International Journal of Current Science Research
www.drbgrpublications.in

IJCSR – **DOI: 05.2016-31641248**

Volume: 2; Issue: 9; September-2016; pp 901-915. ISSN: 2454-5422

Ethno-veterinary Survey of Medicinal Plants in Kovilpatti Taluk, Tuticorin District, Tamil Nadu, India

Siva V [1*], Ramesh V[2] and P.Mehalingam[1]

1 Department of Botany, VHNSN College (Autonomous), Virudhunagar, India
2 Department of Botany, Vivekananda College, Tiruvedakam West, Madurai, India
*Corresponding Author E-Mail: sivavplk@gmail.com

Abstract

The present documentation study constitutes an important contribution to the knowledge of biological resources used in ethnoveterinary practices (EVPs) in Kovilpatti Taluk, Tuticorin district, Southern Tamil Nadu, India, a territory with clear cut information on the subject. Field work was conducted from 2013 -2014 and 18 informants between the ages of 25 to 78 were interviewed. First, detailed unstructured interviews and group discussions were done with key informants and second, successive oral free listing and semi-structured interviews were performed. The veterinary diseases as described by the informants were categorized according to the symptoms they cause and the organs they affect. A total of 24 plant species from 23 genera of 18 families were found to cure 14 common ailments of milk yielding animals. EVPs in southern Tamil Nadu involve a high number of species and conditions are strongly linked to folk tradition. Unfortunately, some evidence of their slow disappearance has been found. Hence we have to prevent the priceless medicine in the field of fold medicines.

Keywords: Ethno veterinary medicinal plants - Folk medicine - Livestock diseases – Documentation

Introduction

Ethno-veterinary medicine (EVM) is a system that is based on folk beliefs, traditional knowledge, skills, methods and practices used for curing diseases and maintaining health of animals (Mathias-Mundy and McCorkle 1989; Tabuti *et al.,* 2003). Traditional veterinary medicine knowledge like all other traditional knowledge systems is handed down orally from generation to generation and it may disappear because of rapid socioeconomic, environmental, technological changes and as a result of the loss of cultural heritage under the guise of civilization (Mathias-Mundy and McCorkle 1989; Nfi *et al.,* 2001). Only solution is that it must be documented and conserved through systematic studies before it is lost forever.

Ethno-veterinary Medicine is gaining popularity because it is affordable for developing countries. Moreover, questionable quality of allopathic drugs, development of chemo- resistance in livestock and companion animals due to indiscriminate use of anthelmintics and antibiotics e.g. ivermectin, ampicillin and tetracycline and their user unfriendly effects such as antibiotic and hormone residues in the milk and other animal products are sufficient drawbacks to divert the attention from modern veterinary medicine to EVM (Akhtar 1988; Akhtar and Ahmad 1992; McCorkle *et al.,* 1997; Fielding 1998; Monteiro *et al.,* 1998; Lans *et al.,* 2000; Mathias 2004; Iqbal *et al.,* 2005).

India is a veritable emporium of medicinal and aromatic plants. It has been estimated that out of 15,000 higher plants occurring is India, 9,000 are commonly useful, of which 7,500 are medicinal, 3,900 are culturally important, 525 are used for fiber, 400 are for fodder, 300 for pesticide and insecticide 300 for gum, resin and 100 for in cense and perfumes (Duthie 1960). In terms of the plant materials used for traditional medicine, it is estimated that local communities have used over 7,500 plants species. Indian flora has innumerable medicinal plants, which are collected from forest by the tribal villagers. Many of them are being exported to the developed countries. Since ancient times, humankind depended mainly on the plant kingdom to meet its need for medicine, fragrance and flavors. Indian subcontinent is blessed with most varied and diverse soil and climatic conditions, which are suitable for the growth of almost every plant species. Usage of plants in medicine had been a long practice by man from ancient times. This practice of using plants in medicine is still prevailing among not only the tribal but also others

living in the rural areas (Jain 1967). In India the veterinary medical system is generally codified traditional and folk medicine and no such comprehensive record are available. Some literature is available in the local languages, the Vedas and other ancient Indian scriptures.

The recent return to natural medicine throughout the world has emphasized the importance of gathering information about medicinal plant species traditionally used by the indigenous and tribal communities. There is now growing evidence that indicates a strong relationship between ethnic knowledge and sustainable use of biodiversity (Sullivan and Shealy 1997). The time-tested ethnic knowledge when supplemented with the latest scientific insights can offer new models of economic development, that are both eco-friendly and socially acceptable (Croom 1983).

