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Research Article

Harnessing of local plant species by indigenous people of Hamirpur district for ethno-veterinary purposes

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Abstract: Traditional medicines have been playing significant role in livestock health care management since long especially in remote area. This paper is based on a field survey conducted to collect information for curing different ailments utilized by local people and tribals in the Hamirpur district, Himachal Pradesh. Total 541 households were interviewed involved as informants with fully prepared questionnaires; proper interaction along with group discussion. Information were collected from the selected sites regarding way to cure different ailments of animals which was further analyzed for the authenticity of data through different statistical quantitative indices. We found total 121 plant species belonging to 61 families that have been documented to be of common use for curing 78 different types of livestock. Total ailments were categorized into fifteen major categories based on the body organ systems of livestock. The highest number of ethno-medicinal plants were recorded from family Fabaceae followed by Asteraceae and other families. Leaves were the most commonly used part of the plant for the preparation of ethno-medicinal medicines followed by other plant parts. *Achyranthes aspera*, *Acorus calamus, Pogostemon benghalensis* are the most important plants used to cure different ailments on the basis of use value index. On the basis of Informant Consensus factor (FIC), diseases related to digestive system, reproductive system, respiratory and fever were considered as major ailments in the livestock. In conclusion, we found in this study that most of the plants are widely used to cure different ailments as reported previously by different workers. However, on the first hand, many new findings to cure different ailments of livestock have been found during this survey indicating need for conducting more studies to get valuable information from the local community which are not documented yet. It was also found that indigenous people have excellent information with respect to ethnoecological aspect. There is an urgent need to study and document the traditional uses before they are disappeared from the society or community and further study must be integrated with qualitative and quantatitative data to assess importance of plants for ethno-veterinery purposes.

Keywords: Ethno-veterinary, Traditional uses, Informants, Tribal Community and Livestock.

Introduction

Plants are the real wealth of the universe designed by the nature for the welfare of other classes of organisms including human. These plants have been used for all necessities by human being for different purposes like food, medicines, fibers, wood, oils, resin etc. from the very beginning of human era (Sharma *et al.,* 2005, Confessor 2009, Tebkew *et al.,* 2014, Pal *et al.,* 2014 and Chand et al 2017). Human associations with animals are recorded since the beginning of human civilization. However, Anthropologists and development professionals started knowing the people's animal healthcare practices in 1980. In this respect, the term ethno-veterinary medicine was first time coined by Mc Corke in 1986 and defined in 1995. Ethno-veterinary medicine is the holistic, interdisciplinary study of local knowledge and its linked skills, practice, belief, practitioners and social structure pertaining to the health care and beneficial husbandry of food, work and other income producing animals, always with an eye to practical development application within livestock production and livelihood system, and with ultimate goal of increasing human happiness via increased benefits from stock raising. In general, Ethno-veterinary is a sub-discipline of ethno-ecology that pertains to ecological wisdom of local people regarding animal health care (Martin, 1995). Interest in this area has grown significantly leading to many publications in recent years (Chand *et al.,* 2016, Ali-Shtayeh *et al.,* 2016, Parthiban, 2016). However, this field has not gained desired recognition so far. People especially living in the remote area or villages have been utilizing ethno-veterinary medicines (EVM) as better alternative in terms of efficiency, low cost, availability and comfort administration. According to Tabuti *et al.,* 2003, EVM study can generate useful information to develop livestock healing practice and methods that are suited to local environment, it could be a key source to add new drugs and it can contribute for biodiversity conservation too, which is now a thrust core for saving biodiversity for human kind on the earth (Ali-Shtayeh *et al.,* 2016).

Animal husbandry is the backbone of the rural sector of Himalayan region and 80% of tribal population depends upon traditional medicines for their animal health care and more than 95% traditional medicine preparations are of plant origin (Kumar & Bharati 2013). So, the development of this sector may improve the standard of rural communities (Phondani *et al.,* 2009). India has rich diversity of medicinal plants used to cure different ailments of human being as well as animals by traditional medicinal treatments (Lulekal *et al.,* 2008, Devi *et al.,* 2009, Meena *et al.,* 2015, Parthiban *et al.,* 2016 and Chand *et al.,* 2017). It is estimated that 6500 to 7000 plant species are medicinally important and used by the society (Kalayou *et al.,* 2012).

In Himalayan region, Himachal Pradesh is one of the largest state. Out of the total 55,576 km area of the state approximate 14353 Sq. km is under forest which accounts for about 25% of total area, higher than the average estimate for the country i.e. 20.6%. However, forest cover is very low as compared to the other states of Himalayan region, for example, Uttaranchal has more than 45% forest cover (FSI, 2003). Flora of Himachal Pradesh consists of about 1038 genera and 3400 species belonging to 180 families (Chaudhary and Wadhwa, 1984, Choudhary, 1991). Remote areas of the state lack modern medicinal facilities and hence their dependency on the

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medicinal plants is very high and more than 500 different plants are used by local people for curing various ailments (Chauhan, 2003) and nearly 130 species are in heavy demand which contribute good trade in medicinal plants in the state (Badola and Pal, 2003). About 152 plants have been documented in India for traditional veterinary medicines (Srivastava *et al.,* 2000).

In Himachal Pradesh, Thakur *et al., (*2016) documented 74 plant species of Kangra and Chamba district used to cure 22 different ailments of Human and animals, few species were reported to cure livestock. In the foot hills of Shivalik region, residents of Gujjar community have used 35 plant species to increase milk production of their livestock (Rawat and Kharwal, 2010). Another study on the same community from Jawalmukhi region was reported by Sharma *et al.,* 2014; they found 24 plant species were used to cure different ailments. Since, Himalayan belts are the store house of many more important plant species that can be a good substitute for medicinal purposes for curing diseases of the live-stock in the modern time. Moreover, because of the importance of medicinal plant use and lack of practical and scientific information regarding the care of most common veterinary ailments, our primary purpose of this study was to document and analyses traditional information associated with the medicinal plants that are used in managing the animal health problems by the indigenous people of Hamirpur district in Himachal Pradesh. Since local people (informants) are well versed with the medicinal properties of the plants, we involved them in this study to collect basic information. The collected data was analysed both qualitatively and quantitatively for getting more evidences.

Materials and Methods

The study area comprised of several villages of Hamirpur district located at the south-western part of Himachal Pradesh. It lies between 76^0-17'-50" to 76^0-43'-42" east longitudes and 31^0-24'-48" to 31^0-53'-35" north latitudes. It is covered by lower Himalayas; the elevation varies from 400 to 1100 meters. The district is covering an area of 1118 km^2 of total geographical region of the state and it is bounded in the north by river Beas which separates from Kangra district and in the east, Bakhar and Seer Khads separates from Mandi district, whereas in the south, it is bounded by Bilaspur district and in the west by Una district. The climate is mainly sub-tropical and is not much hilly being closer to the plains. Annual average rainfall is about 1520 mm, where maximum rain fall occurs in the month of July to September and minimum in the months of April to June. In this region, demographic structures are mixed with tribal communities along with other different castes such as Brahmins, Rajputs, Kolis, Khatti, and Dumanas etc. However, tribal population in this region is mainly Gujjar, Gaddis and Shaphererd.

Ethnobotanical survey and Data collection:

Extensive field surveys were carried out in five tehsils (Nadaun, Barsar, Hamirpur, Bhoranj and Sujanpur Tirha) in Himachal Pradesh. It was conducted from April, 2013 to May 2017 for the collection of ethno-botanical information. Before conducting field survey, permission was obtained from the local authorities to work and collect information on useful plants with in the local communities. After that, all participants through Sarpanch (Pradhan), Panches and chowkidaars (Representatives of Villages) of the Gram Panchayats (Villages) were informed about the research work, and their benefits to the whole society. Information was gathered on indigenous uses of plant species as ethno-veterinary medicine by local people including Gujjar, tribes as well as some professional or experienced people. Communication was conducted in local Pahari (Hindi) dialect. Ethno- botanical data collection included semi structured interview, group discussion, free listing, plant identification, local name etc.

A total of 541 informants (330 males and 211 females) between the different age group from 18 to 100 were interviewed. Informants below twenty and above 90 were included in two separate group along with the ascending order of other age groups 21-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90 years, respectively. A questionnaire was prepared and distributed in each house hold which comprised of different parts: (1) Socio- demographic data included gender, age, qualification, occupation, community etc. (2) The information collected included, local name of plant species, ethno veterinary use of plants for treating different ailments, were collected with help of informant. For each plant mentioned or cited, vernacular name, part used, method for drug preparation and mode of administration were carefully recorded. (3) Consent of the informants obtained. (4) Name and identification of plants through PAN herbarium of the department of Botany was used for proper identification. Digital camera was used to take picture of each recorded plant species for the records.

Data analyses:

The information or data collected by interviewing informants was analyzed by different quantitative indices such as fidelity level (FL %), Factor informant consensus (FIC) and Use value (UV), Frequency Index (FI), Medicinal Importance Value (MIV), Relative Medicinal Importance Value (RMIV), Informant Fidelity Index (IFI) Information Index (II) and Total Importance Value (TIV), respectively.

Fidelity Level

Many plant species are used in the same use category, the most important and favored species used to cure particular ailment, which can be represented with the fidelity level (FL, Friedman *et al.,* 1986).

$$FL(\%) = \frac{Np}{N} \times 100 \text{---------- (i)}$$

Here, Np is the number of use reports cited for a given species for a particular ailment and N is the total no. of use reports cited for any given species. If FL value is higher (100%) for plants, it means that all use reports refer to the same way of using it, however, if the values being low then that plant might be used for many different purposes or ailments. (Musa *et al.,* 2011, Bhatia *et al.,* 2014).

Factor Informant Consensus:

Informant consensus factor was calculated for group of ailments to evaluate the selection of plants against the given disease category as per the level of agreement among informants those plant species which are effective for the treatment of disease having higher ICF level. To check the homogeneity of knowledge about the use of ethno-medicinal plants, the factor informant consensus (FIC) was used (Heinrich *et al.,* 1988). This was calculated as under:

$$FIC = \frac{(Nur-Nt)}{(Nur-1)}$$ ---------- (ii)

Where, Nur = number of use reports for particular use category and Nt = no. of species used for particular use category by all informants. FIC values are low, if plants are chosen randomly or if there is no exchange of information about their use among informants and Value is near to one (1) if information is exchanged among informants (Gazzaneo *et al.,* 2005, Sharma *et al.,* 2012).

Use Value Index:

Use value indices were used to calculate the relative importance of the species locally as under: (Phillips *et al.,* 1994, Hoffman and Gallaher, 2007)

$$UVi = (\sum_{i=1}^{n} UVis)/(ni)$$ ---------- (iii)

Where, UV_{is} is the number of plants cited by each informant for a given species and ni is total number of informants. Use value are high when there are many use reports for a plant and plant is important, and if value is approaches to zero (0) where there is few use reports related to its use and plant is not much important.

Frequency Index (FI_{is}):

According to Mahwasane *et al.,* 2013 and Parthiban *et al.,* 2016, frequency citation is a numerical percentage frequency of citation of single species by informants. It is used to compare the relative importance of each plant species. The following formula is used to calculate frequency index given by Madikizela *et al.,* 2012 as FI= FC×100

$$FIis = \frac{NCis}{TIn} \times 100$$ ---------- (iv)

NC_{is}= Total citations of *ith* species given by each informant, TI_n= Total number of informants involved during the survey for all plant species.

Medicinal Importance Value:

Medicinal Importance Value (MIV*is*) was used to calculate the relative importance of the species locally as under:

$$MIVis = \frac{(MUVis \times NCis)}{(TNC)} \times 100$$ ---------- (v)

Where, MUV_{is} is the number of uses of *ith* species, NC*is* is the total number of citation of *ith* species and TNC is the total number of citation of all species. Medicinal importance of each species depends upon the uses of the plants cited by the informants and total citations quoted by the all informants of same species. If the Medicinal importance is higher then it means the plant is commonly or frequently applied by the people for livestock care.

Relative Medicinal Importance Value:

$RMIV_{is}$ **of each species** was estimated by using the formula based on the medicinal use value of each species as under:

$$RMIVis = (\sum_{i=1}^{n} MUVis)/(MIVn) \times 100$$ --- (vi)

Where, $RMIV_{is}$ =Relative medicinal importance value of *ith* species, MUV_{is} = medicinal use value of each species and MIV_n = sum of medicinal importance value of total species**.**

Information Fidelity Index (IFI_{is}):

IFI_{is} was calculated by involving following formula which shows the significant reliability of the plant species with respect to informants.

$$IFIis = \frac{(NUis \times NCis)}{(TIn)} \times 100$$----------(vii)

Where, NU_{is} = number of uses of *ith* species, NC_{is} is denoted as the number of citations of *ith* species and TI_n = total number of actual informants participated to provide information of medicinal uses of all species documented.

Information Index (II_{is}):

Information index of each species is calculated by using the formula given below which shows the importance of each species in relation to informants.

$$IIis = \frac{(NUis \times NIis)}{(TIn)} \times 100$$ ---------- (viii)

Where NU_{is} refers to total number of uses of *ith* species and NI_{is} refers to number of informants which cited uses of *ith* species and TI_n total number of actual informants cited uses of all species recorded.

Total Importance Value:

Total importance value of each species **(TIV_{is})** is summation of all values calculated on the basis of use reports, citations and informants participated to provided information of medicinal importance of each and all species recorded which represents overall importance of *ith* species how much that species play important role for ethno-veterinary purposes to the indigenous community. Higher TIV_{is} shows the greater importance of the species.

TIV*is* =∑ (UVi+FIis+MIVis+RMIVis+IFIis+IIis) ---- (ix)

Where, UVi = Use Value of *ith* species, FI_{is} = Frequency index of *ith* species, MIV_{is} = Medicinal Importace Value of *ith* species, $RMIV_{is}$ = Relative Medicinal Importance Value of *ith* species, IFI_{is} = Information Fidelity Index of ith species and II_{is} = Information Index of *ith* species.

Table 1. Plants used to cure different livestock ailments by indigenous people of Hamirpur district, Himachal Pradesh.

