

Regular Article

Ethnoveterinary medicinal plants used in Perambalur District, Tamil Nadu

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Ethnoveterinary medicine is the holistic interdisciplinary study of the local knowledge and the socio-cultural structures and environment associated with animal healthcare and husbandry. Perambalur, partially plain and a hilly district of Tamil Nadu state is rich in ethnoveterinary medicinal plants. In the present study, 21 plants belonging to 16 families used as veterinary medicines have been documented. Due to poor availability of modern healthcare facilities and poverty of indigenous people, they fully or partially depend on local ethnic medicinal plants for the healthcare of their domestic animals. In this way, an attempt has been made to document the traditional knowledge of Perambalur district people about ethnoveterinary medicinal plants and their usages on the treatment of various veterinary diseases, their botanical names, local names, methods of drug preparation and administration of drugs are given.

Key words: *Perambalur District, Ethnoveterinary medicine, domestic animals, AUH (Annamalai University Herbarium)*

Ethnoveterinary medicine, the scientific term for traditional animal health care, encompasses the knowledge, skills, methods, practices, and beliefs about animal health care found among the members of a community (McCorkle, 1986). The knowledge base differs not only from region to region but also among and within communities. It has been developed through trial and error and deliberate experimentation. Therefore, it is less systematic, less formalized, and not universally recognized as a valid method of disease control in animals. While traditional healers have less to offer in the treatment and control of epidemic and endemic infectious diseases like foot and mouth disease, rinderpest, septicemia, anthrax, and acute life-threatening bacterial diseases, they can

cope with a reasonable spectrum of common diseases such as diarrhea, wounds, colds, worms, coccidiosis, and reproductive disorders.

Ethnoveterinary medicinal plants used extensively and quite effectively for primary health care treatment to make domestic animals productive and healthy. The indigenous knowledge of the veterinary health care system acquired by traditional herbal healers is orally transformed from one generation to other (Phondani *et al.*, 2010). The importance of the traditional knowledge on ethnoveterinary practices by specialists (Vaidyas) and local healers who are knowledgeable and experienced in traditional systems of treatment, but their knowledge are not documented, and is dwindling fast (Jain,

1999). In Indian Agriculture, livestock plays a key role in the farmer's life. They provide farm power, rural transport, manure, fuel, milk and meat, but also a major role in rural economy by providing income and employment to the small hold farmers and weaker sections of the society (Kiruba *et al.*, 2006). In South India, many livestock owners, especially those who are poor and live in remote areas, use ethnoveterinary medicine for the primary healthcare of their animals.

Perambalur district is an inland district of Tamil Nadu spread over 3,691 Sq. km without any coastal line. It is geographically located between 10°54' and 11°30' of Northern latitude and 78°40' and 79°30' of the Eastern latitude. Besides agriculture, cattle rearing form an important part time means of livelihood. Due to availability of enough fodder, the cattle population, especially cows, bulls and goats, is very high. The local village people are very much cautious about the health of domestic animals. Since no modern veterinary medicinal facilities available in remote areas, they rely mostly on the traditional remedies prepared out of ethnomedicinal plants.

Traditional veterinary medicine is very important in developing countries where conventional remedies for animal health care are inaccessible or unaffordable to poor rural farmers (McGaw *et al.*, 2007). According to the United Nations Food and Agricultural Organization (FAO), the lack of drugs to treat diseases and infections results in losses of 30-35% in the breeding sector of many developing countries, where poor animal health remains the major constraint to increased production (FAO, 2002). High costs and inaccessibility have helped maintain traditional treatment practices in these countries and fostered research on this subject (Muhammad *et al.*, 2005).