In most rural areas people prefer to treat their animals with indigenous drugs. At present over 35,000 plants are known to have healing properties (Jain, 1991). All parts of the plants, including leaves, bark, fruits, flowers, seeds are used in medicinal preparations (McCorkle, 1996). Ethnoveterinary practices are often cheap, safe, time tested and based on local resources and strengths. These can provide useful alternatives to conventional animal health care (Kumar 2002). Ethnoveterinary medicine is in danger of extinction because of advancement of the modern veterinary medicine.

As the local healers did not document their knowledge and experience, and did not pass it on to others readily, there was danger of extinction of that knowledge (Mathias and Anjaria, 1998). Very rarely, the ethno-veterinary medicinal uses of the floral diversity have been investigated. In this backdrop, the main objective of the present research was to fill the knowledge gaps in this important sub-area of cultural biodiversity directly relevant to the livelihood of the rural communities.

Similarly 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 Kovilpatti Taluk, Tuticorin district people about ethno veterinary medicinal plants and their usages on the treatment of various veterinary diseases.

Methodology

Study area and Ethnology

Kovilpatti is a special grade municipality of Thoothukudi District in the state of Tamil Nadu - India. Kovilpatti is located at 9.17°N 77.87°E. It has an average elevation of 106 meters. It is Located 100 km south of Madurai city, 55 km north of Tirunelveli Town and 60 km north-west of Tuticorin. The climate of Kovilpatti town is hot and dry. Temperatures range between a maximum of 37 °C and a minimum of 22 °C. April to June is the hottest months and December and January are coldest with temperatures rising towards the end of February. Rainfall occurs mostly during the north-east monsoon in the months of October to December though the town receives little rainfall, averaging 840 mm compared to the district average. Annual rainfall has ranged from 964 mm to 228 mm during past decades. This condition is more suitable for cultivation of many ethnoveterinary plants.

Ethnoveterinary survey

Ethnoveterinary data were collected according to the methodology suggested by (Jain 1964). Periodic field survey was carried out during January 2013 to April 2014 to collect information on the therapeutic value of plants found in the traditional healers inhabited villages of Achangulam, Ahilandapuram, Alampatti, Asoor, Chidambaranar and Gengankulam of Kovilpatti Taluk, Tuticorin district. There were 18 informants between the ages of 25 to 78 in the study area. During periodical field trips, rapport was established with traditional healer people by staying with them. The information (local name, mode of preparation, medicinal uses) were collected through structured questionnaire, interviews and discussions with the village dwellers. Our questionnaire allowed descriptive responses on the plant prescribed, such as part of the plant used, medicinal uses, detailed information about mode of preparation (i.e., decoction, paste, powder and juice) and form of usage either fresh or dried and mixtures of other plants used as ingredients. The information thus gathered was adequately cross checked for the reliability and accuracy by interacting with different groups of traditional healers from different habitats to confirm the usage pattern. The plants were collected in its flowering stage as far as possible from its natural habitat and identified with the help of standard compilations (Gamble 1936; Henry *et*

al., 1987; Matthew 1983). Voucher specimens were deposited at the herbarium of the Department of Botany, V.H.N. Senthikumara Nadar College, Virudhunagar.

In order to facilitate our data collection we drew up the following questionnaire. In which we listed a number ofpre-defined or open questions, to stimulate, especiallyin the elderly, a recollection of past local traditionsregarding the most frequent animal illnesses.

Sl. No: Date:

I-Particulars of respondent

Name		:
Age		:
Occupation		:
Phone and address		:
Length of experience in this profession		:

II-Diseases, people like to cure with EVM practices

Allopathic treatment co-administered (if any)		:
Reason for using EVM Practices	A	Allopathic treatment is not available
	B	Allopathic treatment is very expensive
	C	EVM practice more effective
	D	Allopathic practices associated with side-effects
	E	Any other
Mobile veterinary services available/not available		:
Any relevant information		:

Results

The documentation study results revealed that the medicinal plants of 24 plant species from 23 genera of 18 families were found to cure 14 common ailments of milk yielding animals in Kovilpatti Taluk, Tuticorin district. The enumeration and utilization of these plants are described Table 1 below. Among these above families, Fabaceae was the most represented family with highest number of species (4 Species) followed by Poaceae (3 Species). Euphorbiaceae and Acanthaceae families had represented by 2 species of each. The remaining fifteen families were representing by one species each.