S.No.	Scientific Name/Common name and Family name	Ailments/Treatment	Part used	Mode of administration	Citations	FI
1	*Abutilon indicum* (L.) Sweet Ban Bhindi Malvaceae	Urination problems	Leaf, Root	Half cup to one cup of leaf / root extract given orally twice a day for 5-6 days or till recovery.	10	100
2	*Acacia catechu* (L.f.) Willd Khair Fabaceae	Foot and Mouth disease	Heart wood	Heart wood burnt powder mixed with *Sesamum indicum* (sesame) oil or *Brassica campestris* (mustard) oil is applied on the infected part of animal.	12	75
		wound	Heart wood	Washed the infected part of three or four times and then applied powder or paste till recovery.	4	25
3	*Acacia nilotica* Benth. Babul/Kikar Fabaceae	Foot and Mouth disease	Bark	Bark decoction is used to wash the infected foot and with the molasses of *Saccharum officinarum* (sugarcane) and allowed orally to the infected animals also.	10	35.7
		Burning	Bark	Stem bark extract made into a paste with *Sesamum indicum* (sesame) oil and then applied on the wounds or burns.	6	21.4
		Stomach worms/ Increase milk in cattle	Pods	About 200 to 500 g are used as feed daily to kill the stomach worms and pods are also used as fodder to icrease milk production.	12	42.9
4	*Achyranthes aspera* Linn. Puthkanda Acanthaceae	Fever (Malma)	Root	Given powder form orally with water for one weak. Also given as decoction form.	15	31.9
		Wound worms	Root	Few parts of roots wrapped in blue cloth bound to the neck with sun rise and removed before sun.. This to be repeated daily for 5-7 days or till recovery.	5	10.6

		Removal of retained placenta	Root	Roots wrapped in cloth and bound to tail for expulsion of retained placenta after delivery in animals.	10	21.3
		For easy delivery	Root	Roots bound on the neck till delivery	12	25.5
		Pus discharges from ear	Leaf	Extract of leaves put in the ear twice daily to stop the discharge of pus from the ear but pour in other ear.	3	6.4
		Insect bite	WP	Extract of whole plant paste is applied on the effected parts of the animal body.	2	4.3
		Skin allergy	WAP	Rubbing of leaf extract on the infected body parts.	25	47.2
		Boils	WAP	Peeled off the aerial part of plant, warm it on the flame, applied on the boils	12	22.6
5	*Aloe vera* (L.) Burm.f. Ghi-kuwer/ Koaria Liliaceae	Constipation, Stomach disorder	WAP	Dried aerial whole part of plant is grounded into powder, mixed with equal amount of *Phyllanthus emblica, Terminalia bellerica and Terminalia chebula* fruit powder and Black salt. A handful of mixed powder is given daily in empty stomach.	6	11.3
		Swelling	WAP	Aerial parts prepared as decoction is given orally 3-4 times daily till recovery. Fresh small parts may be given in feed or fodder.	8	15.1
		Breathing problem	WAP	Internal part of leaves taken in a pot, fried, mixed into small amount of Black pepper and given orally for 5-7 days.	2	3.8
		Constipation, Fever/ Malma	Roots/ Leaves	Root or leaf powder or decoction of this part is given orally to the animal twice a daily for 5-7 days or till recovery.	20	50
6	*Adhatoda vasica* Nees Basuti Acanthaceae	Swelling	Do	Leaf decoction of *Adhatoda vasica*, *Cuscuta reflexa*, *Vitex negundo* and *Murraya koenigii* is prepared in water and used for bathing or may be taken orally.	15	37.5
		Joint pain	Leaf	Leaf boiled in water till 1/4 left, this decoction mixed in mustard oil and used for massage for joint pain.	5	12.5
		Ectoparasites (lices) intestinal worms	Bark/ Fruit/Leaf	Leaves infusion, seeds or bark powder is used for massage with mustered oil on the infected part of animal body to kill and repel ecto-parasites such as lice, fleas, bugs and flies. Decoction given orally for intestinal worms.	20	43.5
7	*Azadirachta indica* A. Juss Neem Meliaceae	Skin problem Allergy,	Leaf	Leaf extract is rubbed on the body or given orally in fodder.	15	32.6
		Fever	Leaf/ Bark	Leaf or bark decoction given orally twice a day till recovery.	8	17.4
		Constipation	Leaf	Leaf paste mixed with equal quantity of turmeric powder and given orally to animal for 5-7 days against constipation.	3	6.5
		Joint Pain		Powder of rhizome mixed with powder of *Artemisia scoparia* in *Brassica campestris* (mustard) or *Sesamum indicum* (sesame) oil and used for massage in case of fever, joint pain and arthritics.	28	46.7
8	*Acorus calamus* L. Baryan/Buch Araceae	Arthritics	Rhizome		5	8.3
		Swelling			7	11.7
		Fever	Rhizome	20-25 g of powder mixed with black salt and administered orally.	15	25
		Cudding			5	8.3
9	*Ageratum conyzoides* L. Neela Phool Asteraceae	Dog bite	Whole plant	After washing the bite parts, whole plant extract is applied properly.	8	100
		Bone fracture (Haddi Tootana)	Leaf	Leaf extract warmed and paste is applied daily on the broken bone part till further recovery.	6	60
10	*Agave americana* L *Keora/RamBan* Agavaceae	Wound	Leaf	Leaf extract is applied on the wound part of the animal. To get good result this would apply daily one or two times.	4	40
11	*Aegle marmelos* Webb. & Benth Bael/Bill Rutaceae	Fever	Fruit pulp	Extracted juice of fruit is given orally two times daily till further recovery.	20	74.1
		Constipation	Fruit	Fruit pulp, pods of *Cassia fistula* boiled, added jaggery, given orally in a day.	7	25.9
12	*Ajuga bracteosa* Wall ex Benth. NilKanthi Asteraceae	Foot and Mouth disease	Whole plant	Whole plant crushed, mixed with flour and given to the animal orally. It may be given in advance so that animals do not suffer from this disease.	12	100
13	*Albizia lebbeck* Benth. Siris, Sirin Fabaceae	Eyes whiteness	Seed	Seed grounded and filtered through 2-3 folds of cotton cloth and put in the affected area, it remove the whiteness and growth in eyes of animals.	10	71.4
		Night blindness	Leaf	2-3 drops of leaf extract administered 2-3 times daily.	2	14.3
			Bark	Bark crushed and given with wheat flour for seven days.	2	14.3
14	*Andrographis paniculata* (Burn f.) Acanthaceae	Foot and mouth disease	Whole aerial plant	Whole aerial part of plant in dried form, powdered mixed with salt and applied or decoction of plant is used for washing the infected foot and mouth parts of animal.	7	77.8
		Fever	WP	Decoction of leaf or whole fresh aerial plant is given	2	22.2
		Rheumatism, Body pain	Whole plant	Juice extracted from fresh leaves and fruits are applied over animal body.	2	40
15	*Argemone mexicana* Linn. Lee Papaveraceae	Retained Placenta	WP	Whole plant is given orally in feed or fodder for the removal of retained placenta.	2	40
		Foot and Mouth disease	Leaf	Leaves extract is also applied on the infected feet of the cattle/ animals and also given orally.	1	20
		Prolapsed uterus/Uterus expulsion	Rhizome	Seeds are grounded and mixed wheat flour and administered orally.	10	38.5
16	*Arisaema tortuosum* (Wall.) Schott Kire ki Chhalli Araceae	Fever, Anorexia	Tuber	Small piece of tuber in a ball of wheat flour, make like a tennis balls and given orally to oxen when suffering from fever (Pate the fever). This can be given with tuber black pepper and Jaggery.	8	43.5
		Dogbite	Tuber	Crushed tuber pieces mixed with 5-7 seeds powder of black pepper, and given with wheat flour.	5	21.7
17	*Artemisia nilagirica* (C.B. Clarke) Chharmra Asteraceae	Digestive disorder	Leaves	Leaves are grounded along with the leaves of *Vitex negundo*, *Adhatoda vasica*, *Pogostemon benghalensis*, *Murraya koenigii* in equal amount and mixed well with four types of salt in it and a handful given daily in morning in empty stomach.	15	6 8.2
		Eye problem	Leaf	Leaf extract is administered to the affected area.	7	31.8
18	*Artemisia scoparia* Waldst. & Kit Chaunkhera/ Martessia Asteraceae	Fever	leaf/seed/flower	Inflorescence and seeds powder is used for massaging; decoction may be given orally.	25	100

		Fever	Roots or aerial part	Root tuber or aerial parts mixed with feed and administered orally.	30	63.8
19	*Asparagus racemosus* Willd Sanspai Liliaceae	As coolant after conception	Root tuber	Tuber pieces mixed with fodder or animal feed is given after conception. Decoction of tuber about 1-2 liters mixed with 500 g jaggery is given for drinking for 2-3 days after conception.	13	27.7
		To increase lactation	Root tuber	Tuber pieces mixed with fodder or feed is given to increase the milk production.	4	8.5
20	*Asphodelus tenuifolius* L. Piyaji Liliaceae	Boils	whole aerial parts	Whole aerial parts extract paste is applied on boils.	6	54.5
		Skin allergy	WAP	Rubbing the leaf extract on the infected parts.	5	45.5
21	*Aerva pseudotomentosa* Blatt. & Hallb Amaranthaceae	Foot and Mouth disease	Flowers	250 ml of flowers decoction given orally twice a day till recovery; and infected foot and mouth part may also be washed with this decoction which may provide more relief.	5	41.7
		Fever (Malma)	WAP	Whole aerial part with flower is used to make decoction and mixed with gur or Jaggery and given to animal two times in a day.	7	58.3
		Mouth and Foot Disease	Leaf	Leaf extract given orally and used to washed the infected body parts.	2	15.4
22	*Bambusa arundinaceae* (Retz.) Roxb. Bainjh Poaceae	Milking enhancement (Lactation)	Leaf	Leaves are used as a fodder to it enhances the milk production.	7	53.8
		Cough	Scale leaf	Burnt leaf made into powder and given orally.	2	15.4
		Expulsion of Placenta	Leaf	Leaf extract is given orally.	2	15.4
		Cold and Cough	Leaf	The leaves are used as fodder.	4	26.7
23	*Bauhinia vahlii* Wight and Am Taur Fabaceae	Body tonic (Weakness)	Seed	Seeds grounded and mixed with feeds are given for weakness.	7	46.7
		Tape worm, Worms	Leaf, stem	50-100 ml Leaf /stem extract is given orally in empty stomach daily.	4	26.6
		Tumour	Bark	Bark crushed and mixed with feed or fodder and given orally 5-7 days or decoction of the bark is also given two times daily till recovery.	4	14.8
24	*Bauhinia variegata* L. Karaal/Kachnaar Fabaceae	As coolant to retain pregnancy after conception	Leaf	Leaves act as cooling agent and given orally as fodder to ensure the successful pregnancy in cow and Buffalo.	15	55.6
		Lactation	Leaf	Leaves used as fodder	8	29.6
		Expulsion of Uterus (Bhaar Daina)	Bark/ Roots	Root and old stem cut in to small slice pieces, boiled in water till it become semisolid, Extract is called as Rasaut which is used for the treatment of various diseases.	13	41.9
25	*Berberis asiatica* Roxb. ex DC. Kashmal/ Kasmalu Berberidaceae	As Coolant to retain successful pregnancy after conception	Old stem, Root	Rasaut is diluted in water and given as drink for 2-3 days	6	19.4
		Eye redness problem, Fever	Old stem/root	Rasaut is poured in eyes of animal to reduce redness, discharges from eyes and injuries. Rasaut extract is given orally for fever.	7,5	22.6,16.1
		Fever (Malma)	WP	Decoction of whole plant of about 250 ml is given twice daily till recovery.	11	28.2
		Milking enhancement (Lactation)	WAP	Aerial part of plant mixed in fodder, increase milk.	10	25.6
26	*Boerhaavia diffusa* L. Utshat/ Punernava Nyctaginaceae	Retained placenta after delivery	WP	1 kg of whole plant boiled in 5 liters water till 1/4 left and then this decoction given orally two times daily of retained placenta.	15	38.5
		Urinal problems/ swelling	Roots	Whole plant is fed to animal daily for curing urinary, swelling problems.	3	7.7
		Bone fracture/ Dislocation	Bark	Bark grounded, a small amount is mixed with turmeric powder and applied paste on the broken or dislocated bone area daily till complete relief or recovery.	5	55.6
27	*Bombax ceiba* L. Simbal, Simal Bombaceae	Mastitis (Blocking of milk pore) Thanela		Grounded bark is mixed with feed or fodder which increases the flow of blocked milk in animal like buffalos, cow etc.	4	44.4
28	*Bryophyllum pinnata* (Lam.) Oken. Pather Chat Crassulaceae	Swelling in nipples, Joint pain, Boils	WP	Leaf of the plant dip in mustard oil slightly heated on flame and paste or applied on the affected part of the animals.	4+2+7	30.8 15.4 53.8
		For heat to perceive pregnancy	Bark	Decoction of bark 200-250 ml given orally to retain pregnancy.	15	60.0
29	*Butea monosperma* (Lam.) Taub. Palash/Palah Fabaceae	Abortion	Bark	Bark crushed, boiled and decoction is used with molasses of sugarcane for abortion.	6	24.0
		Constipation	Leaf	Leaves mixed with grasses are used as fodder for animal.	4	16.0
		Tumour or wart	Latex	Milky extract of plant is applied on tumor/ wart	3	27.3
30	*Calotropis procera* R.Br. Bara Aak/Ak Asclepiadaceae	Dog bite, snake bite	Latex	Milky extract is applied on bitten part of the body to neutralize poision.	3	27.3
		Hard neck of Ox	Leaf	Powder of burnt leaves mixed with classified butter or desi ghee and applied as massage on neck.	5	45.5
31	*Cassia fistula* L. Amaltas/Ali Fabaceae	Indigestion, stomach pain	Seed	Pods crushed and boiled in water till 1/4 left, this decoction mixed with appropriate amount of *Trachyspermum ammi* (Ajwin), *Linum usitatissimum* (Alsi) and a jaggary or molasses of sugar cane is given orally up to 500 ml twice a day for 2-3 days.	35	60.3
		Constipation (Ban)	Pod	Pods of *Cassia fistula*, internal part of fruit of *Aegle marmelos* and *Lens culinaris* (Masar Daal) boiled in water till 1/3 left and jaggery is added and admistered.	15	25.9
		Cough/cold		Pod decoction mixed with jaggery and fed to animal.	8	13.8
32	*Cassia tora* L. Allown/ illama Fabaceae	Milking enhancement (Lactation)	Leaf	Leaves are used as fodder to increase milk production in animals.	7	70
		Dog bite	Seed	Seeds powder of *Cassia tora* and *Cassia occidentalis* mixed in 1-2 litres curd or lassi and orally administered.	3	30
33	*Cassia occidentalis* L. Chhoti ilama /Alowan Fabaceae	Dog bite (Rabbies)	Seed	About 50-100 g of seed powder mixed with 1-2 liters curd or lassi and given orally.	14	100
34	*Cannabis sativa* L. Bhang Cannabaceae	Insect bite	Leaf	Massage with leaf extract on the affected area of the animal to neutralize the poison.	5	55.5
		Digestion, constipation	Leaf	Leaves fodder is given to animal for stomach pain, constipation problem.	4	44.5