Much effort is needed in research and integration of the ethnoveterinary practices activities in developing countries (Mathias *et al.*, 1997). In many native and local stock

raising communities if not all, a considerable proportion of useful ethno-knowledge and traditional animal health care practices remain unknown to date, albeit their increased demand to be integrated into primary animal health care delivery systems for wider use by rural and urban communities (Wanzala *et al.*, 2005). While ethnoveterinary practices can lead to their validation and eventually to better animal healthcare provision and enhanced living standards of the rural poor (Nyamanga *et al.*, 2008; Lans *et al.*, 2007), there is a notable scarcity of studies of zootherapy in ethnoveterinary medicine (Confessor *et al.*, 2009). The available information on ethnoveterinary medicine is not only scanty but scattered for India in general (Pal, 1992; Issar, 1981; Sebastian and Bhandari, 1984; Singh, 1995; Geetha *et al.*, 1996) and Tamilnadu in particular (Karthikeyni and Janardhanan, 2003; Matthew, 1984; Rajan and Sethuraman, 1997). The main objective of this study was to assess the ethnoveterinary medicinal plants were used by Perambalur district and document the traditional knowledge on the treatment of various veterinary diseases.

Materials and methods

Ethnoveterinary data were collected by conducting interviews with villagers, village doctors, experienced and elderly person of tribal communities such as Irulas and also local inhabitant. Questionnaires, pertaining to the mode of administration of herbal medicines on various maladies for cattle, were got filled by these people. The maladies and the herbal medicines based on individual experiences of villagers. It consists of information which has been traditionally passed from one generation to the next generation at the grass root level. Observations regarding flowering and fruiting time, habitat, local names, maladies, administration etc. were recorded.

Identification of the plant specimens collected was done on the basis of literatures and voucher specimens and by using related literature (Gamble, 1979; Matthew, 1982, 1983, 1988, 1998; Henry *et al.*, 1989). Each plant specimen was deposited in herbarium department of Botany, Annamalai University (AUH). Botanical names followed by family, local names, voucher specimen number, disease, plant parts used and mode of administration were enumerated here.

Results

Diseases are basic problems for both the human being and animals. Living beings have always been fighting with diversified types of diseases since prehistoric periods. Livestock keepers who live close to their animals often have detailed information on various diseases their animals often have detailed information on various diseases, their causes and control. Local people may use a single term for several diseases that cause similar symptoms. Disease concepts and treatment differ widely across societies, and even within a single community among gender, age, education and caste. The most commonly used resources of drugs are plants and their product.

Enumeration of ethnoveterinary plants and their uses

a) Anthrax

Abrus precatorius L. (Fabaceae),
'Kundumani' AUH-218

Stem bark with leaves of nocchi (*Vitex negundo*), tubers of nilapanai (*Curculigo orchoioides*) each 50 g and 15 g pepper and garlic pounded and boiled in water and the decoction was given orally once a daily for a week.

Tinospora cordifolia (L.) Merr.

(Menispermaceae), 'Seenthil' AUH-33

Leaves along with that of oosimalli (*Jasminum auriculatum*), stem bark of pavattai (*Pavetta indica*), fruits of vilvam (*Aegle*

marmelos), roots of tanneervittan kizhngu (*Asparagus racemosus*) and nilapanai (*Curculigo orchoioides*) each 50 g were pounded and the extract was given for 10 days.

b) Wounds

Aegle marmelos (L.) Nees (Rutaceae),
'Vilavam' AUH-99

Leaf paste was mixed with turmeric and applied locally.

Bridelia montana Wild. (Euphorbiaceae),
'Mulvengai' AUH-337

Stem bark paste mixed with a pinch of calcium and turmeric was heated moderately and applied locally.

Mucuna pruriens (L.) DC. (Fabaceae),
'Poonaikali' AUH-113

Leaf paste was mixed with turmeric and applied locally.

c) Bone fracture

Cissus quadrangularis L. (Vitaceae),
'Pirandai' AUH-93

Stem and the leaves of sempulicchan (*Erythroxylon monogynum*), sesame oil and pinch of turmeric were pounded and applied over the fracture.

Tinospora cordifolia (L.) Merr.

