are boiled with water and juice (Mund) is applied.
Fascioltasis	Chhipadi	Growth of hard knot on the surface of thyroid gland	Buffalo, Cow, Oxen (Timru-Rutaceae)	*Zanthoxylum armatum*	Bark of *Zanthoxylum armatum* milled with pod of *Capsicum annuum* and used to eat.
				Oryza sativa (Dhan-Poaceae)	Inflorescence is directly applied to eat.
Indigestion	Apach	Bleaches out chewed food	Buffalo, Cow, Oxen, Sheep, Goat, Horse, Mule, Dog, Cat	*Piper nigrum* (Kali mirch-Piperaceae)	Grind *Piper nigrum* and mixed with black salt with water and used to eat.
Constipation	Kabj	Dung is extra solid	Buffalo, Cow, Oxen	*Bombax ceiba* (Semal-Bombaceae)	Milled the bark of *Bombax ceiba* with water and make a solution and used to eat.
				Cassia fistula (Amaltas-Caesalpiniaceae)	Pod of *Cassia fistula* directly used to eat.
Foot and Mouth disease	Khuri	Infection of mouth and hoops	Buffalo, Cow, Oxen, Sheep, Goat	*Acacia catechu* (Supari-Mimosaceae)	Bark of *Acacia catechu* boiled with water for making asolution and used eat.
				Mangifera indica (Aam-Anacardiaceae)	Leaves directly used to eat.
				Allium cepa (Pyaj-Liliaceae)	Bulb is grind and mixed with black salt and used to drink with water
				Picrorhiza kurrooa (Kutaki-Scrophulaceae)	Dried roots milled along with sugar and drink with water.
				Lyonia ovalifolia (Anyar-Ericaceae)	Buds of *Lyonia ovalifolia* milled with bark of *Juglans regia* and make a solution with mustard oil and paste is applied externally.
Dermatitis	Damri	White patches and hair loss from the skin	Buffalo	*Stephania glabra* (Gindaru-Menispermaceae)	Grind of *Stephania glabra* and used to eat with water.
				Elucine coracana (Koda-Poaceae)	*Urgenia indica* grind with *Elucine coracana* and used to eat with water.
				Glycine max (Bhatt-Fabaceae)	Seeds of *Glycine max* is milled and used to eat with water.
				Quercus leucotricophora (Banj-Fagaceae)	Ash is externally used.
Cataract	Phula	White rashes on the surface of eye ball	Buffalo, Cow, Oxen, Sheep, Goat, Horse, Mule, Dog, Cat	*Berberis aristata* (Kinmor-Berbridaceae)	Root decoction (juice) and few drops applied to cure eye infection.
				Oxalis corniculata (Bhilmori-Oxalidaceae)	Leaves juice is used to cure eye infection.

