



Original Research

Ethno-veterinary Practices of Parasitic Infestation with Their Extent of Use Followed by Livestock Owners in Western Zone of Rajasthan

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Abstract

The present study was conducted in Bikaner and Jodhpur districts of Rajasthan in order to document the ethno veterinary practices followed by livestock owners. A total of 120 livestock owners were selected as respondent from 12 selected villages of 4 tehsils of the districts. Inventories of 4 ethno veterinary practices were documented for treatment of ecto-parasitic infestation, 6 ethno-veterinary practices were documented for treatment endo- parasitic infestation. Using neem (*Azadirachta indica*) bark with water was found most frequently using ethno-veterinary practices for treatment of endo-parasitic infestation having highest Ethno-veterinary Medicine Use Index (EVMUI) 264 and ranked first. Khinf (*Leptadenia pyrotechnica*) with water, kali jeeri (*Centratherum anthelminticum*) with water EVMUIs 79, 78 and ranked II and III, respectively. Using tobacco (*Nicotiana tabacum*) and water was found most frequently using practice for treatment of ecto-parasitic infestation having highest Ethno-veterinary Medicine Use Index (EVMUI) 184 and ranked first.

Key words: Ecto-parasitic, Endo- parasitic, Ethno-veterinary, EVMUIs

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Introduction

About 70 percent of livestock being owned by landless, marginal & small farmers, so their reach to veterinary doctor and allopathic medicine is limited. Therefore, traditional knowledge for first aid and treatment of animals being very important for growth of Indian livestock sector from farmers point of view (Singh *et al.*, 2011). Ethno preparations are powders, poultice, ointment, decoction, infusion, cold ware



extract, tincture fumigation. The use of indigenous veterinary medicine is a cost effective treatment option for livestock, especially in primary health care in remote areas (Punniamurthy, 2010). These days, anthropogenic activities such as industrialization, deforestation, habitat destruction, urbanization, etc. pose a serious threat to the species diversity. It is, therefore, very necessary to document the useful ethno-botanical/ethno-veterinary (Ahmad *et al.*, 2016). A lot of work has been done to evaluate and document this hidden knowledge in different parts of India and abroad, but still the information is rare and unacquainted to others. As a scientific term for animal health care, ethno-veterinary focus is on maintaining livestock keepers' knowledge approaches to animal health care and production. It covers information on diseases and their control; remedies and clinical practices for treatment and prevention; management, feeding and breeding strategies; spiritual elements and the human resources that hold the information and experience (Mathias, 2004).

Materials and Methods

The present study was conducted in purposively selected Bikaner and Jodhpur districts of Rajasthan. Two tehsils Nokha and Lunkaransar were purposively selected out of the 8 tehsils from Bikaner district on basis of good proportion of livestock population. Two tehsils Phlodi and Bhopalgarh were purposively selected out of the 13 tehsils from Jodhpur district on basis of good proportion of livestock population. With consideration of availability of traditional healers, a comprehensive list of all villages were prepared from respective tehsils after discussion with patwari, tehsildar, veterinary officer, villagers and traditional healers. Three villages were randomly selected from each tehsil and a total of twelve villages were selected for the purpose of study. The 10 livestock owners from each of the twelve selected villages including the available traditional healers were identified randomly who have adopted animal husbandry as occupation. Thus, the total sample size was constituted 120 livestock owners.

Rajasthan is located in the North Western part of India. Geographically it lies between 69°30' to 78°17' latitude and 23° 3' to 30°12' E longitude. Rajasthan state comprises of total area 342239 sq. km of India. Total livestock population of state is 57732204 and livestock density is 169. In Rajasthan state, total cattle population is 13324462, buffalo is 12976095, sheep is 9079702, goat is 21665939 and camel is 325713. Among different species of livestock, the proportion of cattle, buffalo, sheep and goat is 23.08, 22.48, 15.73 and 37.53 percent.

Bikaner district is spread over an area of 30239 Sq. Km. lying in the North Western part of Rajasthan located between 27°11' and 29°03' North latitude and 71°54' and 74°12' East longitudes. National Research Centre on Camel (NRCC) and National Research Centre on Equines (NRCE) are situated at Bikaner. The major part of the district is comprised of Great Indian Desert of Thar. There are two natural divisions of the district i.e. North-Western desert and South-Eastern semi desert. At many places one finds shifting sand



dunes of varying heights ranging from 6 meter to 30 meter. There are no hills and no rivulets or stream of any significance. The total population of Bikaner is 23, 63,937 with a population density of 78 per sq.Km and literacy 65.13% (Anonymous, 2011). Bikaner district consists of 8 tehsils viz. Bikaner, Kolayat, Khajuwala, Chhatargarh, Pugal, Nokha, Lunkaransar and Dungargarh. There are 918 villages and 220 Gram panchayats. There is one municipal corporation (Bikaner) and six municipal councils: Deshnok, Nokha, Dungargarh, Khajuwala, Loonkaransar and Napasar. The exotic cattle population is 57421 and indigenous cattle population is 848654. So, the total cattle population is 906075. Total buffalo population is 193433. Area of Bikaner is 27244 Sq. km and livestock density per sq. km is 102.

