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Ethnoveterinary practices by tribal farmers & local healers in Sepahijala & Gomati Districts of Tripura

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ABSTRACT

The study was conducted to identify, document and assess the medicinal plants used in ethnoveterinary practices by tribal farmers and local healers of Tripura. The study was conducted in the Sepahijala and Gomati districts of Tripura. The data were collected from fifty farmers and five local healers through a semi-structured interview schedule in the selected study areas The interviewee were asked to identify, and locate the medicinal plants and to demonstrate the traditional remedy for the ailment in animals. A total of 24 medicinal plants (14 herbs, 5 shrubs and 5 trees) and 3 mixtures which were used in treatment and feeding of animals in the study area were identified and documented. The commonly found diseases treated by medicinal plants were gastrointestinal problems (diarrhoea, bloat, loss of appetite and vomiting) followed by wounds (FMD wounds and cuts or infected wounds), fever, skin infection, endo-parasitic infestation, joint problems, conjunctivitis, etc. The common parts of plants used were leaves followed by the stem, root/rhizome/tuber, fruits, flowers, seeds and whole plants. Such traditional knowledge of medicinal plants used in ethnoveterinary practices is needed to be identified, preserved and conserved for future application. Further studies related to the pharmaceutical properties of such ethnoveterinary plants may be studied in detail.

1. Introduction

People's knowledge, skills, methods, practices, and beliefs concerning animal care are covered by ethnoveterinary practices (McCorkle, 1986). The ethnoveterinary practices and knowledge of medicinal plants in the field of animal husbandry have limited documentation which may result in the loss of such knowledge and its application. Therefore, documentation of such ethnoveterinary practices and assessment of their validity is of utmost necessity. The use of ethnoveterinary practices is widely prevalent in village areas in many states of India. Tripura, a small state of India has its geographical area covered with 73.68 percent of forest area (India State of Forest Report, 2019) where most tribal farmers dwell and their livelihood depends on forest products. By the virtue of their lifestyle, it is evident that they have a close association with the forest and its wonderful blessings such as medicine and food. The forest of Tripura has witnessed the presence of 379 species of trees, 320 shrubs, 581 herbs, 165 climbers, 16 climbing shrubs, 35 ferns, 45 epiphytes and 4 parasites (a total 1,545 taxa) of the forest plants and vegetation, out of which 266 species are medicinal plants (68 trees, 39 shrubs, 71 herbs and 88 climbers (Tripura Forest Department). The tribes' habitation area is completely surrounded by diverse plant resources, which are either used as edible food, shelter, or fodder by these tribes or are used medicinally to heal various maladies. The climate in Tripura is humid sub-tropical which might be the reason for adaptation and the growth of various plants ranging from

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herbs, shrubs to trees. Annual rainfall of the state varies from 1922 mm to 2855 mm (ENVIS, Tripura). The tribes use many medicinal plants and some of which might have been explored or unexplored and might have resulted in medicinal values and some as folklore. It is very interesting to investigate whether these traditional ailments have got pharmacological effects or just folklore. Therefore, by keeping all these points in mind the study has been aimed to identify, document and assess the indigenous technical knowledge practiced by the tribal livestock farmers of Tripura.

2. Methodology

Study area:

The study was conducted in four selected villages namely Padmininagar (Taijiling), Laltila, Manikya Para and Jalema Para of two districts viz., Sepahijala and Gomati of Tripura, India. A purposive selection was done for choosing the study area. The main source of data collection was based on primary sources (first-hand information) and secondary literature. The information was gathered by interviewing the farmers and local healers. The distribution of the collection of data was randomly selected based on prior informed consent.

Data collection:

Open-ended questions were asked to fifty farmers and five local healers regarding the application of medicinal plants in ethnoveterinary practices. An interview schedule had been prepared for this purpose and the farmers and local healers were asked directly to identify the available medicinal plants in their vicinity which were practiced in animals and as well as in human beings. The farmers and local healers were requested to demonstrate the procedures of medicinal preparation and observations were made to know the actual procedure of application of medicinal plants and mixing of other ingredients for treatment and feeding of animals. The medicinal plants and procedure of their applications shown were captured in a digital camera for documentation purposes.

3. Results and discussion

Ethnoveterinary practice has been in use since time immemorial among the tribal community in and around the world and which were mostly observed in India. Mishra *et al.* (2006) reported that ethnoveterinary practices in India were mostly based on traditional knowledge of medicinal plants. Mishra *et al.* (2020) also reported the practice of ethnoveterinary in the treatment of FMD wounds in animals with the parts of medicinal plants. Such ethnoveterinary practices were followed among the farmers in the state of Arunachal Pradesh (Yadik, 2017), Rajasthan (Monoj and Ekta,2014), Kerala (Varshneya, 2012) and Meghalaya (Suchiang, 2016).

