Advances in Natural and Applied Sciences, 4(1): 10-13, 2010
ISSN 1995-0772
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ORIGINAL ARTICLE

An ethnoveterinary survey of medicinal plants used to treat cattle diseases in Birishiri area, Netrakona district, Bangladesh

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Md. Harun-or-Rashid, Rabiea Tanzin, Khokon Chandra Ghosh, Rownak Jahan, Mst. Afsana Khatun, Mohammed Rahmatullah; An ethnoveterinary survey of medicinal plants used to treat cattle diseases in Birishiri area, Netrakona district, Bangladesh; *Adv. in Nat. Appl. Sci., 4(1): 10-13, 2010.*

ABSTRACT

Cattle (cows, goats, buffaloes) are reared in the rural areas of Bangladesh mainly to serve three purposes – to obtain milk and meat (for local consumption as well as supply to the cities), for cultivation (ploughing fields with cows or buffaloes is still practiced in the country), and as a source of dung (which is used both as fuel and fertilizer). Because of either lack of access to modern veterinary facilities or because of the high prices of medicines, most farmers rely on traditional healers for treatment of cattle diseases, who in general, rely on administration of medicinal plants for treatment of cattle ailments. An ethnoveterinary survey was conducted among the traditional healers of cattle diseases in Birishiri area, Netrakona district, Bangladesh. An initial survey was carried out among the farmers to identify the traditional healers. Information on medicinal plants was obtained from the healers with the help of a semi-structured questionnaire and through open-ended interviews and guided dialogue techniques. A guided field-walk method was followed where the healers showed plants used by them to the interviewers and described their uses. All plant specimens as pointed out by the healers were collected and identified at the Bangladesh National Herbarium. A total of 42 plants distributed into 28 families were obtained in the present survey. Leaves constituted the major plant part used (34.1%), followed by barks (15.9%) and whole plant (13.6%). Eight plants were used to treat fever, six plants to treat meningitis, five plants to treat diarrhea or dysentery, and three plants to treat helminthiasis. Besides body ache, these diseases appeared to be the major ailments affecting cattle in the Birishiri area. The route of administration was primarily oral followed by topical applications. The farmers used the remedies prescribed by the healers not only because they offered a cheaper alternative to modern pharmaceuticals, but also they thought the traditional remedies to be more efficacious.

Key words: Ethnoveterinary, medicinal plants, Netrakona, Bangladesh

Introduction

Pastoralists and cattle farmers in various under-developed regions of the world have long relied on and still use medicinal plants for treatment of cattle diseases. Partly this has been due to lack of access to modern veterinarians and price of modern medicines; however, in part these traditional practices are continuing because the users believe that medicinal plants are more efficacious for treatment of cattle ailments than modern medicines. The use of 20 medicinal plants for treatment of ruminant diseases has been described in the ethnoveterinary practices of Trinidad and Tobago (Lans, C. and G. Brown, 1998). Ethnoveterinary medical

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practice has been reported to be widespread among herdsmen and village livestock producers in northern Nigeria. Traditional remedies in this area include plant extracts and various plant parts (Alawa, J.P., 2002). The Setswana-speaking people in the Madikwe area of the North West Province of South Africa utilize 45 plant species belonging to 24 families to treat cattle diseases (D. van der Merwe, 2001).The local people of Bulamogi county, Uganda utilize 38 plant species distributed in 37 genera and 28 families to treat cattle diseases prevalent in their cattle (Tabuti, J.R., 2003). In the southern Punjab region of Pakistan, the herdsmen use a number of plants like *Lamium amplexicaule*, *Mallotus philippinensis*, *Withania somnifera*, *Azadirachta indica*, and *Citrullus colocynthis* as anthelmintics for their cattle (Jabbar, A., 2006). It has been reported that the Tsonga speaking people of South Africa utilize 19 plant species belonging to 12 families as remedies for cattle diseases (Luseba, D. and D. Van der Merwe, 2006).

Ethnoveterinary use of 128 plants has been documented in British Columbia, Canada for treatment of ruminants (Lans, C., 2007). An ethnoveterinary survey conducted at the Bale Mountains National Park and adjacent areas, Ethiopia observed the use of 74 veterinary medicinal plant species for treatment of 25 animal ailments (Yineger, H., 2007). The use of 66 plant species has been documented to treat reproductive disorders of cows and buffaloes in Sargodha district of Pakistan (Dilshad, S.M., 2008). It has been reported that the people of Karamoja of northern Uganda chiefly rely on ethnoveterinary knowledge to control common livestock health problems. The use of 209 plant species has been documented from that region (Gradé, J.T., 2009).

