Research Article

Ethnoveterinary practices among tribes of Kolli hills in Tamilnadu, India

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Accepted on: 31-08-2014; **Finalized on:** 30-09-2014.

ABSTRACT

An ethnoveterinary survey was carried out among the tribes of Kolli Hill, Namakkal District, Tamilnadu state, India in the year 2013. The survey identified 52 medicinal plant species of ethnoveterinary values available in Kolli hill, belonging to 31 families. Of these, major families are *Euphorbiaceae* (6 species), and *Zingiberaceae*, *Solanaceae*, and *Apiaceae* (03 of each). Most of the medicinal plants are used for the treatment of enteritis. Haemorrhagic septicemia and Black quarter are the two bacterial diseases treated by medicinal plants at Kolli hills. This report includes name of the plant species, vernacular name, family of the plant, part used and details about its usage in the animal treatment.

Keywords: Ethno botany, Ethnoveterinary, medicinal plants, Kolli hills, Animals, Tribes

INTRODUCTION

India is one of the twelve mega biodiverse countries of the world having rich vegetation with great emporia of ethno botanical wealth[1]. In the developing countries, demand for meat has increased rapidly over the last 20 years, due to an increasing tendency to consume animal products[2]. Moreover livestock farmers do not have access to conventional medicines, always. Thus, they see the use of medicinal plants as an alternative due to ever increasing impoverishment. Although the traditional use of some plants has been tried and tested, the effectiveness of most plants has not yet been demonstrated. This makes it necessary to conduct scientific studies aimed at efficient and appropriate use, without the risk of intoxication.

Herbal therapy has been used for thousands of years in many human cultures[3]. Over centuries and even millennia, a tremendous amount of clinical experience has been obtained by these cultures regarding which herbs work well for which conditions, and how they are best administered. It has been estimated that even today 75 percent of the world's population relies upon herbal medicine for basic health care. Early civilizations placed a great deal of emphasis on the health of the horses and cattle that were so integral to their lives. As a result, the history of veterinary herbal treatment parallels its history in human therapy.

In India the early information on the art of caring for animals was provided by the sacred texts of the *Vedic* religion. Towards the end of the *Vedic* period, Indian medicine began to adopt observations and rational procedures which developed into coherent system known as *Ayurveda*. The knowledge served as a model for veterinary medicine. The ethnoveterinary field could not flourish in recent centuries due to decreasing interest of herbal healers (Pashu vaidyas), less availability of medicinal plants due to rapid urbanization and industrialization and also due to rapid increase in the chemical medicament market (Allopathy). However the traditional treatment of animals, the ethnoveterinary treatment did not continue along with the development of world population and poverty with the common people in the developing countries who remembered their traditional treatment, the ethnoveterinary medicines (EVM) for treatment of their livestock. The EVM although not well documented still continue in the minds of the local people and tribal community.

In the recent years more emphasis has been focused on ethnoveterinary practices by the pharmaceutical companies to bring out the EVM developed by the farmers in the field and barns to the scientific laboratories. Documenting the indigenous knowledge is important for conservation and utilization of biological resources. In this way, at present many research workers are carrying out their work on EVM and documenting the folklore medicinal plants for the future world[4-15].

The Kolli hills of Eastern Ghats, Tamilnadu, India is well known for their rich biological diversity of medicinal plants and aromatic plants. Ethno medicinal use of folklore medicinal plants practiced by the tribal people of Kolli hills tract was well documented by many research workers[16-19]. The wealth of ethnoveterinary knowledge has been documented from various parts of India. A perusal of these reports suggests that documentation of this knowledge in Tamilnadu is incomplete and particularly it is so in the Kolli hills of Namakkal District. This paper reports the collective information and documentation of folklore medicinal plants used for animal treatment from traditional ethnoveterinary medicinal practitioners of Kolli hills.

