



Ethno-Veterinary practices used for common health ailments of sheep and goat: A participatory assessment by the *Raika* pastoralist of Marwar Region, Rajasthan

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ABSTRACT

The *Raika* pastoralists of Rajasthan have a large network of traditional healer and make use a large variety of indigenous plants, minerals and animal products to cure their diseased animals. Therefore, the present study was designed to document and appraise ethno-veterinary practices followed by the *Raika* pastoral community to treat common health ailments of sheep and goat like diarrhea, bloat, jaundice and fever. The study was carried out at purposively selected Marwar region of Rajasthan and a total 120 *Raika* pastoralists were interviewed from the six villages of Pali and Jodhpur district on an open-ended interview schedule to document the ethno-veterinary practices. For participatory assessment of the identified ethno-veterinary practices, Quantification of Indigenous Knowledge (QuIK) was applied. The *Raikas* were using total 15 ethno-veterinary practices to cure four common health ailments. Use of alum and jaggery was found most effective to treat diarrhea, whereas, they used only alum to treat fever. They also used mixture of turmeric, acidic butter, tea and black salt to manage bloat in their animal most effectively. To cure Jaundice of animal, they perceived use of mixture of lemon, baking soda and pepper was more effective ethno-veterinary practice. Hence, pharmacodynamics of these ethno-veterinary practices may be studied before further replication and use.

Keywords: Ethno-veterinary practices, Goat, Marwar region, *Raika* pastoralist, Sheep

Pastoralists depend on livestock for their livelihood. Their major sources of income are selling of animals and their products like meat, milk etc. There are, around, 120 million pastoralists across the globe (Rass 2006). Pastoralists makes a significant contribution mainly in developing counties like India in terms of animal product like meat and generating employment in rural areas. In India, more than 200 pastoral communities are living (Khurrana 1999). *Raika* pastoralist is one of the most important pastoralists inhabiting with seven million population in Marwar region of Rajasthan (Rollefson *et al.* 2004). There are two communities among the *Raika*, i.e. *Maru* (camel rearer) and *Godwar* (sheep rearer) (Tripathi and Rajput, 2006). Though, the *Raikas* are known as the camel breeder, but, sheep and goat population in their herd has increased significantly during last few decades (Dudi and Meena, 2015). Nomadic pastoralism is critically important to the economy of Rajasthan. Aridity and poor soils, especially in the western districts, make it well-suited to a combination of agriculture and livestock rearing (IIRR, 1994). Every year after rainy season, *Raika* used to migrate along with their animals. Lack of fodder, water and

marketing are the main reasons of migration of *Raika* and they used to migrate more than eight months in a year. During migration, they used to reach different parts of Madhya Pradesh, Uttar Pradesh and Haryana. Due to their intimate association with the animals, *Raikas* accumulated a large body of knowledge related to cure and management of different diseases of their animals. *Raikas* have very little access to modern veterinary facilities due to remote location of their migratory routes and solely depend on their traditional knowledge to treat their diseased animals. These treasure of knowledge is very little documented and there is danger of extinction of this knowledge base. Therefore, it is utmost important to document these old age practices as well as to assess their perceived effectiveness. Pharmacodynamics of the identified effective practices may be further studied and may be replicated for further use. Hence, the present study was designed to document and participatory assessment of the documented ethno-veterinary practices used to cure common health ailments of sheep and goat.

MATERIALS AND METHODS

There are 3.074 crore of small ruminant (sheep and goat) in Rajasthan which is highest populated state in India (Anonymous, 2012). *Raikas* mainly inhabiting in Rajasthan with seven lakh population which is 61% of the total *Raika*

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pastoralists of India. Therefore, the present study was carried out in Rajasthan. Out of nine regions in Rajasthan, Marwar region was selected purposively due to the highest population of *Raika* pastoralists. Out of six districts of Marwar region, two districts, i.e. Pali and Jodhpur were selected purposively based on the highest population of the *Raika* pastoralist. From each district, one tehsil (Bali from Pali district and Bilara from Jodhpur district) was selected. Further, three villages from each tehsil were selected, randomly. Therefore, the present study was conducted in six villages. From each village, 20 *Raikas* pastoralists were selected randomly who were rearing sheep and/or goat and migrating along with their sheep and goat and they were considered as respondents for this study. Thus, total 120 *Raika* pastoralists were interviewed at their home and during migration with help of an open-ended interview schedule for documentation of ethno-veterinary practices with rationale used by them to treat different diseases of sheep and goat. Prior informed consent was obtained from the village headman for sharing and publishing their traditional knowledge and practice as ethno-veterinary practices to acknowledge them. While seeking informed consent, the researchers have explained the purpose of the research, its sponsors, potential benefits and possible problems associated for people and the environment, research methodology and participation of residents of the community. They were given an opportunity to read the summarized facts of research through their village headman.