35	*Carissa spinarum* L. Karaunda/ Garuna Apocynaceae	Milking enhancement (Lactation)	Leaf/Fruit	Leaf and fruit used as fodder to increase the flow of milk.	8	66.6
		Constipation, digestion problem	do	Leaf and fruit are used as feed.	2+2	16.7 16.7
36	*Celastrus paniculatus* Willd. Sankhiryan, Sankheere Celastraceae	Fracture, Joint pain, Massage	Seed/Oil	Seed oil is massaged on the infected body part of animal having joint pain or fracture.	5+15	16.7 50
		Milking enhancement (Lactation)	Seed	Seeds are boiled with *Gossypium esculenta* seeds and given daily to animal for the increase of milk production.	10	33.3
37	*Centella asiatica* L. BrahamiButi Apiaceae	Retention of successful pregnancy after conception	Whole plant	Whole plant extract or decoction is used to retain pregnancy after conception for 3-4 days	20	100
38	*Centipeda minima* (L.) A. Br. & Asch. Nachhiknu/ Chhiknu Asteraceae	Uterus expulsion	WP	Powdered form of plant mixed with water and sprayed on the out coming part of the uterus.	15	83.7
		Stomach pain	WP	Dried powder of whole plant is given to animal with water for curing stomach pain and it may be given in semi-solid form as halwa.	3	16.7
39	*Cheilanthes albomarginata* C.B. Clarke Silver Fern Adiantaceae	Intestinal Worm,	WP	Extracted juice is administered orally.	3	42.9
		Wound	WP	Grounded aerial parts and paste is applied on the wound.	4	57.1
40	*Chenopodium album* L. Bathua/ Kunnaha Chenopodiaceae	Milking enhancement (Lactation)	WAP	Whole aerial plant part is used as fodder.	12	75
		Removal of retained placenta after delivery	WP	Whole plant is used as fodder.	4	25
41	*Chenopodium ambrosioides* L. Kaa Ajwain Chenopodiaceae	Digestion, constipation	Seed/Leaf	Decoction of seeds and leaves is mixed with jaggery given orally to animals for 2-3 days.	30	60
		Stomach pain	WAP	Decoction of WAP is prepared by boiling it in water under low flame till ¼ left. Jaggery is added	15	30
		Cudding (Juggali)	WAP	Plant part is boiled with water until ¼ of it is left. Jaggery is added and mixture id administered orally.	05	10
		Loose motion	Leaf	Aerial parts boiled in 4-5 liters water until only 1/4 left and 200-250 ml given orally twice daily for 5-7 days or till recovery.	20	51.3
42	*Cissampelos pareira* L. Patindu, Bhatindu Menispermaceae	Swelling/wounds/bois		Application of leaf decoction and extract is applied on the wound or infected part of the animal body.	12	30.8
		Eye problems	Leaf	Few drops of Leaf extract put in eye for curing redness and other problem of the eyes.	2	5.1
		For successful conception or pregnancy in buffalos	WAP	Decoction of whole aerial parts is given after conception for 2-3 days.	5	12.8
43	*Cissus quadrangularis* L. Hadjor Vitaceae	Bone Fractures	Stem	Stem of the plant crushed, a paste is made and it is applied on the fractured part of the body.	15	100
		Cough	Leaf	Leaf powder or decoction mixed with jaggery and given orally daily.	24	66.7
44	*Colebrookea oppositifolia* Smith Dushane Lamiaceae	Fever	Root	Powder of dried root mixed with leaf powder of *Murraya koenigii* and *Adhatoda vasica*, one handful is given to animal two times till recovery.	8	22.2
		Eye problem	Leaf	Leaf extract filtered with 2-3 layers of clean cloth, 2-3 drops are used two times a day in eyes to reduce redness or injury.	4	11.1
45	*Colocasia esculenta* L. (Schott.) Jangli Kachaloo or Arbi Araceae	Constipation	Tuber	Tuber cut into small pieces, mixed in animal feed to cure constipation. Also can be used as fodder.	8	66.7
		Cudding	Tuber	Tuber crushed mixed with wheat flour and handful given two or three times a day.	4	33.3
46	*Commelina benghalensis* L. Chhura Commelinaceae	Eye redness	WAP	Whole aerial plant of extract is applied in the eyes.	16	100
47	*Cordia dichotoma* G. Forst. Lasura Boraginaceae	Nipple wounds, cracks or cut	Leaf	Powder of burnt leaves mixed with butter or classified butter and applied on the infected part of nipples of animals daily till recovery.	8	66.7
		Wound worms		Powder of Burnt leaves mixed with classified butter or ghee and applied on the infected part till recovery.	4	44.3
48	*Costus speciosus* (J.Konig), Sm. Kire ki Bari Chhali Costaceae	Fever	Tuber	Tuber is crushed in wheat flour (Make ball or laddoo) and fed to the animal.	6	40
		Swelling/ Boils	Tuber	Small piece of tuber in wheat four ball is given orally.	5	33.3
		Dog bite (Rabbies)	Tuber	Small piece of tuber in wheat four ball is given orally	4	26.7
49	*Curcuma aromatica* Salisb Ban haldi Zingiberaceae	Loose motion	Rhizome	Rhizome cut in to small pieces and mixed in feed or fodder.	23	74.2
		Prevention of mis-carriage	Rhizome	Rhizome pieces mixed with feed or fodder and given to the animals.	2	6.4
		Stomach pain, Anorexia, Ghumanghera	do	Rhizome powder boiled in water along with some jaggery and given orally. Powder grounded with water and paste on the head of animal.	3,2,3	9.0 6.4 9.0
50	*Cuscuta reflexa* Roxb. Akkash Bel Convolvulaceae	Swelling	whole plant	Whole plant boiled in water, and then it is used for bathing and also given orally to the animals.	25	62.5
		Fracture/ Gum wound		Decoction of *Cuscuta reflexa*, *Doedenea*, *Murrya koengii*, *Vitex negundo* leaf is used for bathing and prepared paste applied on the fractured part of the body till recovery.	15	37.5
51	*Cryptolepis buchanani* Roem and Schultes Bakerbel Ascelpiadaceae	Milking enhancement (Lactation)	Leaf	Leaves of plant are used as fodder to increase milk in goats and sheep.	24	66.7
		Dog bite (Halka)	Root	Roots grounded, boiled in water, decoction given one time daily for seven days	3	8.3
		Cudding (Juggali)	WAP	Whole aerial plant mixed with feed of the animal and given orally.	5	13.9
		Mouth ulcer	WAP	Whole aerial parts are crushed and rubbed in the mouth of the infected animal.	4	11.1
52	*Cynodon dactylon* (L.) Pers. Doob grass/ Dhruv Poaceae	Burning wounds	whole plant	Extract of whole plant is applied on the burnt area.	10	23.8
		Urination problems	Whole plant	Decoction of whole plant 400-500 ml is given orally twice daily till further recovery.	7	16.7
		Lactation (Increase milk), Tonic	WAP	Whole aerial parts used as fodder to increase milk production in animals and improve the health of animals.	25	59.5

53	*Dalbergia sissoo* L. f. Shisham/Tahli Fabaceae	Blood in urine	Leaf/Young pod	Leaves and Young pods are used as fodder to cure blood in urine. Decoction of these parts is better for quick relief.	10	100
54	*Cyperus rotundus* (L.) Deela/ Morla Cyperaceae	Fever	Tuber	Tubers of the grass boiled in water to form decoction 400-500 ml is given two times for a weak or till further recovery to the animals.	10	100
55	*Dactyloctenium aegyptium* (L.) P. Beauv. katikuti Charakha gass Poaceae	Milking enhancement (Lactation)	WP	Whole aerial parts of the plant is used as fodder	15	100
56	*Diospyros cordifolia* Ebenaceae	Foot and Mouth disease	Fruit	Fruit pulp massed with some amount of water and applied on the affected parts.	12	100
57	*Dodonaea viscosa* L. Jacq. Mehandru Sapindaceae	Fractured bone	leaf	Leaf extract mixed with the leaf paste of other plant extract such as *Adhatoda vasica*, *Dodonaea viscosa, Cuscuta reflexa, Vitex negundo*, *Flucortia indica* and applied on the affected areas.	28	65.1
		Burning		Paste prepared from the leaves of the plants is applied on the burnt part of the body.	15	34.9
58	*Equisetum debile* Roxb. ex Vauch. Ghornali Equisetaceae	Prolapsed uterus or Evagination of Uterus	WAP	Whole plant crushed, mixed in wheat flour and given orally two times daily for seven days	8	100
59	*Erythrina indica* Lamk Fabaceae	Fever	Bark	Bark boiled in water till ¼ left; about 500 ml of decoction is given to animal two times in a day for two –three days.	3	100
60	*Eupatorium adenophorum* Spreng. Asteraceae	Constipation/ Ban	Leaf	Leaves boiled in 4-5 litres water till 1/4 left, 100-200 ml decoction given two or three timesin day for two days orally given to the animal.	5	100
61	*Euphorbia royleana* Thoar (Chhun) Euphorbiaceae	Ovulation, stimulation	Young shoot	It stimulate the ovulation in animals where pregnancy is not occurred due to some related problems	5	62.5
		Tail infection	Milky Latex	Milky latex is applied directly on the infected tail.	3	37.5
62	*Euphorbia geniculata* Ort. ex Boiss. Bari Dodhi Euphorbiaceae	Loose motion	Leaf or young shoot	Leaves mixed with feed given orally with normal water.	4	36.4
		Constipation	Leaf	Leaf decoction with lukewarm water.	4	36.4
		Milking enhancement (Lactation)	Leaf	Leaves used as a fodder to increase the milk in goat and sheep	3	27.2
63	*Ficus benghalensis* L. Bad/ Bargadh Moraceae	To retain pregnancy or heat in buffalos	Leaf	Leaves mixed with fodder.	10	100
64	*Ficus cordifolia* Thunb. Khain Moraceae	Milking enhancement (Lactation)	Leaf	Leaves are given mixed with other fodder to increase milk production.	15	100
65	*Ficus palmata* Forsk. Phalgu/ Anjhir/Dogla Moraceae	Milking enhancement (Lactation)	leaf	Leaf used as fodder to increases the milk production in animals.	8	100
66	*Ficus religiosa* L. Peepal Moraceae	Bowls/ Burns	Bark	Bark powder paste is applied on the affected parts of the animal body.	13	61.9
		Lactation, Digestion	Leaf	Leaves are fed to increase milk and it may cure digestive problems of animals.	5,3	23.8,14.3
67	*Flacourtia indica* (Burn.f.) Merr. Kangu Salicaceae	Swelling, Fracture and Body pain	Bark	Bark in fresh or powder form is mixed with leaf of *Adhatoda vasica*, *Vitex negundo* and *Dodonaea viscosa* in equal amount, boiled in water and used for washing the infected part of the animal body daily till recovery.	7,8	41.2,47
		Liver problem		Bark powder or decoction is given to the animals.	2	11.8
68	*Fumaria indica* (Haussk.) Pugsley. Pitpapara, Papara Fumariaceae	Jaundice/ Liver problem	WP	Whole plant boiled in water under low flame till 1/4 is left and 100-200ml is given twice a daily for 5-7 days or till complete recovery.	10	55.6
		Fever	WP	Whole plant decoction orally given two times daily till recovery.	8	44.4
69	*Gloriosa superba* L. Colchicaceae (Liliaceae)	Removal of retained placenta after delivery	Root	Root decoction mixed in Jaggery (Gur) is given orally after delivery to expel the retained placenta.	9	100
		Worms	Leaf/Bark	Bark extract or leaves is given as fodder.	7	29.2
70	*Grewia oppositifolia* Roxb. Beul/Bheul Malvaceae	Milking enhancement (Lactation)	Leaf	Leaves used as fodder to increase milk in animals.	10	41.7
		Easy delivery	Bark	Bark is boiled in onelitre water till 1/3 is left, then it is mixed with milk, *Brassica campestris* (mastred) oil and Mishri (sugar) and given orally.	3	12.5
		Fever	Leaf	Leaves are fed as fodder.	4	16.6
71	*Listea chinensis* Lam. Rihaan, Ruhaan Lauraceae	Broken bone	Bark	Paste of Bark powder is applied on broken bone for quick recovery. Powder is also given orally to animal in wheat flour.	35	87.5
		Wound	Bark	Bark grounded, made into paste and then applied on the wound.	5	12.5
72	*Holarrhena pubescens* Wall ex. G.Don Keur, Inderjaun Apocynaceae	Prolapsed Uterus (Evagination of Uterus)	Bark	Bark is grounded into paste and applied on the exposed part or given decoction with jaggery orally.	18	100
73	*Leucaena leucocephala* (Lam.) de Wit Alsaeenia Fabaceae	Milking enhancement (Lactation)	Leaves	Leaves mixed with fodder grass are given to the animals.	10	100
74	*Lepidagathis cuspidata* Nees Billi Acanthaceae	Indigestion	WP	Grounded whole plant along with *Allium cepa* (onion) and *Nicotiana tabacum* (Tobacco leaf) and 5-7 seeds of *Piper nigrum* (Black pepper) and then given orally to animal.	7	100
75	*Madhuca indica* JF Gmil Sapotaceae	Fever	Flower	Flowers and leaves grounded and mixed with jaggery for consumption.	5	50
		Constipation	Bark	50 g bark powder mixed with wheat and Gram flour is given orally.	5	50
76	*Mallotus philippensis* (Lam.) Muell.-Arg. Kamal/ Kamola Euphorbiaceae	Worms	Seed powder	Seed powder mixed with curd or lassi 1/2 liters is given orally to kill intestinal worms.	25	86.2
		Milking enhancement	Leaf	Leaves are used as fodder.	4	13.8

