

Original Research Article

Indigenous Technical Knowledge and Practices followed by Pastoralists for the treatment of livestock diseases in hills of Jammu & Kashmir State in India

Abstract

The paper reports some of the unique ethnoveterinary treatments from the hilly regions of Jammu and Kashmir state. Large livestock maintained by farmers leads to development of indigenous health care practices in the region. Thirty six indigenous technical knowledge practices were identified and documented in hilly district of Doda of Jammu & Kashmir State of India. The data was collected with the help of a structured interview schedule through personal interview technique. A total of 22 species of plants and ingredients used for treatment of 14 different ailments were documented. The documented practices were for the treatment of maggot infestation, ectoparasite and endoparasites, retention of placenta, anestrus, mastitis, milk fever, foot and mouth disease, black quarter, poisoning, snake bite and for increasing milk production.

Keywords: *Pastoralists, Indigenous technical knowledge, Animal treatment, traditional*

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Introduction

Ethno-veterinary medicine (EVM) is a system that is based on folk beliefs, traditional knowledge, skills, methods and practices used for curing diseases and maintaining health of animal [1]. Traditional veterinary medicine knowledge like all other traditional knowledge systems is handed down orally from generation to generation and it may disappear because of rapid socio-economic, environmental, technological changes and as a result of the loss of cultural heritage under the guise of civilization[2]. Only solution is that it must be documented and conserved through systematic studies before it is lost forever.

India has very rich heritage of traditional health control and treatment systems (Ayurveda, Unani and Homeopathic) that has been used in treatment of animals since generations. The traditional practices are considered to be as old as domestication of various livestock species. Many of these indigenous practices offer viable alternatives to conventional western style medicine. The livestock healers are usually farmers having their own readymade drug preparations such as herbal tablets, decoctions and ointments for treating different types of diseases[3].

In the state of Jammu & Kashmir, although these practices are widely adopted, yet no step has been taken to document them. The traditional farmers and pastoralists in the hilly region of district Doda are mostly dependent on these practices owing to lack of availability of proper veterinary health care facilities. Documentation of indigenous technical knowledge in hilly district of Doda of Jammu & Kashmir State of India has not been done so far and there is a grave danger of losing this precious knowledge as most of the practices are transferred to new generation by only verbal means. It was therefore imperative to collect and document these practices so that this knowledge could be made available for use in animal health care. Therefore a study was conducted to document the indigenous technical knowledge among pastoralists for the treatment of animal diseases in the Doda district of Jammu and Kashmir.

Materials and methods

The study was conducted in Doda district of Jammu and Kashmir state. The established prevalence of nomadism and traditional farming system in the hills and valleys of this region was considered fit for such a study. Doda district comprises of 8 blocks. Out of these 8 blocks, 4 blocks where indigenous technical knowledge was extensively practiced were selected purposely. The selected blocks were Bhaderwah, Bhalesa, Thathri and Marmat. A comprehensive list of the villages of the selected blocks was prepared. Three villages were selected purposely from each selected block where indigenous technical knowledge was extensively used for the treatment of animals. Thus, a total of 12 villages were selected. For selection of the respondents, 10 pastoralists who were known for using indigenous technical knowledge were selected purposely from each village. Thus, a total of 120 respondents were selected for the study. The data was collected with the help of a structured interview schedule through personal interview technique during the months of May to August in years 2012-2013, as the study area receives heavy snowfall in winters. Prior informed consent of some

63 most famous traditional healers of Bhaderwah region was taken. Plants prescribed for the
64 treatment were personally collected in presence of traditional healers from the study area and
65 specimens were cross checked, identified and classified scientifically. Some rare plants were
66 photographed on site, in their habitat before collecting for the herbarium.

67 **Results and Discussion**

68 The results of the present study have been presented in **Table 1**. Thirty six indigenous
69 practices were identified and documented. A total of 22 species of plants were being used in
70 the study area for treatment of different ailments. Some of the plants were used in more than
71 one disease condition. The respondents administered the remedies to the animals mostly
72 orally as decoctions, topical or external application. Doses of the remedies were highly
73 variable and farmers did not have exact knowledge about the doses. The respondents were of
74 the opinion that dose of the drug depends on size of animal or availability of plants used for
75 treatment. Many of the ingredients employed by the pastoralists were spices that were found
76 in every household and were widely used to cure ailments. Most of the times, the plants that
77 were indigenous to an area were collected by the ITK users and practitioners themselves or
78 were purchased from the local market. It was found that the mode of preparation of ethno-
79 veterinary medicines varied according to the active ingredient to be extracted. For preparation
80 of a medicine, parts of the plant that were mostly utilized by the respondents were roots, bark,
81 wood, leaves, stem, flower, fruit, resin, latex, grains, buds, bulbs and seeds as also reported in
82 various studies Abbas et al.[4], Giday et al.[5] Ole-Miaron[6] and Viegí et al.[7]. The
83 common method of extraction of a drug was grinding, soaking, brewing or boiling different
84 parts of plants or whole plant.

