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Ethnoveterinary Medicinal Practices of the Villagers of Usilampatti Taluk of Madurai District, India

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Abstract: This study is aimed to document the medicinally important plants used in the treatment of cattle diseases by the villagers living in Usilampatti Taluk, Madurai district, Tamil Nadu, India. Interviews and detailed personal discussions were conducted with the traditional healers and local people to identify the plants and their medicinal information for 12 months (from September 2010 to August 2011). The medicinal important plants were botanically identified and voucher specimens were maintained in our Department herbarium. The investigations recorded 73 plant species belonging to 39 families were reported to have ethno-veterinary medicinal values. Leaves are the mostly used part to prepare medicine. Generally fresh parts are used for preparation of remedies and used for oral administration. Attention should be made on scientific validation and proper exploitation and utilization of these medicinally important plants in animal health care.

Key words: Ethno-veterinary, medicinal plants, Madurai district, India

INTRODUCTION

In recent time, there has been marked shift towards herbal cures because of the pronounced cumulative and irreversible reaction of modern drugs (Pande *et al*., 2007). The people are utilizing or practicing many ancient traditional methods of healing for their domestic animals. Large quantities of these plants are also used in the preparation of drugs. Therefore, due to over population, urbanization and continuous exploitation of the herbal reserves, the natural resources and their related traditional knowledge are depleting day-by-day. Very little of this traditional knowledge has been documented in developing countries (Khan, 2009; Sanyasi Rao *et al*., 2008) and ethnoveterinary knowledge generally ignored in mainstream veterinary medicine. But in remote rural areas, increasing attention has been paid to ethnoveterinary knowledge and local veterinary practices due to lack of veterinary health care centers. Moreover the supply of veterinary health services and dedications is constrained by scarcity, erratic supply and prohibitive cost. In some rural areas, although an extensive network of veterinary hospitals exists, a poor communication and infrastructure and a shortage of manpower drives livestock owners to treat animals themselves. The villagers prone to consult a local healer for immediate treatment of livestock or slaughter the animal if the cost of treatment becomes more expensive than value of the animal. Thus, ethnoveterinary medicine is mostly preferred by villagers as this system of approach dealing with the folk beliefs, knowledge, skills, methods and practices pertaining to the health care of animal by tradition (Tiwari and Pande, 2010). There is an urgent need that they should be documented before this traditional knowledge is lost. The present work was carried out to enumerate the plants used to treat the veterinary diseases in rural areas of Usilampatti Taluk, Madurai district, Tamil Nadu, India. The study focuses pathogenic diseases, digestive disorders and reproductive problems associated with livestock might be overcome by folklore medicines derived from one or combination of several plants.

MATERIALS AND METHODS

Description of the study area: The entire area of Madurai district lies between 9° 39' -10° 30' N latitude and 77° 00' E-78° 30' E longitude. The district is spread over an area of about 6500 sq. km and is bounded on the North and Northeast by Pudukkottai district, on South by Virudhunagar district, on the Southwest by Theni district and on the West by Dindigul district and East by Sivagangai district. The district receives an annual rainfall in about 600-850 mm. The maximum and minimum temperature varies between 18° and 40°C. The study area of Usilampatti Taluk is 37 Km away from Madurai district.

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This taluk comprises not less than 30 villages and the rural people rely upon agriculture and livestock for their livelihood.

Methodology: The field survey was conducted in different localities of Usilampatti Taluk Madurai for 12 months from September 2010 to August 2011. The ethnobotanical data were collected according to the methodology suggested earlier (Thirumalai, *et al*., 2010). The data were recorded using structured questionnaire interviews and discussions with households and local healers. A total of more than 27 local healers and 195 households were interviewed. The questionnaire items included each respondent's age, school education and medicinal plants used for a particular disease . The data of ethnoveterinary medicinal plants, which were used by the healers and households, represent their vernacular name in Tamil, botanical name and followed by their family were recorded. All the specimens were botanically identified and authenticated with the help of Flora of Tamil Nadu Carnatic (Matthew, 1983) and An Excursion Flora of Central Tamil Nadu (Matthew, 1991). The voucher specimens were collected and maintained in the Herbarium of Department of Botany, Saraswathi Narayanan College, Madurai-625 022, India.