77	*Martynia annua* L. Puthkoun Martyniaceae	Skin allergy	Leaf, stem	Leaf/stem crushed gently applied on the affected body part of the animal.	6	37.5
		Dry cough	Fruit	Burnt fruit powder is given orally.	10	62.5
		Lices (Ectoparasites)	Leaf/Bark/ Fruit	Leaf or seed decoction applied externally on whole body of the animal.	9	45
78	*Melia azadirachta* L. Drerk/ Bakain/Mahaneem Meliaceae	Skin problem	Leaf/seed	Leaf or seed decoction 50-100 ml given orally daily till recovery.	7	35
	Bhui AMLA	Fever	WP	Whole plant about 100 g boiled in one liter water at low flame till 1/4 left and then given orally two times daily 2-3 days or till recovery.	4	20
79	*Moringa oleifera* Lam. Sunna Moringaceae	Retention of pregnancy	Leaf/Bark	Leaves are given as fodder to cow or buffalo after conception to retain pregnancy. Bark extract or decoction is given orally for 4-5 days.	18	78.3
		Swelling in Nipple	Fruit	Fruits or pods are used as feed with other fodder for 5-7 days or till recovery.	5	21.7
		Stomach indigestion	leaf	Leaf powder mixed with *Trachyspermum ammi* (Awain) powder and four salts and a handful is given daily in empty stomach to cure indigestion.	17	51.5
80	*Murraya koenigii* (L.) Spreng. Gandhla/Karry Patta Rutaceae	Animal makhi, Allergy, Nipple bleeding, wound, Worms, Foot and Mouth disease	Leaf / Bark	Leaf extract is used as massage or applied to repel makkhi (Parasite insect) or fleas that suck blood from the body of animals; It is also applied on boils, wound, nipple wounds and foot and mouth diseases. Oral administration done to kill or expel the intestine worms.	3, 4, 5, 2	9.1 12.1 15.1 6.1
		For heat in animal	Leaf	Extract or decoction of leaves is given for 3-4 days to produce heat in buffalos before conception.	2	6.1
81	*Mucuna pruriens* (L.) de Candole Duragal Fabaceae	For heat in animals	Seed	Seed powder with wheat flour or in feed is given to animal before conception.	15	75
		Sex stimulant	Seed	Seed powder is also given orally as stimulant.	5	25
82	*Origanum vulgare* L. Jungli Tulsi Lamiaceae	Cough & Cold	Leaf	Leaf extract is given orally to animal in case of cough and cold	10	40
		Gastric problem/ Constipation		Leaf powder mixed with the powder of *Terminalia chebula*, *Terminalia bellerica*, *Phyllanthus embilica*, *Trachyspermum ammi* and four salts, handful powder in empty stomach given orally daily.	15	60
83	*Oroxylum indicum* Vent. Tat palangha Bignoniaceae	Consipation/ Indigestion/ Gastric problem	Bark	Bark decoction is given to animals orally twice a day till recovery.	15	100
84	*Ougenia oojeinensis* (Roxb.) Hotch. Sanan/Sandan Fabaceae	Worms	Leaf/ Bark	Leaf as fodder or bark decoction is used to cure the intestinal worm.	5	50
		Blood purifier	Bark	Bark decoction with Jaggery is given orally to the animal.	5	50
85	*Oxalis corniculata* L. Khatti Mithi buti Oxalidaceae	Stomach problem	WAP	Extract of whole plant provided orally stomach problem.	8	61.5
		Eye problem	Leaf	Leaf extract poured in the eyes in infection, injury etc.	5	38.5
86	*Phyllanthus emblica* L. Amla/Ambla Euphorbiaceae	Indigestion, Constipation	Fruit	Fruit powder mixed with the fruit powder of *Terminalia chebula*, *Terminalia bellerica*, *Trachyspermum ammi* and four salts in equal amount and then a handful given orally in empty stomach.	35 20	53.8 30.8
		Anemia	Fruit	Fruit powder mixed with the fruit powder of *Terminalia chebula*, *Terminalia bellerica*, *Trachyspermum ammi* and four salts in equal amount and then handful powder in empty stomach given orally daily	10	15.4
87	*Pinus roxburghii* Sarg. Chir Pinaceae	Worms Ascaris/ Tapeworms	Needles	Extract of leaves is used to expel or kill intestine worms of animals; 100-200 ml is given orally two times for 3-7 days.	10	66.7
		Broken horn/ Pain relief	Resin	Resin is applied on the broken horn for quick recovery.	5	33.3
88	*Pistacia integerrima* L. Kakersinghi Anacardiaceae	Cooling effect to retain pregnancy after successful conception.	Bark	Bark decoction is given to animals after conception to retain pregnancy for 3-5 days.	12	100
89	*Plumbago zeylanica* L. Chitra Plumbaginaceae	Mastistis (Bis-Basaihar)	Root paste	Root grounded with water and made into paste which is applied on the infected area of animal.	20	80
		Infection in tail	WAP	Crushed the whole aerial plant and prepare a semisolid material and paste applied on the infected part of the tail and then bandage.	5	20
90	*Podophyllum hexandrum* Royle Furfanu Podophyllaceae	Fever	Fruit	Fruits with feed given orally for checking fever in the animal. Also provided with wheat flour along with feeding.	7	70
		Nasal discharge	Fruit Root	Fruit powder mixed with wheat flour is also given orally. Decoction of the roots is given for nasal discharge.	3	30
91	*Pogostemon benghalensis* Burm. F. Kali Basuti Lamiaceae	Fever	leaf	300-400 ml of leaf decoction is given orally twice a day for 4-5 days or till further recovery.	20	35.7
		Spot/ Patches on skin	Leaf	Leaves crushed and rubbed on the infected part of animal body to remove or eradicate spots or patches on the skin.	2	3.6
		Eye troubles	Leaf	Leaf extract filtered with the 2-3-fold of cloth and put in the infected eyes.	16	28.6
		Swelling, Cough, Digestion	Leaf Root	Dried leaf in shade, grounded and mixed four salts in it and given orally daily. For better result leaf powder of *Adhatoda vasica*, *Dodonaea viscosa and Vitex negundo* in small amount is also added in the above preparation.	5,7,6	8.9, 12.5 10.7
92	*Premna latifolia* Roxb Bakaar, Bhankaar Verbenaceae	Skin Allergy	Leaf Bark	Leaves extract is applied on the infected skin. Decoction of plant is given orally.	25	53.2
		Boils	Leaf Bark	Paste of bark is applied on the boil.	15	31.9
		Abdomen/stomach pain	Bark	Decoction of plant bark is given orally for pain relief.	7	14.9
93	*Pueraria tuberosa* DC. Salod, Siyali Fabaceae	Cooling effect to retain successful pregnancy after conception	Tuber	Tubers in small pieces are given with feed or fodder after conception to retain pregnancy.	7	100
94	*Riccinus communis* L. Arand Euphorbiaceae	Worms/constipation /To clean stomach	Oil/seed	Seeds or seed oil is used to treat constipation or worms in intestine of animals	15+5	36.6 12.2
		Joint pain	Leaves	Leaves in mustard oil heated slightly on flame, applied or bind on the aching of animal to relieve the joint pain.	21	51.2

95	*Rhynchostylis retusa* Blume Bhangru Orchidaceae	Fractured bone	Leaf and Flower	Leaf and flower paste is bounded on the affected part of the animal body daily.	7	70
		Indigestion	Tuber	Tubers used as fodder.	3	30
		Skin diseases	Fruit	Fruit crushed is given with wheat flour	4	20
		Fever	Fruit	Fruit extract is given orally for fever relief.	2	10
		Foot and Mouth disease	Fruit	Fruit decoction is used to clean the infected parts of feet.	3	15
96	*Randia dumetorum* (Retz). Lam. Rada Rubiaceae	Tail infection (tail gangrene)	Thorn	Thorn (spine) crossed into infected tail and remain inside till recovery	3	15
		Boils	Thorn	Thorn is punctured in the boils so that it bursts.	2	10
		Constipation	Fruit	Fruit extract or juice in small amount is given orally to animal with Luke warm water.	3	15
		Taboos (Locket)	Wood	Wood locket is used in animal neck to avoid bad spirit and evil.	3	15
97	*Saccharum munja* Roxb. Munj grass/ Suraad Poaceae	Removal of retained placenta after delivery	Leaf	Leaves are boiled in water and mixed with jaggery and given orally to cow, goat and buffalo etc.	10	100
98	*Sida rhombifolia* L. Dirya Malvaceae	Body tonic	Seed/root	Seeds and roots in powdered form is given to the animals as body tonic especially after delivery.	20	51.3
		Prolapsed Uterus	Seed	Seeds are grounded to powder and given orally.	8	20.5
		Loose motion	Leaf	Leaves are used as fodder.	4	10.2
		Fever	Leaf, seed	Decoction of the plant along with jaggery is given orally.	4	10.2
		Eye infection	Root	Root extract is applied for eye infection.	3	17.7
99	*Solanum erianthum* D. Don. Olla Solanaceae	Eye Contract	Leaf	Leaves crushed, Squeezed and filter extract with the help of 3-4 folds of clean cloth. Then 5-6 drops of this extract applied two times a day in the infected eyes of the animal	3	100
100	*Solanum nigrum* L. Kiryun miyun / Makoi Solanaceae	Rabbies/ Halk	Whole plant	Whole plant crushed in water and mixed small amount 5-10 g powder of Black pepper mirch orally allowed to the rabies infected animal.	14	55.6
		Gastrointestinal problem	WAP	Whole aerial plant is used as fodder.	5	44.4
101	*Solanum viarum* Dunal Jungali bhindi Solanaceae	Respiratory problems/ Cough/ Digestive problem/ Swelling	Fruit	Powder of dried roasted fruits, *Trachyspermum ammi* (Ajwain), *Terminalia bellerica*, *Terminalia Chebula*, *Phyllanthus emblica*, *Colebrookia oppositifolia* in equal amount and four types of salts in required amount in equal amount is mixed. Then one handful is given to animal in empty stomach.	15 7 12 8	35.7 16.7 28.6 19.0
102	*Solanum xanthocarpum* Bhindi (Chhoti Kanteli) Solanaceae	Digestive disorder (Gastric and Flatulence)	Fruit	Powder of dried roasted fruits, *Trachyspermum ammi*, *Terminalia bellerica*, *Terminalia Chebula*, *Phyllanthus emblica* in equal amount and four types of salts in required amount in equal amount is mixed. One handful is given to animal in empty stomach.	10	55.6
		Swelling	Fruit	Powder of dried roasted fruits, *Trachyspermum ammi, Terminalia bellerica, Terminalia Chebula, Phyllanthus emblica* and four types of salts is given as above.	8	44.4
103	*Soymida febrifuga* (A. Juss) Riyaan Meliaceae	Fracture/injuries	Bark	Bark crushed or grounded and applied on the fractured bone part to relieve pain in animals.	15	44.1
		Swelling, internal wound / Rheumatism/ Body tonic/		Bark powder is mixed with feed or fodder, given orally to the animal for the relief of pain or swelling.	10 5	29.4 14.7
				Bark powder mixed in water and semi-solid form is applied on the infected parts.	4	11.8
104	*Swertia chirata* Roxb.ex Fleming Chirayata Gentianaceae	Fever	Root	Roots crushed, mixed in water and given orally to animals. It may be mixed in feed or fodder till recovery.	12	63.2
		Skin disease	Root	Whole plant and roots are used as fodder or extract of roots may be applied on the infected skin directly.	3	15.8
		Urinal problem	Root	Decoction of roots mixed with jaggery is given orally.	4	21.0
105	*Stephania glabra* (Roxb.) Bis-Khappar Menispermaceae	Swelling/Poisonous / Joint pain	Tuber	Tuber pieces or slices mixed with wheat flour and given once a day after alternate day.	18	40.9
		Funshies	Tuber		3	6.8
		Fever (Malma)	Tuber	Tuber of the plant about 20-25 g cut into small pieces, mixed in feed and then given orally.	12	27.3
		Flatulence	Tuber		10	22.7
		Mouth Ulcer	Tuber		1	2.3
106	*Thalictrum foliolosum* DC. Kathu Ranunculaceae	Digestive disorder (Colic pain)	Leaves	Leaves boiled in water, mixed with jaggery and then given orally specially to cattle for digestive problem like pain.	10	1
107	*Terminelia chebula* Retz. Harar Combretaceae	Digestion problem Constipation Stomach pain	Fruit	Churan powder is prepared from the fruits of *Terminalia chebula, Terminalia bellerica, Phyllanthus emblica, Trachyspermum ammi, Solanum surretence* mixed with Black salt, Sindh salt and Sanchar salt and normal white salt in equal amount. This powder in a handful amount is given early morning daily.	22 10 6	45.8 20.8 12.6
		Anaemia	Fruit		10	20.8
108	*Terminalia bellerica* (Gaertn.) Roxb. Bahaera Combretaceae	Digestion, constipation	Fruit	Churan powder is prepared by the fruit of *Terminalia chebula, Terminalia bellirica, Phyllanthus emblica, Trachyspermum ammi*, Solanum surretence mixed mixed with Black salt, Sindh salt, Sanchar salt and white salt. This powder in one handful amount is given early morning daily in empty stomach.	22	91.7
		Tumor	Bark	Paste of bark is applied on the affected tumor area daily till recovery.	2	8.3
		Leaf fodder, Uterus expulsion	Bark Leaf	Bark powder with oil spray on the expulsed uterus and also given orally	2	9.1
109	*Terminalia arjuna* (Roxb.) Wight&Arn. Arjun Combretaceae	Swelling, Breathing problem	Leaf	Leaf mixed with fodder given to animal or bark boiled in water till 1/4 left and given twice a daily orally till recovery.	13	59.1
		Burn	Bark	Bark grinded and paste is applied on the affected part of animal body daily till recovery.	4	18.2
		Heart problem, blockage of veins.	Leaf, Bark	Leaf, bark powder is used in hear trouble and blockage to animal.	3	13.6
110	*Tinospora cordifolia* (Willd.) Miers. Gulaja, Giloy, Gulanjan Menispermaceae	Fever	Stem	Stem cut into small pieces and mixed with feed or fodder or decoction of whole aerial part is given orally to animal till recovery.	30	73.3
		Milking enhancement (Lactation)	Stem and leaf	Fodder of plant increase the milk production in animals also.	4	9.7

