

Ethno-veterinary health treatment by Gujjar community of Kalagarh Range in Corbett National Park Uttarakhand, India

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Abstracts: The present investigation was designed to document indigenous knowledge on ethno-veterinary medicinal plants used by Gujjar community of Kalagarh Range in Corbett National Park. The present research mainly concentrated on a vagabond Gujjar community. The community has a great association with the natural forest ecosystem as it works as a storehouse of various medicinal plants which are used for the treatment of various ailments of their cattles. The community still does not have easy access to modern veterinary facilities for treating the livestock ailments. However, they possess valuable traditional knowledge about the usage of different plants for curing various diseases. In this work ethno-veterinary information was gathered through personal interviews, direct observations, audio video documentation and guided field work. During the survey 29 plants species belonging to 23 families and 27 genus were identified. The present study reveals that leaves constituted a major portion of the plant parts (8) followed by seed (7) and fruit (6) used for the treatment of cattle. The main objective of the study is to explore, identify and document the information regarding the ethno veterinary medicinal plants utilised by Gujjar for livestock healthcare which will be beneficial by providing a cost effective alternative to allopathic medication.

Keywords: Ethno-veterinary, Gujjars, Kalagarh Range.

INTRODUCTION

Indian subcontinent, rich in biodiversity has been regarded as a treasure of medicinal plants. Uttarakhand a hilly state of India is characterised by rich diversity of ethnomedicinal plants. Apart from these medicinal plants state is also rich in tribal diversiry having Taru, Boxa, Raji, Bhotia, Gujjars etc. Gujjars are nature dweller and are entirely dependent on the forest and forest products. The primary vocation of Gujjars are rareing cattle and selling of milk and milk products. As they are the inhabitant of forest they use traditional medicinal plants for the treatment of various ailments in cattles which is known as ethno-veterinary. Ethno-veterinary medicine is concerned with traditional animal protection from various ailments (Mc Corkle, 1986). Livestock population has been an important resource for various products like meat, milk and milk products etc., therefore the cattle's healthcare has been a genuine concern for Gujjars. Livestock holders have a good understanding of plant parts and quantities

needed and method of harvesting storing and utilizing medicinal plants to ensure good drug efficacy and enhance the survival of plant germplasm (Toyang *et. al* 1995). According to W.H.O. at least 80% of people in developing countries depend on traditional knowledge for controlling and treating the various ailments of human as well animals. These traditional ethno- veterinary medicine are cost effective and also dynamic (Warren, 1991). In India earlier information on the art of caring for animal was provided by the sacred text of Vedic religious (Mazarh-1998). Most of the tribal communities live in forest areas due to which they are in close vicinity with nature and know the nature very deeply (Tadav M. *et al.* 2012). Gujjars are nomadic in nature and use phytotherapy for the treatment of various ailments of their cattles. The diversified flora of Kalagarh range of Corbett National Park provide a valuable storehouse of medicinal plants and their parts such as root stem leaf tuber etc. In Uttarakhand a lot of efforts have been done for the documentation of

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knowledge of ethnoveterinary medicine (Tiwari L. and Pande P.C. 2009, Bisht N. *et al* 2004, Gaur R. D. *et al*. 2010).

Treatment of cattles diseases by medicinal plants has been practiced by Gujjars in the Kalagarh range for many years. Even with the advent of modern medicine for caring of cattles diseases Gujjars still prefer traditional medicinal for the treatment of cattles. This may be due to higher price of modern medicine and also because of the lack of accessibility to allopathic drugs. It is a well known fact that documentation and compilation of the knowledge related to ethno-veterinary practices was not considered to be an important aspect of bio sciences. However, it is felt that there is an urgent need to preserve the knowledge which is being passed from generation to generation by words of mouth. Ethno-veterinary information is in danger of extinction because of current rapid changes in communities all over the world (Kubkomawa *et al*. 2013) Apart from this the side effects of modern medicine and high cost involved have forced the researchers and scientists to explore the potential of the traditional medicine. The present study is an attempt to investigate new citation of plants used in ethno-veterinary traditional system of Gujjar community of Kalagarh range.

