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Ethno-Medicinal Importance of Some Selected Plants Used For the Treatment of Ruminant Animal Diseases in Ekiti State, Nigeria.

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Abstract: *A survey of medicinal plants used in the treatments of ruminant animals in the rural areas of Ekiti-State, Nigeria was conducted. A total number of 52 botanicals belonging to 25 families were identified for the treatment of 20 diseased conditions. The result also shown that some herbs were diseased-specific while others were effective as multipurpose remedies. Consequent upon this, features that enhanced the continuous utilization of these botanicals were identified and strategies that could enhance their sustainability were proposed.*

I. Introduction

Ruminants are important animals that are used in the social and ceremonial life of the rural people than other animal species (FDLPCS, 1992). Ruminant rearing supplements incomes, offers employment opportunities, support agriculture and contribute to the health and nutrition of households especially in the rural communities. They are good source of animal proteins. In Nigeria, for example, Brimkmann and Adu (1977) reported that goat meat was estimated to account for about 20% of all meat consumed in the country.

Incidentally, management of ruminant is largely in traditional hands in the rural areas where ethno-veterinary practices still play important roles (Kudi and Myint 1999). Farmers are scarcely aware of veterinary and improved management services. In some cases, many of those who were aware of the services cannot afford to pay for them because they are expensive. Anthra (1997) reported that over 85% of 400 small and marginal farming households sampled in a developing country were found using indigenous knowledge to cure their animals. This according to Kayode *et al*; (2009) might be attributed to the fact that people believed in the system, which they have used for long and found to be very effective. Also, the same treatment may cure many diseased conditions while the practitioners are readily available.

In Ekiti State Nigeria, ruminant production and productivity is largely in the hands of rural farmers which have developed indigenous method for their management. Among the various indigenous methods is the use of botanicals to manage the health of animals.

Consequent on the above, the aim of this study is to identify and document the medicinal usage of plants used for the management of the health of ruminant animals with a view to determine their abundance, identified the endangered species among them and propose strategies that could enhance their conservation

II. Materials And Methods

This study was carried out in the existing three Senatorial Districts of Ekiti State Nigeria. The three Districts are Ekiti North, Ekiti South and Ekiti Central Senatorial Districts. In each district, ten rural communities that were still relatively far from urban influence were selected. In each community, ten respondents were randomly selected and interviewed. The interviewed were conducted with a fairly open framework that allowed for focused, conversational and two-way communication (Omotoyinbo 2008; Olanipekun 2010). Also in each community, group interviews were conducted in order to determine group consensus on the ethno-veterinary plant species. Four groups, each consisting of four or five individuals, were interviewed. Information on plants and other traditional methods used for animal health were documented.

Also information on their preparation and administration were sought. Key informants made up of health, community development, forestry and veterinary officials were interviewed to provide secondary information on the use of medicinal plants in the study area. Voucher specimens of the plant species identified were collected, identified and relevant information on them were documented. The specimens were later treated and deposited at the herbarium of the Department of Plant Science; Ekiti State University Ado-Ekiti, Nigeria.

The relative abundance of the botanicals in each community was determined by the time it would take, from the centre of the community, to physically come across the plant specimens. plant specimens that could be sited between zero minutes to five hours were regarded as abundant; those that would take more than 5 hours to be seen were regarded as scarce.

III. Results And Discussion

Field observation revealed that a total of 52 plant species belonging to 29 families were identified as being used for the treatment of ruminant animals' pests and diseases in the study area (Table 1). Though, various plant parts such as leaves, stems, roots and stem barks were being utilized, but the leaves constituted the bulk of the parts used thus supporting the previous assertion of Kayode *et al;* (2009) that the leaves formed the major parts of the ethno-botanicals in the state.