Bangladesh is primarily an agricultural country with the majority of the population residing in rural areas. Their main occupation is agriculture. Cattle (cows, goats, and buffaloes) is kept in most households primarily for ploughing fields (cows, buffaloes), but also as means of transport (bullock or buffalo-drawn carts are still a common sight in most villages). The animals also serve as a source of milk and meat for both home consumption as well as selling to the urban population. Other uses include using cattle dung as fertilizer and fuel. Cows are also used to thresh paddy in a substantial number of rural households. The number of cattle kept in individual households is not many; on average a middle income household may have 2-4 animals. Large scale cattle farming is virtually absent in Bangladesh. Treatment of cattle diseases with medicinal plants has been practiced in Bangladesh over the centuries. Even with the advent of modern medicines for treatment of veterinary diseases, most farmers still rely to some extent on veterinary traditional medicinal healers for treatment of cattle ailments. This is because of the higher price of modern medicines and also because of the lack of accessibility to a modern veterinarian in the rural areas. The ethnoveterinary practices in Bangladesh remains to be documented. This poses serious concerns because traditional cattle healing knowledge is passed on within the healer's immediate family from generation to generation, and the newer generations are fast losing interest in the traditional ways and practices. It was the objective of the present study to document the uses of medicinal plants for treatment of cattle diseases in the Birishiri area of Netrakona district, Bangladesh.

Materials and Methods

An initial survey was carried out among the farmers of Birishiri area to identify the traditional healers. Information on medicinal plants was obtained from the healers with the help of a semi-structured questionnaire and through open-ended interviews and guided dialogue techniques. Cattle ailments and symptoms as described by the healers were properly identified with the help of a trained veterinarian, who accompanied the interviewers throughout the present survey. A guided field-walk method (Maundu, P., 1995; Bachaya, H.A., 2009) was followed where the healers showed plants used by them to the interviewers and described their uses. All plant specimens as pointed out by the healers were collected and identified at the Bangladesh National Herbarium.

Results and Discussion

A total of 42 plant species distributed into 28 families were found to be used by the traditional cattle healers of Birishiri. The results are summarized in Table 1. The Anacardiaceae, Euphorbiaceae, Fabaceae, and Piperaceae families were represented by three plants per family. The various plant parts used included whole plant, leaf, stem, root, bark, seed, trunk, fruit, and flower. Leaves constituted the major portion of plant parts used (34.1%), followed by barks (15.9%) and whole plant (13.6%). The administration of plants included both oral and topical; for most diseases, oral administration was followed. We observed that for oral administration, the plant or plant parts was mixed with molasses to make the plant more palatable to cattle. The usual method was to cut up the plant or plant part into small pieces, mix it with molasses and given to the cattle mixed with water, mustard cake and rice bran. For topical administrations, crushed plant part, or juice obtained from crushed plant would be applied following mixing with oil. An exception was that of *Coffea benghalensis*, where the juice obtained from freshly plucked flowers were directly applied to eyes of cattle for treatment of cataract.

Table 1: Medicinal plants used in Birishiri area, Netrakona district, Bangladesh for treatment of cattle diseases