Assessment of ethno-veterinary practices had been done through QuIK (Quantification of Indigenous Knowledge) method by key informants, using the method (QuIK) was developed by De Villiers (1996). The basic premise of this method is that farmers know and understand the environment in which they farm and that answers to many questions can be found in the collective experience of the farming community and doing informal experiments over years. It can be used to unpack the practices of successful farmers, so that information can be disseminated to a wider group of farmers. QuIK methodology represents a rapid and relatively cheap way to elicit ethno-veterinary practices. In QuIK, PRA tool, i.e. matrix ranking is combined with an interview schedule to elicit numerical data from key informants. *Raikas* were, mainly, using ethno-veterinary practices to cure four common health ailments of sheep and goat, i.e. diarrhoea, bloat, jaundice and fever. Therefore, these four health ailments were selected for the participatory assessment of the ethno-veterinary practices which were used to cure these diseases. Among the identified ethno-veterinary practices, important practices as identified by the pastoralists were considered for QuIK. Thus, four practices were selected to evaluate their comparative effectiveness to cure diarrhea. Accordingly, three practices were selected to appraise their effectiveness against bloat and jaundice; and finally five practice were evaluated in case of fever. To conduct participatory assessment, key informants were identified by Sociometric method (Moreno,

1951) among the selected *Raika* pastoralists those were having detailed understanding regarding selected ethno veterinary practices. Thus, 19 key informants were identified for participatory assessment of ethno-veterinary practices used to treat diarrhoea and 21 key informants were identified for the assessment of the ethno-veterinary practices used to treat other three ailments viz. bloat, jaundice and fever. Four criteria or parameters, viz. availability, ease of preparation, healing effect and lower side effect, were selected to appraise comparative and relative effectiveness of the identified ethno veterinary practices. Key informants were asked to put required number of pieces of stone out of in each block of matrix as per their perception on the each criteria/parameter of the identified ethno-veterinary practices. Data from each key informant were treated as an independent result. Data collected from the key informants on several criteria were subjected to one-way analysis of variance. Duncan's Multiple Range Test (DMRT) as modified by Kramer (1957) was followed to identify the most effective practices among the identified practices.

RESULTS AND DISCUSSION

Ethno-veterinary practices used in sheep and goats by the Raika pastoralists for different diseases

Diarrhoea: Diarrhoea is very common stomach diseases for sheep and goats in Rajasthan and, in this condition their droppings usually become soft, watery and smelly. *Raikas* expressed that animals were depressed and did not consume feed and fodder. Sometimes, animals had a watery, whitish-yellow or greyish diarrhoea which is known as "white scours". Mortality amongst lambs/kids usually were high due to dehydration. A total four ethno-veterinary practices were used by the *Raika* pastoralists against Diarrhoea in sheep and goat (Table 1). In case of first practice, they collect *fitkari* (alum) and jaggery from market and mixed them with less quantity of alum with higher quantity of jaggery. Then, boiled with water for 30 min. and kept whole night and provided to animals in early morning for 4–5 days. Jaggery boosts intestinal strength due to its high magnesium content and jaggery is also loaded with antioxidants and minerals such as zinc and selenium, which in turn help to prevent free-radical damage and also boost resistance against infections. Tyagi (1994) reported same practices in his study in south-western Rajasthan, where, farmers were providing jaggery along with water to help clear off waste from uterus after delivery and also help to provide comfort to animals after delivery. In the second practice, fruits of *Cucumis melo*, *L. syno*, *Cucumis callosus* (*Rottler*) *cogn.* collected from nearby areas mixed with sugar and oil and water was given to animals. *Raikas* take, in third practice, mustard oil and half spoon of red chilies powder and mix both in cup and give to animals for 3 days in morning time and evening time. During this treatment, they did not provide green fodder to the infected animal, but, only dry fodder was given. They also believed about the utility of isabgol in control of diarrhoea and used as

fourth practice. They mixed powder of isabgol leaves with water and gave to animals 2–3 times within a single day.