Table1.List of identified botanicals used for the treatment of ruminant diseases

S/N	BOTANICAL SPECIES	FAMILY NAME	VERNACULAR NAME	PART(S) USED
1	Acacia arabica (Linn)	*Mimosaceae*	Kasia	Fruit and stem bark
2	Adansonia digitata (Linn)	*Bombaceae*	Ose	Leaves
3	Aframomum meleguata (R. Schun)	*Zingiberaceae*	Ata-ire	Leaves, seeds
4	Agerantum conyzoides (Linn)	*Asteraceae*	Imi-esu	Leaves
5	Allium cepa (Linn)	*Alliaceae*	Alubasa-elewe	Leaves
6	Allium sativum (Linn)	*Alliaceae*	Ayu	Seeds and leaves
7	Alstonia boonei (Linn)	*Apocynaceae*	Alum	Leaves and stem bark
8	Amaranthus spinosus (Linn)	*Amaranthaceae*	Efo elegun	Leaves
9	Anacardium occidentale (Linn)	*Anacardiaceae*	Kasu	Leaves and stem
10	Annona senagalensis (Linn)	*Annonaceae*	Abo	Leaves
11	Aspilia africana (Pers)	*Asteraceae*	Yunrinyun	Leaves
12	Azardiracta indica (AJuss)	*Meliaceae*	Dongoyaro	Leaves
13	Bridelia africana (Bth)	*Euphorbiaceae*	Ira	Stem bark
14	Calotropis procera (R.Br)	*Asclepiadaceae*	Bomubomu	Leaves
15	Capsicum frutescens (Linn)	*Solanaceae*	Ata wewe	Fruit
16	Caccia occidentale (Linn)	*Caesalpinaceae*	Kassia	Leaves
17	Carica papaya (Linn)	*Caricaceae*	Ibepe	Seeds
18	Chromoleana odorata (Linn)	*Asteraceae*	Akintola	Leaves
19	Citrus aurantifolia (Christn)	*Rutaceae*	Osan wewe	Fruit and seeds
20	Elaeis guinensis acq)	*Arecaceae*	Ope	Fruit, leaves
21	Ficus exasperata (Linn)	*Moraceae*	Eepinpin	Leaves
22	Ficus thoningn (Linn)	*Moraceae*	Odan	Leaves
23	Flugea virosa (Linn)	*Euphorbiaceae*	Isawewe Ameranbabo	Leaves
24	Gliricidia sepium (Jacq)	*Falaaceae*	Agunmaniye	Leaves
25	Gossypium arboretum (Jacq)	*Malvaceae*	Owu	Leaves & seeds
26	Guiera senegalensis (Linn)	*Combretaceae*	Gedu	Leaves
27	Helitricum indicum (Linn)	*Boranginaceae*	Apari igun	Leaves & stem
28	Hymenocardia acida (Linn)	*Hymenocardiaceae*	Orupa	Leaves
29	Jatropha gossypifolia (Linn)	*Euphorbiaceae*	Lapalapa funfun	Leaves, stem & latex
30	Jatropha multifida (Linn)	*Euphorbiaceae*	Ogege	Leaves
31	Khaya senegalensis (Deir)	*Meliaceae*	Oganwo	leaves
32	Lantana camera (Linn)	*Verbenaceae*	Ewonadele	Leaves
33	Momordica charantia (Linn)	*Cucurbitaceae*	Ejirin wewe	Leaves
34	Moringa oleifera (Lam)	*Rubaceae*	Igbale	Leaves
35	Nicotiana tabacum (Linn)	*Solanaceae*	Taba	Leaves
36	Ocimum gratisimum (Linn)	*Lamiaceae*	Efinrin nla	Leaves
37	Psidium guajava (Linn)	*Myraceae*	Gurofa	Leaves/fruits
38	Rauwolfia occidentale (Afz)	*Apocynaceae*	Asofeyeje	Leaves
39	Saccharium officinarium (Jacq)	*Poaceae*	Ireke	Stem
40	Sida corymbosa (Linn)	*Malvaceae*	Iseketu	Leaves
41	Spondia mombin (Linn)	*Asteracea e*	Ekikan	Leaves
42	Solanum nodiflorum (Linn)	*Solanaceae*	Odu	Leaves
43	Talinum trangulare acq)	*Portulaceae*	Gbure	Leaves
44	Tamarindus indica (Linn)	*Fabaceae*	Ajagbon	Leaves
45	Tithonia diversifolia (Linn)	*Asteraceae*	Odod	Leaves
46	Tridax procumbens (Linn)	*Asteraceae*	Igbalode	Leaves
47	Triumfetta cordifolia (A Rich)	*Tiliaceae*	Akeri	Leaves
48	Vernona amygdalina (Del.)	*Asteraceae*	Ewuro	Leaves
49	Vitex doniana (Sweet)	*Verbenaceae*	Oriri	Leaves
50	Waltheria indica (Linn)	*Sterculiaceae*	Ewe eje	Leaves & stem
51	Zea mays (Linn)	*Poaceae*	Agbado	Seeds
52	Zingiber officinale (Rosc)	*Zingiberaceae*	Ajo	Seeds

Table 2 revealed that respondents in the study area were all across various socio-economic strata. Thus, the results revealed that these features were not pre-requisites to the awareness of the respondents to the use of botanicals. All the respondents claimed to have used plant species to treat livestock before the study.

