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MINI REVIEW

A review of medicinal plants used for livestock health in Tamil Nadu, India

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ABSTRACT

Herbal medicines play a significant role in curing human and livestock diseases. It has been used since ancient times. Ethno-veterinary practices reduce the cost of livestock treatment compared to allopathy/scientific medicines, and herbal medicines are readily available without side effects. Ethno veterinary practices contain the knowledge and skills to prepare medicines and manage animals. The study discuss that 20 plant families and parts like flowers, rhizomes, seeds, leaves, bark and roots were used to cure various livestock problems. Most of the farmers use the plant leaves to cure the problems. The paper also review the role of medicinal plants in livestock health and the preparation of medicinal plants for livestock health care.

INTRODUCTION

Ethnoveterinary is the branch of ethnobotany that studies the relationship between plants and animals. Ethnoveterinary medicine also deals with people's knowledge, skills, methods, practices and beliefs about the care of their animals (McCorkle, 1986). Farmers have used medicinal plants for a long time to treat sick animals. India's rural and semi-urban areas make most of their money from raising livestock. People in rural and tribal areas cannot access modern veterinary services for their animals. They rely on their traditional knowledge to heal animals. Traditional medicines are cost-effective, socially compatible, and readily available (Das and Tripathi, 2009). It is a cheap, safe, biodegradable, and easy-to-find alternative to modern and synthetic disease control methods.

People and animals have been using medicinal plants for a long time to treat diseases. People rely on livestock for milk, meat, and organic fertilizer. Local herbs have been used for centuries to keep livestock healthy and to prevent and treat diseases. Ethno-veterinary medicine is the study of how people in different parts of the world use locally available plants to treat illnesses in animals. Ethno-veterinary medicine is easier to find and less expensive than modern medicine. Ethno-veterinary medicine is the scientific term for traditional care methods for animals' health. Animal care includes a few aspects, such as collective knowledge, skills, practices, methods and traditional beliefs about animal care in a community. Indigenous medicine systems that use parts of plants remain essential for keeping livestock healthy. For treating the typical illness in animals, nearly 80 per cent of global farmers, cattle growers and shepherds followed the traditional treatment practices (Lulekal *et al*., 2008; Devi *et al*., 2009). In modern years, there has been a renewed interest in using medicinal plants to treat diseases and make high-yielding animals like cattle more productive, as herbal remedies are being used more and more in treating cattle (Chakraborty *et al*., 2012).

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History of Traditional Animal Care in India

Ethno-veterinary knowledge of managing animal health has existed since human evolution and has taken many forms. It encompasses all the ethnic practices, approaches and traditional knowledge people use to improve the health of their livestock, which in turn improves production and performance (Menegesha, 2020).

Urbanization, the rapid depletion of natural resources due to the progression of malnutrition, global warming, and loss of natural habitats pose a severe threat to the future of traditional medicine, which is based solely on herbs and minerals rather than animal food. In some parts of the world where many different ethnic groups live, traditional herbal healers still work. History shows that most people have used plants, animals, microbes, and minerals to treat the ailments. Over the past decade, traditional Chinese medicine has gained prominence in many developed and developing countries, including India (Chakraborty and Pal, 2012).

In India, the details of veterinary medicine have been documented for about 5,000 years, and veterinary medicine has been classified into systematic traditional and folk medicine methods. Coded knowledge takes the form of texts and manuscripts, whereas folk remedies are usually not written but passed down orally from generation to generation. There are many traditions, indigenous knowledge of how to care for animals, and herbal-based remedies that can be easily found in the area. In Indian villages, people still have strong and valuable beliefs, practices and techniques related to the care and management of livestock. People use local medicinal plants to treat animals (Sri Balaji and Chakavarthi, 2010; Mir *et al*., 2020).

In order to promote organic farming globally and avoiding modern medicine's side effects, ethno-veterinary treatments were identified as a potential practice. The Ethno-veterinary medicine varies from region to region and community to community. It is widely and highly effectively used to treat fundamental health problems in animals and to maintain its health and productivity (Mir *et al*., 2020) (Table 1).

Contribution of Livestock to Human Beings

Livestock plays a crucial role in the Indian economy as farm animal provides a resource to two-thirds of the rural community. The farmers in India maintain cattle and other animal husbandry system, i.e. a mix of crops and farm animals where farm animal maintain a natural eco system. The animal offers different by-products like meat, milk, wool, hide, hair, bones, and manures, which serve as financial instruments for drafting, recreation, sport as well as transportation. The animals are best partners to humans during the war and are also used for travelling. Few animals like dogs have a keen sense of hearing and smell, based on which the animals are also used in drug detection.

Role of Medicinal Plants in Treating Livestock Diseases

The most commonly used in parts of plants in ethnoveterinary medicines are the leaves, bark, fruits, flowers, seeds, and roots. Animal products like milk, butter, urine, and even poop are essential to making ethno-veterinary medicines.

Table 1: Method of preparation of various medicinal plant parts for combating diseases of livestock.

Botanical Name	Family	Local Name	Plant Parts Used	Method of preparation
Acorus calamus L.	Acoraceae	Vasambu	Rhizome	Take the fresh *Acorus calamus* and *Cyperus rotundus* rhizomes and grind them together into a paste. This paste can be applied on the skin of the cattle to cure skin infections.
Adenia hondala	Passifloraceae	Malaipirandai	Leaf	The fresh leaves of *Adenia hondala* are ground with water, and the juice is extracted. This juice can be fed to the cattle orally to treat stomach problems.
Acacia Leucophloea Willd.	Fabaceae	Vel-velam	Stem bark	Stem barks of *Acacia Leucophloea* Willd and *Terminalia arjuna,* along with the seeds of *Cuminum cyminum* and cow milk, are ground together, and this juice is used to treat insect bites in cattle.