STUDY AREA

The study site Kalagarh range comes under Corbett National Park, Uttarakhand, which is situated in the foothills of Shivalic Mountains of outer Himalayas. Kalagarh Range is the core zone of Corbett Tiger Reserve (Fig. 1). Kalagarh Range is sub- divided into nine beats, which are Kalagarh South Beat, Kalagarh North Beat, Kalagarh West Beat, Nalkatta Beat, Paterpani Beat, Gaudpani North Beat, Gaudpani South Beat, Jamunagwar North Beat and Dhara Beat. Gujjars residing only in these two beats, Nalkatta beat and Kalagarh West Beat. A total of nine families inhabit in these two beats, five families in Nalkatta Beat and the remaining four families in Kalagarh West Beat. Geography and climate of study area is given in table 1.

Table 1
Geography and climate of study area

Particulars	Kalagarh Range
1. Latitude	29° 28' 35.9" to 26° 23' 25.6"
2. Longitude	78° 46' 49.4" to 79° 16' 21.3"
3. Height from sea level	230 to 410 mtrs msl
4. Geographical area	19181.6 hectares
5. Average Maximum Temperature	43° C
6. Average Minimum Temperature	8° C
7. Average Rainfall	1400 to 2100 mm

MATERIAL AND METHOD

Ethno-veterinary data were collected by conducting interviews with elder member of the family of Gujjar and knowledgeable person, who practices and had good experience about husbandry and veterinary medicine. The interviews were conducted in the simple language. A total of 25 informants were interviewed out of which 17 were males and 08 females. Mostly the informants were illiterate but some of them literate belong to different age groups (Table 2). Ethno-veterinary information include with the local name of the particular plant, plants utilised, medicinal uses and method of preparation and administration. Audio and video documentation were also taken for long conservation of the gathered knowledge. The plant specimen were also identifies with the help of existing floras and various experts of different institution. Forest walk with Gujjars was a special part of the survey to gather information about different species of medicinal plants available around the forest.

Table 2
Informants details

S. No.	Characteristic	Number of Informants	Responses %
1.	Gender Male	17	68%
	Female	08	32%
2.	Education Literate	5	20%
	Illiterate	20	80%
3.	Age ≥ 50	11	44%
	≤ 50	14	56%

RESULT AND DISCUSSION

The outcomes of the survey showed that a total of 29 ethno veterinary herbal plants belonging to 23 families were documented. The details on plants is categorised into the following headings viz. Botanical name, Family, Plants name used by Gujjars, Cattles disease name, plant habit, parts used, mode of administration and name of the informants and their ages (Table 3). Out of the total 23 families 6 families Euphorbiaceae, Fabaceae, Zingiberaceae, amaryllidaceae and piperaceae were dominant while the remaining 17 families were represented by single texon each. In this study the habit patterns of plants were recognised into 4 groups viz. Trees, shrubs, Herbs and climbers (Fig.2). The total 11 livestock diseases (Jada Bukhar, Ogan, Thanela, Sari, Maukhar, Bal jhadi, Afra, Nikala, seing Tutna, Taku and Kabj) were recorded and treated by these medicinal plants (Table 4). The root of administration of plants fall mainly into two categories oral and Topical.

