

Plants used in Ethnoveterinary Medicine by Tribals of Visakhapatnam and Vizianagarm Districts, Andhra Pradesh, India

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ABSTRACT

This study enlightens the knowledge on ethnomedicinal plants to treat domestic cattle's ailments. The information was gathered from ethnic people like Bagata, Gadaba, Goudas, Jatapu, Konda dora, Konda Kammara, Khond, Kuttiya, Mali, Manne dora, Mukha dora, Porja, Savara, Valmiki and yerukula of tribal belts in area. A total of 61 plant species representing to 61 genera and belonging to 40 families as remedy for 39 broad categories of animal ailments. The species, family and vernacular name, plant part(s) used, drug preparation and mode of administration. Purpose and use of these plants vary considerably, thereby the present paper is provide additional ethnoveterinary practices and a base line data for herbal industry.

Keywords: Ethnoveterinary diseases, Medicinal plants, Visakhapatnam, Vizianagaram and Andhra Pradesh.

INTRODUCTION

The use of plants and animals as a source of medicine has been continued since ancient time for curing or preventing diseases of man and animals. The term *Ethno-Veterinary* was coined by MC Corkle¹ (1986). Though, there is no authentic evidence of when and how plants came into usage for curing the domestic animals, the rural people seems to be aware of it through generations. Ethnoveterinary medicine refers to holistic and interdisciplinary study of traditional knowledge, beliefs, practices, skills and methods pertaining to the health care of animal ailments. In particular, so far some authors²⁻¹¹ studied the ethnoveterinary practices in Andhra Pradesh. Very few workers¹²⁻¹⁴ have studied and gathered information in the field of ethnoveterinary medicine has been endeavored and focusing on the folk knowledge in this region.

A broader survey has shown that above 80% of the tribals of Andhra Pradesh even today, depend on traditional medicine for their animal health practices. Traditional animal doctors are a substantial component of livestock healthcare systems in developing countries. There has been a rich traditional and indigenous knowledge about animal healthcare in India. Healers and their roles have been largely ignored by the modern veterinary community. In remote areas, no organized veterinary medicinal aid is available. Therefore, these people treat their domestic animals with herbal medicines on the basis of their empiric knowledge. The cost and availability of modern medicine deprives rural people from it.

Study Area

Andhra Pradesh is the fourth largest state in India, tribal population is around 50.24 lakh divided into 33 tribal communities. Visakhapatnam and Vizianagaram districts are belongs to North Coastal Andhra Pradesh, which lies between approximately 17° 15' to 19° 17' N latitudes and 82° 33' to 83° 34' E longitudes. It is bounded on the North by Odisha State, on the South by East Godavari district, on the East by Bay of Bengal and Srikakulam district, on the West by East Godavari district and a part of Odisha state.

The region extends an area of 17, 470 sq.km which constitute 6.3% of the geographical area in the state of Andhra Pradesh. The area comprises Visakhapatnam and Vizianagaram districts in which Visakhapatnam district is occupying the largest portion in the region (**Fig. 1**).

Materials and Methods

The methodology and mode of approach for ethnoveterinary medicinal plants is adopted from the classical works of Jain and others^{15,16}. Emphasis was given mainly to intensive field work in the selected tribal pockets and the ethnomedicinal data presented here is the outcome of a series of intensive field studies conducted over a period of June 2012 - August 2013 in 20 interior tribal pockets with good forest cover and coastal and plain pockets. To collect the desired information on ethnoveterinary practices completely devoted to acquaintance with the local chiefs, priests, vaidyas, herbal doctors and headman's, elderly people and educated students. In the present investigation, an attempt has been made to gather the data as methodology adopted by the tribal people to control the various ailments in livestock. Each medicinal practice was cross checked with at least 6 to 8 informants. Ethnoveterinary medicinal plants data and vernacular names (Telugu) are collected and those specimens were identified by referring to standard Flora of the Presidency of Madras¹⁷ and other local floras of Andhra Pradesh^{18,19} and these plants were preserved in the form of herbarium.