Alpinia galangal (L.) Sw.	Zingiberaceae	Perarathai	Rhizome	The rhizome of *Alpinia galangal* (L.) Sw. is mixed with the cumin seeds, red pepper and the oil of pork muscle. This paste is mixed with neem and fed orally to treat cows suffering from foot and mouth disease.
Alstonia scholaris R. BR.	Apocynaceae	Mukampalei	Latex	In cows and goats, the latex is poured upon the long-term wounds three times a day.
Annona squamosa Linn.	Annonaceae	Seetapalam	Seeds	The seeds of *Annona squamosa* Linn. were ground with the leaves of *inermis* and *Nicotiana tobaccum*, which were applied on the tick-bitten areas in the cattle.
Azadirachta indica A.Juss.	Meliaceae	Vembu	Leaf and seeds	The leaf juice of *Azadirachta indica*. It is mixed with the 50 ml leaf extract of *Datura metal*, and 50 ml of leaf juice of *Cissus quadrangularis* is mixed with water and made into a paste. This paste is applied on the outer areas of cattle in order to get rid of lice.
Basella alba L.	Basellaceae	Pasalikkerai	Leaf	The leaves of *Basella alba* L. are mixed with the leaves of *Justicia adhatoda*, pepper and garlic to make into a paste. This mixture treats the cows and goats against lethargy and body weakness.
Catharanthus roseus (L.) G.Don.	Apocynaceae	Sudukattum-alli	Leaf	Fresh leaves of *Catharanthus roseus* are soaked in a cup of water, and a small amount of *Citrus medica* is mixed and placed on the area where a dog bit a cow.
Chloroxylon swietenia DC.	Rutaceae	Purasu	Leaf	Leaves and rhizomes of *Curcuma longa* are ground together and applied on the skin of a cow, goat, or hen to remove ectoparasites.
Curcuma amada Roxb.	Zingiberaceae	Mango ginger	Rhizome	The rhizome of *Curcuma amada* Roxb. is dried and then powdered nicely and stored. This powder is mixed with a small quantity of coconut oil and made into a paste. In cattle, this paste is used for treating scabies.
Dalbergia sissoo Roxb.	Fabaceae	Irupoolai	Stem bark	A handful of fresh stem barks of the *Dalbergia sissoo* Roxb. is cut into small pieces, followed by boiling in half a litre of water and then extracting the decoction. It is fed orally to cure the ulcers in cattle.
Hibiscus Cannabinus L.	Malvaceae	Pulichakeerai	Leaf and flower	Leaves ground with a small amount of *Tamarind indica* fruit are used to treat ringworm in cattle.
Syzygium cumini (L.) Skeels.	Myrtaceae	Naval	Stem bark	The juice is made by using a handful of *Syzygium cumini* (L.) Skeel stem barks and is mixed with a pinch of pepper powder and cow milk. This mixture is applied to the skin of the cattle to get rid of ectoparasites on cattle.
Vitex altissima L.	Verbenaceae	Mailadi	Leaf	*Vitex altissima* L and *Wrightia tinctoria's leaves* were shade-dried, appropriately ground, and mixed with water. This paste is applied to the skin to eliminate lice in cattle.
Abrus precatorius L.	Fabaceae	Gundumani	Root	Root paste is used to treat and heal the wounds of the cattle.
Aegle marmelos Corr. Serr.	Rutaceae	Vilvam	Leaf	Turmeric mixed with leaf paste is applied on the wounds of cattle.
Alangium salvifolium L.	Alangiaceae	Alangimaram	Leaf	Leaf juice is poured into livestock's eyes to cure the cornea's opacity.
Aloe barbadensis Mill.	Liliaceae	Sotrukattazhai	Leaf	Fresh leaf juice is applied to the skin to destroy ticks.
Andrographis alata Nees.	Acanthaceae	Periyanangai	Whole plant	A paste is made with the whole plant of *Andrographis alata* Nees and applied to cure skin disease and snake bites in cattle.

Several plants, plant extracts, and plant parts have been found to have anti-microbial, antiviral, or antifungal properties and are often thought to boost the immune system too (Rajesh *et al*., 2019).

CONCLUSION

In rural areas, there are unwritten rules about how to treat diseases in animals with medicinal plants. This traditional veterinary knowledge is almost lost as the world becomes advanced. This knowledge has been transferred through oral communication from generation to generation. However, the current generation needs to take more interest in gathering the traditional treatments followed for curing cattle disease causing traditional veterinary knowledge which is dying out of the system. Therefore, the veterinary herbal sector needs to be on top priority.

While comparing modern and herbal medicines in veterinary sciences, herbal medicines are sold at lower prices. As the active part of medicinal plants is gaining much importance, prices are getting higher. However, the cost of herbal products is getting cheaper, resulting in a scenario where herbal veterinary medicines are vanishing before allopathic drugs. Hence, the research may be focused nationally and internationally on the importance and usage of herbal medicines in veterinary science in order to gain the importance of veterinary herbal medicine and to harmonize the health of cattle effectively by following proper methods and traditional claims through the detailed pharmacognostic, phytochemical and pharmacological system. The safety evaluation protocols are also a prerequisite for developing herbal medicines for veterinary health.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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