MATERIALS AND METHODS

Study area

Eastern Ghats of Kolli hills is situated in the Namakkal District of Tamilnadu. It falls within the following coordinates, Longitude: 78° 17'05"E to 78° 27'45"E and Latitude: 11° 55'05"N to 11° 21'10"N in S.O.I topo sheets 581/8. The total block area is 441.41 sq. kms. It stretches 29 km from north to south and 19 km from east to west. Physiographically it is a hilly region with altitude ranging from 180 m at the foot hill to 1415 m at the plateau. Geologically the study area occupied by the hill is highly undulating, cut by a network of streams and most of them are semi-perineal and seasonal flowing in all the directions but mostly in the eastern and southern directions. Annual rainfall is 1324 mm which is received largely between May to December. Annual mean temperatures of maximum and minimum are 35° C and 18° C respectively. The type of soil is red loamy and black soil. As per the 2011 census, the total population of Kolli hills is about 42,200 in 14 village panchayats and 275 hamlets. Four veterinary dispensaries and one mobile veterinary service unit are available for the veterinary service to the tribal people of Kolli hills. Kolli hill is ethno botanically rich in having a wide variety of medicinal plants.

Data collection

A series of questions were prepared about the prevalence of common diseases in bovine, ovine and caprine species at Kolli hills with the help of a veterinary physician. The field work in the villages of traditional healers in Kolli hills was commenced on January 2013 to December 2013. The people with ethnoveterinary plant knowledge aged between 35 to 75 were located through a number of field surveys and were consulted to gather the ethnoveterinary medicinal information. Resource persons with knowledge of ethnoveterinary medicinal plants were selected based on the expertise in the preparation of medicines, whether he/she is a professional medicine man or women, and their willingness to share the traditional knowledge as per the methodology described by Jain, 1989. The information was collected through the interviews and discussions based on the questions prepared among the tribal practitioners' in the local language of Tamil. The interviews and discussion allowed descriptive responses on the plant prescribed, such as part of plant used, medicinal uses, detailed information about mode of preparation viz., decoction, paste, powder and juice, from the usage either fresh or dried and method of application. The collected plants were identified and confirmed taxonomically using the collected specimens with those known identity in the Herbarium of Botanical Survey of India, Coimbatore, India, Department of Botany, School of life sciences, Bharathiar University, Coimbatore, India and Arignanar Anna Arts College, Namakkal, India as well as using the Flora of the Presidency of Madras[20].

RESULTS AND DISCUSSION

A total of 52 plant species having ethnoveterinary values and used as a traditional medicine to cure different diseases of livestock were found in the present investigation (Table 1).

The 53 plant species belong to 31 families. Among the documented useful species of the families *Euphorbiaceae* is frequently represented with a total of 6 species followed by *Zingiberaceae*, *Solanaceae*, and *Apiaceae* with total of 3 species and *Fabaceae*, *Acanthaceae*, *Araceae*, *Moraceae*, *Rutaceae* and *Lamiaceae*, *Asclepiadaceae* represented with a total of 2 species and other families with one species each.

The medicinal plants found in the present study area are used to cure 36 different diseases. These diseases are being treated either with a single plant or combination of different plants. The major ailments that are covered in the study include anorexia, indigestion, bloat, retained foetal membrane, enteritis, fever, arthritis, fracture, inflammation, ecto- and endo-parasites, skin diseases, cough, respiratory problems, snake bite, insect bites, wound healing, maggot wound, pox, infertility, etc,. The plant parts *viz.,* bark, leaves, rhizome, bulb, stem, seed, fruit, milk from leaf and stem, whole plant, Juice from leaf and roots are used for the preparation of medicines. Various preparations like dry powder, decoction, paste, juice are prepared using various parts of the medicinal plants and given as drench, bolus or applied externally.

Haemorrhagic septicemia and Black quarter diseases are the two bacterial diseases treated with the medicinal plants by the tribes of Kolli hills. *Arisaema tortuosum* Shott. , *Capsicum annum* L. and *Pergularia extensa* (Jacq) N.E.Br. are the major plants used to treat the bacterial diseases in cattle.

In the present study the local herbalists, healers, farmers and local leaders were interviewed for responses regarding traditional knowledge. Most of the villagers and tribes are expertise in ethno medical treatment of various diseases. Very few of them are having the knowledge about the traditional ethnoveterinary medicine and identification of the plants. At present, the practice of ethnoveterinary medicine is done by countable number of healers. These inhabitants live in remote places and rely mainly on surrounding plant resources for food, fiber, shelter and medical care especially in an emergency situation where the veterinary help could not reach in time.