RESULTS AND DISCUSSION

The present study revealed that 73 plant species belonging to 39 families were found in the different areas of Usilampatti Taluk of Madurai district. The listed plants possess medicinal values and were used mostly to cure 38 different livestock diseases and or ailments like diarrhoea, dermatitis, diuretic, pyrexia, mastitis, bone fracture, mouth diseases, indigestion, poisonous bites, etc. The medicinally important plants for veterinary diseases used by the villagers of the study area Usilampatti taluk ,Madurai district with their family name, local name and medicinal uses are given in the Table 1. The data evidence that eleven species of Asclepidaceae, ten species of Fabaceae, Piperaceae and Liliaceae, nine species of Euphorbiaceae, seven species of Meliaceae, and six species of Zingiberaceae were largely employed for preparation of herbal remedies for curing animal diseases. In the families of Solanaceae, Cucurbitaceae and Lamiaceae only five species used but in other families *viz*., Apiaceae (4 species) and Poaceae (3 species) less than five species were used for veterinary practices. Moreover the observations reveal that nine different species were used for enteritis, six different species for the treatment of abortion, bronchitis (asthma), and four different species for helminthes, coreal opacity, pyrexia, allergic reaction, mastitis and black quarter and three different species for sprine and swelling, diarrhea, hair falling, horn fracture and small pox. It has also been recorded that one or two species were used for treating problems like indigestion, vomiting, fever, cold, infertility, anorexia, foot and mouth diseases, tongue disease, and running nose.

In this study, the villagers who include both herbal healers and households of rural area of the Usilampatti Taluk of Madurai district used herbal therapies prepared from 73 plants to treat different veterinary illnesses. Among the plant parts used, leaf was the mostly used plant part (43.73%) to treat a particular animal disease followed by seed (15.16%), fruit (7.28%), bulb (6.43%), rhizome (4.03%) and tuber and bark (6.51%). The parts like flower and root were used at 4.87% but stem was the least used part (1.67%) in ethnoveterinary therapy. It has been recorded that latex and oil (10.32%) of some plants were used for curing bone fracture, warts, wounds and for external uses (9.7%). Generally, 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, some solid extracts etc.,) was found as mostly followed mode (76.19%) to treat the illness followed by raw feeding (14.11%). The plant extracts were prepared and also applied as paste externally to cure mastitis, wounds, foot and mouth diseases, swelling, horn and bone fracture etc. The percentage of the various parts of plant used and different mode of treatment is given in the Fig. 1 and 2. The study showed that a good number of medicinally valuable plants were used for the treatment of various veterinary diseases. *Piper nigrum* was used for the treatment of most of the diseases followed by *Azadirachta indica, Allium cepa* and *Cuminum cyminum*. In most of the preparations, the leaves of the plants were used for treating animal diseases and followed by seed, fruit, bulb etc. Most of the earlier ethnobotanical studies confirmed that leaves were the major portion of the plant used in the treatment of diseases (Tiwari and Pande, 2010). The data also revealed that the plants were mostly used in combination with other plants to treat particular disease effectively. It was noticed that oral administration was the mostly followed mode to cure the illness. The survey evidences that most of the plant extracts are very much useful in treating cattle diseases *viz*., mastitis, enteritis, dermatitis, bronchitis etc. Further, the traditional healers (Pasu vaidhyars) and villagers of the study area were found to adopt traditional health care practices to overcome the common ailments of their animals by them. It was recorded that the traditional medicines were found to be given either along with country sugar, fruit and or

Table 1: Details of animal diseases and ethnoveterinary medicinal plants used in the traditional practices followed by the villagers of Usilampatti Taluk of Madurai district, Tamil Nadu, India