Botanical name	Family	Local name	Parts used	Ailment(s) treated and Administration (O = oral, T = topical)
Justicia adhatoda L.	Acanthaceae	Harbashok	Leaves	Bone fever (O).
Justicia gendarussa L.	Acanthaceae	Birjabon	Leaves	Stiffening of muscles (T).
Allium cepa L.	Alliaceae alt. Liliaceae	Piaz	Stems	Fever (O).
Amaranthus spinosus L.	Amaranthaceae	Khuira kanta	Whole plant	Increase milk production (O).
Crinum asiaticum L.	Amaryllidaceae	Gu-roshun	Roots	Fever (O).
Lannea coromandelica (Houtt.) Merrill	Anacardiaceae	Zigar	Barks	Leg fractures (T).
Mangifera indica L.	Anacardiaceae	Aam	Barks	Wound infections (T).
Spondias pinnata (J. Koenig ex L. f.) Kurz (wild variety)	Anacardiaceae	Amra	Barks	Diarrhea (O).
Alocasia indica (Lour.) Spach	Araceae	Bish fhen	Whole plant	Meningitis (O).
Ananas comosus (L.) Merr.	Bromeliaceae	Anarosh	Leaves	Helminthiasis (O).
Cannabis sativa L.	Cannabaceae	Ganja	Leaves	Wound infections (T.
Ipomoea aquatica Forssk.	Convolvulaceae	Gongasagor	Whole plant	Meningitis (O).
Ipomoea quamoclit L.	Convolvulaceae	Gate ful	Whole plant	Common cold (goat only) (O).
Cyperus rotundus L.	Cyperaceae	Kelnaboe	Whole plant	Fever (O).
Codiaeum variegatum (L.) A.Juss.	Euphorbiaceae	Pata bahar	Leaves	Enlargement of liver (O).
Ricinus communis L. (white variety)	Euphorbiaceae	Hader (shada)	Seeds	Body ache, maintain good health (O).
Ricinus communis L. (red variety)	Euphorbiaceae	Henda	Leaves	Loss of hair (O).
Mimosa pudica L.	Fabaceae	Shada lajjaboti	Roots	Increase milk production (O).
Pterocarpus santalinus L.	Fabaceae	Chondon	Barks	Diarrhea (O).
Sesbania sesban (L.) Merr.	Fabaceae	Jointhe	Leaves	Retention of urine (O).
Swertia chirata Buch.-Ham. ex Wall.	Gentianaceae	Chirota	Fruits	Asthma, fever (O).
Clerodendrum viscosum Vent.	Lamiaceae alt. Verbenaceae	Bait	Leaves	Body ache, diarrhea (O).
Leucas aspera (Willd.) Link.	Lamiaceae alt. Labiatae	Domkolosh	Leaves, stems	Retention of urine (O).
Stephania japonica (Thunb. ex Murray) Miers.	Menispermaceae	Techamoti	Leaves	Diarrhea, body ache, mumps (O).
Musa sapientum L.	Musaceae	Aita kola	Trunk	Helminthiasis (O).
Syzygium aromaticum (L.) Merr. & Perry	Myrtaceae	Long	Barks	Meningitis (O).
Syzygium jambos L.	Myrtaceae	Golap jam	Barks	Wound infections (T).
Nyctanthes arbor-tristis L.	Oleaceae	Sheuly	Flowers, leaves	Mumps (O).
Cocos nucifera L.	Palmae alt. Arecaceae	Narikel	Fruits	Diarrhea (O).
Piper betle L.	Piperaceae	Pan	Stems	Body ache (O), wound infections (T).
Piper longum	Piperaceae	Pipul	Leaves	Loss of hair (O).
Piper nigrum L.	Piperaceae	Gol morich	Seeds	Fever, meningitis, hair loss (O).
Nigella sativa L.	Ranunculaceae	Kalo jeera	Seeds	Meningitis (O).
Coffea benghalensis Roxb. ex Schult.	Rubiaceae	Cori ful	Flowers	Cataract (T).
Paederia foetida L.	Rubiaceae	Bon bhadilia	Whole plant	Wound infections T), bone fever (O).
Aegle marmelos (L.) Corr.	Rutaceae	Bel	Leaves	Body ache (O), wound infections (T), fever (O).
Datura stramonium L.	Solanaceae	Dhutura	Leaves	Loss of hair (O).
Solanum capsicoides Allioni	Solanaceae	Kontikori	Barks	Asthma (O).
Trema orientalis (L.) Blume	Ulmaceae	Jigne	Leaves	Glossitis (O).
Cuminum cyminum L.	Umbelliferae	Jeera	Seeds	Helminthiasis, maintain good health (O).
Tectona grandis L.f.	Verbenaceae alt. Labiatae	Shegun	Roots	Meningitis, loss of hair (O).
Zingiber officinale Roscoe	Zingiberaceae	Ada	Roots	Dysentery (O).

Unless otherwise mentioned, plants were used for treatment of diseases in cows, goats, and buffaloes.

In general, the treatment did not vary between cows, goats and buffaloes. It was observed that only one plant – *Ipomoea quamoclit* was used for exclusive treatment of common cold in goats. The most common cattle ailments observed were fever, meningitis, gastrointestinal disorders, and helminthiasis. 8 plants were used for treatment of fever, 6 plants for treatment of meningitis, 5 plants for treatment of diarrhea or dysentery, and three plants for treatment of helminthiasis. Three plants were also used to treat loss of hair in cattle. The farmers expressed additional concerns about loss of hair because it also decreased the commercial value of animals. Four plants were used to treat body ache – a common occurrence in cattle because of their use in ploughing, drawing heavily laden carts, and threshing paddy for hours on end.

It is interesting to note that the plants used to treat some common ailments in cattle at Birishiri are quite different from other regions of the world that have been reported, even though the same plant may be present in Bangladesh. For instance, *Acacia nilotica* is used as an anthelmintic in traditional veterinary medicine of Pakistan and its efficacy has been scientifically validated (Farooq, Z., 2008). The plant is available in nearly

all parts of Bangladesh; however, it is not used by the cattle rearers of Birishiri. Among the 18 plants reported to be used for treatment of parasitic diseases in livestock in Cholistan desert, Pakistan, several are very common in Bangladesh and even in the Birishiri area. These plants include *Azadirachta indica*, *Brassica campestris*, *Capsicum annuum*, *Cyperus rotundus*, *Nicotiana tabacum*, *Solanum surratense*, and *Zingiber officinale* [14]. It is to be noted that at Birishiri, *Cyperus rotundus* is used for treatment of fever, and *Zingiber officinale* for treatment of dysentery (Table 1). The plants *Withania somnifera* and *Azadirachta indica* are used as anthelmintics in the southern Punjab region of Pakistan (Jabbar, A., 2006). These two plants are common plants in Bangladesh with *Azadirachta indica* being very common at Birishiri. However, none of these two plants are used for treatment of any cattle ailments at Birishiri.