Jodhpur is centrally situated in the Western region of the state and covers a total geographical area of 22850 sq. K.M. Jodhpur district lies between 26° and 27° North altitude and 72° 55' and 73° 52' East longitude. It is bounded by Nagaur in the east, Jaisalmer in the west, Bikaner in the north and Barmer and Pali in the south. The total length of the district from north to south is about 197 km and from east to west is about 208km. Jodhpur lies at a height of 250-300 meters of sea level. CAZRI (Central Arid Zone Research Institute) and AFRI (Arid Forest Research Institute) are also situated at Jodhpur. The total population of Jodhpur is 36, 87165 with a population density of 161 per sq. K.M. and literacy of 65.94%. (Anonymous, 2011). Jodhpur district comprises of 13 tehsils viz. Jodhpur, Bhopalgarh, Luni, Bilara, Osian, Phalodi, Shergarh, Baori, Balesar, Bap, Mandor, Pipar city and Tinwari. There are 2083 villages in Jodhpur district which is an urban agglomeration governed as a municipal corporation. The Bilara, Phalodi and Piparcity are towns governed by municipal councils.

The ethno-veterinary medicines (EVMs) used by the livestock owners of a selected area in Rajasthan were identified and determined the extent to which the identified EVMs were using by them. In present study, the extent of use of ethno-veterinary medicines was calculated on the basis of EVMUI (Ethno-veterinary Medicine Use Indices) score. The following formula was used to calculate the EVMUI scores. The procedures for measuring the EVMUI were presented on a four-point continuum scale with the scoring order of 3, 2, 1 and 0 for 'frequently used,' 'occasionally used,' 'rarely used' and 'not at all used' respectively was employed (Islam and Kashem, 1999).

$$EVMUI = N1 \times 3 + N2 \times 2 + N3 \times 1 + N4 \times 0$$

Where,

EVMUI = Ethno-veterinary Medicine Use Index

N1 = Number of farmers who used the EVM frequently

N2 = Number of farmers who used the EVM occasionally

N3 = Number of farmers who used the EVM rarely

N4 = Number of farmers who did not use the EVM



Education Status of Healers

Education		
No schooling	51	42.5
Up to primary	34	28.33
Up to middle	23	19.17
Up to secondary	6	5
Up to high secondary	3	2.5
Graduate and above	3	2.5

Results and Discussion

Endo-parasitic Infestation

- Livestock owners provided decoction of ground neem (*Azadirachta indica*) bark boiled in water and drenched to animal for removal of endo parasites. According to them this practice was highly economical and highly effective. Scientifically, neem have anthelmintic property, thus helps in removal of parasites from animal.
- In another practice they provided crushed khinf (*Leptadinia pyrotechnia*) boiled with 4 litres water.
- Some traditional healers prepared a mixture of 2 kg table salt, 5 to 6 drops of latex of aak (*Calotropis gigantea*) then kept whole night and same time they prepared another mixture of 1 litre whey, 100 gm crushed rai (*Brassica nigra*) 50 gm salt and kept whole night. Next morning both first and second mixture mixed in ratio of 1:4 and given to suffering animal. They perceived as this practice was effective in reduce worm load from intestine of animal. Medicinally, aak has anthelmintic property and rai has purgative property.
- In another practice livestock owners roasted the flowers of aak (*Calotropis gigantea*) in ghee and fed to infested animal for removing internal parasite from intestine. Scientifically, aak flower also has anthelmintic property.
- Some traditional healers fed crushed seed of lalmirch (*Capsicum*) to animal for expulsion of endo-parasites. Medicinally, chilly have counter irritant property, thus helps in expulsion of parasite from animal body.
- In another practice they fed 50 gm kali jeeri (*Centratherumantheleminticum*) along with 1 litre water two subsequent days for removal of endo-parasite. Medicinally, kali jeeri have anthelmintic property and effective against earthworm and tapeworm, thus helps in reduce worm load from intestine of animal.