Results

Diseases are basic problems for both the human beings 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 causes and control. In the present study a total of 61 plant species representing to 61 genera and belonging to 40 families have been collected for ethnoveterinary practices as remedy for 39 broad categories of animal ailments of which 55 were dicotyledons and 06 were monocotyledon species. Out of the total species, 25 species are herbs, 19 tree species, 15 shrubs and 02 climbers are used to cure different diseases of animals. The scientific name of the species along with vernacular names, families, Part(s) used, ailment and with mode of administration presented in **Table: 1**.

While extrapolated the information on the plants used for treating ailments of animals, it has been noted that leaf (45.90%) is the most commonly used plant part followed by whole plant (19.67%), stem/bark (18.03%), seed (13.11%), root (08.19%), fruit (06.55%), rhizome (06.55%), pod (03.27%), kernel, latex, seed oil and tuber in this chronological order. It is interesting to note that for the 61 plant species enumerated, major ethnoveterinary uses are treatment of diarrhoea by five plant species (*Atylosia scarabaeoides*, *Cajanus cajan*, *Cocculus hirsutus*, *Datura metal* and *Elephantopus scaber*), dysentery by (*Cajanus cajan*, *Curcuma caesia*, *Datura metal*, *Phyllanthus nirurii* and *Shorea robusta*) and wounds by 05 species (*Barleria prionitis*, *Carissa spinarum*, *Chloroxylon swietenia*, *Pterocarpus marsupium* and *Vitex negundo*); anthrax by four species (*Abrus precatorius*, *Derris scandens*, *Dillenia pentagyna* and *Pergularia daemia*), sores by (*Commelina benghalensis*, *Eclipta prostrate*, *Trianthema portulacastrum* and *Woodfordia fruticosa*), Foot and Mouth Disease (FMD) by (*Andrographis paniculata*, *Ficus religiosa*, *Nicotiana tobaccum* and *Tinospora cordifolia*), ophthalmic problems by (*Balanites aegyptiaca*, *Lycopersicum esculentum*, *Strychnos potatorum* and *Trianthema portulacastrum*) and galactagogue by 04 species (*Amaranthus spinosus*, *Cassia tora*, *Cryptolepis buchanani* and *Macrotyloma unifloram*); 03 species by constipation (*Azadirachta indica*, *Commelina benghalensis* and *Ficus religiosa*), insect bite by (*Apluda mutica*, *Datura metal* and *Kalanchoe pinnata*), tympany by (*Coleus ambonicus*, *Cuminum cyminum* and *Wrightia tinctoria*) and lactation by (*Acacia nilotica*, *Cryptolepis buchanani* and *Oxalis corniculata*); bronchitis (*Citrus aurantifolia* and *Ficus religiosa*), renderpest (*Citrus aurantifolia* and *Morinda pubescens*), helminthiasis (*Commelina benghalensis* and *Holarrhena pubescence*), cough & cold by (*Gomphrena serrata* and *Semecarpus anacardium*), intestinal worms by two species (*Euphorbia nivulia* and *Shorea robusta*), Indigestion by (*Acacia nilotica* and *Cuminum cyminum*), eradication of lice by two plants (*Coleus ambonicus* and *Lippia javanica*), maggots and mastitis by 2 species of each (*Elephantopus scaber*, *Xanthium indicum*, *Aloe vera* and *Cynodon dactylon*) respectively.

Single species were allocated for anthelmintic (*Azadirachta indica*), impaction (*Derris scandens*), cuts and injuries (*Cleome viscosa*), dog bite (*Alangium salvifolium*), dyspepsia (*Aristolochia indica*), eczema (*Cannabis sativa*), ephemeral fever (*Ixora pavetta*), fertility (*Saraca asoca*), fractures (*Cassytha filiformis*), gout/inflammation (*Curcuma caesia*), haematoria (*Trigonella foenum-gracum*), horn cancer (*Brassica nigra*), infusion (*Tinospora cordifolia*), jaundice (*Costus speciosus*), pain (*Wrightia tinctoria*), ranikhet (*Eclipta prostrate*), rheumatism (*Cannabis sativa*), trypanosomiasis (*Ceiba pentandra*) and ulcers by (*Chloroxylon swietenia*).