Usually fresh parts of the plants were used for the preparation of medicine for livestock illness. The mode of treatment was varied with respect to nature of cattle disease. It was recorded that oral administration of herbal preparations (decoction, juice and some solid extract etc.,) was found as mostly followed mode to treat the illness followed by raw deeding. Similarly, most of the medicines were given orally which is in agreement with some other studies conducted elsewhere (Poonam and Singh, 2009; Reddy *et al* 2010; Ayyanar and Ignacimuthu 2011). From these surveys, Majority of the remedies are taken orally. For topical use, the most important methods used are direct application of the paste or ointment and mostly deals with ailments like cattle and buffaloes wounds, diarrhoea, poisonous bite, stomach problem, mastitis, mouth disease, dog bite, improvement in lactation, dysentery, cataract, indigestion, broken horn, blood loss after delivery and swellings (Table 2).

The most used plant parts were leaf (37.50%) followed by whole plant (25%), stem and fruits (9%) and latex, endosperm, anther, bulb, seed (5%). The plant parts are either used singly or in combination with some other plant parts from same or other plants.

Discussion

A number of organizations within India are concerned with maintaining India's Traditional Medicine Systems. In addition, there is a wide spread development network, an established pharmaceutical industry and a wealth of botanical experts in the country. Until now, however, there has been little effort to document the volume and impact of national or international trade in India's medicinal plants. The goals of an ethnopharmacological field study are to prepare

inventory of the indigenous practices for the future generations, and to provide the list of important plants of the region to perform further phytochemical and pharmacological studies. The indigenous knowledge often is passed on orally from one generation to the next and occasionally within a family constitutes the basis for traditional bioprospecting.

In the study area, generally the ethnoveterinary practices were performed either by the women or the traditional healers. As the women are involved in more than 90% of the activities related with cattle care, they were the first person to observe the sick animal. Women mostly provided the first-aid to the animal in case of most of the common diseases. They were having expertise in the ailments like general weakness, garmi, tail gangrene. But, the traditional healers were consulted immediately if the problem was beyond their knowledge.

In the tropical regions there is a tendency for few families of flora to dominate. In the present study Fabaceae and Poaceae members were dominated. Similarly Fabaceae and Poaceae were the most used families in the ethnoveterinary system of Rajasthan (Musa *et al* 2011). The plants of both Fabaceae and Poaceae are generally herbaceous in habit and can be cultivated or found in abundance in the nutrient poor soils of local forests. Much evidence has accumulated indicating that chemical and ecological factors orient the selection and use of medicinal plants in local communities in all the parts of the world (Gazzaneo *et al* 2005).

In the present study, there are 24 species of plants were used for ethnoveterinary purposes. These plants are used to treat the disorders such as boils, bone fracture, diarrhea and lactation. Among the listed plants *Azadirachta indica* was also used by the tribal people of Moradabad district, Uttar Pradesh, India as refrigerant for cattles (Ali 1999) and Kollimalayalis of Tamil Nadu used to treat ulcer (Geetha *et al* 2001). Leaves were reported to be the most frequently used parts of plants for the treatment of various ailments followed by other plant parts namely flowers, seeds, barks and roots. Similarly, Dinesh and Sharma (2012) reported that 91 plants species belonging to 50 angiospermic families were used for ethnoveterinary medicines in Nizamabad district, Andhra Pradesh. Majority of preparations are from leaves, stem and some are of underground parts (like root, rhizome, tuber, etc).

Conclusion

The study shows significant ethnoveterinary medicinal plants novelty. The use of herbal remedies is important among the peoples of Kovilpatti taluk and it reflects the revival of interest in traditional folk culture. Accurate knowledge of the plants and their medicinal properties are held by only a few individuals in this community. Some of them have a strong tendency of keeping their knowledge secret. The wealth of tribal knowledge of medicinal and other useful plants points to a great potential for research and the discovery of new drugs to fight diseases, obtaining new foods and other new uses. Therefore, it is important to focus on the conservation of valuable plants which could serve as a source of future herbal drugs.