This observation was similar to the one made by Sondermann *et al.;* (1993) in the Northern Region of Malawi, where farmers crushed local plants or their parts and mixed them together with drinking water for chickens to prevent or cure Newcastle diseases and diarrhea. It was also observed that unlike in human medicines, farmers in the study area did not establish themselves as traditional veterinary healers or practitioners. The use of plant species was used as remedies at subsistence level.

Table 2. Socio-economic characteristics of the respondents of Ekiti State, Nigeria

FEATURES	DESCRIPTION	PROPORTION (%) RESPONDETNS			
		EN (n=100)	EC (n=100)	ES (n=100)	AVERAGE TOTAL (%)
Sex	Male	20	32	25	25.7%
	Female	80	68	75	74.3%
Age (Years)	10	-	-	-	-
	10-50	40	45	40	41.7%
	50 and above	60	55	60	58.3%
Literacy	Illiterate	40	80	50	56.6%
	Literate	60	20	50	43.3%
Economic Status	High	10	05	15	10%
	Medium	35	35	30	33.3%
	Low	55	60	55	56.6%

N is the number of respondents interviewed.

Table 3 Revealed that most of the respondents possessed adequate indigenous knowledge on the botanicals and have experienced them before the study. They were of the opinion that the botanicals were readily available, cheap and economical, easy to apply, highly effective, less toxic and have no side effect.

Table 3. Perception of respondents on ethno-veterinary botanicals in Ekiti State, Nigeria

S/N	DESCRIPTION	PROPORTION (%) OF RESPONDENTS			
		EN	EC	ES	AVERAGE TOTAL
1	Locally and easily available	90	80	80	83.3
2	Cheap and Economical	80	70	90	80.0
3	Easy to apply	90	80	68	79.3
4	Highly effective	90	80	64	78.0
5	No side effects	70	70	90	76.7
6	Less toxic	80	60	70	70.0
7	Helps where modern veterinary assistant is race or not available	80	70	60	70.0
8	Treatment at farmers resistance is possible	70	70	60	66.6
9	The process in natural	70	70	60	66.6
10	It satisfies the animal owners	70	80	80	76.2

Table 4 revealed the 20 disease conditions identified by the respondents in the study area. Of the 20 disease conditions, diarrhea and cough were most prevalent, thus confirm the previous assertion of Oboegbulem and Chah (1997) that diarrhea, cough and nasal discharges have been the major problems of ruminants in Southern parts of Nigeria. Other diseases conditions identified were worms, helminthes, dystocia, retain placenta, mastitis, botulism, conjunctivitis, trypanosomiasis and body swellings. However, mange, scabies, fleas and ticks were the pests identified in the study area.

Table 4. Ruminants Pests and diseases and their symptoms as identified by respondents in Ekiti-State, Nigeria.

PEST/ DISEASE	ENGLISH/ SCIENTIFIC NAME	VERNACULAR NAME	SYMPTOMS/SIGNS ORLESSIONS
(a) Pests	Lice, fleas and ticks	Eyoo/kokoro	- small insects that are transmitted by body contact, whose life-cycle is completed in relative short time. - It causes restlessness, dullness and weakness. - Often results in sores on the animals that may serve as entry points for microbes and finally caused death.
	Worms/Helminthes	Araninu	- worms present in the stool - Animals lack appetite - Emaciation and general body weakness.