Among the families, Fabaceae has most specious family with 07 species followed by Apocynaceae, Asteraceae and Solanaceae with 3 species each; 2 species of each by Acanthaceae, Amaranthaceae, Asclepiadaceae, Caesalpiniaceae, Euphorbiaceae, Menispermaceae, Poaceae, Rubiaceae and Verbenaceae. Twenty seven families (Aizoaceae, Alangiaceae, Anacardiaceae, Apiaceae, Aristolochiaceae, Balanitaceae, Bombacaceae, Brassicaceae, Cannabinaceae, Cleomaceae, Commeliniaceae, Costaceae, Crassulaceae, Dilleniaceae, Dipterocarpaceae, Geraniaceae, Lamiaceae, Lauraceae, Liliaceae, Flindersiaceae, Loganiaceae, Lytheraceae, Meliaceae, Mimosaceae, Moraceae, Rutaceae and Zingiberaceae) were bearing single species only.

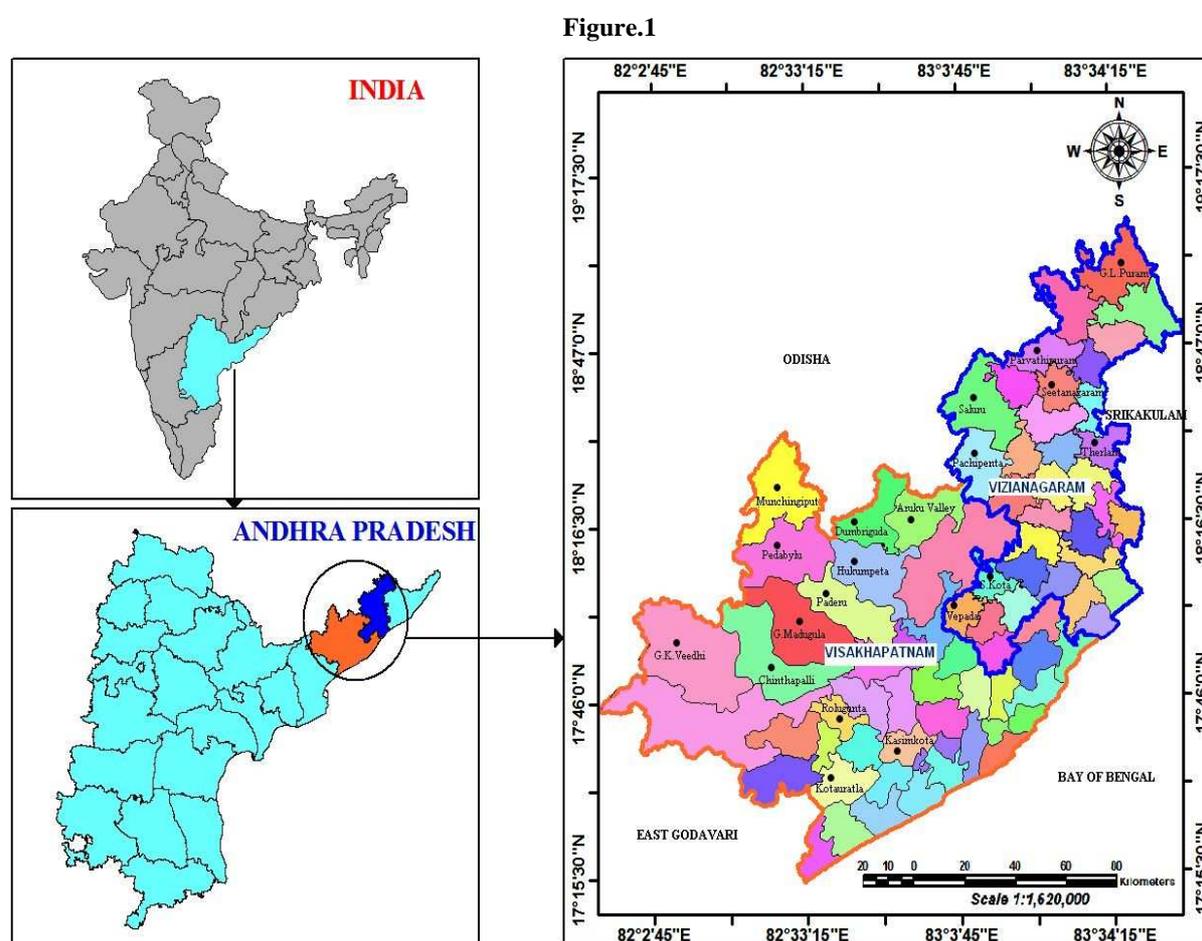


Table: 1. Ethnoveterinary medicinal plants and their mode of administration

S.No	Name of the species / Local name / Family	Part(s) used	Ailment	Mode of administration
1	<i>Abrus precatorius</i> L. Guruvinda Fabaceae	Stem Bark	Anthrax	Stem bark along with leaves of <i>Vitex negundo</i> , tubers of <i>Curculigo orchioides</i> (each 50g), 15g pepper and garlic are pounded and boiled in water and the decoction is given orally once daily for a week.