In this study, a total of 24 (14 herbs, 5 shrubs and 5 trees) medicinal plants species and 3 other mixtures were found to be used in ethnoveterinary practices for treatment and feeding purposes which are enlisted briefly in Table 1. Some of the medicinal plants are presented in Figure 1. The commonly found diseases/illnesses treated by medicinal plants were gastrointestinal problems (44.44%) that includes diarrhoea (18.5%), bloat (14.8%), loss of appetite (7.4%) and vomition (3.7%) followed by wounds (29.6%) which include FMD wound (7.4%) and cut/ infected wounds (22.2%), fever (14.8%), skin infection (11.1%), endo-parasitic infestation (7.4%), joint problems (7.4%), conjunctivitis (7.4%) anaemia (3.7%), and other health issues like fungal infection, nervous disorders, tooth problems and, etc. This finding is supported by Reang *et al.* (2016) who in their study on the South District of Tripura documented the traditionally used medicinal plants for curing domestic animal ailments prevailed in the locality and were also used in treating major ailments such as cuts and wounds, bone injury, skin infection, eye infection, dysentery, indigestion and constipation. Khateeb *et al.* (2015) stated in their study that the medicinal plants used in ethnoveterinary practices for the treatment of digestive system disorders was common. According to Suchiang (2016), the majority of medicinal plants were utilised to treat fever and wound healing. But the present finding was against the finding of Kumar and Bharati (2012) who in their study reported that fever was treated with the greatest variety of local remedies followed by FMD and regulation of the oestrus cycle. Plant parts used commonly in ethnoveterinary practices were leaves (52%) followed by the stem (16%), root/rhizome/tuber (16%) and 4 percent for fruits, flowers, seeds and whole plants (4%). A similar finding was reported in Kerala (Varshneya, 2012). Musa spp., Colacotus spp. and Manihot esculenta, etc. were among the plants most commonly used in feeding animals (especially in pigs). Suchiang (2016) also reported that mostly the leaves and tubers of the plants were used in feeding and treatment of animals and it was done either by boiling the plants or directly giving raw plants for feeding and for treatment the plants were first grounded and made paste or was given orally.

Table 1. List of medicinal plants used in ethnoveterinary practices by the tribal farmers

Sl no.	Local name	Scientific name	Type of plant	Parts used	Purpose of use	Mode of administration
1.	SotwiKwthang	*Cuscusma domestica*	Herb	Rhizomes	FMD, Wound, Galactogouge	Collect the rhizomes and crush them nicely and make a paste and apply it directly on site. Apply twice a day. Continue the treatment till it gets cure.
2.	Samsota	*Centella asiatica*	Herb	Whole plant	Bloat, Stomach problem, loose motion	For loose motion, provide fresh leaves/ground leaves mixed with feed in empty stomach early morning.
3.	Basokpata	*Phlogacanthus thyrsiflorus*	Shrub	Leaves	Cough, Cold	Grind the fresh leaves and feed the juice orally. Or boil the leaves, add a desirable amount of salt and feed the juice to the patient.
4.	Neembwlai	*Azadiracta indica*	Tree	Leaves	Skin irritation, skin disease	Dry the leaves properly until it gets crunchy and make them into powder form and then mix with petroleum jelly and apply it directly to the affected site.
5.	Chirotabokong (Kalomegh)	*Andrographis paniculata*	Shrub	Leaves and Stem	Worm	Crush leaves can be provided orally along with feed (single dose). Repeat after 14 days.
					Fever, stomach problem, deworming	Soak the leaves in water overnight and feed the juice.
6.	Dongkoloso	*Leucasaspera*	Herb	Leaves and Stem	Cough and Fever	Make a paste (leaves) and give it to drink in the early morning in an empty stomach.
7.	Son Banta	*Acorus calamus*	Herb	Whole plant	Fever, dizziness, vomiting, loose motion	Crush the leaves and feed them along with jaggery.
8.	Dokjaraja	*Cestrum diurnum*	Shrub	Leaves	Ringworm, any fungal infection	Crush the leaves and make a paste out of it and put it directly on the site.
9.	Thentrwibwtwi (Tamarind juice)	*Tamarindus indica*	Tree	Fruits	Listless, reluctance especially in birds(poultry)	Soak the tamarind in water and give it to drink.
10.	Kwsakwthangbwlai	*Bryophyllum pinnatum*	Herb	Leaves	Conjunctivitis, pinpoint swelling in the eyelid,	Cut the leave into two or more separate parts, then some fluid will come out and put the fluid in the eyes. Repeat it for 3-4 days.
					Cut wounds, pain in teeth	Pluck the leaves of it and crush them and then apply them locally on the site. For pain in teeth, crush the