85 Ethno-veterinary Practices for ecto and endo-parasites were very common among the
86 pastorilists. Several plants along with other materials were reported to be used for these
87 conditions. The animal owners reported many indigenous knowledge (ITK) practices used in
88 case of helminthosis and ectoparasites. The most frequently used plant for helminthosis and
89 external parasites was processed resin of *Cedrus deodara* Roxb. ex D.Don used almost in all
90 the species. *Cedrus deodara* Roxb. ex D.Don has been reported to be used for external
91 parasites in Jammu and Kashmir by Slathia et al.[8] and in Pakistan by Sindhu et al.[9].
92 *Aconitum deinorrhizum* Stapf and *Sarcococca saligna* D.Don were most widely used plants
93 in almost all the parasitic and other skin conditions in animals. Use of *Rabdosia rugosa*
94 Wallich ex. Benth and *Gentiana kurroo* Royle as remedy of helminthosis in livestock has

also been reported in Jammu and Kashmir by Kumar et al.[10]. *Nicotiana tabacum* L. genome reported from the study area for treatment of maggots has been documented earlier in the literature by Nfi et al.[2]. *Saussurea costus* Falc. reported for maggot infestation has also been reported for the same condition in Jammu and Kashmir by Khan et al.[11] and in Uttaranchal by Bisht et al.[12].

For reproductive disorders, respondents reported use of ITK practices mainly for retention of placenta and anoestrus. *Coccinia indica* Wight and Arn and *Dendrophthoe falcata* L.f. were used for the treatment of retention of placenta which have also been reported as galactagogue and for the treatment of tuberculosis by Singh et al.[13]. In the present study, oil of *Cedrus deodara* Roxb. ex D.Don and *Ferula asafoetida* L. were reportedly used for the treatment of retention of placenta, same has been also reported earlier in Pakistan by Jabbar et al.[14]. *Cannabis sativa* L. was documented for use in anoestrus, however it has also been documented for treatment of wounds and diuresis by Mahmood et al. [15].

A number of ITK practices were reported by the respondents for prevention and treatment of mastitis. *Ocimum tenuiflorum* Linn. was most frequently reported plant used for the treatment of mastitis in bovine. This plant has been reported to be used for dysentery but not specifically for the treatment of mastitis by Singh et al.[16]. In the present study, butter and mustard oil *Brassica juncea* L. Czern. were also reported for the treatment of mastitis. *Polygonum glabrum* Willd. was mostly used by the bovine owners as galactagogue. Similarly a mixture of *Vigna mungo* L. Hepper. *Trigonella foenum-graecum* L., *Trachyspermum ammi* L. Sprague. and jaggery was used for increasing milk production. *Vigna mungo* L. Hepper has been documented as a galactagogue by Prajapati et al.[17] while *Polygonum glabrum* Willd. has been reported to be used as a galactagogue and anti helminthic by Mahmood et al.[14].

A strong agreement among the pastoralists was observed that the infectious diseases do not find sole solution in ethno-veterinary medicines. They have to integrate the ethno-veterinary and allopathic treatment to cure the ailments. This is in close agreement with the statement made by livestock owners in other studies, that ethno-veterinary medicine was not effective against acute infections such as Foot and Mouth disease Kudi[18]. The most frequently used plants for the treatment of Foot and Mouth disease were *Fagopyrum esculentum* Moench. and *Tamarindus indica* L. *Fagopyrum esculentum* Moench. documented

in the present study have not been documented for Foot and Mouth disease so far and no information regarding their use was available in the literature, however, it has been documented for the treatment of anaemia by Ratan et al.[19]. Similarly *Tamarindus indica* L. has been reported for the treatment of black quarter after mixing with soil of ant hill and applying it on the back or thigh region by Deshmukh et al.[20] in early studies. Feeding of fish and snail to animals in order to prevent and treat Foot and Mouth disease was also reported from the study area which has also been reported for the treatment of Foot and Mouth disease in Sargodha district of Pakistan by Dilshad et al.[21]. Use of plant decoctions and chemicals like copper sulphate as external washes for treatment of Foot and Mouth disease was recorded in the study area. The observations were in agreement with earlier findings of Pieroni et al.[22]. For the treatment of black quarter respondents were using indigenous techniques like puncturing the ear vein and allowing the blood to ooze out and branding the hind portion of affected animal with red hot sickle, which do not find any mention in the available literature.