2	<i>Acacia nilotica</i> (L.) Del. Nalla tumma Mimosaceae	Stem Bark, Pod	Lactation, Indigestio n,gas problem	Tender pods are given every morning and evening to enhancing the lactation. Dried powdered bark is boiled in water, filtered and given orally to cattle twice a day.
3	<i>Alangium salvifolium</i> L.F. Wag. Ooduga Alangiaceae	Root, Seed	Dog bite	100 g of root ground with 20 seeds of <i>Piper nigrum</i> and a pinch of mustard oil. Paste is applied on wounds caused by dog bite.
4	<i>Aloe vera</i> L. Kalabanda Liliaceae	Leaf	Mastitis	The leaf pulp is applied on the swollen portion of the udder of cows or buffaloes.
5	<i>Amaranthus spinosus</i> L. Mulla thotakura Amaranthaceae	Whole plant	Galactogo gue	Entire plant crunched with cumin seeds and cloves is fed to cows and goats.
6	<i>Andrographis paniculata</i> Nees. Nelavemu Acanthaceae	Whole plant	FMD	Powder of the aerial part, jaggery, pinch of rock salt and water is given once a day for 5 days.
7	<i>Apluda mutica</i> L. Poaceae	Whole plant	Insect bite	Whole plant is given as a fodder to cure poisoning in animals due to insect bite.
8	<i>Aristolochia indica</i> L. Nalla eswari Aristolochiaceae	Whole plant	Dyspepsia	A glass of whole plant decoction mixed with powder of 21 seeds of <i>Piper nigrum</i> is administered daily once for 2 days.
9	<i>Atylosia scarabaeoides</i> (L.) Benth. Adavi kandulu Fabaceae	Leaf	Diarrhoea	Leaf paste (300gm) is given with fodder to cattle to treat diarrhoea.
10	<i>Azadirachta indica</i> A. Juss. Vepa Meliaceae	Leaf	Constipati on, Ant helminthic	Fruit paste is given to cattle for internal heat. Paste of the leaf mixed with equal quantity of turmeric powder is given once early in the morning for a week. Leaf paste in doses of 100g twice a day for about 3 days is administered to treat cough, liver diseases and as anthelmintic.
11	<i>Balanites aegyptiaca</i> (L.) Del. Gara chettu Balanitaceae	Fruit	Corneal opacity	Fruit pulp with 10 leaves of <i>Ocimum basilicum</i> , tobacco snuff and turmeric are pounded and kept in a sealed box overnight. It is applied externally to eye once a day. If both the eyes are infected, the medicine is applied on one of the eyes on the first day and the other eye the next day.
12	<i>Barleria prionitis</i> L. Mulla gorinta Acanthaceae	Whole plant	Wounds	The whole plant is crushed and mixed with mustard oil. The preparation is applied on wounds of cattle.
13	<i>Brassica nigra</i> L. Koch. Nalla valu Brassicaceae	Oil,Rhiz ome	Horn cancer	Pure mustard oil with rhizome paste of <i>Curcuma longa</i> is applied on the mischief parts of cattle horn.
14	<i>Cajanus cajan</i> L. Kandulu Fabaceae	Pod	Diarrhoea, Dysentery	Cooked leaves are fed to cattle and boiled leaves and seeds are mixed with fodder in cattle. Green pods crushed and mixed with cold water are administered twice.
15	<i>Cannabis sativa</i> L. Ganjaya Cannabinaceae	Leaf	Rheumatis m, eczema	Dried leaves along with a small quantity of salt are given in goats. Aqueous paste of fresh leaves is applied on affected portion.
16	<i>Carissa spinarum</i> Linn. Chinna vaka Apocynaceae	Root	Wounds	Root is pounded with flowers of <i>Madhuca longifolia</i> and made into a paste. This is applied on maggot-infested sores. Root paste applied on effected areas of cattle till cure.
17	<i>Cassia tora</i> Linn. Togirasa Caesalpiniaceae	Seed	Galactogo gue	Crushed seeds soaked in water overnight and given orally in the morning for 15 days.
18	<i>Cassytha filiformis</i> L. Paachi teega Lauraceae	Whole plant	Fractures	It is pounded in human urine and banded over the affected part of the bone.
19	<i>Ceiba pentandra</i> (L.) Gaertn. Buruga Bombacaceae	Leaf, Stem bark	Tryponos omiasis	Leaf and Stem bark of decoction (15ml each) is administered twice daily for 3 days.
20	<i>Chloroxylon swietenia</i> DC. Billuda Flindersiaceae	Leaf, Stem bark	Wounds, ulcers, gall	Leaves are ground with turmeric and the paste is applied to the cattle. Stem bark ash mixed with coconut oil is applied locally on yoke gall.