Disease	Botanical Name	Family	Vernacular name	Mode of administration
Indigestion	*Bambusa arundinacea* (Retz.) Willd.	Poaceae	Moongil	Leaf extract is given as liquid juice to treat digestive disorder
Sprine and swelling	*Albizia lebbeck* (L.)Benth	Mimosaceae	Vagai Elumichai	Leaves of *Albizia* seeds of *Vigna* and 2to3 pellets of camphor are ground in the lemon juice to obtain paste.
	Citrus lemon (L.) Burm.f.	Rutaceae		
	Vigna mungo (L.) Hepper	Fabaceae	Uzhunthu	This paste is applied external to cure sprine.
Pyrexia	*Piper nigrum* L.	Piperaceae	Milagu Vetrielai	Seeds of Piper nigrum and leaves of *Piper* betel are mixed and fed to animal to treat pyrexia
	Piper betel L.	Piperaceae		
	Solanum nigrum L.	Solanaceae	Mana thakkali	Entire plant of *Solanum* is ground and used to cure fever in animals
	Lannea coromandelica (Houtt). Merr	Anacardiaceae	Odhiya maram	The stem and bark of *Lannea* are ground and the extract is also given to cure fever.
Diarrhoea	*Cadaba indica* Lam.	Capparaceae	Veelielai	Leaves of *Cadaba*, seeds of *Cuminum* and bulbs of *Allium* are ground and given orally for sheep, goat and cattle to treat diarrhea.
	Cuminum cyminum L.	Apiaceae	Seeragam	
	Allium cepa L.	Liliaceae	Chinna vengayam	
Enteritis	*Sida cardifolia* L.	Malvaceae	Pazhampasi elai	Leaves of *Sida* and seeds of *Trigonella* are ground and given orally for curing enteritis in goat.
	Trigonella foenumgraecum L.	Fabaceae	Venthayam	
	Cadaba indica Lam.	Capparaceae	Veeli elai	Leaf extract is mixed with ½ liter cow milk and given orally to goat.
	Aloe vera (L.) Burm. f	Liliaceae	Chothukathalai	Raw leaves of *Aloe* are fed to animals along with small amount of salt
	Datura metel L.	Solanaceae	Umathai	Fruits are gently warmed and given to feed for cattle.
	Citrullus colocynthis (L.) Schrader	Cucurbitaceae	Kumatti	Fruits are crushed and then given to fed as raw to cure enteritis
	Thespesia populnea (L.) Soland ex Correa.Serr.	Malvaceae	Poovarasu	Leaves of *Thespesia* are ground and fed to animals
	Solanum melongena L	Solanaceae	Kathirikai	Fruits of *Solanum* are slightly warmed and given as raw feed for goat and sheep to treat enteritis.
Bone fracture	*Euphorbia antiquorum L.*	Euphorbiaceae	Pothakalli	Latex of *Euphorbia*, *Ficus glomerata* and *Ficus benghalensis* is applied on fracture area and then tied by a clean cloth.
	Ficus glomerata L	Moraceae	Athimaram	
	Ficus benghalensis L	Moraceae	Aalamaram	
	Vigna mungo (L.)Hepper	Fabaceae	Uzhunthu	The mixture of seed powder of *Vigna mungo* and egg is applied on the fracture area and tied with the stick of Bamboo.
	Bambusa arundinacea (Re tz.)Willd	Poaceae	Moongil	
Mouth disease	*Ocimum basilicum* L.	Lamiaceae	Pacha elai	Leaf is ground and the paste is applied externally to cure mouth disease.
Foot and mouth diseases	*Musa paradisiaca* L.	Musaceae	Vazhai	Fruits are soaked in sesam oil for 12 h and the juice is given orally.
	Sesamum indicum L.	Pedaliaceae	Ellu	
Foot disease	*Pergularia daemia* (Forsskal) Chiov	Asclepiadaceae Veliparuthi		Leaves of *Pergularia*, camphor and naphthalene are ground well and the paste is applied externally to cure foot diseases.
Conjuctivities	*Piper betel* L.	Piperaceae	Vetrielai	The extract of the ground leaves applied as eye drops.
Anorexia	*Aloe vera* (L.) Burm. f.	Liliaceae	Chothukathalai	The leaves and small amount of salt are fed to animals to treat anorexia.
Yolk galls, warts	*Coccinia indica* Wight and Arn.	Cucurbitaceae	Kovai elai	The leaves of *Tephrosia* and *Coccinia* are ground and fed to animals orally to cure warts.
	Tephrosia purpurea L.Pers	Fabaceae	Kozhunji	The oil of ground nut is applied on the infected spot to treat warts.
	Arachis hypogaea L.	Fabaceae	Kadalai	
Conjuntira	*Zingiber officinale* Roscoe	Zingiberaceae	Sukku	Dried rhizome of *Zingiber* and leaves of *Leucas* are ground well and the extract is applied as eye drops
	Leucas aspera (Willd) Link.	Lamiaceae	Thumbai	
Snake bite	*Corallocarpus epigaeus* (Rottler) C.B.Clarke	Cucurbitaceae	Kollankovai kizhangu	Tubers of *Corallocarpus*, leaves of *Andrographis* and seeds of *Piper* are ground and mixed with ½ liter cow milk. This mixture is given orally to cure poisonus effect.
	Piper nigrum L.	Piperaceae	Milaugu	
	Andrographis paniculata (Burm.f.) Wallich ex Nees.	Acanthaceae	Chirya nangai	
Helminths	*Cissus quadrangularis* L.	Vitaceae	Pipperacee	Stem of *Cissus*, bulb of *Allium* and seeds of *Piper* and *Cuminum* are ground well and fed to animals to cure helminthes.
	Allim cepa L.	Liliaceae	China vengayam	
	Piper nigrum L.	Pipperacee	Milagu	
	Cuminum cyminum L.	Apiaceae	Seeragam	
	Cadaba indica Lam.	Capparaceae	Veelielai	Leaves of *Cadaba*, seeds of *Cuminum* and bulbs of *Allium* are ground well and given orally.
	Cuminum cyminum L.	Apiaceae	Seeragam	
	Allium cepa L.	Liliaceae	Chinna vengayam	
Mastitis	*Solanum tuberosum* L.	Solanaceae	Urulai kizhangu	The tubers of *Solanum* and fruits of *Citrus* are ground and mixed with water for oral administration.
	Citrus medica L.	Rutaceae	Elumichai	The leaves of *Wattakaka* and *Curcuma* are made into paste and applied on the nipple to cure mastitis.
	Wattakaka volubilis (L.f.) Stapf	Asclepiadaceae	Kurinjan	