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Hematuria	Khunipeisab	Bleeding with urine	Buffalo, Cow, Oxen	*Dalbergia sissoo* (Sisham-Fabaceae)	Green leaves directly used to eat.
				Lawsonia inermis (Mehandi-Lythraceae)	Green leaves directly used to eat.
Pneumonia	Garmibukhar	Increase body temperature and running nose	Buffalo, Cow, Oxen, Sheep, Goat, Dog	*Trigonella foenum* (Methi-Fabaceae)	Seeds of *Trachyspermum ammi*, Rhizome of *Curcuma domestica*, Leaves of *Trigonella foenum* and *Dendrocalamus strictus* grind and mixed with *Piper nigrum* and used to eat with water.
				Megacarpaea polyandra (Barmoa-Brassicaceae)	Root decoction of *Megacarpaea polyandra* mixed with sugar and drink to cure Pneumonia.
Burning	Jalna	Burns on the skin	Buffalo, Cow, Oxen, Sheep, Goat, Horse, Mule, Dog, Cat	*Triticum aestivum* (Gahu-Poaceae)	Seeds are grind and make a paste used externally.
Sprain	Mochaana	Sprain on the foot	Buffalo, Cow, Oxen, Sheep, Goat, Horse, Mule, Dog, Cat	*Urtica parviflora* (Kandali-Urticaceae)	Fresh leaves are rubbed on the infected part. and black salt and used externally.
				Pinus rox burghi (Cheer-Pinaceae)	Boiled the leaves of *Cannabis sativa* with ash of *Pinus rox burghi*
Dysentery	Peichis	Frequent loose motion	Buffalo, Cow, Oxen, Sheep, Goat, Dog	*Glycine max* (Bhatt-Fabaceae)	Seeds of *Glycine max* is milled and used to eat with water.
				Allium cepa (Pyaj-Liliaceae)	Bulb is grind and mixed with black salt and used todrink with water.
				Mentha arvensis (Podina-Lamiaceae)	Milled fresh leaves and mixed with black salt and used to eat with water.
				Raphanus sativa (Muli-Brassicaceae)	Grind the underground part and used to eat with water.
				Aconitum hetrophyllum (Atis- Ranunculaceae)	Root paste used to eat with water.
				Elucine coracana (Koda-Poaceae)	Seeds are grind and used to eat with water.
Lice and Ticks Infection (Ectoparasite)	Joonpadna	Itching on the skin	Buffalo, Sheep, Goat, Dog, Cat	*Artemisia nilagirica* (Kunja-Asteraceae)	Milled the leaves and juice is applied externally.
				Acorus calamus (Buch-Araceae)	Apply corn powder externally through mixing coconut oil and used to externally.
				Sapindus mukorossi (Reetha-Sapindaceae)	Mature fruit is grind with water and paste is externally applied to cure lice and ticks infection.
				Zea mays (Makka-Poaceae)	Ash of cob mixed with *Brassica compestri* soil and externally used.
Endo parasite	Peit main keera	Discharge of worms in the dung	Buffalo, Cow, Oxen	*Asculus indica* (Panger-Hippocastanaceae)	Mature fruit is milled with water and apply to drink.

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Sterility	Banjhpan	Obesity and eccentric behave	Buffalo, Cow, Goat, Sheep	*Hordeum vulgare* (Jau-Poaceae)	Seeds are milled of *Hordeum vulgare* and *Triticum aestivum* with *Trigonella foenum* and make a powder isused to eat with water.
				Urticadioca (Kandali-Urticaceae)	Mature inflorescence is grind and used to eat.
				Cicerareitinum (China-Fabaceae)	Germinated *Cicer areitinum* used to eat.
Uterus disorder	Jair	Placenta membrane is held up inside the womb	Buffalo	*Myrica esculenta* (Kafal- Myricaceae)	Bark boiled with water and used externally.
				Picrorhiza kurrooa (Kutaki-Scrophulaceae)	Dried roots milled along with sugar and drink with water.
Bone fracture	Haditootna	Swelling on the fracture part	Buffalo, Cow, Oxen, Sheep, Goat, Horse, Mule, Dog, Cat	*Vanda testacea* (Laguli-Orchidaceae)	Grind the leaves to make a paste and apply on fractured part. The fractured part is supported by *Dendro calamus strictus.*
				Agave americana (Ramban-Agavaceae)	Leaf fibers used to tie the fractured bone.
				Achyranthus aspera (Latjeera-Amaranthaceae)	A piece of fresh root is grounded and the paste applied to cure bone fracture.
				Betula utilis (Bhojpatra-Betulaceae)	Seeds milled of *Vigna mungo* and mixed with *Cynodon dactylon* and make a paste, used to plaster on fractured part then covered the bark of *Betulautilis/Zanthoxylum armatum*.
Broken horns	Seengtootna	Shelling off outer layer of horn concomitant bleeding	Buffalo, Cow, Oxen, Sheep, Goat	*Tagetus erectus* (Genda-Asteraceae)	Milled the fresh leaves and juice is applied externally.
				Rehum emodi (Dolu-Polygonaceae)	Root paste is externally applied.
				Pinus roxburghi (Cheer-Pinaceae)	Resin is used to join the broken parts.
				Curcuma domestica (Haldi-Zingiberaceae)	Rhizome paste is applied externally.
				Cedrus deodara (Devdar-Pinaceae)	Bark oil is applied externally.
				Geranium wallichianum (Kaphlya-Geraniaceae)	Root paste is externally used to cure broken horns.
				Oryza sativa (Dhan-Poaceae)	Seeds grind and make a paste is used to join the broken parts.
Snake bite	Sharp dans	Bleeding and swelling on the bitten part	Buffalo, Cow, Oxen, Sheep, Goat, Horse, Mule, Dog	*Allium sativum* (Lahsun-Liliaceae)	Milled the leaves of *Allium sativum*and *Azadirachta indiaca* and juice is applied to drink with water.
Yoke galls	Kandhaaana	Wounds and swelling on the neck	Oxen	*Curcuma domestica* (Haldi-Zingiberaceae)	Rhizome of *Curcuma domestica* dry over flame than grind and mixed with oil of *Brassica compestris* and externally used to the infected part.
Diphtheria	Kand Rohni	Infection of the throat	Cow, Oxen	*Ficus religiosa* (Peepal-Moraceae)	Rhizome of *Zingiber officinale* and leaves of *Ficus religiosa* boiled with water and make a solution andused to eat.