21	<i>Citrus aurantifolia</i> (Christm.) Sw. Nimma Rutaceae	Fruit	Bronchitis, renderpest	Pickle of the fruits made by adding salt and pounded turmeric is given to animal along with bread of jowar to cure bronchitis. Crushed leaves mixed with and are orally given to animal for curing renderpest.
22	<i>Cleome viscosa</i> L. Kukka vominta Cleomaceae	Leaf, Whole plant	Cuts & Injuries	Leaf paste is rubbed on the left horn if the right leg is cut and vice versa. This stops bleeding. The whole plant is crushed. The paste is applied on injuries of bullocks made during ploughing.
23	<i>Cocculus hirsutus</i> (L.) Diels. Patala bheri Menispermaceae	Leaf	Diarrhoea	Leaf paste is given twice daily for three days to cattle.
24	<i>Coleus ambonicus</i> Lour. Vamu aku Lamiaceae	Leaf	Tympany & Lice	250g leaves of juice given orally twice for 4 days to treat tympanites. Leaves with of <i>Ximenia Americana</i> , <i>Azadirachta indica</i> and <i>Annona squamosa</i> are taken in equal quantities and powdered. Powder is applied on the body of hens daily once for 3 days to eradicate lice in poultry.
25	<i>Commelina benghalensis</i> Linn. Yandra aku Commelinaceae	Whole plant	Constipation, Sores, Helminthiasis	Plant paste is applied to treat yoke sores. Juice of the whole plant is given orally. Whole plant is given as a fodder.
26	<i>Costus speciosus</i> (koen.) Sm. Adavi dumpa Costaceae	Rhizome	Jaundice	Rhizome used for jaundice.
27	<i>Cryptolepis buchani</i> Roem. & Schult. Adavipala teega Asclepiadaceae	Leaf	Lactation & Galactagogue	Leaf paste in doses of 200g once a day for 7-10 days for enhancing lactation. Leaf paste in doses of 200g once a day for 7-10 days in cattle.
28	<i>Cuminum cyminum</i> L. Jeelakarra Apiaceae	Seed	Indigestion & Tympany	Powder of seeds is soaked in water; water given orally to cure gastric trouble. Seeds mixed with black salt are given for curing tympany.
29	<i>Curcuma caesia</i> Roxb. Nalla pasupu Zingiberaceae	Rhizome	Gout/Inflammation, dysentery	Fresh rhizome juice mixed with mustard oil is given once daily on empty stomach for two - three days in dysentery. It is also applied to cure to gout/inflammation disease.
30	<i>Cynodon dactylon</i> L. Garika Poaceae	Leaf	Mastitis	Fresh and pointed grass and <i>Oryza sativa</i> is used to open the blocked pore of the udder (Mastitis).
31	<i>Datura metal</i> L. Ummetta Solanaceae	Fruit, Seed and Leaf	Diarrhoea, dysentery, insectbite	Paste of roasted unripe fruit in one dose is given orally. Second may be given. Seed powder is used in skin diseases and crushed leaf is applied on insect bite.
32	<i>Derris scandens</i> (Roxb.) Benth. Nalla teega Fabaceae	Leaf, Rhizome	Anthrax & Impaction	Leaves ground with those of ginger, turmeric and a pinch of calcium carbonate is given orally. Leaves ground with tubers of <i>Gloriosa superba</i> , onion and salt is given orally.
33	<i>Dillenia pentagyna</i> Roxb. Kalinga Dilleniaceae	Stem bark	Anthrax	Stem bark paste is fed to animal daily twice for 3-4 days to relieve anthrax.
34	<i>Eclipta prostrata</i> L. Guntagalagaraku Asteraceae	Leaf	Sore, Ranikhet	Leaf juice is applied to on shoulders caused by carrying heavy loads and also used for swelling of ears in cattle. Alcoholic extract has antiviral against Ranikhet disease virus especially in hen.
35	<i>Elephantopus scaber</i> Linn. Nela marri Asteraceae	Root, Leaf	Maggot wounds, Diarrhoea	For maggot wounds, grind roots and salt and wrap the bolus in grass and feed to the animal. 50g leaves are made into paste and mixed with sugar candy which is given orally.
36	<i>Euphorbia nivulia</i> Buch. Ham. Erra kalli Euphorbiaceae	Latex	Kill worm	For carbuncle, latex is applied on the affected areas twice a day for 3 days to kill the worms.
37	<i>Ficus religiosa</i> L. Raavi Moraceae	Stem bark, Leaf	Constipation, FMD & bronchitis	Stem bark paste is given against constipation. Bark boiled in water for thirty minutes and the luke warm leachate is applied on the effected hoofs during foot and mouth diseases. Shade dried leaves are powdered and fed two times a day for seven days to cure bronchitis.