Tamarandus indica L. was reportedly used against toxicity but no information regarding it could be gathered from available literature. In case of snake bite, *Hedera helix* L. was used by the respondents in the study area, however, it has been documented for use in bruises and arthritis by Singh et al.[23].

145 Table 1- Plants used by pastoralists in treatment of animal diseases

S.No	Disease	Scientific name of plant/ingredient	Local name of plant/ingredient	Part used	Method	Animal species
1.	Maggots	<i>Aconitum deinorrhizum</i> Stapf.	Bish	Root	Little amount of the paste of root of <i>Aconitum deinorrhizum</i> Stapf. is applied topically	Cow/buffalo/ sheep/ goat
		<i>Saussurea costus</i> Falc.	Kuth	Root	Paste of root of <i>Saussurea costus</i> Falc. is applied topically once a day	Cow/buffalo/ sheep/ goat
		<i>Sarcococca saligna</i> D.Don	Duon	Leaves	Paste of leaves of <i>Sarcococca saligna</i> D.Don is applied topically once a day	Cow/buffalo/ sheep/ goat
		<i>Nicotiana tabacum</i> L. genome	Tamokh	N/A	Paste of <i>Nicotiana tabacum</i> L. genome is applied topically once a day	Cow/buffalo/ sheep/ goat
2.	Ectoparasite	<i>Cedrus deodara</i> Roxb. ex D.Don	Kelam	Oil	Oil of <i>Cedrus deodara</i> Roxb. ex D.Don is applied topically once a day	Cow/buffalo/ sheep/ goat
		Processed oil of <i>Cedrus deodara</i> Roxb.exD.Don+ <i>Brassica juncea</i> (L.) Czern.	Kelam+ sarsoon	Oil	Oil of <i>Cedrus deodara</i> is mixed with pure mustard oil and applied topically once a day	Cow/buffalo/ sheep/ goat

3.	Endoparasite	<i>Rabdosia rugosa</i> Wallich ex. Benth	Sulie	Leaves	200gm leaves of <i>Rabdosia rugosa</i> Wallich ex. Benth are fed twice daily for 3 days	Cow/buffalo/ sheep/ goat
		<i>Aconitum deinorrhizum</i> Stapf	Bish	Root	Root of <i>Aconitum deinorrhizum</i> Stapf is finely powdered and 100 gm powder is given to 100 sheeps/goats	sheep/ goat
		processed oil of <i>Cedrus deodara</i> Roxb. ex D.Don	Kelam	Oil	5 ml oil of <i>Cedrus deodara</i> Roxb. ex D.Don is mixed with salt and given to sheep/ goat	sheep/ goat
		<i>Capsicum annum</i> L.	Redchilli +common salt		10 gm red chilli and salt is fed to animal early morning empty stomach	
4.	Liver flukes	<i>Gentiana kurro</i> Royle	Butein	w/plant	About 100 gm <i>Gentiana kurro</i> Royle is given to animal 2 to 3 times a day	Cow/buffalo/ sheep/ goat
5.	Nasal worms	<i>Sapindus saponaria</i> L.	Rainta	Seed	Grind seeds of <i>Sapindus saponaria</i> L. to powder and then put the powder in nostrils of affected animal.	Cow/buffalo/ sheep/ goat
6.	R O P	<i>Coccinia indica</i> Wight&Arn.	Vanlarh	Root	Grind 200gm root of <i>Coccinia indica</i> Wight&Arn. and feed two times a day for 2 to 3 days	Cow/buffalo/ sheep/ goat

		<i>Dendrophthoe falcata</i> L.f	Hawaipatta	w/plant	100gm <i>Dendrophthoe falcate</i> L.f. is given to animal, twice a day for 2 to 3 days.	Cow/buffalo/ sheep/ goat
		processed oil of <i>cedrus deodara</i> Roxb. ex D.Don	Kelam	Oil	About 10 ml oil of <i>cedrus deodara</i> Roxb. ex D.Don is mixed with water and given to animal, twice a day for 3 days.	Cow/ buffalo
		<i>Ferula asafetida</i> L.	Hing	Resin	10gm of <i>Ferula asafetida</i> L. is given, daily for 7 to 10 days before parturition(prevention	Cow/ buffalo
7.	Anestrus	<i>Cannabis sativa</i> L.	Bengai	w/plant	About 400 gm <i>Cannabis sativa</i> L. is grinded and then given to animal, once a day for 3 days	Cow/ buffalo
8.	Mastitis	<i>Ocimum tenuiflorum</i> Linn.	Babri buol	Seed	About 10 gm seeds of <i>Ocimum tenuiflorum</i> Linn. are mixed with water and given to animal once daily for 3 to 4 days	Cow/ buffalo
			Ghee + Butter		250 gm of ghee and butter is fed to animal once a day for 3	Cow/ buffalo
		<i>Brassica juncea</i> L. Czern	Mustard oil + Salt		100 ml of pure mustard oil <i>Brassica juncea</i> (L.) Czern. with little amount of salt is given to animal once a day for 3 to 4 days	Cow/ buffalo
9.	Enhance milk production	<i>Polygonum glabrum</i> Willd	Salam misri	Tuber	Grind about 500 gm tuber of <i>Polygonum glabrum</i> Willd. and mix with 500 ml milk and feed to animal once a day for 3 to 4 days.	Cow/ buffalo