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Abdominal pain	Peit Shool	Frequent lying and standing movements	Horse, Mule	*Cannabis sativa* (Bhang-Cannabaceae) *Saccharum officinarum* (Ganna-Poaceae)	Resins obtain from the leaves of *Cannabis sativa* and leaves of *Nicotiana tabacum* mixed and burn over flame and smoke is used. Rhizome of *Curcuma domestica*, *Zingiber officinale* and bulb of *Allium sativum*, seeds of *Trachyspermum ammi* and *Brassica juncea* is milled and mixed with goor of *Saccharum officinarum* provided to animal to eat for curing abdominal pain.
Debility	Kamjori	Feel more sleeping and motionless	Buffalo, Cow, Oxen, Sheep, Goat, Horse, Mule	*Triticum aestivum* (Gahu-Poaceae) *Glycine max* (Bhatt-Fabaceae) *Tinospora cordifolia* (Gelai-Menispermaceae)	Seeds of *Triticum aestivum* boiled with water and used to eat for curing debility. Seeds of *Glycine max* and *Hordeum vulgare* boiled with water and used to eat. Grind the root and used to eat with water to curingdebility.
Acidity	Gais	Foul smell	Oxen, Horse, Mule	*Angelica glauca* (Choru-Apiaceae)	Roots powder mixed with tea and used to drink to cure acidity.
Vomiting	Ulti	Oozing waste material from the mouth	Dog, Cat	*Hordeum vulgare* (Jau-Poaceae)	Fresh green leaves are directly applied to cure vomiting.
Skin disease	Makku	Itching and hair loss ofthe skin	Sheep, Goat	*Cedrus deodara* (Devdar-Pinaceae)	Oil is obtained from the bark and rubbed.

The documentation of 30 plant species collected from study areas and their medicinal use against various ailments are presented in Table 1. Species names are followed by vernacular names, local names, habit of plant and plant parts used.

Diseases are basic problems for both human being and animals. Animals are fighting with the expanded types of diseases. Diseases concepts are differ from animal to animal. Different plant species, different parts are used for different purposes. Livestock owners used different plants part for different purpose. They know the diseases of animal and use of plants parts. According to Tewari and Pande (2008). Females are keen observer of cattle diseases due to their association with milking and have knowledge about problems related to milking, milk lowdown *etc*.

Uttarakhand state is rich in flora and is home to different pastoral communities like Gujjars, Bakarwals, Chopansetc who believe in naturally available resources to rear their livestock. According to Kirmani (2020) local people generally faced lack of basic facilities of healthcare and depend on traditional treatments both in humans as well as in animals. Indigenous uses of medicinal plants for curing veterinary ailments were given in Table 1. A total of 30 herbs/shrubs belonging to different families have been documented in the present study as per information collected for treatment of various livestock ailments. It has been reported that animals suffers lots of problems as Arthritis, Anorexia, Blot, Fascioltasis and Pneumonia *etc*. Different plants are used to cure these diseases.

CONCLUSION

Thus, we can conclude that this research focous on adoption of folk medicines for immediate action an animal care along with livestock related social realities. Ethno veterinary knowledge is a holistic body of folk beliefs, skills, knowledge, experience and practices employed by indigenous communities in curing various diseases and disorder of livestock. Ethno-veterinary knowledge is often conveyed vertically or horizontally through centuries, like many other conventional knowledge structures, mostly through oral transmission, which leaves only a limited portion of it available to science.

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