	Mange/scabies	Ekiku	- Unsteadiness, rubbing body on concrete or hard surfaces. - Bruises on the skin - Falling of hair - Leaving scaly and a red skin -Emaciation, weakness and depression of the body.
(b) Nutritional Diseases	1. Bloat	Inu wiwu	- Distention of abdomen - Off feeding, no ruminant - Labored breathing
	2. Fever, Dizziness, Anemia	Iba, oyi, oji, eje gbigbe	- Weakness of the body - Yellowish urine - Yellowish of mucus membrane of eye, lips etc. - Lack of appetite - Emaciation, pale look - Inadequate blood.
	3. Trypanosomiasis	Ounje aipeye	- Staring hair coat - Unsteadiness, not convenient - Depression and darkening of the hair coat - Weakness of the body.
(c) Microbial Diseases	1. Lameness	Riro/rolaparolese	- Paralysis of animal(s) - Loss of body weight - Wound on the cleft and foot - Difficulties in the breathing - Depression of the animal(s) - Persistence watering stooling
	2. Diarrhea	Igbe-gburu/Inu wiwo	- Depression, weakness & leaning of animals - Bloody dropping - Nasal discharge. - Discharge of watery substances from nose
	3. Respiratory Disease	Eemi-lile/ Ikoawugbe	- Swollen of animal(s) face - Sneezing and coughing. - Severe diarrhea
	4. Cough/Rinder pest Disease	Iko/Awuku	- Mouth, nose and eye discharges raised hair coat and swollen head, cough and swollen faces - Lesion of the lower lips
	5. Botulism	Orun lilo	- Twisting of the neck, because of poisoning of food
	6. Veneral Disease	Egbo/Oyun oju ara	- Blisters of the vulva
	7. Conjunctives	Aran oju/ oju to nsepin	- Stuffy eye.
(d) Environmental Diseases	1. Wound/Snake bite	Egbo/gige je ejo	- Swellings around the neck or root - Wound noticed on bite side or broken skin
	2. Inflammation	Aponkun	- Swelling of the head - Pam on the thigh or joints - Limping of the animal.
	3. Dystocia	Ailedabimo	- Prolong labor at parturition - Retained foetus - Animal unable to give birth without help.
	4.Mastitis/brest Abscess	Egbo Etitu/ Oyun inu omu	- Pains on the breast - Accumulation of pus - Area becomes swollen and painful - Animals unable to work.
	5. Retained Placenta	Olobi ti ko le da jade	- Placenta delay to drop explore or drop - Pains all over the animal's body.

Table 5 revealed that various plants were used in different herbal preparations administered to animals. Some plants were used as single remedies while some provided multiple remedies, preventing or curing several kinds of ailments. This observation confirmed the previous assertions of Agharkar (1995) and Anjara (1996) that the juice of leaves or roots of botanicals, such as *A.rabica, A,spinosus* and *C.odorata* were used to treat wounds. Also, Dean (1996) reported that villagers in the Pare Mountains of Tanzania used the leaves extract of *Solanum spp* and *C.odorata* in treating wounds in ruminant animals.
Similarly, Burkil (1995); Odebiyi and Sofowora (1998) reported that the leaves of F.thonigii and S.mombin leaves aids placenta expulsion in ruminants animals (e.g goats) in South Eastern part of Nigeria.

Table 5. Method of preparations of plant species used for the Treatment/management of ruminant pests and diseases.