Table 1: Continue

Disease	Botanical Name	Family	Vernacular name	Mode of administration
	Curcuma domestica Valeton.	Zingiberaceae	Manjal	
Infertility	*Azadirachta indica* Adr.Juss	Meliaceae	Vembu	Neem oil with egg albumin is given orally to improve fertility.
Wound	*Calotropis procera* (Ait.) R.Br.	Asclepiadaceae	Vellai erukku	The latex is applied externally for healing the wounds in animals.
Tear wound	*Curcuma longa* auct.non L.	Zingiberaceae	Kasthuri manjal	The rhizome of *Curcuma* is ground with caster. The oil and applied externally to cure wounds.
	Ricinus communis L.	Euphorbiaceae	Amanakku	
Chronic wound and Deep wound	*Azadirachta indica* Adr. Juss	Meliaceae	Vembu	The powder of naphthalene is mixed with neem oil And applied on the infected spot for curing deep wounds
Cut wound	*Tridax procumbens* L.	Asteraceae	Thaatha poo	The leaf of *Tridax* is ground and the paste is applied on cuts and wounds in animals.
Bloat, tympang	*Ceiba pentandra* (L.)Gaertner Var.	Bombaceae	Elavam	Seeds are made into powder and mixed with caster oil to fed the animals for curing bloats.
	Ricinus communis L.	Euphorbiaceae	Amanakku	
Haematuria	*Canthium parviflorum* Lam.	Rubiaceae	Karai veru	Leaves of *Canthium*, bulbs of *Allium* and seeds of *Cuminum* are ground well and fed orally to animals to treat haematuria.
	Allium cepa L.	Liliaceae	China vengayam	
	Cuminum cyminum L.	Apiaceae	Seeragam	
Poisonous bite	*Piper nigrum* L.	Piperaceae	Milagu	Seeds of *Piper nigrum*, leaves of *Piper betel*, *Acalypha* and bulbs of *Allium* are ground and fed orally to animals.
	Piper betel L.	Piperaceae	Vetri elai	
	Allium cepa L.	Liliaceae	China vengayam	
	Acalypha indica L.	Euphorbiaceae	Kuppai meni	
	Croton bonplandianus Baillon.	Euphorbiaceae	Venapundu	Leaves of *Croton*, *Azima* and *Pergularia* are ground and it is orally given to cure poisonous bite in animals.
	Azima tetracantha Lam.	Salvadoraceae	Sanga elai	
	Pergularia daemia (Forsskal) Chiov	Asclepiadaceae	Veli paruthi	
	Corallocarpus epigaeus (Rottler) C.B.Clarke	Cucurbitaceae	Kollan kovai kizhangu	The tubers of *Corallocarpus*, seeds of *Piper* and leaves of *Azadirachta* are ground. The extract is orally given to animals.
	Azadirachta indica Adr. Juss	Meliaceae	Veambu	
	Piper nigrum L.	Piperaceae	Milagu	
Epemeral fever	*Abrus precatorius* L. ssp. precatorius	Fabaceae	Kundumani	Leaf is ground and fed to animals orally given to feed (or) The entire plant of *Abrus* is tied around the neck for curing fever in animals.
Dermatitis	*Citrullus colocynthis* (L.) Schrader	Cucurbitaceae	Kumatti	The fruits are fed as raw to cure dermatitis in animals.