Acknowledgments

Authors are highly thankful to the Managing Board of Virudhunagar Hindu Nadar's Senthikumara Nadar College, Virudhunagar-626 001, Tamil Nadu, India for providing laboratory facilities.

Conflict of interests

We declare that we have no conflict of interest.

References

Akhtar MS and Ahmad I 1992 Comparative efficacy of *Mallotusphillippinensis* fruit (Kamala) or Nilzan® drug against gastrointestinal cestodes in Beetal goats. Small Ruminant Res. 8: 121-128

Akhtar M S 1988 Anthelmintic evaluation of indigenous medicinal plants for veterinary usage. Final Research Report (1983-1988). Department of Physiology and Pharmacology, University of Agriculture, Faisalabad, Pakistan

Croom E M 1983 Documenting and evaluating herbal remedies, Econ. Bot. 37: 13–27

Dinesh V and Sharma PP 2012 Ethno veterinary plant resources from Nizamabad district, Andhra Pradesh, India. W J Sci Tech. 2: 26-31

Fielding D 1998 Ethnoveterinary medicine in the tropics-Key issues and the way forward ? Paper presented to the tropical agricultural association seminar on Sep.26th 1998, on local knowledge in tropical agricultural research and development. Durham University, Durham, UK

Gamble J S 1936 *Flora of the Presidency of Madras*, (Allard & Co, London)

Geetha S; Lakshmi G and Ranjithakani P 2006 Ethnoveterinary medicinal plants of Kollihills, Tamil Nadu. J. Econ. Taxon. Bot. 12: 284-291

Henry A N; Kumari G R and Chitra V 1987.*Flora of Tamil Nadu, India, series 1: analysis*, (Botanical Survey of India, Coimbatore)

Iqbal Z; Jabbar A; Akhtar M S; Muhammad G and Lateef M 2005 Possible role of ethno veterinary medicine in poverty reduction in Pakistan: Use of botanical anthelmintics as an example. J. Agricul. Soc. Sci. 1: 187-195

Jain S K and Rao RR 1967 A hand book of field and Herbarium Methods, Today & Tomorrow, Printers and Publishers, New Delhi. 33-58

Jain SK 1991 *Dictionary of Indian folk medicine and Ethnobotany*. Deep Publications, New Delhi

Jain S K 1964 The role of botanist in folklore research, Folklore 5: 145-150

Kumar D 2002 The use and relevance of ethnoveterinary practices in sheep. Ind. J. Small Rumin. 8: 124-128

Lans C; Harper T; Georges K and Bridgewater E 2000 Medicinal plants used for dogs in Trinidad and Tobago. Preven Veteri Med. 45: 201-220

Mathias E and McCorkle C M 2004 Traditional livestock healers. Rev Sci Tech Off. Int Epiz. 23: 277-284

Mathias E and Anjaria J 1998 Forthcoming Prospects of ethnoveterinary medicine in the modern world. In: Directory on Indian agriculture. Rashtra Deepika Ltd., Kerala, India. 526-534

Mathias- Mundy E and McCorkle CM 1989 Ethnoveterinary medicine: an annotated bibliography. Bibliographies in Technology and Social Change. 6:199. Technology and Social Change Program, Iowa State University, Ames, Iowa 50011. USA

Matthew K M 1983 The *Flora of Tamilnadu Carnatic*, The Rapinat Herbarium

McCorkle C M; Rangnekar DV and Mathias E 1997 Whence and whither ER & D? In:Proc. Intl. Conference Ethnoveterinary Medicine: Alternatives for Livestock Development. Organized by BAIF Development Res.Foundation.4-6 Nov.1997, Pune, India, Vol 1. Selected papers

Monteiro A M; Wanyangu S; Kariuki D P; Bain R; Jackson F and McKellar QA 1998 Pharmaceutical quality of anthelmintics sold in Kenya. *Vet Rec* 142: 396-398

Musa M S; Abdelrasool F E; Elsheikh E A; Ahmed L A M N; Mahmoud A L E and Yagi S M 2011 Ethnobotanical study of medicinal plants in the Blue Nile State, South-eastern Sudan. J Med Plants Res. 5: 4287-4297

Nfi A N; Mbanya J N; Ndi C; Kameni A; Vabi M; Pingpoh D; Yonkeu S and Moussa C 2001 Ethno veterinary medicine in the northern provinces of Cameroon. Veter Res Commun 25: 71-76