PEST/DISEASES	PLANT USED	PART(S) USED	METHODS OF PREPARATION
Fleas	1. *Vernonia cornifera*	Leaves	Squeeze in water and bath the animal
	2. Palm Oil	Fruits	Apply all over the body
Ticks	Hand picking		Pick ticks from the body
	Ficus exasperata		Fresh leaves put in the house of the animal as beddings
Mites	Palm Oil		Apply all over the body
Mange/scabies	1. Palm oil/salt		Apply on affected area
	2. Engine oil		Apply on affected area
	3. Sulphur cake		Grind and dust on the animal
	4. Palm oil		Apply oil on the affected part
	5. Dregs of palm oil processing		Apply dregs on the affected part
	6. Palm oil/gun powder		Apply mixture on the affected part
	7. Kerosine		Apply on the affected area
	8. Gammaline		Apply on the affected area
	9. Hot oil/ limestone		Apply on the affected area
	10. Used motor oil		Apply on the affected area
Disease			
Wounds	*A. arabica,*		
	A. spinosus,		Pound and extract with water use it to dress the wound
	C. odorata,		
	M. oleifera		
Diarrhea	*1. Vernonia amygdalina*	Leaves	Squeeze in water and use he water to drench the animal
	2. Adansonia digitata	Leaves	Squeeze in water and use the water to drench the animal
	3. M. charantia	Leaves	
	4. Zea mays	Grains	Roast and feed the animal
Retained placenta and parturition	*1. F. thoningii*	Leaves	Fresh leaves given the animal
	2. F. virosa	Leaves	Fresh leaves given the animal
	3. H. indicum	Leaves	Fresh leaves given the animal
	4. H. acida	Leaves	Fresh leaves given the animal
	5. S. mombin	Leaves	Fresh leaves given the animal
Mastitis	*1. S. mombin*	Leaves	Drench and also use the leaves to massage the udder
Chronic respiratorsy disease	*1. A. digitata*	Leaves	Macerate in the water and drench
	2. A. sativum	Bulb	Macerate in the water and drench
	3. A. cepa	Bulb	Macerate in the water and drench
	4. A. spinosus	Leaves	Macerate in the water and drench
	5. A. indica	Leaves & seeds	Macerate in the water and drench
	6. C. odorata	Leaves	Macerate in the water and drench
	7. C. aurantifolia	Leaves & fruits	Macerate in the water and drench
	8. E. guineisis	Fruits	Macerate in the water and drench
	9. V. doniana	Leaves	Macerate in the water and drench
	10. V. paradosa	Leaves	Macerate in the water and drench
sVenereals disease	*Palm oil*		Apply on the affected area.
Strong abdominal pain/constipation	*1. Aspilia africana*		Leaves extract in water
	2. Ocimum gratisimum		Leaves extract in water
	3. Z. officinarium		Macerate in water and drench
	4. E. guinensis		Oil palm given the animal.
Gastroenteritis	*1. C. papaya*		Ground seeds given the animal

	2. G. sepium	fresh leaves given the animal
	3. V. doniana	Stem bark and fresh leaves given in water.
Mouth ulcer	*1. A. spinosus*	Leaves extract apply on the wound
	2. C. frutescens	Ground seeds apply on the wound
	3. J. gossypifolia	Extract from the leaves and stem apply in the feed.

Table 6 revealed the relative abundance of the species identified in the study area. It was observed that 22 of the botanicals could be described as being abundant. The abundant species were mostly species that were cultivated in the study area for other purposes than medicine.

Table 6.List of abundant botanicals in treating ruminants diseases in Ekiti State, Nigeria

S/N	BOTANICAL NAME	MAJOR PRODUCTS OBTAINABLE FROM CULTIVATION
1	*Aframomum meleguata*	Seeds as medicine
2	*Agerantum conyzoides*	Medicine
3	*Amaranthus spinosus*	Medicine
4	*Anacardium occidentale*	Fruits and medicine
5	*Aspilia Africana*	Animal fodder and ornamental
6	*Azardicacta indica*	Erosion and wind control and medicine
7	*Calotropis procera*	Ornamental and food preparation
8	*Capsicum frutescens*	Fruits and medicine
9	*Caccia occidentale*	Shade, stake for yam and erosion control
10	*Carica papaya*	Whole plant as wind control
11	*Chromolaena odorata*	Medicine from leaves and stem
12	*Citru aurantifolia*	Wind breaker, fruits as medicine
13	*Elaeis guinensis*	Fruits, wind erosion control
14	*Ficus thoningii*	Shade and erosion control
15	*Gliricida sepium*	Yam stakes and wind breaker
16	*Momordica charantia*	Medicine from leaves and stem
17	*Ocimum gratisimum*	Leafy vegetable and medicine
18	*Talinum trangulare*	Leafy vegetable and medicine
19	*Tithonia diversoifolia*	Ornamental
20	*Tridax procumbens*	Folder and medicine
21	*Venona amygdalina*	Leafy vegetable and medicine
22	*Zea mays*	Fruits as food and medicine

In conclusion, in spite of wide network of modern veterinary services, people in the remote areas still consider it inferior to the use of plant species for the treatment of livestock diseases. This is because the botanicals had no side effect; they are locally available and easily accessible. Hence the conservation of these ethnoveterinary botanicals is highly imperative and can be achieved thus:

1. There should be policies aimed at educating farmers on the value of indigenous knowledge
2. Extension agents should work hand in hand with veterinarians on the possibility to blend both the orthodox drugs with the traditional treatments which go a long way to improve animal health care in rural areas

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