		Digestion problem	Stem	Small peicecs of stem used as fodder and in feed.	2	4.8
		Boils/ Blood purifier	Stem	Plant crushed and applied on the boils.	2	4.8
		For heat	Stem	Plant pieces are used to induce heat for conception of animals like buffalos	3	7.4
		Colic, cough	WAP	Fresh leaves or whole plant extract or juice is given to animal in case of colic and chronic cough	2	11.1
111	*Tribulus terrestris* Linn. Bhakhra Zygophyllaceae	Urinal problem	Seed	Powder of seeds or whole plant is given orally for any type of urinal problems	13	72.2
		Tonic/Enhancement milking	WP	Whole plant is used as fodder to Buffalos which act as body tonic to increases milk production.	3	16.7
112	*Tridax procumbens* L. Asteraceae	Wound/cut	Leaf	Leaf paste is applied on the wound or cut part of the animal.	17	100
113	*Vanda roxburghii* R.Br. Bhangru Orchidaceae	Fractured bone	Leaf	Leaf paste is wrapped on the broken bone of the body daily.	8	100
		Swelling, Bloat (affara)	WP	Whole plant boiled in water till 1/4 left and given to animal orally for 2-3 days	4	19.1
		Constipation,			2	9.5
114	*Verbascum thapsus* L. Ban Tambakoo Scrophulariaceae	Rabies	WAP	Decoction of plant is given to the animal in large amount again and again so it causes vomiting repeatedly till recovery.	5	23.8
		Cudding (Juggali)	WAP	Decoction with jaggery (Gur) is given orally to animal.	7	33.3
		Stomach pain (Shool)	WAP	Whole aerial part is also given as feed or fodder.	3	14.3
115	*Vernonia anthelmintica* Willd. Brahmjiri Asteraceae	'Basaihar'(Mastitis) Seeds,	Leaves	Leaves are given as fodder daily two or three times daily.	3	100
		Goiter	Seed	Seeds mixed with jaggery is given orally as well as applied externally also.	1	14.3
116	*Vernonia cinerea* Kalajiri Asteraceae	Loss of appetite	Seed	Also given with feed in loss of appetite.	2	28.6
		Aafara	Seed	Seed mixed with sesame oil is given 2-4 times to cure aafraa.	4	57.1
		Swelling/ Bis –Bisair (Mastitis)	Leaf/ bark/Root	Young leaves boiled in water and washed the swollen part in 3-4 times daily or small amount is also given orally.	17	65.4
		Diarrhoea/ Digestion		Dried leaf powder or leaves mixed with feed or fodder.	4	15.4
117	*Vitex negundo* L. Bana/Banaha Verbenaceae	Eye injury or whiteness	Leaf	Leaf extract with leaf extract of *Colebrookea* sp. is used as eye drops for recovery in eye problem.	2	7.7
		Foot and mouth disease	Root/ leaf	Leaf decoction is given orally and it is used to bath infected part such as foot and mouth of the animal.	3	11.5
118	*Wendlandia heynei* (Roem. & Schult.) Sant. & Merch. Pansara Rubiaceae	Expelling leeches and lices	Leaf	Leaf extract is applied to expel out leaches from animal skin.	2	100
119	*Withania somnifera* Dunal. Ashwagandha Solanaceae	Fever	Leaf/ Root	100-150 ml of leaf or root decoction in fresh or dried form 25-40 gm is given orally for 2-3 days or till further recovery.	15	100
120	*Woodfordia fruticosa* (L.) Kurz. Dhavane, Dhaun Lythraceae	Wound heeling	Leaves/ Flower	Leaf or flower paste applied on the wound for relief.	12	100
		Constipation/Digestion problem	Seed/ Fruit	Fresh fruit or dried powder is used for constipation and to clean stomach.	2	22.2
121	*Zizyphus mauritiana* Lam. Ber Rhamnaceae	To clean stomach	Leaf Fruit	Decoction of leaf and fruit is given to clean stomach of the animal.	2	22.2
		Milking enhancement	Leaf	leaves are used as fodder and it increases lactation in goat, sheep and buffaloes	5	55.6

Table 2. Major use categories of ethno-veterinery purposes.

Major categories	Ailments
Circulatory system	Anemia, Blood problem, Heart trouble, Artery blockage delivery, Removal of retained placenta after delivery, Ovulation, Stimulation, Abortion, Abnormal delivery, Sterility, infertility
Digestive system	Indigestion, Constipation, Bloating, Flatulence, Gastric problem, Stomach/abdominal pain, Loose motion, Dysentery, Diarrhoea, To clean stomach), Anroxia, Cudding
Ectoparasites and Endoparasites	Lices, Flies, Mosquitoes, Chichar, Intestine worms, Ascaris, Tape worm etc.
Excretory system	Urinal problem (Blockage), Urine flow, Blood in urine
Fever	Fever, Ephemeral fever (Malma) in Buffalo, (Pate da) in Ox
Foot and Mouth disease	Same
Galactagouse	Lactation or Milking enhancement (Increased milk), Increase milk flow, Nipple crackes, Mastitis (Thanella)
Immunity system	Body tonic, Nerve tonic
Muscular system	Swelling (Bis-Bisair), Arthritis, Rheumatism (inflammation), Muscular pain (Body pain), Muscle Fatigue
Ophthalmatic	Ear pain, Ear pus, Eye redness, Eye infection, Eye contract, Night Blindness, Tearing
Others	Wound, Worms, Goiter, Tail infection, Mouth ulcer, Insects bite, Dog bite, Snake bite
Reproductive system	Retention of Placenta, Uterus expulsion, Abortion, Succesful conception, for heat to retain pregnancy
Respiratory system	Cough, Cold, Whooping cough, Pneumonia, Breathing problem
Skeleton system	Bone fracture, Dislocated bone, Joint pain
Dermatosis	Skin allergy, Boils, Burns, Tumour, Blisters, Rashes

Table 3. Reported ethno-veterinary information regarding various ailments of livestock across country and overseas (Source: Literature reviewed).

Name	Ailments	Reference
Achyranthes aspera	Fever, delivery, Shivering, Conjunctivitis, Wound, Watering of eyes, Bone fracture, Constipation, Expels placenta, Ear problems, Nasal infection, Minor bleeding, Mastitis, Goiter, Indigestion, Bronchitis	Giday and Ameni 2003., Khan 2009, Sumeet 2009, Phondani *et al.,* 2010, Pandit 2010, Selvaraju *et al.,* 2011, Pragada and Rao 2012, Gadpayale *et al.,* 2014, Lulekal et al 2014, Saha *et al.,* 2014, Tariq *et al.,* 2014, Sharma *et al.,* 2014, Panda and Dhal 2014, Birhanu and Abera, 2015,, Al Mamun *et al.,* 2015, Reang 2016, Thakur *et al.,* 2016.
Abutilon indicum	Diarrhoea, Dysentery, Removal of placenta	Mishra and Patro 2010, Selvaraju *et al.,* 2011, Ramachandra *et al.,* 2012, Gadpayale *et al.,* 2014

Acacia catechu	Constipation, wound, Hump sore, Foot and Mouth disease, Arthritis	Mishra and Patro 2010, Phondani *et al.,* 2010, Pandit 2010, Malik et al 2012, Saha *et al.,* 2014.
Acacia nilotica	Jaundice, Dysentery, wound, Stomach worms, Diarrhoea, smooth delivery, Colic pain, Mouth Ulcer, Immune deficiency	Pandit 2010, Malik *et al.,* 2012, Pragada and Rao 2012, Salave *et al.,* 2012, Mishra *et al.,* 2012, Verma 2014, Manoj and Ekta 2014, Yadav *et al.,* 2014.
Acorus calamus	Ecto-parasitic, Snake bite, Bone injury	Banumathi and Vaseeharan ,2015, Phondani *et al.,* 2010 Pandit 2010, Malla and Chhetri 2012, Dhanam and Elayaraj 2014, Reang *et al.,* 2016.
Adhatoda vasica	Intestinal worms, Insect repellant, Stomach disorder, Fever, Dysentery, Indigestion, Gas trouble, Dehydration, Bronchitis, Diarrhoea, Dysentery, Wound, Inflammatory swellings, Fever, Cough Cold	Ishtiaq Ch. *et al.,* 2006, Abbasi *et al.,* 2013, Parthibanet *et al.,* 2016, Summet *et al.,* 2009, Pandit 2010, Selvaraju *et al.,* 2011., Malik *et al.,* 2012, Shah *et al.,* 2012, Mishra *et al.,* 2012, Gadpayale *et al.,* 2014, Verma 2014, Mishra *et al.,* 2015,
Aegle marmelos	Diarrhorea, Sun burn, Snake bite, Dysentery, Internal fever, Viral fever, External parasites	Sri Balaji and Vikrama Chakravarthi 2010, Pandit 2010,, Malik *et al.,* 2012, Kulkarni *et al.,* 2014, Yadav *et al.,* 2014, Al Mamun *et al.,* 2015, Mishra *et al.,* 2015.
Agave Americana	Bone fracture	Phondani *et al.,* 2010, Rajkumari *et al.,* 2014
Ageratum conyzoides	Cold, Fever	Chassagne *et al.,* 2016
Ajuga bracteosa	Abdominal pain, Fever	Ishtiaq ch. *et al.,* 2006, Abbasi *et al.,* 2013
Albizzia lebbeck	Eyes problems	Yadav *et al.,* 2014
Aloe vera	Stomach pain, Loss of Appetite, Black water, External parasites, Skin burns, Typhoid, Unconscious condition	Pandit 2010, Dhanam and Elayaraj 2014, Rajkumari *et al.,* 2014, Al Mamun *et al.,* 2015, Thakur *et al.,* 2016, Selvaraju *et al.,* 2011, Pragada and Rao 2012.
Amaranthus viridis	Stomach, Wound, Constipation	Pragada and Rao 2012, Shah *et al.,* 2012, Sher and Aldosari 2013.
Andrographis paniculata	Cough and Cold, Foot and mouth, Fever, Dysentery	Pandit 2010, Selvaraju *et al.,* 2011, Malik *et al.,* 2012, Ramachandra *et al.,* 2012, Gadpayale *et al.,* 2014, Panda and Dhal 2014.
Argemone mexicana	Root infection, Rheumatism, Constipation, retained placenta, Ulcer wound, Malarial Fever,	Khan 2009, Malik *et al.,* 2012, Malik et al 2012, Verma, 2014, Yadav *et al.,* 2014, Panda and Dhal 2014,
Artemisia brevifolia	Removal of placenta, Expelling round worms	Shah *et al.,* 2012, Tariq *et al.,* 2014,
Asparagus racemosus	Fever Dysentery, Arthritics, Abdominal pain, to produce heat for conception, Stimulant, Heat stroke	Malla and Chhetri 2012, Ramachandra *et al.,* 2012. Sher and Aldosari 2013, Verma 2014, Saha *et al.,* 2014, Tariq *et al.,* 2014, Dhanam and Elayaraj 2014, Yadav *et al.,* 2014, Mishra *et al.,* 2015.
Asphodelus tenuifolius	Paralysis	Sher and Aldosari 2013
Aerva pseudotomentosa	Muscular injury	Galav *et al.,* 2010
Azadirachta indica	Foot and Mouth, wound, Intestinal worms, Flatulence, Ecto-parasites, Constipation, Fractured horn, Fever, Hump sore, Skin diseases	Sumeet *et al.,* 2009, Mishra and Patro 2010, Sevaraju *et al.,* 2011, Malik *et al.,* 2012, Dhanam and Elayaraj 2014, Gadpayale *et al.,* 2014, Manoj and Ekta 2014, Yadav *et al.,* 2014, Meena *et al.,* 2015, Al Muman *et al.,* 2015, Mishra *et al.,* 2015, Saha *et al.,* 2015,
Bambusa arundinacea	Easier delivery, Diarrhoea, Retained placenta, Skin diseases	Sri Balaji and Vikrama Chakravarthi 2010, Verma, 2014, Meena *et al.,* 2015, Reang *et al.,* 2016
Bambusa Vulgaris	Cough, Mouth soar and Diarrhoea	Mishra *et al.,* 2015
Bauhinia vahlii	Cold	Sharma *et al.,* 2014
Bauhinia variegata	Successful conception	Sharma *et al.,* 2014
Berberis aristata	Cataract (Eye disease), Flatulence	Phondani *et al.,* 2010, Al Mamun *et al.,* 2015
Boerhaavia diffusa	For retained placenta, Urine problem	Mishra *et al.,* 2012, Yadav *et al.,* 2014,
Bombax ceiba	Dislocated bone, Mastitis (Thanela), Constipation, Flatulence	Sumeet *et al.,* 2009, Phondani *et al.,* 2010, Malik *et al.,* 2012.
Bryophyllum pinnata	Insect sting, Wound, Boils	Ishtiaq Ch. *et al.,* 2006,
Butea monosperma	Worm, Dysuria, Paralysis, Tympani, Expels worms, Sore throat, Anthelmintic	Khan 2009, Malik *et al.,* 2012, Shah *et al.,* 2012, Ramachandra *et al.,* 2012, Sher and Aldosari 2013, Verma 2014, Kulkarni *et al.,* 2014, Saha etal. 2014, Tariq *et al.,* 2014, Dhanam and Elayaraj 2014, Mishra *et al.,* 2015.
Calotropis procera	Skin diseases, Easy delivery, Internal worms, Skin infection, Throat problems, retained placenta, Cough and Cold, Stomach, Snake bite, inflammation, Arthritis, Snake bite, Flatulence, Indigestion, Paralysis, Swelling, Bone injury	Sumeet *et al.,* 2009, Khan 2009, Phondani *et al.,* 2010, Malik *et al.,* 2012, Pragada and Rao 2012, Mishra *et al.,* 2012, Sher and Aldosari 2013, Verma 2014, Tariq *et al.,* 2014, Sharma *et al.,* 2014, Yadav *et al.,* 2014, Panda and Dhal 2014, Mishra *et al.,* 2015, Reang *et al.,* 2016,
Cannabis sativa	Diarrhoea, Dysentry	Rajkumari *et al.,* 2014
Cassia fistula	Cold, Snake bite, Constipation, Improves appetite, Indigestion, Manor, Cough, Fever, Diarrhoea	Phondani *et al.,* 2010, Saevaraju *et al.,* 2011, Malik *et al.,* 2012, Pragada and Rao 2012, Verma 2014, Sharma *et al.,* 2014, Panda and Dhal 2014, Gadpayale *et al.,* 2014, Rajkumari *et al.,* 2014, Mishra *et al.,* 2015, Al Mamun *et al.,* 2015, Thakur *et al.,* 2016.
Cassia occidentalis	Bone fracture,	Chhavi *et al.,* 2011, Mishra *et al.,* 2012
Cassia tora	Dog bite, Skin diseases, Galactgouge	Selvaraju *et al.,* 2011, Mishra *et al.,* 2012, Kulkarni *et al.,* 2014, Gadpayale *et al.,* 2014.
Centella asiatica	Indigestion, Skin diseases, Dysentery, Diarrhoea	Raj Kumari *et al.,* 2014, Mishra *et al.,* 2015, Reang *et al.,* 2016.
Chenopodium album	Wound	Tariq *et al.,* 2014
Cissampelos pareira	Diarrhoea, Stomach problems, Swelling of Abdomen, Tonic, Scorpion bite	Pragada and Rao 2012, Shah *et al.,* 2012, Salave *et al.,* 2012, Gadpayale *et al.,* 2014, Sharma *et al.,* 2014, Mishra *et al.,* 2015.
Cissus quadrangularis	Bone fracture, Asthma, Fever, Removal of placenta, Anthrax, Mastitis, Lice and Fleas	Giday and Ameni 2003, Sumeet *et al.,* 2009, Mishra and Patro 2010, Sevaraju *et al.,* 2011, Malik *et al.,* 2012, Gadpayale *et al.,* 2014, Kulkarni *et al.,* 2014, Dhanam and Elayaraj 2014,
Coccinia indica	Cough, Cold, Running nose	Selvaraju *et al.,* 2011, Malik *et al.,* 2012, Panda and Dhal 2014,
Colebrookea oppositifolia	Stomachache, Wound maggots	Shah *et al.,* 2012, Sharma *et al.,* 2014,
Colocasia esculenta	Induce fertility and increase milk, Foot and Mouth diseases, Diarrhoea	Panda and Dhal 2014, Meena *et al.,* 2015, Mishra *et al.,* 2015,
Commelina benghalensis	Eye problem, Redness of eyes	Shah *et al.,* 2012, Mishra *et al.,* 2012 Kulkarni *et al.,* 2014.
Cordia dichtoma	Cracked nipples	Yadav *et al.,* 2014
Costus speciosus	Fever, Diarrhoea	Saha *et al.,* 2014, Panda and Dhal 2014.
Curcuma aromatica	Exposure to disease, Yolk gall, Muscular pain	Upadhyay *et al.,* 2011
Cuscuta reflexa	Skin diseases, Abortion, Body ache, Poisonous insect bite, Foot and Mouth disease	Malla and Chhetri 2012, Kulkarni *et al.,* 2014, Saha *et al.,* 2014, Yadav *et al.,* 2014, Mishra *et al.,* 2015.
Cryptolepis buchanani	Yoke gall	Upadhyay *et al.,* 2011, Suroowan *et al.,* 2017
Cynodon dactylon	Diarrhoea, injury, Lactation, Conjuctivities, Wound, Analgesic, Foot and Mouth disease, Mastitis, Flatulence	Verma 2014, Tariq *et al.,* 2014, Meena *et al.,* 2015, Al Mamun *et al.,* 2015, Mishra *et al.,* 2015,
Dalbergia sissoo	Bleeding with urine	Phondani *et al.,* 2010
Datura metel	Rabies, Cold, Wound, Eczema, Lices, Heating, Typhoid, Dysentery, Cough	Selvaraju *et al.,* 2011, Malik *et al.,* 2012, Sher and Aldosari 2013, Verma 2014, Kulkarni *et al.,* 2014, Saha etal. 2014, Tariq *et al.,* 2014, Dhanam and Elayaraj 2014, Gadpayale *et al.,* 2014, Mishra *et al.,* 2015, Parthiban *et al.,* 2016
Dioscorea deltoidea	Constipation, Mastitis, Ephemeral Fever, Skin, Ear disease	Tiwari and Pande 2010, Malla and Chhetri 2012, Ramachandra *et al.,* 2012.
Dodonaea viscosa	Wounds, Leg bandage, Bone fracture	Chhavi *et al.,* 2011, Shah *et al.,* 2012, Ramachanda *et al.,* 2012, Banumathi and Vaseeharan ,2015, Parthiban *et al.,* 2016
Eclipta alba	Cut and injury	Sumeet *et al.,* 2009
Equisetum	Bone fracture, Urine infection	Chhavi *et al.,* 2011
Erythrina indica	Worm, Fever, Diarrhoea	Saha *et al.,* 2014, Panda and Dhal 2014, Mishra *et al.,* 2015