38	<i>Gomphrena serrata</i> L. Bondu malli Amaranthaceae	Whole plant, Leaf	Cough, Cold	Whole plant with leaves of <i>Tephrosia purpurea</i> and seeds of <i>Piper nigrum</i> are taken in equal quantities and ground. 50g of paste with rice washed water is administered daily once for 3 days.
39	<i>Holarrhena pubescence</i> Wall. Pala kidisa Apocynaceae	Stem bark	Helminthiasis	10g of stem bark paste mixed in a glass of water is administered daily twice for 2 days. Bark powder is applied externally to cure wounds.
40	<i>Ixora pavetta</i> Andr. Korivi Rubiaceae	Stembark	Ephemeral fever	30g stem bark, 10g garlic, 5g pepper, 5g turmeric and <i>Carissa spinarum</i> , ground and it is given orally a dose of 50g daily twice for 7 days.
41	<i>Kalanchoe pinnata</i> (Lam.) Pers. Gallarapaku Crassulaceae	Leaf	Insect bite	Leaves massaged with sesame oil are slightly warmed and applied on the body of the cattle affected by bites of insect to get relief from pain.
42	<i>Lippia javanica</i> (Burm. f.) Spreng. Verbenaceae	Whole plant	Lice	For eradication of lice, whole plant used as lice repellent in poultry.
43	<i>Lycopersicum esculentum</i> L. Tamato Solanaceae	Fruit & Leaf	Eye problem	Fruit and leaf juice is administered twice daily for 3days against eye problem.
44	<i>Macrotyloma unifloram</i> (Lam.) Verdc. Fabaceae Ulavalu	Seed	Galactogogue	250g of seeds boiled in water and mixed with husk powder of <i>Oryza sativa</i> is administered to cattle twice a day during lactation period. Seed decoction is given orally to cattle for good mulching after delivery.
45	<i>Morinda pubescens</i> Sm. Togaru Rubiaceae	Stembark	Renderpest	Stembark along with seeds of <i>Semecarpus anacardium</i> , camphor and turmeric are allowed to ferment in water and the infusion is given orally.
46	<i>Nicotiana tobaccum</i> Linn. Pogaku Solanaceae	Leaves	FMD	Processed leaves are crushed and made into a paste with saw wood and the paste is applied on the hoof of the cattle affected with foot and mouth disease.
47	<i>Oxalis corniculata</i> L. Ambati koora Geraniaceae	Root	Enhancing Milk	A piece of root is collected on a Lunar eclipse day and burned with 7 black peppers in the cattle shed to increase milk production of cows.
48	<i>Pergularia daemia</i> (Forsk.) Chiov. Guritaku Asclepiadaceae	Leaf & Tuber	Anthrax	Leaves along with those of tubers of <i>Curculigo orchoides</i> (each 100 g) and 10 g pepper and garlic pounded and the extract given orally twice daily (morning and evening) for a week.
49	<i>Phyllanthus nirurii</i> L. Nela usiri Euphorbiaceae	Leaf	Dysentery	Leaf paste is given in doses of 100 g once a day.
50	<i>Pterocarpus marsupium</i> Roxb. Yegasi Fabaceae	Stem bark	Wound	Stem bark along with that of <i>Macaranga peltata</i> is taken in equal proportions and ground into paste and is applied on wounds. Half of the above extract is given orally for deworming.
51	<i>Saraca asoca</i> (Roxb.) de wilde. Asoka Caesalpinaceae	Leaf, stem bark	Fertility	Decoction of leaf and stem bark is administered once daily for ten days against to induced fertility.
52	<i>Semecarpus anacardium</i> L. f. Nalla jeedi Anacardiaceae	Kernal	Cough	The kernel oil is used for cough. It is applied on the pharyngeal wall with the help of a long stick on alternate days. This treatment is very much use full for goats.
53	<i>Shorea robusta</i> Gaertn. f. Guggilam Dipterocarpaceae	Stem bark & Seed	Dysentery & Worm	Bark paste in doses of 100 g is administered once a day for 3 days. Seed paste in the same dosage is used to kill worms in the intestine.
54	<i>Strychnos potatorum</i> L. f Indupukaya Loganiaceae	Seed	Eye problem	Seed paste with honey is poured into the eyes for eye infections in doses of few drops thrice a day for 3 days.
55	<i>Tinospora cordifolia</i> (Willd.) Hook. f. &Thoms. Amruta valli Menispermaceae	Wholepla nt	FMD & Infusion	For poultry diseases, infusion of the stem is put in chicken's drinking water. If animals feed on poisonous plants then whole plant extract is given orally to animals causing vomiting. For Foot and mouth, dried aerial pieces are fumigated to reach the mouth area of cattle disease.
56	<i>Trianthema portulacastrum</i> L. Pappukooraku Aizoaceae	Root & Leaf	Eye problem & Sore	Aqueous extract of root and leaves is used as eye drops for eye disease. Leaves ground with musk, saffron and pepper given orally in sores.
57	<i>Trigonella foenum-gracum</i> L. Mentulu Fabaceae	Seed	Haematuria	Infusion of seed flour is given to the animal daily for 3 days.
58	<i>Vitex negundo</i> L. Vavili Verbenaceae	Leaf	Wound	Dried leaf powder is dusted on the affected parts of the horse to heal wounds. Leaf paste mixed with a pinch of turmeric is applied on the wounds daily twice for 3 days.