Table 3: Ethno-veterinary plants used by Gujjars

S. No.	Botanical name of plants	Family	Name of plants by Gujjars	Cattles's disease name	Habit	Parts used	Mode of administration	Name of informants / Age
1.	<i>Ailanthus excelsa</i>	Simaroubaceae	Aru		Tree	Bark	Decoction of stem bark is given orally to treat malaria	Mustu / 51
2.	<i>Argemone maxicana</i>	Papaveraceae	Kandiyaru	Jada Bukhar	Herb	Fruit Leaves	1. Fruit is given orally. 2. Juice of leaves is given to animals suffering from malarial fever	Suleman / 31
3.	<i>Capsicum annuum</i>	Solanaceae	Pipli		Herb	Fruit	1. Paste of fruit is mixed with whay and is given to cattles 2. Crush dry fruits along with garlic and make bolus. Feed this medicine once a day for three days to cure jada bukhar.	Najiya Begum / 55
4.	<i>Embllica officinalis</i>	Euphorbiaceae	Amlu		Tree	Fruit	Juice of fruit is administered	Nambardar / 66
5.	<i>Tamarindus indica</i>	Fabaceae	Imli	Ogan	Tree	Fruit Root	1. Dried fruit powder is given with fodder. 2. Root extract is given orally	Gaussia / 56
6.	<i>Gardenia turgida</i>	Rubiaceae	Thnela		Tree	Seed	Decoction of seed is given orally.	Aashif / 27
7.	<i>Brassica campestris</i>	Brassicaceae	Sarsu		Herb	Leaves	Leaves paste is applied externally.	Nagma / 39
8.	<i>Curcuma domestica</i>	Zingiberaceae	Basar	Thanela	Herb	Rhizome	Rhizome paste is rubbed on nipple	Nagma / 39
9.	<i>Bombax ceiba</i>	Bombaceae	Semlu		Tree	Flower Bark	1. Ointment of flower bud paste is applied over nipple. 2. Bark of Bombax ceiba mixed with seeds of Glycine max and grind with water to eat.	Fatima / 28
10.	<i>Momordica charantia</i>	Cucurbitaceae	karela		Climber	Leaves	Infusion of leaves is given orally	Taj Bibi / 52
11.	<i>Oroxylum indicum</i>	Bignoniaceae	Tat		Tree	Seed Stem	1. Fresh seed paste is mixed with fodder and given to the cattle. 2. The crushed stem gives in dysentery.	Ushuf / 31
12.	<i>Coriandrum sativum</i>	Apiaceae	Dhaniya	Sari	Herb	Leaves	Coriander leaf juice, added to fresh butter & milk and taken internally helps in dysentery.	Taj Bibi / 52
13.	<i>Allium sativum</i>	Amaryllidaceae	Thom		Herb	Bulb	Bulb juice is given orally to cure dysentery.	Gulam Rashool / 52
14.	<i>Ricinus communis</i>	Euphorbiaceae	Aranda		Shrub	Seed	Crushed seeds are mixed with fodder and given to get relief from dysentery.	Gama / 45
15.	<i>Adiantum vasica</i>	Acanthaceae	Basuti		Shrub	Root	Decoction of root is given orally.	Atal Baby / 36
16.	<i>Moringa oleifera</i>	Moringaceae	Lamfali		Tree	Root	Root extract is mixed with buttermilk given to cure sari.	Ali Husair / 57
17.	<i>Eclipta prostrata</i>	Asteraceae	Fuli		Herb	Leaves	Leaves paste is applied externally on foot rot.	Mustak / 35

18.	<i>Punica granatum</i>	Lythraceae	Anar			Tree	Fruit Bark	Fruit bark paste is mixed with brassica oil and rubbed externally.	Rafi /29
19.	<i>Tectona grandis</i>	Lamiaceae	Sagon	Bal jhadi	Tree	Flower Seed	An ointment is made from Flower and seed paste and applied externally over the body.	Roshandeem /62	
20.	<i>Piper nigrum</i>	Piperaceae	Kali Mirch		Climber	Seed	Powder of seed with <i>Brassica</i> oil applied externally.	Roshandeem /62	
21.	<i>Piper longum</i>	Piperaceae	Lasar bel		Climber	Leaves	Fresh leaves paste is rubbed over the body of cattles to control hair falling.	Shramdar /65	
22.	<i>Holorrhena antidyseritrica</i>	Apocynaceae	Kogad	Afra	Tree	Bark	Decoction of bark is given orally.	Shamsher Ali / 69	
23.	<i>Tinospora cordifolia</i>	Menispermaceae	Gilo	Nikala	Climber	Stem	Pound 6 to 10 inch long stem to extract juice. This extract is given orally for 3 to 5 times a day.	Sakeena Bagum /51	
24.	<i>Oryza sativa</i>	Poaceae	Dhan	Sieng tutna	Herb	Seed	Seed powder sprinkled on injured horn to check bleeding	Noorjaha /47	
25.	<i>Tagetes erecta</i>	Asteraceae	Gaida		Shrub	Flower Leaves	1. Flower paste is mixed with <i>Brassica</i> oil and applied externally on broken horns. 2. Milled the fresh leaves and juice is applied externally	Mustaffa /71	
26.	<i>Allium cepa</i>	Amaryllidaceae	Pyaz	Taku	Herb	Bulb	1. Bulb infusion is given orally. 2. bulb is given with fodder to livestock.	Navi /27	
27.	<i>Zingiber officinale</i>	Zingiberaceae	Adrak	Kabj	Herb	Rhizome	Dried rhizome powder is made into a bolus to feed an adult animal to control Kabj.	Abdul /58	
28.	<i>Acacia nilotica</i>	Mimaceae	Khadi		Shrub	Leaves	The leaves pulp is made into a pasie and given to cattle for relief from kabj.	Abdul /58	
29.	<i>Cassia fistula</i>	Fabaceae	Karanga		Tree	Seed Fruit	1. Cassia seed pulp is kept in water for two days and given for habitual constipation 2. Dry fruits powder is mixed into 500ml water and drench it to get relief from kabj (constipation).	Saife /66	