For the assessment of ethno-veterinary practices for treatment of diarrhoea in sheep and goat by the *Raika* pastoralists of Rajasthan, a total 19 key informants were interviewed. Matrix ranking for the relative performance of the options with respect to each criterion, viz. availability, ease of preparation, healing effect and lower level of side

effect was done with scoring pattern of 1 to 4 as presented in Table 2. The result shows in Table 2 discernible difference in different ethno-veterinary practices. The first practices, i.e. use of alum and jaggery mix and third practice, i.e. use of Mustard oil and red chillies both were perceived as most effective in terms of availability, but, in terms of ease of preparation, *Raika* pastoralists perceived that third practice, i.e. use of mustard oil and red chillies was most effective and

Table 1. Ethno-veterinary practices used by the *Raika* pastoralists in Marwar region of Rajasthan for treatment of diarrhoea in sheep and goat

Practice	Ingredients	Botanical name of used plants	Form of use	Mode of use
First	Alum, Jaggery	–	Paste	Fitkari (<i>Alum</i>) + jaggery, mix less amount of Alum with more jaggery and boil with water for 30 mins and keep whole night and provide to animals in early morning for 4–5 days.
Second	Kachri (Arid fruit), Sugar, Mustard oil	<i>Cucumis melo</i> L. syno <i>Cucumis Cucumis callosus</i> (Rottler) cogn	Fruit	Mix fruit of <i>kachri</i> and mixed with sugar and oil and water and given to animals.
Third	Mustard oil Red chillies	<i>Brassica nigra</i> , <i>Capsicum annuum</i> L. and <i>Capsicum frutescens</i> L.	Oil Powder	Take mustard oil and half spoon of red chillies powder and mix both in cup and give to animals for 3 days in morning time and evening time. Should not provide green fodder to affected animal. Give only dry fodder.
Fourth	Isabgol	<i>Psyllium</i> husk	Leaves	Powder of isabgol leaves mix with water and given to animals 2–3 times in one day.

Table 2. Participatory assessment of ethno-veterinary practices for treatment of diarrhoea in sheep and goat by the *Raika* pastoralists of Marwar region of Rajasthan (n=19)

Criteria	First practice	Second practice	Third practice	Fourth practice
Availability	3.50±0.115 ^a (I)	1.95±0.050 ^b (II)	3.50±0.115 ^a (I)	1.05±0.050 ^c (III)
Ease of preparation	3.35±0.109 ^a (II)	1.35±0.109 ^b (IV)	3.65±0.109 ^a (I)	1.65±0.109 ^b (III)
Healing effect	3.20±0.092 ^b (II)	3.80±0.92 ^a (I)	1.80±0.156 ^c (III)	1.35±0.109 ^d (IV)
Lower level of side effect	3.15±0.196 ^a (II)	2.30±0.105 ^b (III)	1.10±0.100 ^c (IV)	3.45±0.170 ^a (I)
Overall effect	13.20±0.277 ^a (I)	9.40±0.222 ^b (III)	10.04±0.256 ^b (II)	7.50±0.235 ^c (IV)

(a,b,c,d means bearing different superscripts in row under each criterion differ significantly (P<0.05). The multiple comparisons are based on DMRT Post Hoc test. Values in parenthesis indicate the respective rank under each criterion).

Table 3. Ethno-veterinary practices used by the *Raika* pastoralists in Marwar region of Rajasthan for treatment of bloat in sheep and goat

Practice	Ingredients	Botanical name of used plants	Form of use	Mode of use
First	Turpentine, black salt, hing and linseed	<i>Ferula assa -foetida</i> , <i>Linum usitatissimum</i>	Paste and oil	Turpentine oil-100 ml, Black salt-100 g, Hing-30 g Linseed oil-500 ml. At first, 500 ml linseed oil mixed with 100 ml turpentine oil. Then, 100 g of black salt added with oil solution. Finally, 30 g of hing (<i>asafoetida</i>) added to the solution. This final mixture was provided to animal to drink. Water should not be provided upto 2 h of offering of the solutions.
Second	Turmeric, acidic butter, Tea and black salt		Powder and paste	Acidic butter + black tea + turmeric mix + black salt and given to animals.
Third	Kali jiri, Rai and butter	<i>Brassica napus</i> , <i>Nigella sativa</i>	Seeds	Kali Jiri + Rai + acidic butter (buffalo, cow) mix all the materials and provide to animals for 4–5 days.