Reddy K N; Subbaraju G V; Reddy C S and Raju V S 2006 Ethnoveterinary medicine for treating livestock in eastern Ghats of Andhra Pradesh. Ind. J. Trad Knowl. 5: 368-372

Sullivan K and Shealy C N 1997 Complete Natural Home Remedies. Element Books Limited, Shaftesbury, UK. 3-5

Tabuti J R S; Dhillion S S and Lye K A 2003 Ethno veterinary medicine for cattle (*Bosindicus*) in Bulamogi county Uganda: plant species and mode of use. J. Ethnopharm. 88: 279-286

Table 1. Ethnoveterinary veterinary medicinal plants indicated for the treatment of animal diseases, part utilized, mode of use and route of administration, recipe, ethnoveterinary uses in Koilpatti Taluk

Sl. No	Botanical Name	Family Name	Common Name	Useful Parts	Mode of Treatment
1.	*Abutilon indicum* (L.) Sweet.	Malvaceae	Thuthi	Fruit	The fruit is dipped in the latex of *Euphorbia tirucalli* and applied on lateral side to treat the stomach problem.
2.	*Acalypha indica* L.	Euphorbiaceae	Kuppaimeni	Whole plant	By mixing the leaves with the leaves of *Piper betle*, *Allium cepa* and *Piper nigrum*, the swelling is cured when it is applied on the affected part.
3.	*Aerva lanata* (L.) Juss. Ex Schult	Amaranthaceae	Kappukattu	Whole Plant	Whole plant parts are ground with children's urine and given orally to cure poisonous bites. The dosage given to the animals depends on the age.
4.	*Andrographis paniculata (Burm.f)*	Acanthaceae	SiriyaNangai (Ariyanangai)	Whole plant	Whole plant parts are ground with water and given orally to cure poisonous bites.
5.	*Anisomeles malabarica* (L.) R.Br	Lamiaceae	Perthumbai	Leaves	Leaf of this plant, bulb of *Allium cepa* and seeds of *Piper nigrum* are made into juice and given orally twice a day for three days to cure indigestion.
6.	*Aristolochia bracteata* Retz.	Aristolochiaceae	Aduthinnapaalai	Leaves	Leaf is ground with fermented boiled rice water and given orally twice a day for three days to cure stomach problem.
7.	*Allium cepa* L.	Amaryllidaceae	ChinnaVengayam	Bulb	Pieces of onion are given orally to treat diarrhoea.
8.	*Andrographis*	Acanthaceae	GopuramThaangi	Whole plant	Whole plant are made into paste with the

	echioides Ness.				rhizome of *Curcuma longa* is applied on affected places to heal wounds
9.	*Azadirachta india* A. Juss.	Meliaceae	Vembu	Leaves	The leaf paste with the rhizome of turmeric was applied over wounds till it cures.
10	*Bambusa arundinacea* (Retz.) Willd.	Poaceae	Moongile	Leaves	Leaf is ground with cow's milk and the juice obtained is given orally to arrest dysentery.
11.	*Calotropis gigantea* (L.)W. T. Aiton.	Asclepiadaceae	Yeruku	Latex	Few drops of latex are mixed with the leaf of *Pergularia daemia* and made into juice. The juice is poured into the eyes to cure cataract.
12.	*Cassia auriculata* L.	Fabaceae	Aavarai	Anther	Anther of flower is ground with palm sugar and fresh lemons juice is given orally during delivery time to prevent continuous blood loss after delivery.
13.	*Cissus quadrangularis* L.	Vitaceae	Pirandai	Young shoot	Young shoot tips are ground with the seeds of *Cuminum cyminum* and given orally to cure diarrhoea.
14.	*Cleome viscosa* L.	Cleomaceae	Naaikadugu	Whole plant	Whole plant parts are ground with rhizome of turmeric and made into a paste and applied on affected region of goat to treat dog bite.
15.	*Coccinia indica* Wight &Arn.	Cucurbitaceae	Kovai	Leaves	Leaf of this plant is ground with the leaves of *Ailanthus excels* and made into a paste and applied over the breast region to treat mastitis.
16.	*Cocos nucifera* L.	Arecaceae	Thennai	Endosperm	Oil obtained from the endosperm is mixed with turmeric powder and made into paste and applied on mouth region to treat mouth