Euphorbia geniculata	Lactation	Sharma *et al.,* 2014
Euphorbia hirta	Wounds, Increase milk	Selvaraju *et al.,* 2011, Parthiban *et al.,* 2016, Suroowan et al 2017
Euphorbia royleana	Fracture	Upadhyay *et al.,* 2011,
Ficus benghalensis	Stomachache, Dental problem, Snake and Scorpion bite	Verma, 2014, Kulkarni *et al.,* 2014, Dhanam and Elayaraj 2014, Meena *et al.,* 2015, Parthiban *et al.,* Surooban *et al.,* 2017
Ficus palmata	Easy delivery and Remove placenta, External wound infection and warts, Mouth ulcer	Giday and Ameni 2003, Shah *et al.,* 2012, Thakur *et al.,* 2016
Ficus religiosa	Tonsils, Retained placenta, Constipation, small pox, Throat infection, Foot and mouth	Sumeet *et al.,* 2009, Phondani *et al.,* 2010, Malik *et al.,* 2012, Pragada and Rao 2012, Verma, 2014, Yadav *et al.,* 2014, Panda and Dhal 2014, Surooban *et al.,* 2017
Flacourtia indica	Prolapsed uterus, Retention of placenta	Upadhyay *et al.,* 2011
Fumaria officinalis	Constipation,	Saha *et al.,* 2014
Glorisa superba	Small pox, Mastitis	Upadhyay *et al.,* 2011, Mishra *et al.,* 2012,
Grewia oppositifolia Roxb.	Worm	Sharma *et al.,* 2014
Gymnema sylvestre	Fever	Selvaraju *et al.,* 2011
Holarrhena pubescens	Prolapsed uterus, Diarrhoea	Rao et al 2008, Sehgal and Sood 2013
Litsea glutinosa	Bone fracture	Saha *et al.,* 2014
Madhuca indica	Fever	Verma, 2014
Melia azedarach	Stomach flatulence, Galactagouge	Tariq *et al.,* 2014, Shah *et al.,* 2012,
Mimosa pudica	Fever	Selvaraju *et al.,* 2011
Moringa oleifera	Diarrhoea, Dysentery, Rheumatism, Ulcer, Successful conception, Wound, Swelling, Bone fracture	Chhavi *et al.,* 2011, Malik *et al.,* 2012, Verma 2014, Sharma *et al.,* 2014,
Mucuna pruriens	Sex stimulant, Lactation, Snake bite	Malla and Chhetri 2012, Saha *et al.,* 2014, Panda and Dhal 2014,
Murraya koenigii	Gastric troubles, Diarrhoea, Repeat breeding problem	Pragada and Rao 2012, Ramachanda *et al.,* 2012, Sharma *et al.,* 2014,
Oroxylum indicum	Drowsiness, Nipple crack, Gastric	Saha *et al.,* 2014, Sharma *et al.,* 2014
Oxalis corniculata	Eye infection, Abdominal Pain	Phondani *et al.,* 2010, Al Mamun *et al.,* 2015
Phyllanthus niruri	Cough and Fever, wound, indigestion	Khan 2009, Dhanam and Elayaraj 2014,
Physalis minima	Flatulence, Loose motion, Abdomen swelling	Saha *et al.,* 2014, Pragada and Rao 2012.
Picrorhiza kurroa	Foot and Mouth disease, Retained placenta, Indigestion	Mohammad *et al.,* 2005, Phondani *et al.,* 2010,
Pinus roxburghii	Sprain on the foot (Moch), Broken Horn	Phondani *et al.,* 2010
Plumbago zeylanica	Improved appetite, Diarrhoea, Tumor, Wart	Malik *et al.,* 2012, Yadav *et al.,* 2014,
Pogostemon benghalensis	Digestive problems	Thakur *et al.,* 2016
Pongamia pinnata	Fever Dysentery,	Selvaraju *et al.,* 2011
Portulaca oleracea	Excessive bleeding	Yadav *et al.,* 2014
Ricinus communis	Constipation, rheumatism, Constipation, Wound, Cold, To clean stomach, Flatulence, Blot, Joint pain, Expulsion of placenta, Ring worm, Scabies, Rabbies	Giday and Ameni 2003, Khan 2009, Malla and Chhetri 2012, Sher and Aldosari 2013,Verma 2014, Saha *et al.,* 2014, Tariq *et al.,* 2014, Dhanam and Elayaraj 2014 Lulekal 2014, Tekle 2015, Birhanu and Abera 2015, Mishra *et al.,* 2015,, Yadav et al, Ali-Shtayeh *et al.,* 2016, Thakur *et al.,* 2016,
Saccharum munja	Retained placenta	Yadav *et al.,* 2014
Sida cordifolia		Mishra *et al.,* 2012
Solanum nigrum	Ulcer, Gastrointestinal, fever, Scabbies,	Pragada and Rao 2012, Ramachandra *et al.,* 2012, Dhanam and Elayaraj 2014, Ali-Shtayeh *et al.,* 2016
Solanum surattense	Fever, Cough, Intestinal infection, Expectorant	Mishra *et al.,* 2012, Tariq *et al.,* 2014,
Sonchus oleraceus	Skin wounds	Pragada and Rao 2012
Soymida febrifuga	Lactation, Blood Dysentery	Kulkarni *et al.,* 2014
Stephania glabra	Eye cataract, Dermatitis (Skin)	Phondani *et al.,* 2010, Saha *et al.,* 2014,
Swertia chirata	Fever	Al Mamun *et al.,* 2015
Syzygium cumini	Diarrhoea, Dysentery, Wound, Joint pain.	Selvaraju *et al.,* 2011, Malik *et al.,* 2012, Ramachandra *et al.,* 2012, Gadpayale *et al.,* 2014, Verma 2014, Panda and Dhal 2014,
Tagetus minuta	Hydrophobia, Skin infection, Broken Horn	Phondani *et al.,* 2010, Verma, 2014, Tariq *et al.,* 2014,
Terminalia arjuna	Wound, Retained placenta, Bone fracture	Chhavi *et al.,* 2011, Kulkarni *et al.,* 2014, Yadav *et al.,* 2014,
Terminalia bellerica	Tumor, Wart	Malik *et al.,* 2012
Terminalia chebula	Better digestion, Loss of appetite, Blot, Fever, Anorexia, Cut injury	Phondani *et al.,* 2010 Selvaraju *et al.,* 2011, Malik *et al.,* 2012, Ramachandra *et al.,* 2012,, Yadav *et al.,* 2014,
Thalictrum foliolosum	Conjuctivities, Indigestion	Sharma *et al.,* 2014, Thakur *et al.,* 2016
Tinospora cordifolia	Mastitis, Vomiting, Fever, Immunity, Bone fracture, Blood purifier, Skin infection, Debility.	Phondani *et al.,* 2010, Chhavi *et al.,* 2011, Mishra *et al.,* 2012, Pradaga and Rao 2012, Tariq *et al.,* 2014, Mishra *et al.,* 2015.
Tribulus terrestris	Cough, Colic, Dirrhoea, Increase milk, Chronic cough, Removal of placenta	Mishra and Parto 2010, Pragada and Rao 2012,, Sher and Aldosari 2013, Verma, 2014, Tariq *et al.,* 2014, Yadav etal. 2014.
Tridax procumbens	Wound, Cut, Hump sore	Mishra and Patro 2010, Selvaraju *et al.,* 2011, Panda and Dhal 2014,
Verbascum Thapsus	Diarrhoea, Indigestion	Shah *et al.,* 2012, Thakur *et al.,* 2016
Vernonia cinerea	Fever, Loss of appetite, Goiter, aafara	Manoj and Ekta 2014, Yadav *et al.,* 2014, Mishra *et al.,* 2015,
Vernonia anthelmintica	Mastitis, Expelling leech	Sehgal and Sood 2013
Vitex negundo	Diarrhoea, Fever, Stomach problems, Body pain and Cough, Ectoparasite, Mouth and Foot, Breathing, Rheumatism, Arthritis, Ulcer wound, Infectious disease, Muscular pain, Dermitis, Cut, Injury	Sumeet *et al.,* 2009, Khan 2009, Malik *et al.,* 2012, Pragada and Rao 2012, Shah *et al.,* 2012, Selvaraju *et al.,* 2011, Thakur *et al.,* 2016, Gadpayale *et al.,* 2014, Rajkumari *et al.,* 2014, Verma 2014, Tariq *et al.,* 2014, Dhanam and Elayaraj2014, Panda and Dhal 2014, Mishra *et al.,* 2015,
Withania somnifera	Cold and cough, Heating	Sher and Aldosari 2013, Yadav *et al.,* 2014,
Woodfordia fructicosa	Grinding of teeth, Dysentery, Fever	Salave *et al.,* 2012, Gadpayale *et al.,* 2014, Sharma *et al.,* 2014, Meena *et al.,* 2015,
Ziziphus jujube	Skin burn, Wound, Skin diseases, Cough, Fever	Pragada and Rao 2012, Ramachandra *et al.,* 2012, Verma, 2014, Tariq *et al.,* 2014,
Ziziphus nummularia	Intestinal worms, Diarrhoea, Cough and Cold, Mouth and Foot diseases, Skin disease, Ulcer wound, Burn of skin	Khan 2009, Rajkumari *et al.,* 2014, Yadav *et al.,* 2014, Meena *et al.,* 2015,

Table 4. New findings recorded from the indigenous people from Hamirpur district.