significantly differed from first practices. Its consistence effectiveness towards each criterion and finally adjudged as the best effective practice to control diarrhoea of sheep and goat. Second practice, i.e. mixture of *kachri* fruits with sugar and mustard oil was having the properties of quick healing. But, collection of material and preparation complexity makes it less effective than the third practice, i.e. mixture of mustard oil and red chillies. Among these four practices, use of isabgol was the least effective practice as it takes more time to recover from diarrhoea. Isabgol is mainly used for constipation for its adsorption quality, so its uses was not found more efficient than other practices as per perception of *Raika* goat and sheep rearers. Though they perceived that second practices, i.e. use of *Kachri* (Arid fruit), sugar and mustard oil to the small ruminants against diarrhoea was more effective in terms of healing effect than other three practices but overall effective was lesser than first practices due to its complexity in preparation and side effect.

Bloat (Affara) in sheep and goat: Bloat (Affara) is one health disorder of small ruminants like sheep and goat as reported by *Raika* pastoralists. Bloat is an excess of gases in the rumen of small ruminant animals and it should always be considered as an emergency situation. *Raika* reported that this type of bloat is usually caused by lush pastures heavy in legumes like clover, alfalfa. These rapidly fermenting foods produce gases more quickly than sheep can digest. A total three ethno-veterinary practices were used by the *Raika* pastoralists against bloat (Affara) in sheep and goat in the study area (Table 3). In case of first practice, they collected 100 ml of Turpentine oil, 100 g of Black salt, 30 g of *Hing* and 500 ml of linseed oil. At first, they mixed two oils, then, black salt was added to this solution. Finally, 30 g of *hing* is added to the solution. This mixture was provided to animal. Generally, they did not offer water upto 2 hrs of providing this mixture. The components present in *hing* (*asafoetida*) have anti-bacterial, anti-spasmodic, laxative, anti-flatulent, anti-inflammatory and antiseptic properties that help deal with problems like irritable bowel syndrome (IBS), flatulence and an upset stomach. For the second practice, a paste of acidic butter, black tea, turmeric powder and black salt was prepared and given to the affected animals. Another paste of *kali jiri*, *rai* and acidic butter was prepared and used as third practice. This paste was provided to mix all the materials and provide to the affected animals for 4–5 days, consecutively.

Table 4. Participatory assessment of ethno-veterinary practices for treatment of bloat in sheep and goat by the *Raika* pastoralists of Marwar region of Rajasthan (n=21)

Criteria	First practice	Second practice	Third practice
Availability	1.57±0.190 ^b (III)	2.76±0.095 ^a (I)	1.67±0.105 ^b (II)
Easy in preparation	1.14±0.078 ^c (III)	2.95±0.048 ^a (I)	1.90±0.095 ^b (II)
Healing effect	1.86±0.210 ^a (III)	2.00±0.195 ^a (II)	2.10±0.136 ^a (I)
Lower level of side effect	1.57±0.163 ^b (II)	2.86±0.078 ^b (I)	1.57±0.111 ^a (III)
Overall effect	6.14±0.261 ^c (III)	10.57±0.177 ^a (I)	7.24±0.275 ^b (II)

a,b,c, means bearing different superscripts in row under each criteria differ significantly ($P<0.05$). The multiple comparisons are based on DMRT Post Hoc test values in parenthesis indicate the respective rank under each criterion.

For the assessment of ethno-veterinary practices, 21 key informants were interviewed with four criteria viz. availability, ease of preparation, healing effect, and low level of side effect with scoring pattern of 1–3. Matrix of decision criteria with respect to each practice for curing of blotting of sheep and goat is presented in Table 4. The second practice, i.e. mixture of acidic butter, black tea, turmeric and black salt was found to be most effective to control bloat of sheep and goat in comparison to the other two practices. All the ingredients of the second practice are easily available at the household level and easy in preparation, therefore, this practice was perceived as best effective one. *Raikas* perceived that the third practice, i.e. *kali jiri*, *rai*, acidic butter mixture, had the features of quick healing effect from bloat. But this practice was adjudged as the second most effective practice due to non-availability of ingredients in comparison of the second practice. The first practice was the least preferred practice among the *Raika* pastoral community due to the non-availability of ingredients like linseed oil, turpentine oil and *hing* as well as complexity in preparation than the other two practices.