					diseases.
17.	*Clitoria ternatea L.*	Fabaceae	Sangu poo	Leaves	Leaf juice is taken orally early in the morning for 3-4 days to cure swelling in knees.
18.	*Euphorbia hirta* L.	Euphorbiaceae	Amman Pacharisi	Whole plant	Whole plant parts are ground with fermented boiled rice water and given orally to improve lactation.
19.	*Eleusine coracana* (Kenn.-O'Byrne) Hilu & de Wet.	Poaceae	Kelvaragu	Seeds	Seeds are ground with the leaves of *Luecas aspera* and larva of termites and made into a paste and applied on horn with clean cloth to settle the broken horn.
20.	*Punica granatum* L.	Lytharaceae	Mathulai	Fruit	The young fruit is ground with water or milk and the juice is obtained is taken orally to cure dysentery.
21.	*Saccharum officinarum* L.	Poaceae	Karumbu	Stem	Juice extracted from the stem is given orally to cure dysentery
22.	*Tamarindus indica* L.	Fabaceae	Puliyamaram	Leaves	Leaf paste is mixed with turmeric and applied on affected places to cure mouth diseases.
23.	*Tephrosia purpurea* (L.) Pers	Fabaceae	Kolunji	Leaves	Leaves are mixed with lime powder and ground into a paste and applied on affected places to heal wounds.
24.	*Vitex negundo* L.	Verbinaceae	Notchi	Leaves	Leaves are boiled with cow dung and made into paste is applied on affected places to treat swellings.

Table 2. Lists of species reported to prepare ailments against livestock diseases in Kovilpati Taluk

Sl. No	Ailment categories	Species in number
1	Wounds	3
2	Swellings	3
3	Diarrhoea	2
4	Poisonous bites	2
5	Stomach problem	2
6	Dysentery	3
7	Mastitis	1
8	Dog bite,	1
9	Mouth diseases	2
10	Increase lactation	1
11	Cataract	1
13	Indigestion	1
14	blood loss after delivery	1
15	broken horn	1

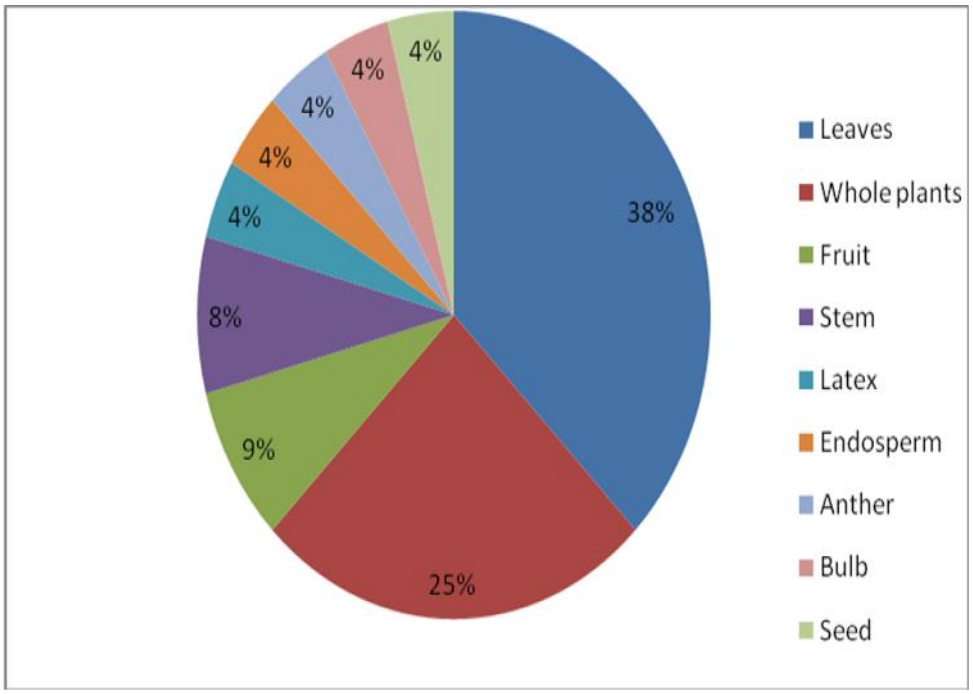

Figure: Various plant parts used for the preparation of ailments against livestock diseases in Kovilpatti Taluk