	Piper nigrum L.	Piperaceae	Milagu	The seeds of *Piper nigrum* are fed along with leaves of *Piper betel* for treating dermatitis.
	Piper betel L	Piperaceae	Vetri elai	
Lactimal gland	*Azadirachta indica* Adr. Juss	Meliaceae	Vembu	The leaves and flowers of *Azadirachta* and seeds of *Jatropha* are made into paste and applied on the head of animals.
	Jatropha curcas L.	Euphorbiaceae	Kattamanakku	
Vomiting	*Acalypha indica* L.	Euphorbiaceae	Kuppaimeni	Leaves of *Acalypha* and seeds of *Acorus* are ground and the extract is fed to animals.
	Acorus calamus L.	Araceae	Vasambu	
Hair falling	*Cinamomum macrocarpum* Hook.f	Lauraceae	IllavangaPatti	Barks of *Cinamomum* and *Ficus* are ground well and the extract is mixed with *Sesamum* oil for oral administration.
	Ficus mollis Vahl	Moraceae	Kallithi pattai	
	Sesamum indicum L.	Pedaliaceae	Nallaennai	
Horn fracture	*Boerhavia diffusa* L.	Nyctaginaceae	Mookkarattai	Leaves of *Boerhavia* and *Azadirachta*, caster oil, calcium carbonate powder and country sugar are mixed and the paste is tied around horns to cure fracture.
	Azadirachta indica Adr. Juss	Meliaceae	Veambu	
	Ricinus communis L.	Euphorbiaceae	Vilakku ennai	
Abortion	*Opuntia dillenii* (Ker Gawler) Haw.	Cactaceae	Chappathi kalli	Leaves of *Nelumbo* and *Anisochilus*, seeds of *Cuminum* and *Elettaria*, bulbs of *Allium* and *Opuntia* are ground and the extract is given orally animals.
	Cuminum cyminum L.	Apiaceae	Seeragam	
	Nelumbo nucifera Gaertn	Nymphaeaceae	Thamarai	
	Anisochilus carnosus (L.f.) Wallich.	Labiatae	Karpura valli	
	Elettaria cardamomum (L.) Maton.	Zingiberaceae	Yealakkai	
	Allium sativum L.	Liliaceae	Vellaipoondu	
Bronchitis asthma	*Withania somnifera* (L.) Dunal	Solanaceae		The roots of *Withania* are ground with leaves of *Cyanodon* and the extract is given orally.
	Cyanodon dactylon (L.)Pers	Poaceae	Arugam pullu	
	Tribulus terrestris L.	Zygophyllaceae	Nerunchi	Leaves of *Pergularia*, *Tinospora* and *Tribulus*, root of Tribulus and tubers of *Corallocarpus* are ground and the paste is applied around ears and nose of animals.
	Pergularia daemia (Forsskal) Chiov.	Asclepiadaceae	Veli paruthi	
	Corallocarpus epigaeus (Rottler) C.B. Clarke	Cucurbitaceae	Kollan kovai kizhangu	
	Tinospora cordifolia (Willd.) Hook.f. and Thomson.	Menispermaceae	Seethil	
Coreal opacity	*Leucas aspera* (Willd.) Link.	Lamiaceae	Thumbai Ingi	The leaves of *Vitex*, *Cajanus* and *Leucas* and rhizome of *Zinger* are made into extract and applied as oral eye drops.
	Zingiber officinale Rose	Zingiberaceae		
	Cajanus cajan (L.) Millsp.	Fabaceae	Thuvarai	
	Vitex negundo L.	Verbenaceae	Nochi elai	