		<i>Trigonella foenum-graecum</i> L. + <i>Trachyspermum ammi</i> L. Sprague	Jaggery+Methi +Ajwain	Seed	10 gm <i>Trigonella foenum-graecum</i> L. And 10gm <i>Trachyspermum ammi</i> L. Sprague is mixed with 250 gm jaggery and fed to animal once a day for 3 days	Cow/ buffalo
			Milk+Sugar		Dissolve sugar in milk and give to animal twice a day for 4 days	Cow/ buffalo
		<i>Vigna mungo</i> L.Hepper + <i>Oryza sativa</i> L	Mahdal+ Rice +Sharini (processed sugar)		Make a mixture of <i>Vigna mungo</i> L.Hepper, <i>Oryza sativa</i> L. and sharini (processed sugar), feed about 500gm of mixture to animal twice a day for 4 days	Cow/ buffalo
10.	Milk fever		Desi ghee		Feed about 200 gm desi ghee twice a day for 3 to 4 days	Cow/ buffalo
11.	F M D	<i>Fagopyrum esculentum</i> Moench	Chok drou	Leaves	About 250 gm leaves of <i>Fagopyrum esculentum</i> Moench are fed to animal twice daily for 5 to 7 days	Cow/sheep/ goat
		<i>Tamarindus indica</i> L.	Imli		200 gm <i>Tamarindus indica</i> L. is given to animal once a day	Cow/sheep/ goat
			Fish		250 gm fish wrapped in chapatti is given to animal	Cow/sheep/ goat

			Snail		Snail is wraped in some leaves or bread and given to animal	Cow/sheep/ goat
		Copper sulphate	Neela thotha		Neela thotha is mixed in water and hoofs of animal are washed twice a day	Cow/sheep/ goat
12.	Black quarter	<i>Gentiana kurroo</i> Royle	Butein	w/plant	About 100 gm <i>Gentiana kurroo</i> Royle. is given to animal 2 to 3 times a day	Cow/buffalo/ sheep/ goat
			Ear vein puncture		Ear vein of the animal is punctured and blood is made to ooze out from ear vein	Cow/buffalo/ sheep/ goat
			Branding with hot iron		Hot sickle branding is done on upper side of hind limbs	Cow/ buffalo
13.	Poisoning	<i>Tamarindus indica</i>	Imli	Whole plant	125 gm <i>Tamarindus indica</i> L. and salt is fed to animal twice a day.	Cow/buffalo/ sheep/ goat
14.	Snake bite	<i>Hedera helix</i> L.	Bail	Leaf	Paste is made from the leaves of <i>Hedera helix</i> L. and applied on the area of bite.	Cow/buffalo/ sheep/goat

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Some of the plants used



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148 *Fagopyrum esculentum* (Chol

155 *Cannabis sativa* (Bengai)

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157 *Ocimum tenuiflorum* (Babri b

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Conclusion

Thirty six indigenous technical knowledge practices were identified and documented. A total of twenty two species of plants and ingredients used for treatment of different ailments were documented. The traditional healers and pastoralists depend on ethno-veterinary practices in order to treat their livestock due to the unavailability of modern veterinary healthcare facilities in the hilly region. The respondents administered the remedies to the animals mostly orally as decoctions, or through fumigation, topical and/or external application. Doses of the remedies were highly variable and farmers did not have exact knowledge about the doses. They were of the opinion that dose of the drug depends on the size of animal or availability of plants used for treatment. Many of the ingredients employed by the farmers were spices that were found in every household and were widely used to cure ailments. Majority of the pastoralists placed their trust in the traditional ITK which has since times immemorial been able to recover their herds from various ailments. An important observation of this study was that the traditional healers complained about the slow disappearance of rare plants in the region as instead of collecting the only required portion of a medicinal plant, the whole plant was being uprooted by some healers. The region remains covered under snow blanket for most part of the year which gives a very less opportunity to explore the region and find the plant.

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