(Menispermaceae), 'Seenthil' AUH-33

Leaves along with those of virali (*Dodonaea viscosa*) each 100 g, mixed with egg albumen, black gram, calcium and goat milk were pounded and the extract applied over the fractured area and bandaged.

d) Dysentery

Asparagus racemosus Wild. (Liliaceae).

'Thannervittan kizhangu' AUH-587

Paste of 250 g tender shoots mixed with jaggery and butter milk was given orally in morning and evening for two days.

Clitoria ternatea L. (Fabaceae),
'Sangupoo' AUH-96

Leaf paste of 100 g was mixed with 25 g jaggery and 500 ml buttermilk and given orally once a day for three days.

e) Ephemeral fever

Agave americana L.

(Agavaceae), 'Kattrazhai' AUH-383

Roots along with those of nilapanai (*Curculigo orchioides*), leaves of (*Andrographis paniculata*) and nocchi (*Vitex negundo*) each 100 g and 10 g pepper and garlic were pounded and the extract was given for three days.

Caesalpinia bonduc (L.) Roxb.

(Caesalpinaceae), 'Kazharchikai' AUH-158

Seeds along with the stem bark of palai (*Wrightia tinctoria*), leaves of nocchi (*Vitex negundo*) (each 100 g), 20 g pepper and garlic were pounded, boiled in water, and the decoction was given orally once a day for a week.

f) Insect bite

Andrographis paniculata Nees

(Acanthaceae), 'Siriyanaigai' AUH-518

50 g of roots mixed with 100 g pepper was pounded and the extract was given three times a day for two days.

Aristolochia indica L. (Aristolochiaceae),

Aduthinnapalai' AUH-580

Roots along with stem of seenthil (*Tinospora cordifolia*) each 100 g and 10 g pepper were pounded boiled in water and the decoction was given orally twice a day for two days.

g) Maggot of infected sores

& *Senna auriculata* L. (Caesalpinaceae),

'Avaarai' AUH-180

Seed paste mixed with turmeric and goat milk was applied locally.

Mimosa pudica L. (Mimosaceae),

Thottalsinungi' AUH-214

Leaf paste mixed with turmeric and goat milk applied locally.

h) Retained placenta

Abrus precatorius L. (Fabaceae),

'Kundumani' AUH-218

100 ml of whole plant extract was given orally twice a day.

Achyranthes aspera L. (Amaranthaceae),

'Nayuruvi' AUH-518

200 ml of whole plant extract was given orally twice a day.

i) Rheumatism

Caesalpinia bonduc (L.) Roxb.

(Caesalpinaceae), 'Kazharchikai' AUH-158

Seed paste mixed with goat urine applied once a day for a week.

Cardiospermum halicacabum L.

(Sapindaceae), 'Mudakkattan' AUH-81

Leaf paste mixed with cow urine applied locally: leaf decoction given orally once a day for a week.

j) Skin diseases

Ailanthes excelsa Roxb.

(Simaroubaceae), 'Peenaari' AUH-66

100 g of stem bark mixed with 5 g turmeric and a pinch of calcium was applied externally.

Senna auriculata L.

(Caesalpinaceae), 'Avaarai' AUH-180

Seeds along with stem bark of punnai (*Pongamia pinnata*), latex of kudiyoitipoonu (*Argemone mexicana*) gingelly oil and a pinch of calcium were pounded and the extract was applied once a day for a week.

k) Corneal opacity

Achyranthes aspera L. (Amaranthaceae),

'Nayuruvi' AUH-518

About 20 g leaves, 5 g turmeric, saffron and salt were pounded and used as eye drops.

Bridelia montana Wild. (Euphorbiaceae),

'Mulvengai' AUH-337

About 100 g tender leaves, 5 g turmeric and a pinch of calcium were pounded and used as eye drops.

l) Lack of Lactation

Asparagus racemosus Wild. (Liliaceae),

'Thaneervittan kizhangu' AUH-587

Root paste was given to cow to increase lactation.

Colocasia esculenta (L.) Schott. (Araceae), 'Seppan kizhangu' AUH-613

Crushed root mixed with animal feed was given to domestic animals to increase milk yield.