Table 1: Continue

Disease	Botanical Name	Family	Vernacular name	Mode of administration
Tongue disease	*Pongamia glabra* Vent.	Fabaceae	Pungai maram	The fruit of *Pongamia* is ground with hot water and applied on the tongue areas.
Dog bite	*Achyranthes aspera* L.	Amaranthaceae	Nayuruvi	Leaves and root of *Achyranthes* and *Allium* are ground and the extract is orally given to animals.
	Allium cepa L.	Liliaceae	Chinna vengayam	
Small pox	*Curcuma longa* auct. non L.	Zingiberaceae	Kasthuri manjal	Leaves and flowers of *Azadirachta* and *Curcuma* are ground and orally fed to animals.
	Azadirachta indica Adr. Juss	Meliaceae	Vembu	
	Allium cepa L.	Liliaceae	Chinna vengayam	The bulb of *Allium* extract is applied on the eyes of the hens and cocks in animals
Diuretic	*Gossypium arboretum* L.	Malvaceae	Paruthi	Leaves of *Gymnema* and *Gossypium* are ground and the extract is mixed with the urine of the cow for oral administration.
	Gymnema sylvestre (Retz.) R.Br. exRoemer and Schultes	Asclepiadaceae	Sirugurunjan	
	Cassia fistula L.	Fabaceae	Sarrakkonnai	Leaves of Piper and flower of *Cassia* are ground and mixed with hot water for oral administration.
	Piper betel L.	Piperaceae	Vetri elai	
Alergic reaction	*Azadirachta indica* Adr.Juss	Meliaceae	Vembu	Barks of *Azadirachta,* leaves of *Pergularia Calotropis*, and seed cake of *Madhuca* are ground and fed to animals
	Calotropis gigantea (L.) R.Br.	Asclepiadaceae	Erukku	
	Pergularia daemia (Forsskal) Chiov.	Asclepiadaceae	Veliparuthi	
	Madhuca longifolia (L.) Macbr.	Sapotaceae	Eluppai	
Tuberculosis	*Pergularia daemia* (Forsskal) Chiov.	Asclepiadaceae	Veliparuthi	The leaves of *Pergularia, Cassia* and *Calotropis* are ground and mixed with butter milk to feed the animals to cure tuberculosis
	Cassia fistula L.	Fabaceae	Sarakkonnai	
	Calotropis gigantea (L.)R.Br.	Asclepiadaceae	Erukku	
Worms in intestine	*Azadirachta indica* Adr. Juss	Meliaceae	Vearnbu	The leaves of *Azadirachta* and Fruits and bark of *Punica* are ground and mixed with hot water to feed animals.
	Punica granatum L.	Punicaceae	Madhulai	
Black quarter	*Acalypha indica* L.	Euphorbiaceae	Kuppai meni	Leaves of Acalypha and Leucas, bulb of *Allium* and seeds of *Piper* are ground and fed to animals.
	Leucas aspera (Willd) Link	Lamiaceae	Thumbai	
	Allium cepa L.	Liliaceae	Chinna vengayam	
	Piper nigrum L.	Piperaceae	Milagu	
Cold	*Ocimum sanctum* L.	Lamiaceae	Thulasi	The leaf juice is prepared and used for oral administration to cure cold in animals.
Running nose	*Calotropis procera* (Ait.) R.Br.	Asclepiadaceae	Vellai erukku	The roots are kept in nostrils of affected animals for a few minutes to cure running nose

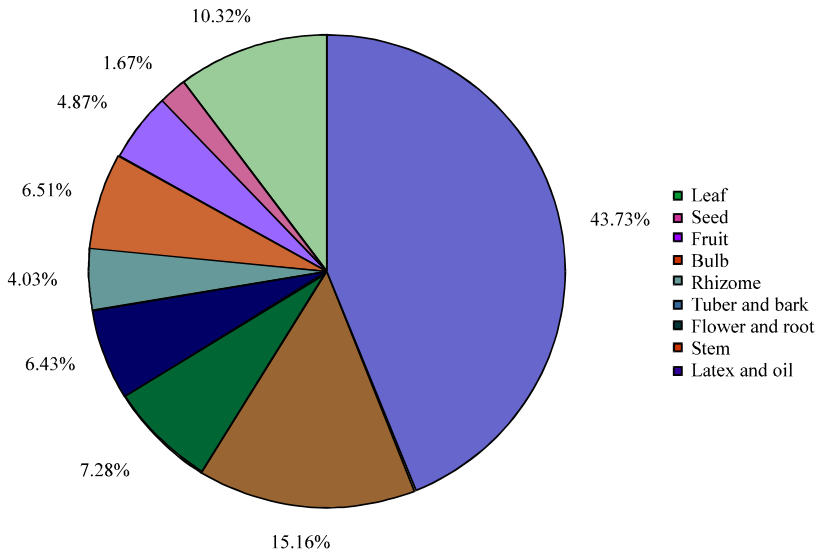

Fig. 1: Percent usage of the parts of the plant used to treat veterinary diseases by the people of Usilampatti Taluk, Madurai Dt

honey during oral administration, so as to feed the animals easily. The usage of *Piper nigrum* and *Allium cepa* was very common for curing eye diseases, indigestion, constipation, wounds (Tiwari and Pande, 2010) insect problems (Saikia and Borthakur, 2010) and fever (Nag *et al*., 2007) was in traditional practice of animal