Table 4
Cattle diseases and their symptoms

S.No.	Name of cattle's Diseases in Gujjar Language	Diseases	Disease symptoms	No. of plants
1.	Jada Bukhar	Malaria	Restlessness, fever, Trembling of the body.	3
2.	Ogan	Blood dysentery	Diarrhea contain large amount of blood and has a putrid odor.	2
3.	Thanela	Mastitis	Swelling, redness and hardness in the udder, a few clots and flakes are seen in milk.	5
4.	Sari	Dysentery	Slight fever, somewhat slow and depressed, decreased milk production, diarrhea is watery often has bubbles	6
5.	Maukhar	Foot rot	Foot is swollen, lesion in the skin between claws and emits foul odor, Animal put little weight on the affected leg.	2
6.	Bal jhadi	Hair fall	It may be seen as bald circles over skin or symmetrical hair loss all over the body.	3
7.	Afra	Bloat	Distension of belly, stomping of feet, labored breathing, frequent urination and defecation.	1
8.	Nikala	Unknown	Tumer formation at mammary glands.	1
9.	Seing tutna	Horn broken	Horn broken	2
10.	Taku	Fever	Stop rumination, cattles may refuse to eat, poor lactation, loss of body weight, body become weak.	1
11.	Kabj	Constipation	Continual switching of tail, uneasiness and an effort to empty the bowels.	3

Preparation of phytomedicine fall into 8 categories viz. Decoction, juice, paste, bolus, powder, extract, ointment and infusion. The plant parts used in ethno veterinary practices were Leaves (8 plants), seeds (7 plants), fruits (6 plants), barks (4 plants), roots (3 plants), flowers (3 plants), stems (2 plants), rhizome (2 plants) and bulb (2 plants) (Fig. 3). Application of plant parts to the cattles is known by the methods like decoction, juice, paste, extract, ointment, powder, infusion and bolus (Fig. 4).

CONCLUSION

Livestock play a major role in the life of Gujjar as their total economy is based on selling the milk and milk products. They still rely on ethno-veterinary plants for the treatment of diseases of their livestock. The forest flora has a vital role to play in the management of animal health care in the life of Gujjar community. The study indicates that the need of today is to popularised the herbal and folklore botanical products for their wide application and acceptance for safeguarding health of livestock. The Gujjars of Kalagarh range of Corbett National Park have a wealth of knowledge about traditional veterinary medicine for curing their cattle. It is also observed that the cattle healers do not always avoid allopathic drug because of their higher price and lack of availability in the remote areas, they often do so

because their experience and observation have registered that use of medicinal plants for treating certain livestock diseases provide better efficacy. Unfortunately the unique knowledge of ethno-veterinary medicine is decaying vigorously due to advancement of modern veterinary medicine and ignorance. Therefore it is necessary to record and conserve such type of valuable verbal communication before it gets lost forever. The plant mentioned in the present research work need to be chemically profiled to find out the pharmaceutical potential.

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