Jaundice in sheep and goat: Jaundice is a common health ailment in sheep and goat. Therefore, *Raika* pastoral community followed their old age ethno-veterinary

Table 5. Ethno-veterinary practices used by the *Raika* pastoralists in Marwar region of Rajasthan for treatment of jaundice in sheep and goat

Practice	Ingredient	Botanical name of used plants	Form of use	Mode of use
First	Palash tree flower and wood	<i>Butea monosperma</i>	Flower and wood	Make tea of palash flower and give to animals for 7–8 days. Boil palash tree wood in water for 2–3 h and provide to diseased animals.
Second	Kheera	<i>Cucumis sativus</i>	Fruit	Provide kheera to animals as much as possible.
Third	Lemon, Meetha soda and Pepper	<i>Citrus × limon</i> , <i>Piper nigrum</i>	Juice/powder	Mix baking soda and little black pepper and mix with the lemon juice and give to animals for 4–5 days consecutively.

practices to control jaundice. Generally, they follow three practices for treatment of jaundice of their sheep and goat. A brief description of these three ethno-veterinary practices is presented in Table 5. In case of first practice, the *Raika* pastoralists collected flower of *Butea monosperma* from forest and crushed the flower and made tea and gave to diseased animals directly for 7–8 days. Singh *et al.* (2013) also reported that *Raika* pastoralists use flower of *Butea monosperma* for the treatment of the jaundice of their animal. But Yadav *et al.* (2014) revealed that powder of seeds of *Butea monosperma* is used to kill the maggots. *Raikas* also provide *Cucumis sativus* to the diseased sheep and goat *ad lib.* for quick healing. They also prepare a solution of baking soda, black pepper and lemon juice and give to the animal for 4–5 days consecutively.

A participatory assessment was conducted among the 21 key informants to identify the best practice for treatment in sheep and goat jaundice used by the *Raika* pastoralists. All the three practices were assessed based on the four criteria namely availability, ease of preparation, healing

Table 6. Participatory assessment of ethno-veterinary practices for treatment of jaundice in sheep and goat by the *Raika* pastoralists of Marwar region of Rajasthan (n=21)

Criteria	First practice	Second practice	Third practice
Availability	1.67±0.105 ^b (II)	1.33±0.105 ^c (III)	3.00±0.000 ^a (I)
Ease of preparation	1.86±0.143 ^b (II)	1.38±0.129 ^c (III)	2.76±0.118 ^a (I)
Healing effect	1.14±0.078 ^b (III)	2.33±0.159 ^a (II)	2.52±0.112 ^a (I)
Lower level of side effect	1.71±0.197 ^b (III)	1.95±0.201 ^a (II)	2.33±0.105 ^a (I)
Overall effect	6.38±0.327 ^b (III)	7.00±0.365 ^b (II)	10.62±0.189 ^a (I)

a,b,c means bearing different superscripts in row under each criteria differ significantly ($P<0.05$). The multiple comparisons are based on DMRT Post Hoc test. Values in parenthesis indicate the respective rank under each criterion.

effect and low level of side effect pattern. The result of the participatory assessment is presented in the Table 6. The third practice, i.e. mixture of lemon, soda and pepper was perceived as the best one in all four categories of participatory assessment. Therefore, this practice was considered as the most effective ethno-veterinary practice to control sheep and goat jaundice. In terms of overall effectiveness, first and second practice did not have any difference at $P<0.05$. But, the second practice was considered as the second most effective ethno-veterinary practice used by the *Raika* pastoral community to control sheep and goat jaundice due to their healing effect in comparison to the first practice.

Fever in sheep and goat: A total five ethno-veterinary practices were used by *Raika* pastoralists for the treatment of fever of sheep and goat. A brief detail of each practice is given in Table 7. *Raika* pastoralists use alum (*fitkari*) as *Ramban*. They always carry alum with them during migration and use whenever it is required. *Raikas* used five ethno-veterinary practices to control fever of their sheep and goat. In the first practice, they prepare a mixture of onion (leaves), *ajwain*, *dhania* and jaggery; and give to the diseased animals. They used alum 2–3 days continuously to control fever. Sometimes, they mixed fenugreek and rock salt with alum and gave to the animals without water. They even add turmeric powder with alum and give to the animals for continuous two days to control fever. They also believed that yellow brinjal can control fever of sheep and goat and used as fifth ethno-veterinary practices