Name of Plants	Ailments cured
Achyranthes aspera	Insect bite
Acorus calamus L.	Fever, cudding
Agave americana L	Wound
Ageratum conyzoides L.	Dog bite
Ajuga bracteosa Wall ex Benth.	Foot and Mouth disease, Goiter
Albizia lebbeck Benth.	Night blindness
Argemone mexicana Linn.	Foot and Mouth disease, Body pain
Arisaema tortuosum (Wall.) Schott	Prolapsed uterus
Asparagus racemosus Willd	Used as coolant to retain pregnancy after successful conception.
Asphodelus tenuifolius L.	Boils, skin allergy
Bambusa arundinaceae (Retz.) Roxb.	Foot and mouth disease
Berberis asiatica Roxb. ex DC.	Prolapsed uterus, Eye problem, fever

Boerhaavia diffusa L.	Fever, urinal problem, swelling.
Butea monosperma (Lam.) Taub.	For heat to get pregnancy, For abortion
Calotropis procera R.Br.	Wart, Hard neck
Cannabis sativa L.	Insect bite
Carissa spinarum L.	Constipation
Cassia occidentalis L.	Dog bite
Centella asiatica L.	As coolant to retain pregnancy after successful conception
Centipeda minima (L.) A. Br. & Asch.	Prolapsed uterus
Cheilanthes albomarginata C.B. Clarke	Wound healing
Chenopodium album L.	To remove the retained placenta
Chenopodium ambrosioides L.	Cudding
Cissampelos pareira L.	Eye problem, For heat to retain pregnancy
Colebrookea oppositifolia Smith	Eye problem
Colocasia esculenta L. (Schott.)	Cudding, Constipation
Commelina benghalensis L.	Eye problem (redness)
Cordia dichotoma G.Forst.	Wound worm
Costus speciosus (J.Konig), Sm.	Fever, swelling and Dog bite
Cryptolepis buchanani Roem and Schultes	Increase milk
Curcuma aromatica Salisb	If abortion occur frequently, stomach pain, Anorexia
Cynodon dactylon (L.) Pers.	Urine problem, Ghumanghera
Cyperus rotundus (L.)	Fever
Diospyros cordifolia	Foot and Mouth disease
Euphorbia geniculata	Loose motion, constipation
Euphorbia royleana	Tail infection
Ficus benghalensis L.	For heat to retain pregnancy
Fumaria indica (Haussk.)Pugsley.	Liver problem
Grewia oppositifolia Roxb.	For easy delivery
Lepidagattis cuspidata	Indigestion
Moringa oleifera Lam.	Swelling in nipples
Mucuna pruriens (L.) de Candole	For heat
Murraya koenigii (L.) Spreng.	For heat to retain pregnancy, Nipples bleeding, Foot and Mouth disease
Oroxylum indicum Vent.	Constipation
Ougenia oojeinensis (Roxb.) Hotch.	Worms
Oxalis corniculata L.	Stomach problem, Eye problem
Pogostemon benghalensis Burm. F.	Fever, Eye problem
Premna latifolia Roxb	Skin allergy
Pueraria tuberosa DC.	As coolant to retain pregnancy after successful conception.
Randia dumetorum (Retz). Lam.	Tail infection
Rhynchostylis retusa Blume	Joint pain
Saccharum munja Roxb.	To remove the retained placenta after delivery
Sida rhombifolia L.	Body tonic
Solanum erianthum D.Don.	Eye problem
Stephania glabra (Roxb.)	Fever, swelling
Swertia chirata Roxb.ex Fleming	Skin disease, Urinal problem
Tinospora cordifolia (Willd.) Miers.	Increase milk, Digestion problem, boil, blood purifier
Verbascum thapsus L.	Rabbies, Cudding
Ziziphus mauritiana Lam.	For heat to retain pregnancy

Results and Discussion

Socio-demographic characters of the informants:

Figure 1 shows the demographic characteristics of informants. A total of 541 informants were face to face interviewed, where 330 were males and 211 were females (Figure-1d). These informants were categorized under different groups on the basis of age such as ≤ 20 and interval of ten with all selected age groups (20-90) and ≥ 90. Although, majority of informants were belonging to above 40 to 70 years age; male accounts 59.6% and female accounts 58.7% (Figure-1a). Most of the households had family size 4 to 6 members which showed 52.8% followed by 7-9 members (21.8%) (Figure-1c). Approximately, 59.5% (n=322) were illiterate and below primary, 21.6% (n=117) were matriculates, 16.8% (n=91) elementary, 11.9% (n=60) were Secondary and only 7.7% (n=42) had achieved university degrees (Figure-1b).

Diversity of recorded plant species:

In this study, information of 121 plant species and 105 genera belonging to 61 families used for curing 78 different types of animal ailments were documented from five tehsils namely: Nadaun, Barsar, Hamirpur, Bhoranj and Sujanpur Tira of Hamirpur district Himachal Pradesh.Many use reports including new information regarding the uses of ethno-veterinary purposes are given in Table 1.

Plant Parts used:

Out of the recorded total plants, leaf component was the most commonly used for the preparation of ethno-medicines (Figure 2). Sixty plant species have been utilized of leaf part followed by Root/Tuber/Rhizome/Corn (24 species), Bark (23 species), Seed/Seed oil (18 species), Fruit (15 species), Whole plant (14 species), Whole aerial part (13 species), Stem/Shoot (7 species), Flower/Inflorescence (6 species), Bud/Pod (3 species), Latex(2species), Wood (2 species), Thorn (2 species) and Resin (1 species). Our results favour in agreement of other similar ethno-veterinary studies (Aziem *et al.,* 2013, Verma 2014, Parthiban *et al.,* 2016, Ali – Shtayeh *et al.,* 2016) that leaves and aerial parts were major component used for the preparation of ethno-veterinary medicines. Our study revealed that herbs were the primary source of medicinal plants accounting for about 44.6 % followed by trees (39.4), shrubs (15.7) and creepers (8.26), respectively. Similar finding was reported by Kumar and Bharati, (2013) from Uttar Pradesh. In present study, all plants belonged to 61 families with most plants representing family Fabaceae (15 species) followed by Asteraceae (9 species), Euphorbiaceae and Solanaceae (5 species each), Acanthaceae, Moraceae, and Poaceae (4 species each) (Figure-3). Medicinal plant species from these families could be recognized by their wider availability for their use in the study area. Gohre *et al.,* (2016) reported Fabaceae as the richest in species followed by Asteraceae and Euphorbiaceae from northern Angola; whereas, Chasange *et al.,* (2016) from Combodia and Verma (2014)

from Bundelkhand, India reported Fabaceae as dominant family followed by Asteraceae and Zingiberaceae, respectively.

Family wise Use and their citation reports:
In this study, a total of 2611 use reports have been documented, where 1868 are total repeated informants who cited uses and 541 refered as actual informants involved in the survey (Figure 3). We observed that 300 are the actual uses cited for 121 plants of species, it means each species is having with atleast 2.5 uses to cure ailments of ethno-veterinery purposes. On the basis of family wise citations, we found that Fabaceae (n=15) family is the largest where having citations (267); informants (190); use reports (31); ailments (21) followed by Euphorbiaceae (n=5) including citations (154); informants (83); use reports (13); ailments (9), Menispermaceae (n=3) citations (124); informants (92); use reports (14): ailments (12), then Asteraceae (n=9) containing (117); informants (108); use reports (13); ailments (9) and lamiaceae (n=3) having citations (117); informants (72); use reports (11); ailments and smallest family Papveraceae (n=1) including citations (5); informants (5); use reports (3); ailments (3) (Figure-3). This analysis showed that which family lower number of plants recorded with more citations has meant as commonlly utilised by the people for their neccesties and their information is communicated among the peoples.

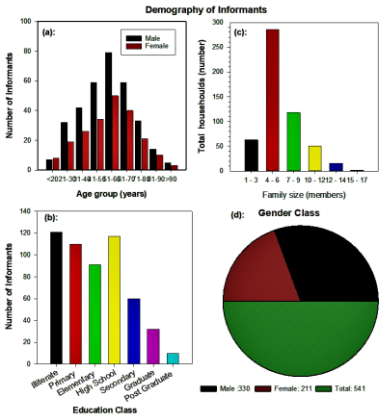

Figure 1. Demography of the informants such as number of informants under with age group (a), Education class (b), total households in family size (c) and Gender class (d) of the total informants were involved for study of medicinal plants for ethno-veterinary purposes.

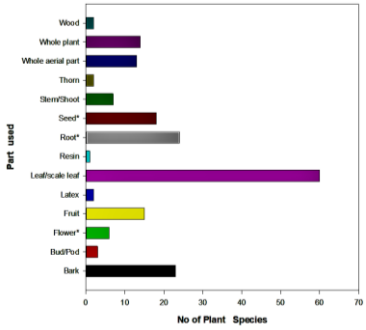

Figure 2. Plant parts used for their ethno-veterinary purposes

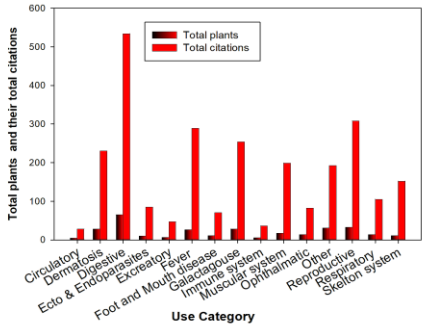

Figure 4. Total number of plants and their citations involved under major use category of ethno-veterinery purposes.

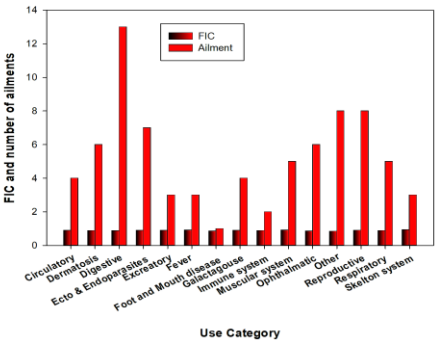

Figure 5. Factor informant consensus and total number of ailments under major use category of ethno-veterinery purposes

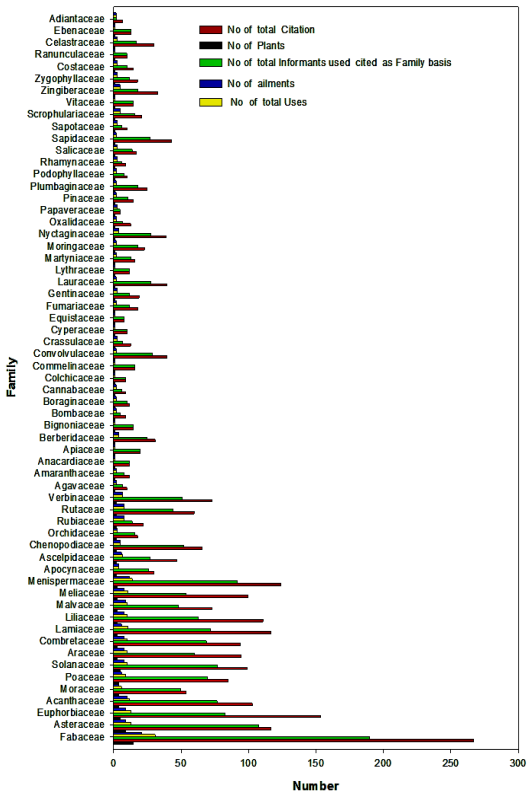

Figure 3. Family-wise analysis showing total citations, Number of plants, Number of total informants used cited as family basis, Number of ailments and Number of total uses.

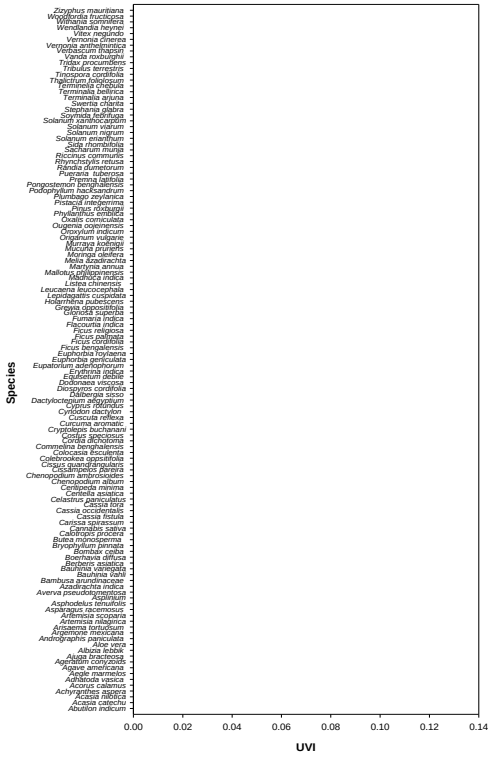

Figure 6. UVI values of each recorded species for ethno-veterinery purposes from Hamirpur District, Himachal Pradesh.

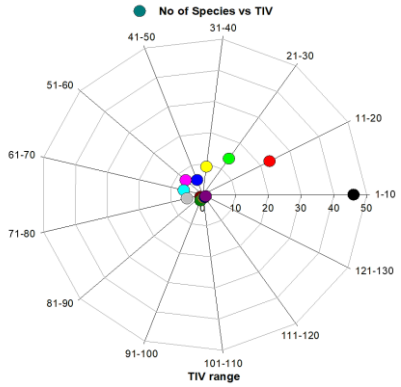

Figure 7. Total importance value (TIV) of total recorded species (number) for ethno-veterinery purposes from Hamirpur District. Values given in the figure as under placed in different classes at interval of 10.

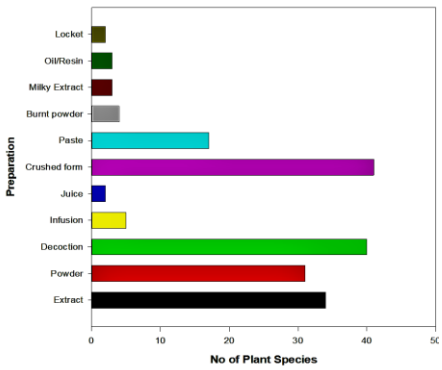

Figure 8. Mode of preparation of ethno-veterinery medicines used to cure ailments of livestock in the selected site Hamirpur district, Himachal Pradesh.