In the recent past many ethno botany studies were carried out in Kolli hills and centre of Ethno botany study was also established at the Kolli hill due to abundant resource of medicinal plants and traditional maintenance of knowledge of medicinal plants by the healers[18]. Very few reports are available on the data collection and documentation of medicinal plants for the veterinary use in Tamilnadu, India[15,8,10].

Table 1: List of Ethnoveterinary medicinal plants used by tribes of Kolli hill

S.No	Botanical Name	Local Name	Family	Parts Used	Ethnoveterinary Use
1.	*Acacia polyacantha* Willd.	Perunganap pattai	Fabaceae	Bark	Snake bite in animals
2.	*Acalypha indica* L.	Kuppaimeni	Euphorbiaceae	Leaf	Ectoparasite control
3.	Accacia caesia Willd.	Sirunganap pattai	Mimosaceae	Leaves	Snake bite in animals
4.	*Achyranthes aspera* L	Nayuruvi	Amaranthaceae.	Leaves	Enteritis and wound healing
5.	*Acorus calamus* L.	Vasambu	Acoraceae	Rhizome	Ectoparasite control, Fly repellent
6.	*Adhatoda vasica* Nees	Adathoda	Acanthaceae	Leaves	Loss of appetite and Respiratory problems
7.	*Allium cepa* L.	Vengayam	Alliaceae	bulb	Enteritis and pox wound
8.	*Allium sativum* L.	Poondu	Amaryllidaceae	Rhizome	Indigestion, bloat
9.	*Aloe vera Tourn.* ex L.	Thennai marathadi kathalai	Liliaceae	Stem juice	Endoparasite control and Enteritis
10.	*Alpinia galanga* Linn.(Willd)	Peilngi	Zingiberaceae	Rhizome	Inflammation, cough, arthritis
11.	*Andrographis paniculata Nees*	Melanalli	Acanthaceae	Leaves	Jaundice and chronic anorexia
12.	*Arisaema tortuosum* Schott.	Kolla Seppan kilangu	Araceae	Rhizome	Haemorrhagic septicemia in bovine
13.	*Artocarpus heterophyllus* Lam.	Palamaram	Moraceae	Leaves	Retained placenta in cattle
14.	*Asparagus racemosus* Willd	Thannervittan kilangu	Liliaceae	Rhizome	Enteritis
15.	*Azadirachta indica* A. Juss	Veppamaram	Meliaceae	Leaves	Antipyretic, thrust, nausea, vomiting and wound treatment
16.	*Brassica juncea* (L.) Czern.	Kadugu	Brassicaceae	Seed	Enteritis
17.	*Breynia vitis idaea*	Poolaver	Euphorbiaceae	Root	Snake bite
18.	*Calotropis gigantea* R.Br	Erukkalai	Asclepiadaceae	Milk from the leaf stem	Dog bite wounds
19.	*Canarium strictum* Roxb.	Sambiranimaram	Burseraceae	Bark	Respiratory disorder
20.	*Capsicum annuum* L.	Seenimilagai	Solanaceae	Fruit	Haemorrhagic septicemia in bovine
21.	*Cardiospermum halicacabum* L.	Mudakkaththan	Sapindaceae	Whole plant	Arthritis in bovine, ovine and caprine
22.	*Centella asiatica* L.	Vallarai	Apiaceae	Leaves	Skin diseases and Neurological disorder
23.	*Cicer arietinum* L.	Konda kadalai	Fabaceae	Seed	Infertility and under developed genitalia in female cattle
24.	*Cissus quadrangularis L.*	Pirandai	Vitaceae	Whole plant	Relaxation of cervix during calving
25.	*Clausena dentate* (Willd.) M. Roem	Anaithagai	Rutaceae	Leaves	Skin infection
26.	*Cocus nucifera* L.	Thennambalai	palmaceae	Flower	Enteritis
27.	*Coriandrum sativum* L.	Kotthamalli	Apiaceae	Hole plant	Ectoparasite control
28.	*Cuminum cyminum* L.	Seeragam	Apiaceae	Seed	Indigestion
29.	Curcuma longa L.	Manjal	Zingiberaceae	Rhizome	Wounds, pox lesions
30.	*Cynoglossum zeylanicum* (Vahl) Thunb. ex Lehm.	Karadi ottarai	Boraginaceae	Leaves	Inflammation
31.	*Datura metel* L.	Oomathai	Solanaceae	Seed, leaves	Skin disease, insect bites
32.	*Dodonaea viscosa* L.	Virali	Sapindaceae	Leaves	Fracture management in farm animals
33.	*Epipremnum pinnatum* (L.) Engl.	Panniperandai	Araceae	Stem	Enteritis
34.	*Euphorbia antiquorum* L.	Sadurakkalli	Euphorbiaceae	Milk from the bark	Wound, fracture bandages
35.	*Ficus tsiela* Roxb.	Kalathi	Moraceae	Milk from the bark	Used for fracture management in animals
36.	*Fiscus macrocarpa* W.	Aththi	Moraceae	Milk from bark	Fracture management
37.	*Leucas aspera* (WILLD.) SPRENG.	Thumbai	Lamiaceae	Juice from the Leaves	Maggot wound
38.	*Ocimum sanctum L.*	Kattuthulasi	*Lamiaceae*	Leaves	Ectoparasite, Respiratory disorder
39.	*Oryza sativa* L.	Paddy	Gramineae	seed	Retained Foetal membrane in cattle