Pergularia daemia (Forssk.) Chiov. (Asclepiadaceae), 'Veliparuthi' AUH-389

Crushed leaves mixed with cattle feed was given to mulching cattle to increase milk yield.

m) Constipation

Parkinsonia aculeata L. (Caesalpiniaceae), 'Naipalai' AUH-157

Aqueous paste of leaves was fed orally to goats to cure constipation.

Tephrosia purpurea (L.) Pers. (Fabaceae), 'Kolingji' AUH-114

Leaves and few chillies and red gram were grounded and their paste was given.

Discussion

India has got great traditional background in the field of ethnoveterinary medicine and practices, but in the process of modernization, this knowledge is vanishing very rapidly. Villagers, especially women, are traditionally considered to take a subsidiary role in the care of animals. They are responsible for milking the animals and they are often the first to notice signs of ill health in animals. They, thus, have a greater knowledge about animal nature, behavior, demeanour, diseases, disorders and their treatments. In some remote areas, many traditional healers are present, who have great undocumented traditional knowledge about animal diseases, herbal treatments, herbal formulations, etc. However, this important veterinary knowledge is in danger of extinction due to rapid modernization. Actually, this information survived by being passed from one generation to next but now-a-days young generation does not take the interest in animal husbandry practices. Due

to this apathy, the valuable information about ethnoveterinary medicine is disappearing. Documentation and standardization of ethnoveterinary knowledge are also important in the context of Intellectual Property Rights (IPRs) to check the patent claims.

In future, detailed chemical and pharmacological investigations of these traditional formulations and medicinal plants will be very helpful for inventing/developing the new veterinary drugs. Therefore, efforts should be made to retain this valuable information for validation and future uses. The Government should recognize ethnoveterinary medicine and set up a systematic framework; like ethnobotany, ethnoveterinary should be developed like an additional subject in veterinary colleges; readymade ethnoveterinary medicines should be patented and supplied by the pharmaceuticals; local flora should be prevented from overexploitation; creation of awareness among people for ethnoveterinary system. Proper documentation of ethnoveterinary medicines; pharmacopoeia of ethnoveterinary medicines should be developed for its popularity and to check patenting; to develop a proper link between traditional veterinary healers and modern veterinary doctors; and rare ethnoveterinary medicinal plants should be listed and preserved.

Promising ethnoveterinary practices should be considered as one alternative among several. This means they have to be measured against the same criteria as outside technologists: efficacy, ease of preparation, availability, affordability, effect on the environment and cultural appropriateness. The last point is especially important if practices are to be transferred from one to another, but within a community, too, practices can become inappropriate due to rapid change. Finally, the most suited practices-whether local or introduced-should be selected, if necessary tested, improved or

blended outside technologies and promoted. Their goal is the development of a healthcare package that is as effective as possible while meeting the expectations and needs of the clientele.

In the present investigation, an attempt has been made to collect the data from the people of Perambalur district and their indigenous knowledge of plants used as medicines in the traditional healthcare system of domestic animals. Respondents listed a total of 21 plant species belonging to 16 families were used for treating ailments in the animals. Some of the drugs were prescribed for many ailments (*Asparagus racemosus*, *Achyranthes aspera*). Some of the drugs employed as multi herbal drugs (*Senna auriculata*, *Cissus quadrangularis*, *Tinospora cordifolia*, *Abrus precatorius*, *Agave americana*, *Caesalpinia bonduc* and *Aristolochia indica*). Leaves play a vital role and frequently used to cure diseases when compare to other parts like stem, stem bark, fruits and seeds.

Some plants are used to treat more than one disease, while others are used as mixtures. Herbalists in the same geographical area often cite different herbal treatments for the same disease, and variations were often encountered in the method of preparation, dosing, and administration of these remedies. Other limitations of ethnoveterinary medicine include the lack of availability of some plant species at certain times of the year and the inadequacy of traditional means of disease diagnosis, which only identifies symptoms and not the underlying cause.

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