						leaves and mix with feed and allow it to masticate.
11.	Samgoda	*Euphorbia/ Suprema Coce*	Herb	Leaves	Shedding and ripening of eye laces	Crush the leaves and squeeze the paste and then the juice will come and then apply that juice directly in the eye.
12.	Unknown-identified by its appearance	*Sansevieria trifasciata*	Herb	Leaves	Loss of appetite (Pig)	Crush the leaves and mix with feed.
13.	Sidhibwlai	*Cannabis sativa*	Herb	Leaves	Anorexia, Diarrhoea	Crush the leaves and mix with feed.
14.	Kolekhora	*Hygrophila auriculata* S.	Herb	Leaves	Anaemia	Crush the leaves and mix with feed.
15.	Sukna Morish+ sorisartel (Bengali)	Dry red chilli + Mustard oil (*Brassica juncea)*	-	-	Purulent wound	Cut it into half and fill it with oil and heat it. Apply it on the affected site.
16.	Hasing	Zinger rhizome (*Zingiber officinale*)	Herb	Rhizome	Bloat	Crush it and feed it along with a ration
17.	Siping	*Sesamum indicum L.*	Herb	Seeds	FMD wound (Cattle & Pig)	Crush the seeds and apply them on the lesions.
18.	Dhababwtwi (hukkarjol)	-	-	-	Bloat, gas	Used the water residues of Hukka and give it to drink once daily for 3-5 days.
19.	Naphthalene bori+ Mustard oil	-	-	-	Wound in between the gap of phalanges	Mix it properly and apply directly. Apply for7 days
20.	Dumorpata	*Ficus exasperate*	Tree	Leaves	Dysentery	Feed the leaves orally.
21.	Akondopata	*Calotropis gigantea*	Shrub	Leaves	Joint problem , boil	Heat the leaves for a minute and cover them around the wound area and then apply the mustard oil over it.
22.	Kalmisak	*Ipomoea aquatic*	Herb	Whole plant	Smallpox	The whole plant can be fed orally.
23.	Kadambwlai	*Anthocephalus cadamba*	Tree	Leaves	Joint problem	Collect the leaves and cover the joint and keep it overnight and remove in next morning. Repeat it for 7-10 days.
24.	Laifang/bugili	*Musa spp.*	Herb	Stem and flower	Used as feed	Feed fresh chopped stem and flower or can also be boiled before feeding.
25.	Kachu/ eram	*Colacotus spp.*	Herb	Stem	Used as feed	Chop it into medium pieces and boiled it and then feed them as much as required.
26.	Tapioca tuber	*Manihot esculenta*	Shrub	Tuber	Used as feed	Raw tuber or boiled tuber can be given orally.
27.	KuichakmaKosh	*Holarrhena pubescens*	Tree	Plant milk (fluid)	Used in wound to stop bleeding	Can be used as topical application.

Ficus exasperate (Dumur)

Hygrophila auriculata (Kolekhara)

Andrographi spaniculata (Chirota)

Centella asiatica (Samsota)

Phlogacanthus Thyrsiflorus (Basak)

Bryophyllum pinnatum (KwsaKwthang)

Colacotus spp.(Kachu/ Muito)

Cuscusma domestica (Halud/ Swtwi)

Manihot esculenta (ThaBuicho)

Musa spp. (Kola/Thalik)

Sansevieria trifasciata

Leucas aspera (Dongkoloso)

Figure 1. List of medicinal plants used in ethnoveterinary practices (Tripura)

4. Conclusion

In the present study, it was evident that some farmers are accustomed and are used to the traditional practices of rearing animals, they often practice ethnoveterinary practices for treatment, feeding and general management purposes. It was evident that most of the respondents use either the whole part of the plants or just leaves or tuber parts, which are found in and around the vicinity of the villages. For treatment purpose, they either boil it or grind it and make a paste out of it and are used either as oral supplements or topical application for wound treatment and for feeding purposes they chop and boil the plants. It's worth finding that many plants can also be utilized for treating digestive issues, fever, and wound healing. As a result, there is a compelling need to preserve and conserve indigenous knowledge about ethnoveterinary practices with medicinal plants for future use. Further studies related to the pharmaceutical properties of such medicinal plants may be studied in detail.

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