40.	*Pergularia extensa* (Jacq.) N.E. Br.	Veliparuthi	*Asclepiadaceae*	Whole plant	Black quarter disease in cattle
41.	*Piper nigrum* L.	Milagu	Piperaceae	Seed	Indigestion
42.	*Plumbago zeylonica* L.	Sithirai mugathuver	Plumbaginaceae	Root	Snake bite in animals
43.	*Phyllanthus amarus L.*	Kezha nelli	Euphorbiaceae	Leaves	Jaundice
44.	*Phyllanthus emblica* L.	Nelli	Euphorbiaceae	Bark	Enteritis
45.	*Ricinus communis L.*	Amanakku	*Euphorbiaceae*	seed	Pox lesion
46.	*Rubia cordifolia* L.	Sevulikkodi	Rubiaceae	Whole plant	Retained Foetal membrane in sheep and goats
47.	Solanum nigrum L.	Manathhakkali/ sukkutikeerai	Solanaceae	Whole plant	Fever, endoparasite
48.	*Syzygium cumini* (L.) Skeels	Naval maram	Myrtaceae	Bark	Enteritis and Deworming in goats
49.	*Tamarindus indica* L.	Puli	Leguminaeceae	Fruit	Carminative, laxative and digestive
50.	*Terminalia chebula* Retz.	Kadukkai	Combretaceae	Seed	Increase libido in male animals
51.	*Toddalia asiatica* Lam.	Milagaranai	Rutaceae	Fruit and leaves	Indigestion, pain and inflammation
52.	*Zingiber officinale* Rosc.	Ingi	Zingiberaceae	Rhizome	Indigestion, bloat

Andrographis paniculata Nees	Melanalli	Acanthaceae	Leaves	Jaundice and chronic anorexia,

Arisaema tortuosum Schott.	Kolla Seppan kilangu	Araceae	Rhizome	Haemorrhagic septicemia in bovine

Artocarpus heterophyllus Lam.	Palamaram	Moraceae	Leaves	Retained placenta in cattle

India has got great traditional knowledge in the field of ethnoveterinary medicines and practices, but the process of modernization, this knowledge is vanishing very rapidly[10]. Detailed chemical and pharmacological investigations of these medicinal plants and traditional formulations will be very helpful for inventing and developing new veterinary drugs. Efforts are being made by the pharmaceutical companies and Government organizations to retain this valuable information for validation and for future use.

CONCLUSION

The data about the usage of medicinal plants to treat the ailments in animals mentioned in the present study is a preliminary and first report. The medicinal formulas explained by the traditional healers are not yet ascertained. But the collection of pharmacological data from this study in Kolli hill can provide can provide a basis for the integration of folk uses in the conventional veterinary medicine.

Acknowledgement: The authors thankful to Bharathiar University, Tamilnadu veterinary and Animal Sciences University for granting permission. Also thankful to Prof. S. Dharmaceelan, Veterinary College and Research Institute, Namakkal, TANUVAS, Dr. R. Sivalingam, Bharathiar University, Thiru. Manikandan and Murugesan for the help provided during the survey and identification.

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Source of Support: Nil, **Conflict of Interest:** None.