A total 21 key informants from the *Raika* pastoral community participated in the participatory assessment of the five ethno-veterinary practices used by them for treatment of fever of their sheep and goat. Assessment of each practice was done based on the four criteria, i.e. availability, ease of preparation, healing effect and low level of side effect was done with scoring pattern of 1 – 5. The decision matrix of the response of the key informants is presented in Table 8. Use of alum alone was found to be the most effective ethno-veterinary practice to control fever of sheep and goat in comparison with other four practices. Healing time from fever was highly delayed when alum

Table 7. Ethno-veterinary practices used by the *Raika* pastoralists in Marwar region of Rajasthan for treatment of fever in sheep and goat

Practice	Ingredients	Botanical name of used plants	Form of use	Mode of use
First	Onion, ajwain, fenugreek and jaggery	<i>Allium cepa</i> , <i>Trachyspermum ammi</i> , <i>Coriandrum sativum</i>	Leaves powder and paste	Onion (leaves) + ajwain + dhania + jaggery; mix all the items and given to animals.
Second	Alum	–	Paste	Make paste of Alum and given to animals followed by water for 2–3 days.
Third	Fenugreek, rock salt, and fitkari	<i>Coriandrum sativum</i>	Powder and paste	Fenugreek + Rock salt + Alum; Mix all and make powder and provide to animal without water.
Fourth	Turmeric and Fitkari	<i>Curcuma longa</i>	Powder and paste	Make powder of turmeric and alum, then, give to animal for 2 days.
Fifth	Brinjal	<i>Solanum melongena</i>	Fruit	Mix yellow brinjal in cold water and give to animals.

Table 8. Participatory assessment of ethno-veterinary practices for treatment of fever in sheep and goat by the *Raika* pastoralists of Marwar region of Rajasthan (n=21)

Criteria	First practice	Second practice	Third practice	Fourth practice	Fifth practice
Availability	2.00±0.00 ^d (IV)	4.86±0.078 ^a (I)	3.00±0.00 ^c (III)	4.14±0.078 ^b (II)	1.00±0.00 ^e (V)
Easy in preparation	1.38±0.176 ^d (V)	4.90±0.066 ^a (I)	3.05±0.263 ^b (III)	3.48±0.148 ^b (II)	2.14±0.143 ^c (IV)
Healing effect	3.48±0.328 ^a (III)	1.67±0.174 ^b (V)	1.86±0.143 ^b (IV)	3.90±0.153 ^a (II)	4.10±0.228 ^a (I)
Lower level of side effect	1.90±0.206 ^b (IV)	4.05±0.263 ^a (I)	2.24±0.168 ^b (III)	2.43±0.289 ^b (II)	2.43±0.289 ^b (II)
Overall effect	8.76±0.625 ^d (V)	15.48±0.406 ^a (I)	10.14±0.427 ^c (III)	13.95±0.312 ^b (II)	9.67±0.392 ^c (IV)

a, b,c,d,e means bearing different superscripts in row under each criteria differ significantly (P<0.05). The multiple comparisons are based on DMRT Post Hoc test. Values in parenthesis indicate the respective rank under each criterion.

was used alone, but, due to the easy availability, no preparation and no side effect it was considered most effective ethno-veterinary practice. On the other side, use of yellow brinjal can control fever of sheep and goat very quickly. But, availability of yellow brinjal was a matter of concern for the *Raikas*. Therefore, this practice was considered as the fourth most effective ethno-veterinary practice. Accordingly, collection and preparation of the ingredients of the first practice, i.e. mixture of onion leaves, ajwain, dhanian and jaggery made it least effective ethno-veterinary practice against fever of sheep and goat.

The *Raika* pastoralists of the Marwar region of Rajasthan depend on the ethno-veterinary practices for the treatment of the common health ailments of their sheep and goat due to their migratory way of life and non-accessibility of modern veterinary practices. Participatory assessment appraised that use of mixture of alum and jaggery was most effective to treat diarrhoea; use of turmeric, acidic butter, tea and black salt was best to treat bloat; juice and powder of lemon, baking soda and pepper was applied and found most effective to treat jaundice and use of dry alum was found to be most effective practice for fever control in sheep and goat. Concerns regarding efficacy, quality, safety and dose standardization remain. Hence, it is an urgent need to evaluate the pharmacodynamics of these ethno-veterinary practices before further replication and use.

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