Major use category of Ethno-veterinary:

All recorded 121 plant species were used to treat about 78 different ailments which were categorized into15 major categories of ailments are given in figure 2 and described with detail in Table 2. These are as follows: Circulatory system (n=4), Dermatosis (n=28), Digestive system (n= 65), Ecto-parasites and Endo-parasites (n=10), Excretory system (n=6), Fever (Ephemeral, Malarial, fever) (n=27) Foot and Mouth disease (n=11), Galactagouse (n=28), Immune system (n=5), Muscular system (n=17), Ophthalmic (n=12), Other (n=34), Reproductive system (n=32), Respiratory system (n=13) and Skelton system (n=12) (Figure-4). On the basis of citations major use category digestive system was largest (534) followed by reproductive (308); fever (289); Galactagouse (254): Dermatosis (230) and lowest one was circulatory system (4) in Figure-4. In conformity with this, a similar type of study has been reported where digestive system having highest citations by Thakur *et al.,* (2016) from Chamba and Kangra district, Himachal Pradesh, by Gohre *et al.,* (2016) from northern Angola, Africa and Kumar and Bharati, (2013) from Uttar Pradesh, India reported reproductive followed by dermatosis and then digestive categories in their study.

Fidelity Level and Factor Informant Consensus:

The fidelity level is applied for recognizing most preferred plant species in use to cure different ailments by the indigenous people. In principle, maximum fidelity level (100%) indicates that all of the use reports cited by the all informants mentioned the same method for using the plant for treatment (Srithi *et. al.,* 2009, Thakur *et al.,* 2016). In present study, thirty-four plant species were found with having of to have hundred percent fidelity level (Table-1), whereas, three plants were applied to cure prolapsed uterus, three digestion problems, three to regain successful pregnancy after conception, four to increase milk production, three to cure fever, two used for removal of placenta, two for bone fracture and others for curing other different ailments had the maximum hundred percent fidelity level.

FIC index was applied to calculate the consensus informants for the treatment of certain major use categories that included different ailments related to specific system (Heinrich *et al.,* 2009). In our study, value for FIC index ranged from 0.84 to 0.94, being maximum representing greater consent among informants for ethno veterinary uses of species for ailments of certain categories (Figure 5). Respiratory system had highest FIC 0.93 followed by muscular system and Fever 0.91, reproductive, galactagouse, ecto-parasite and endo-parasites and lowest Fic (0.84) was found in other category ailments (Figure-5). However digestive system included 13 types of ailments followed by reproductive (8); other (8); ecto and endo paracites (7); Skin (6) and foot and mouth was single ailments (Figure-5).

Use Value *Index*

In present study, on the basis of quantitative analysis, UVI of each species was calculated and given in Figure 6. Most commonly used plant species have higher use value (UV*i*) in *Phyllanthus emblica* (0.110) with 32 use reports by 65 informants, recognized to its use in the treatment of different diseases such as indigestion, constipation, aneamia (Suroowan *et al.,* 2017); *Acorus calamus* (0.11) with 35 use reports by 60 informants, attributed its uses to cure ailments like fever, joint pains, arthritis, cuddling;

another important species *Cassia fistula* (0.107) with use reports 36 and 58 informants endorsed its uses to treat diseases indigestion, stomach pain, constipation cough and cold; *Pogostemon beghalensis* (0.103) with 33 use reports by 56 informants, used in fever/malma, spot/patches on skin, digestion problems, swellings, cough and eye problems; *Aloe vera* (0.097) with 28 use reports and 53 informants credited to cure ailments skin allergy, constipation, stomach disorder, swellings, breathing problems and boils; *Chenopodium ambrosoides* (0.092) with 39 use reports and 50 informants, used to cure digestion, stomach pain, constipation, cudding; *Terminalia chebula* (0.088) with 30 use reports and 48 informants recommended to cure diseases like, digestion and constipation, *Achyranthes aspera* (0.086) with 32 and 47 informants helps in fever, wound worms, removal of retained placenta, for easy delivery, insect bite and discharge of ear pus. Similarly *Premna latifolia* (0.086), *Azadirachta indica* (0.085), *Stephania glabra* (0.081) were included in top ten species having highest range followed by *Dodonaea viscosa* (0.079), *Cynodon dactylon* (0.077), *Solanum viarum* (0.007), *Ricinus communis* (0.075), *Tinospora cordifolia* (0.075), *Cuscuta reflexa* (0.073), *Listea Chinensis* (0.073), *Boerhaavia diffusa* (0.073), *Cissampelos pareria* (0.072), *Sida rhombifolia* (0.072), *Colebrookea oppositifolia* (0.066), *Cryptolepsis buchanani* (0.066) etc. and lowest UV_i range was found in *Wendlandia heynei* (0.0036) with 2 use reports and 2 informants attributed its use to treat the expelling leach and lices from animals skin followed by *Vernonia anthelmintica* (0.005) and *Erythrina indica* (0.005) with 3 use reports and 3 informants each.(Figure 6). Plants, which are having lowest use value indicates that the traditional knowledge about them are not communicated among the community itself might be that will be in risk or may be disappeared gradually from the society by some other environmental reasons (Chaudhary *et al.,* 2006, R. Parthiban *et al.,* 2016). However, plants with low use value may be important than the other plants having higher use value.

Total Importance Value (TIV_{is}):

This was calculated on the basis of different indices like UV_i, IFis, MIVis, $RMIV_{is}$, IFI_{is}, IIis (already explained in the section of materials and methods) and calculated data of each indices however not mentioned in this paper just because of exceeding page sizes except FL of each species is mentioned in Table 1 and valuese for UVI of each species given in Figure 7.

Total Importance value (TIV) of each species provided satisfactory information for the selection of most important species to harnessing for the purpose of ethno-veterinery purpose. Through, this index, importance of some species that was ignored has been appeared to score more values. In present study, across all recorded species, values for the same was ranged from 1.12 to 126.27 (Figure 7), being maximum in *Pogostemon benghalensis* (126.27) and minimum by several species. having highest value found in range 121-130 followed by again one plant *Acorus calamus* (114.28) in range 111-120; *Achyranthes aspera* (110.7) in 101-110: *Aloe vera* (98.25) and *Stephania glabra* (96.1) two plants in 91-100; again one plant *Tinospora cordifolia* (81.86) in 81-90; *Murraya koenigii* (78.3), *Terminalia chebula* (76.4) *Phyllanthus emblica* (75.8), *Sida rhombifolia* (74.5), *Cassia fistula* (71.8) five species in 71-80; *Solanum viarum* (69.6), *Azadirachta indica* (68.2), *Chenopodium ambrosioides* (66.3), *Boerhaavia diffusa* (64.7), *Cissampelos pareira* (62.4) *Curcuma aromatica* (61.7), six species in 61-70, followed by *Premna latifolia* (59.7), and *Asparagus racemosus* (57.5) seven plants from 51-60; five plant species from 41-50; nine plants in 31-40, fourteen species in 21-30; twenty three species in 11-20 and 46 species from 1-10 (Figure-7). Similarly, some plants of having high importance value are mentioned by (Thakur *et al.,* 2016, Chassagne *et al.,* 2016, Gohre *et al.,* 2016). Lowest value was found in *Wendlandia heynei* (1.21,) followed by *Vernonia anthelmintica* (1.82) and *Erythrina indica* (1.82). It was observed that approximate 68.5 % plant species are present in range 1-30. Addition to this, plant species of having lower value in one parameter as they were insignificant but some species were added in fifty species of significant category as when we calculated TIV_{is}. For Example, *Aegle marmelos Bauhinia variegata*, *Butea monosperma*, *Celastrus paniculatus, Cryptolepis buchanani, Soymida febrifuga Verbascum thapsus, Vitex negundo, Terminalia bellerica, Arisaema tortuosum, Mallotus philippinensis, Swertia chirata, Plumbago zeylanica, Artemisia nilagirica, Moringa oleifera, Flacourtia indica, Tribulus terrestris,* and *Acacia nilotica* etc. Some species of them are included only when total important value was applied on them, so it is important to note that these plants are not accounted as important if we consider the single parameter, hence the calculation of Total importance value (TIV_{is}) of all parameters are significant to get actual hidden results (Table-4). Over the conclusion it is found that importance of plants species depends upon many factors such availability, use reports, awareness, communication among society, and it is concluded that plants included in lower range may be important but it is not applicable on all the species recorded.

Treatments:

In the present study area, common livestock (animal) ailments are foot and mouth diseases, fever, anorexia, placenta retention after delivery, prolapsed uterus, mastitis, indigestion, Stomach pain, Flatulence, Retaining pregnancy after successful conception. The people of remote villages have continued their faith on traditional medicines as facilities of modern pharmaceutical medicine is lacking due to non-availability of veterinary hospitals in the adjacent areas. But the role of pharmaceutical medicine has increased villages lying near the town and cities where the facilities are developing and easily available. However, some common ailments like expulsion of uterus, retention of placenta after delivery, cuddling, bone fracture, broken horn, eye redness, injury, swelling, flatulence, diarrhoea and dysentery, most of the villagers still desires the traditional medicine.

Similar thoughts have been mentioned from different parts of India by (Thakur *et al.,* 2016; Kumar and Bharti 2013; Parthiban *et al.,* 2016). It has been found that the ailments (13) pertaining to digestive system were most common for which maximum plants (n= 65) being harvested by the local people for the preparation of traditional medicine and this category had been most frequently cited one (534 times) followed by other ailments., It might be due to contaminated food chain and large number of micro-organisms (Fungi and Bacteria) associated with grasses and soil component o which majority of livestock survives. In agreement with this, Ali Shtayeh *et al.,* (2016) reported similar iformation from West Bank Pelistine where most of the livestock gets food through grazing.

Preparation and formulation for medicine:
In our study, it was observed that a major part of medicine preparation in India is plant source; therefore, substantial amount of plant sources have been utilized in pure form either used in decoction or extract or powder, juice, ash or in small pieces feed with fodder etc. According to local people perception, some minerals may be added to increase the potency of the medicine such as common salt, rock salt, Black salt and Sindh salt, Potassium alum, Sodium bi carbonate with clarified butter (Ghee), vegetable oil (generally mustard), and milk etc. were added for base and good application (Kumar and Bharti, 2013). For example, Rhizome powder of *Acorus calamus* mixed with powder of *Artemisia scoparia* in *Brassica campestris* (mustard) or *Sesamum indicum* (sesame) oil is used for massage in case of fever (Malma, vernacular language of Himachal Pradesh), joint pain and arthritics. About 22.53 % plants were used in crushed form medicine followed by decoction (21.98%) followed by extract (18.68%), Powder (17.03%) and rest with other forms (Figure 8).

We found that some local informants agreed that they use some particular plants together with for a specific ailment if be required for treatment of a specific ailment. In general, there are many evidences given in the earlier literature as well as from scientific documents that combined form of a plant species can be a better and effective remedy for the treatment of ailments (Chand *et al.,* 2016). In present study, Powder of dried aerial whole part of *Aloe vera* plant is mixed with equal amount of *Phyllanthes emblica, Terminalia bellarica and Terminalia chebulla* fruit powder and required amount of black salt to cure the constipation and stomach disorder. Leaf decoction of *Adhatoda vasica*, *Cuscuta reflexa*, *Vitix negundo* and *Murrya koengii* is prepared in water and used to take bath and may be taken orally for swelling. Leaves of *Artemisia nilagirica* are grounded along with the leaves of *Vitex ne-gundo*, *Adhatoda vasica*, *Pogostemon benghalensis*, *Murraya koenigii* in equal amount are mixed well with four types of salt (Black, Sindha, Sea and rock salts) in it and is given handful daily in morning in empty stomach to the animal to cure digestive problem or disorder. Seeds powder of *Cassia tora* and *Cassia occidentalis* mixed in 1-2 litres Lassi (diluted curd) is orally given to the rabies animal which causes vomiting. Decoction of *Cuscuta reflexa*, *Dodonaea sp.*, *Murrya koengii, Vitex negundo* leaf is used for bathing and prepared paste applied on the fractured bone part of the body till recovery. Powder of dried roasted fruits, *Trachyspermum ammi* (Ajwain), *Terminalia bellerica*, *Terminalia Chebula*, *Phyllanthus emblica* and *Colebrookea oppositifolia* in equal amount and four types of salts (Sindh, Black, rock and normal) in required in equal amount is mixed. Then one handful is given to animal in empty stomach to treat respiratory, digestive problems and swelling and poisoning at alternate day. So, plants in combination of two or more plants to cure the specific disease and they might be used to cure different more diseases. On the other hand, many informants reported that two or more plants are used to cure same or specific disease. *Vitex negundo, Adhatoda vasica* and *Acorus calamus* are used in combination to cure diseases like fever, stomach. In general, one plant is also used to cure one or more disease for example *Achyranthes aspera* species is used to cure different ailments like fever, wound worm, expulsion of retained placenta after delivery, for easy delivery and ear discharges, *Ajuga bracteosa* is used to cure single ailment foot and mouth disease. With this different plant parts of same plant are used to cure different type of ailments.

Non-documented ethno-veterinery uses:
Based on literature survey, we found that information collected in our study has been reported by various workers are more or less similarly described which confirms good level of authenticity (Table 3). However, some information reported by the indigenous people is not documented yet in the literature; these are perhaps a new one for etho-veterinery purposes (Table 4).

Conclusions

In this study, many new traditional ethno-veterinary medicines used by indigenous people to cure different ailments of plants were found which are not documented yet in the literature.The informants desired to treat ailments like expulsion of retained placenta, as coolant to retain pregnancy after successful conception, flatulence, foot and mouth disease, bone fracture, bones dislocation, diarrhoea and dysentery, nipple cracks, mastitis and for heat to retain pregnancy by using local traditional medicine. Most of the local people depend upon their traditional health care system especially in the remote areas where facility of veterinary hospital is not available. On the basis of quantitative data analysis, there is great consent among the informants for the use of *Pogostemon benghalensis, Acorus calamus, Achyranthes aspera*, *Aloe vera, Azadirachta indica, Asparagus racemosus, Phyllanthes emblica, Tinospra cordifolia, Adhatoda vasica, Sida rhombifolia, Plumbago zelanica, Riccinus communis, Randia sp, Boerhaavia diffusa, Terminalia chebula, Terminalia bellerica, Terminalia arjuna, Solanum xanthocarpum* etc. to cure different type of ailments. In conclusion, present study, documenting the veterinary medicine and indigenous knowledge could be used for conservation and for the validation of these plant preparations for the treatment of different ailments. Moreover, it may provide the base line for phytochemical and pharmacological analysis to find out the medicinal properties of important plants.

Authors' contributions
ANS planed experimental design, RCB performed field study and drafted manuscript, CN helped in preparation and finalized manuscript. Other co-authors helped in laboratory and field study and rendered equal role in preparation and finalizing the manuscript.

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