59	<i>Woodfordia fruticosa</i> (L.) Kurz. Lythraceae	Leaf Jeguru	Sore	Leaves crushed with those of <i>Pongamia pinnata</i> , <i>Lannea coramandelica</i> and <i>Andrographis paniculata</i> (each 10g) and the paste is applied externally for wounds, ulcers and maggot-infested sores.
60	<i>Wrightia tinctoria</i> (Roxb.) R.Br. Ankudu Apocynaceae	Leaf	Tympany, Pain	250 mg green leaves of each plant crushed together and juice is extracted. A spoonful of 'jeera' and 'Owa' powder mixture is added in it. This extract is mixed with in one litre of water and given to affected animals with the help of drenching bottles. It expels gas and relieves pain.
61	<i>Xanthium indicum</i> Koenig. Marulamatangi Asteraceae	Wholepl ant	Maggot	Whole Plant juice in doses of 200ml is given once a day for swellings on the glands in cattle. Paste of leaves is applied for maggot wounds.

DISCUSSION

In the present study, the stem bark of *Abrus precatorius* is used in curing anthrax, whereas the root is for dysentery and wounds,^{13,14} leaves for insect bite⁶ and retained placenta⁵ and seeds for yoke gall^{3,6}; *Acacia nilotica*, pod and stem bark is used for lactation, indigestion and gas problems. The spine for colic pain,^{2,13} stem bark for intestinal problem¹¹ and fruits for enhancing milk production^{8,10}; *Alangium salvifolium*, root for wounds caused by dog bite, whereas leaf juice is to treat corneal opacity and stem bark for renderpest,¹⁴ for oedema⁷; *Aloe vera*, leaf is used to treat mastitis. Pulp used for insect bite,⁷ leaf for septicemiasis¹⁴ and for fowl typhoid¹¹; Whole plant of *Amaranthus spinosus* used for galactagogue. Entire plant is for wounds¹¹; *Andrographis paniculata*, whole plant for foot and mouth diseases, whereas leaves are used to cure epilepsy,³ roots for insect bite and ephemeral fever⁵; *Aristolochia indica*, whole plant for dyspepsia. Root and leaf for insect bite^{5,6}; *Azadirachta indica*, leaf for constipation, anthelmintic. Stem bark for anthrax,⁶ for stomach pain,^{2,10} leaf for skin diseases and ephemeral fever^{13,4} and whole plant for trypanosomiasis¹¹; Fruit of *Balanites aegyptiaca* to treat corneal opacity, whereas seed for anthelmintic¹¹ and stem bark helmenthiasis¹⁰; *Barleria prionitis*, whole plant is used for wounds. Leaf and stem bark for diarrhoea and foot and mouth diseases¹¹; Seed oil of *Brassica nigra* used to cure horn cancer. Seeds for kidney disorder^{11,12}; *Cannabis sativa*, leaf is used to treat rheumatism, eczema and for dysentery¹³; *Carissa spinarum*, root for wounds and stem bark for ephemeral fever⁴; Leaf and stem bark of *Ceiba pentandra* for trypanosomiasis. Stem bark is to treat