Overall, our survey indicates that the traditional cattle healers of Birishiri use quite different variety of plant species to treat cattle ailments. Thus our findings present considerable potential for further scientific research on these plant species, which can lead to development of cheaper and more efficacious drugs. Cattle farmers do not always avoid modern veterinary drugs because of their higher prices or lack of accessibility; they often do so because in their actual observations they have found that use of medicinal plants for treatment of certain cattle ailments can provide better efficacy (Luseba, D. and D. Van der Merwe, 2006). Modern research has also started to validate at least some of the veterinary uses of medicinal plants (Farooq, Z., 2008). It is therefore of utmost importance to document ethnoveterinary findings from all parts of the world, including Bangladesh before the knowledge disappears either because of endangerment of plants in the wild or because of the loss of knowledge among the newer generation of traditional healers due to loss of interest.

References

Alawa, J.P., G.E. Jokthan and K. Akut, 2002. Ethnoveterinary medical practice for ruminants in the subhumid zone of northern Nigeria. Preventive Veterinary Medicine, 54: 79-90.

Bachaya, H.A., Z. Iqbal, M.N. Khan, Z.U. Sindhu and A. Jabbar, 2009. Anthelmintic activity of *Ziziphus nummularia* (bark) and *Acacia nilotica* (fruit) against *Trichostrongylid* nematodes of sheep. Journal of Ethnopharmacology, 123: 325-329.

D. van der Merwe, G.E. Swan and C.J. Botha, 2001. Use of ethnoveterinary medicinal plants in cattle by Setswana-speaking people in the Madikwe area of the North West Province of South Africa. Journal of the South African Veterinary Association, 72: 189-196.

Dilshad, S.M., Najeeb-Ur-Rehman, Z. Iqbal, G. Muhammad, A. Iqbal and N. Ahmad, 2008. An inventory of the ethnoveterinary practices for reproductive disorders in cattle and buffaloes, Sargodha district of Pakistan. Journal of Ethnopharmacology, 117: 393-402.

Farooq, Z., Z. Iqbal, S. Mushtaq, G. Muhammad, M.Z. Iqbal and M. Arshad, 2008. Ethnoveterinary practices for the treatment of parasitic diseases in livestock in Cholistan desert (Pakistan). Journal of Ethnopharmacology, 118: 213-219.

Gradé, J.T., J.R. Tabuti and P. Van Damme, 2009. Ethnoveterinary knowledge in pastoral Karamoja, Uganda. Journal of Ethnopharmacology, 122: 273-293.

Jabbar, A., M.A. Raza, Z. Iqbal and M.N. Khan, 2006. An inventory of the ethnobotanicals used as anthelmintics in the southern Punjab (Pakistan). Journal of Ethnopharmacology, 108: 152-154.

Lans, C. and G. Brown, 1998. Ethnoveterinary medicines used for ruminants in Trinidad and Tobago. Preventive Veterinary Medicine, 35: 149-163.

Luseba, D. and D. Van der Merwe, 2006. Ethnoveterinary medicine practices among Tsonga speaking people of South Africa. Onderstepoort Journal of Veterinary Research, 73: 115-122.

Lans, C., N. Turner, T. Khan, G. Brauer and W. Boepple, 2007. Ethnoveterinary medicines used for ruminants in British Columbia, Canada. Journal of Ethnobiology and Ethnomedicine, 3: 11.

Martin, G.J., 1995. Ethnobotany: a 'People and Plants' Conservation Manual, Chapman and Hall, London, pp: 268.

Maundu, P., 1995. Methodology for collecting and sharing indigenous knowledge: a case study. Indigenous Knowledge and Development Monitor, 3: 3-5.

Tabuti, J.R., S.S. Dhillion and K.A. Lye, 2003. Ethnoveterinary medicines for cattle (*Bos indicus*) in Bulamogi county, Uganda: plant species and mode of use. Journal of Ethnopharmacology, 88: 279-286.

Yineger, H., E. Kelbessa, T. Bekele and E. Lulekal, 2007. Ethnoveterinary medicinal plants at Bale Mountains National Park, Ethiopia. Journal of Ethnopharmacology, 112: 55-70.