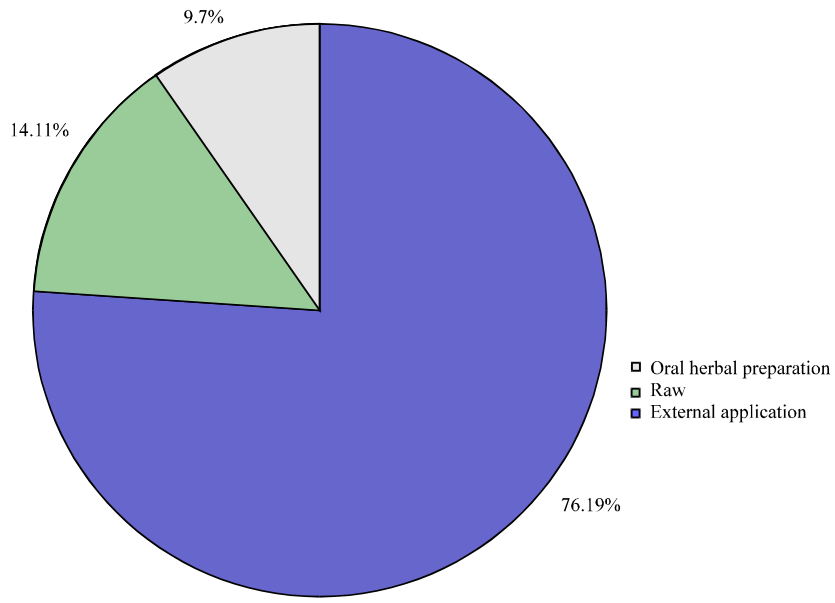

Fig. 2: Percent adoption of the mode of treatment followed by the villagers of Usilampatti Taluk, Madurai District to cure veterinary diseases

care in Uttarkand, Assam and Rajasthan. Similarly, plant species of *Zingiber officinalis, Curcuma domestica* (Tiwari and Pande, 2010) *Azadirachta indica, Datura metel* (Sanyasi Rao *et al*., 2008) *Calotropis procera* (Kiruba *et al*., 2006) *Withania somnifera, Corallacarpus epigaeus*, *Bambusa arundinacea* (Ganesan *et al*., 2008) *Sesamum indicum, Tridax procumbens* and *Wrightia tinctoria* (Nag *et al*., 2007) were reported to have ethnoveterinary medicinal values in many places of India. Moreover, well recognized occupational ethnoveterinary healers who found across the remote villages disseminate these practices to the fellow members of their family and through them the villagers are benefited. It was also recorded that the traditional healers use observation of physical external abnormality of animal which can easily be observed by naked eyes (like redness of skin and eyes, etc.), observations of physical internal abnormality (like state of feed and water intake, feces and defecation, rate and depth of breathing, etc.) observations of body temperature by introducing the fingers into the rectum; and observation of physical examinations such as skin palpation for formations under the skin or muscle. The medicines are administered to animals with the help of a special apparatus known as kottam (in Madurai region, Tamil Nadu). It is a simple mature hollow stem of bamboo (*Dendrocalamus strictus*) which is pointed at one end. Decoctions, plant extracts or other liquid medicines are administered to animals through it.

In conclusion, over exploitation of plant species in the name of medicine may lead some species ultimately to the disappearance in future. Therefore, attention should be made on proper exploitation and utilization of these plants. The findings of this study may become basic leads for chemical, pharmacological, clinical and biochemical investigations. These observations would serve as data base to formulate plant derived compounds in herbal veterinary drugs which could serve as better alternative to allopathic medicines that cause side effects in livestock. The study focuses the adoption of folk medicines for immediate action an animal care along with livestock related social realities. Moreover, it would be necessary to harness the benefits of organic products from dairy animals and for improving the livelihood of rural society. In general the study suggested further investigation on the valuable plants would be necessary to derive the fruits of them in animal health care practices with scientific approaches.

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