dysentery^{2,7}; *Chloroxylon swietenia*, leaf and stem bark used for wounds and yoke gall, whereas leaf used to treat ephemeral fever^{4,6}; Fruit of *Citrus aurantifolia* is used to treat bronchitis and renderpest, for cold and nervous disorder¹¹; *Cocculus hirsutus*, leaf for diarrhoea. Leaf is used for removal of external parasite,³ for epitaxis⁷; Rhizome of *Costus speciosus* to treat jaundice. Root for wounds,¹¹ rhizome for internal injuries,^{3,12} for anthrax⁴; *Cuminum cyminum*, seed for indigestion and tympany, for cough¹¹; Leaf of *Cynodon dactylon* is to treat mastitis, for trypanosomiasis⁷; *Datura metal* fruit, seed for diarrhoea, dysentery and insect bite. Leaf is used for anti parasitics and repellents^{2,11}; *Derris scandens* leaf and rhizome for anthrax and impaction, root is used for sores¹⁰; Leaf of *Eclipta prostrate* used for sore and ranikhet, leaf for wounds¹¹; *Nicotiana tobaccum*, leaf is used for foot and mouth diseases, leaf for ectoparasites¹¹; Leaf of *Pergularia daemia* used for anthrax, whereas leaf is to treat musculair pain and ophthalmic diseases,¹³ for ephemeral fever and tympany^{4,6} and for fever³; *Strychnos potatorum*, seeds are used for eye problems. Leaf paste for wounds,¹⁰ seed infusion for conjuctivity^{3,12}; Entire plant of *Tinospora cordifolia* used for foot and mouth diseases. Leaf for fractures and anthrax,⁵ bark juice for anthelmintic,³ stem and leaf for fever and immunity¹¹; Leaf of *Vitex negundo* to treat for wounds. Leaf for rheumatism and arthritis,¹¹ for ephemeral fever^{5,6}; *Woodfordia fruticosa* leaf for sores. Flower is used for wounds^{10,12}; Leaf of *Wrightia tinctoria* is to treat tympany and pain, whereas stem bark for ephemeral fever, leaf for adenoid and trypanosomiasis⁶.

CONCLUSION

India has great traditional background in the field of Ethno-Veterinary Medicine (EVM) and practices, but in the process of modernization, this knowledge is vanishing very rapidly. The role of ethnoveterinary medicine in livestock development is beyond dispute. Advanced research on plants of excessive medicinal values may lead to new source of drugs which are really beneficial for health care of mankind and other important domestic animals. Documentation and standardization of ethnoveterinary knowledge are also important in the context of Intellectual Property Rights (IPRs) to check the Patent claims. There is an urgent need for biochemical analysis and pharmaceutical investigations of plant species used by the people of this region to formulate and standardize the medicine for sustainable uses, progress and development.

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