Ecto-parasitic Infestation

- Majority of livestock owners applied a mixture of 10 gm tobacco (*Nicotiana tabacum*) with 1 litre water on affected body surface area of animals. This practice was perceived as economical as well as effective.
- Suffering animal given bath with neem (*Azadirachta indica*) leaves boiled in water.
- Some livestock owners prepared a bedding material with straw of jeera (*Cuminum cyminum*) and allow the affected animal to sit and led on it.
- Traditional healers smeared mixture of mustard oil (*Brassica comprastis*) and salt on affected body part. They also spread salt in animal shed as bedding material. They perceived that its help in control of ecto-parasite.

Extent of Use about EVMs of Endo-parasitic Infestation with their EVMUIs and Rank

An inventory of 6 ethno-veterinary practices were documented for treatment of endo-parasitic infestation. The data in the Table 1 shows that using neem (*Azadirichtha indica*) bark with water was found most frequently using ethno-veterinary practices for treatment of endo-parasitic infestation having highest Ethno-veterinary Medicine Use Index (EVMUI) 264 and ranked first.

Table 1: Distribution of respondents according to extent of use about EVMs of endo-parasitic infestation with their EVMUIs and rank (N=120)

S. No.	EVM Practices	F	O	R	N	EVM – Uls	Rank
1	Neem (<i>Azadirichtha indica</i>) bark +water	79	12	3	26	264	I
2	Khinf (<i>Leptadenia pyrotechnica</i>) +water	23	5	0	92	79	II
3	Aak(<i>Calotropis gigantea</i>) flower + ghee	0	11	0	109	22	IV
4	Salt + aak(<i>Calotropis gigantea</i>)+ whey + rai (<i>Brassica nigra</i>) + salt	0	0	5	115	5	VI
5	Kali jeeri (<i>Centratheman thelminticum</i>) + water	18	9	6	87	78	III
6	Lal mirch(<i>Capsicum annum</i>) + water	0	8	0	112	16	V

**F-Frequently, O-Occasionally, R-Rarely, N-Never

Other most frequently utilized practices were khimp (*Leptadenia pyrotechnica*) with water, kali jeeri (*Centratheman thelminticum*) with water EVMUIs 79, 78 and ranked II and III, respectively. Practices of using deshi lalmirch (*Capsicum annum*), salt with aak (*Calotropis gigantea*) with whey and rai (*Brassica nigra*) and salt were found rarely utilized with EVMUIs 16, 5 and ranked V, VI, respectively.

Extent of Use about EVMs of Ecto-parasitic Infestation with their EVMUIs and Rank

An inventory of 4 ethno-veterinary practices were documented for treatment of ecto-parasitic infestation. The data in the Table 2 shows that using tobacco (*Nicotiana tobacum*) and water was found most frequently using practice for treatment of ecto-parasitic infestation having highest Ethno-veterinary Medicine Use Index (EVMUI) 184 and ranked first. Other most frequently utilized practices were salt with mustard (*Brassica comprastis*) oil EVMUI 125 and occupied ranked second. Practice of using jeera (*Cuminum cyminum*) straw was found rarely utilized with EVMUI 23 and ranked fourth.

Table 2: Distribution of respondents according to extent of use about Ecto-parasitic infestation with their EVMUIs and rank (N=120)

S. No.	EVM practices	F	O	R	N	EVM - Uls	Rank
1	Tobaco(<i>Nicotiana tobacum</i>) +water	55	8	3	54	184	I
2	Neem(<i>Azadirichtha indica</i>) leaves + water	26	3	4	87	88	III
3	Salt + mustard (<i>Brassica comprastis</i>) oil	39	3	2	76	125	II
4	Jeera (<i>Cuminum cyminum</i>) straw	0	10	3	103	23	IV

**F-Frequently, O-Occasionally, R-Rarely, N-Never

Yadav and Rajput (2015) reported that, some traditional healers feed 50-100 g crushed leaves of neem (*Azadirachta indica*) with either jaggery or wheat (*Triticum aestivum*) flour for easy removal of endoparasites. Neem (*Azadirachta indica*) leaves have anthelmintic, antiseptic and purgative nature that helps to kill and removal of endo-parasites of the body. Malik *et al.* (2012) found that mixture of leaf of neem (*Azadirachta indica*) and molasses kills intestinal worms. Sunder *et al.* (2014) also reported that tobacco leaf are soaked in water for 12 hours, crushed well and applied on the affected areas. In tick infestation. Within 24- 48 hours of application of this mixture, all the ticks get removed

Conclusion

Majority of livestock owners under present investigation were found to be engaged with ethno-veterinary practices for long period. Majority of respondents also found satisfied with treatment provided by traditional healers for different livestock diseases. Above findings were concluded that cost-effectiveness, easy availability and perceived effectiveness of treatment were found supporting facts for frequently utilization of ethno-veterinary treatment for many of the livestock disease.

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