

Ethno-Veterinary Care amongst the Nomadic Fulani Herdsmen in Southern Zone of Adamawa State, Nigeria

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ABSTRACT: The ethno-veterinary care amongst the nomadic Fulani herdsmen in Southern Zone of Adamawa State, Nigeria was investigated. Purposive sampling technique was used to select four out of the eight Local Government Areas of the Zone, while a total of 227 nomads were randomly selected proportionately to the number of registered members from each of the Local Government Area selected. It was found that nomadic Fulani herdsmen utilize 51 plants species and other traditional practices and beliefs in the treatment of common livestock ailments such as foot and mouth disease, Streptothricosis, Bloat, Bovine ephemeral fever, Black quarter infections among others. Method of preparation and administration found to include direct feeding of the plant part, grinding to powder and mixing with feeds or direct external application of the plant paste or oil extract on the affected part. The farmers also use incantations and other beliefs in the treatment of cattle ailments. Deforestation due to human activities that led to the depletion of the herbs and lack of government recognition were among the constraints in the utilization of the traditional knowledge. It was concluded that livestock herders in Southern Zone of Adamawa State use a variety of medicinal plants and other traditional technologies for treatment of cattle diseases. The traditional knowledge underlying this kind of science has not been explored to the benefit of livestock farmers, to cause significant improvement in their wellbeing. It was therefore recommended that effort on the development of cheaper veterinary services and input in the State should focus more on the abundant traditional resources such as flora and culture.

Keywords: Adamawa, ethno-veterinary care, livestock, nomads.

INTRODUCTION

Livestock production in the Sub Saharan African countries is severely constrained by the presence of a wide range of animal diseases and is believed to be growing at half the rate required to make significant inroads in reducing poverty (Ahemen and Zahraddeen, 2010). These diseases not only affect production and productivity of livestock, but also seriously hamper any meaningful livestock trade. A number of zoonotic diseases have also become a serious threat to human health. Potentially fatal diseases in cattle include Foot-and-Mouth Disease (FMD) and Contagious Bovine Pleural Pneumonia (CBPP). These diseases are recognized to have been the major barriers which affected the early introduction of cattle-based economies in most of the affected countries (Gifford-Gonzalez,

2000). For many years, these diseases have been causing serious problems in livestock production especially among the poor rural farming communities. This problem is exacerbated by the farmers' lack of access to the conventional livestock management skills and financial resources to afford vaccines and curative substances (Gabalebatse et al., 2013). But there is potential for increasing production if disease control and management strategies are appropriately undertaken.

Most livestock farmers in Nigeria are resource-poor. It is therefore, important that disease control strategies aimed at making it affordable and readily available to farmers. This cannot be achieved by adopting disease control strategies that are totally dependent on imported veterinary drugs but those based on cheaper, safer and

sustainable such as the use of locally and naturally derived drugs from plants. In recent years, there has been a remarkable rise of medicinal plants' use, probably due to their local abundance, cultural significance and inexpensive procurement (Thomford, 2015). According to Mathias (2001), the medicinal plants use for the control and management of diseases is a cheaper, readily available and can be used as complement for the expensive synthetic drugs that are often in short supplies. The knowledge of medicinal plant and traditional beliefs of diseases management techniques use among the pastoral herders is said to have been developed gradually over a period of practical experience. Such knowledge, practices and beliefs is summed as traditional or ethno-veterinary knowledge (McCorkle, 1995). Pastoral farmers most especially in the remote and inaccessible areas of the developing countries possess knowledge of local application of medicinal plants and other beliefs for the control and management of livestock diseases and other related health conditions. In Nigeria, particularly Southern Zone of Adamawa State, where there is high concentration of nomadic cattle pastoralists and their cattle, there are abundance of ethno-veterinary knowledge and herbs (Usman et al., 2015). The knowledge is an indispensable source of both preventive and curative medicinal preparations in the area for their livestock (Usman et al., 2015). Recording how plants and cultural beliefs are used in folk medicine by an ethnic nomadic Fulani group in Southern Zone of Adamawa State is a major strategy for the conservation and valorization for the future yet unborn generation.

The documentations of traditional veterinary care use for the control and management of livestock diseases are the appropriate means of identifying potential sources of new drugs. Seventy-four percent of plant-derived compounds currently used in pharmaceuticals, retained similar use as used by traditional healers (Moonga and Chitambo, 2010). Plants used in traditional medicine are two to five times likely to be pharmacologically active than those randomly screened (Mathias et al., 1999). Indeed the need to utilize drugs from local plants is increasingly becoming more important, not only because of the high cost, fake or substandard of the imported drugs but the availability of these imported drugs has become erratic as their importation has to compete for the meager foreign exchange with other vital imports required for industrial and social development. Due to these problems, the dependence on modern veterinary medicine alone cannot solve most of the animal health problems. Therefore, there is need for identification and documentation of the diseases and methods of control to avoid extinction of this knowledge. Hence, the main objective of the study was to analyze the ethno-veterinary care among the nomadic Fulani herdsmen in Southern Zone of Adamawa State, Nigeria. The specific objectives of the study were to;

- i. identify the diseases affecting cattle and the traditional control methods used in the control of these diseases in the study area and.
- ii. identify the constraints to the use of traditional disease control methods of cattle.

METHODOLOGY

Study Area

The study was conducted in Southern Zone of Adamawa State, Nigeria (Figure 1 and 2). The area lies between latitudes 9°54'N and 8°12'N of the equator and longitudes 12°03'E and 11°55'E of the Greenwich meridian (Adebayo and Tukur, 1999). It has a tropical climate marked by distinct dry and wet seasons with mean annual temperature of 34.6°C. The mean annual rainfall of the area ranges between 760 mm to 1000 mm (Adebayo and Tukur, 1999). The study area has a population of 577,039 persons in 2006 (National Population Commission, 2006). The vegetation of the area, availability and abundance of water influence the distribution of livestock in the area. The area is one of the principal livestock producing areas in the State.

Sampling Technique

Four out of the 8 Local Government Areas that made up the zone were purposely selected based on the concentration of registered members of *Mi-yetti* Allah cattle breeders association in the areas. The lists of registered members were obtained from the officials of the association within the Local Government Areas selected which were used as sampling frame. Based on the list obtained, a total of 227 nomads were randomly selected proportionate to the number of registered members from each of the Local Government Area selected (Table 1).

Data Collection

Data for this study were obtained through primary source, through the use of questionnaire administered to the respondents and personal interviews where the respondents can neither read nor write. The questionnaire was divided into three sections: Section A deals with information on types of diseases encountered by the cattle of the respondents and the traditional control methods of the diseases employed by the respondents. Section B deals with method of preparation and administration of the traditional control methods, while section C deals with the problems encountered in using traditional control methods.

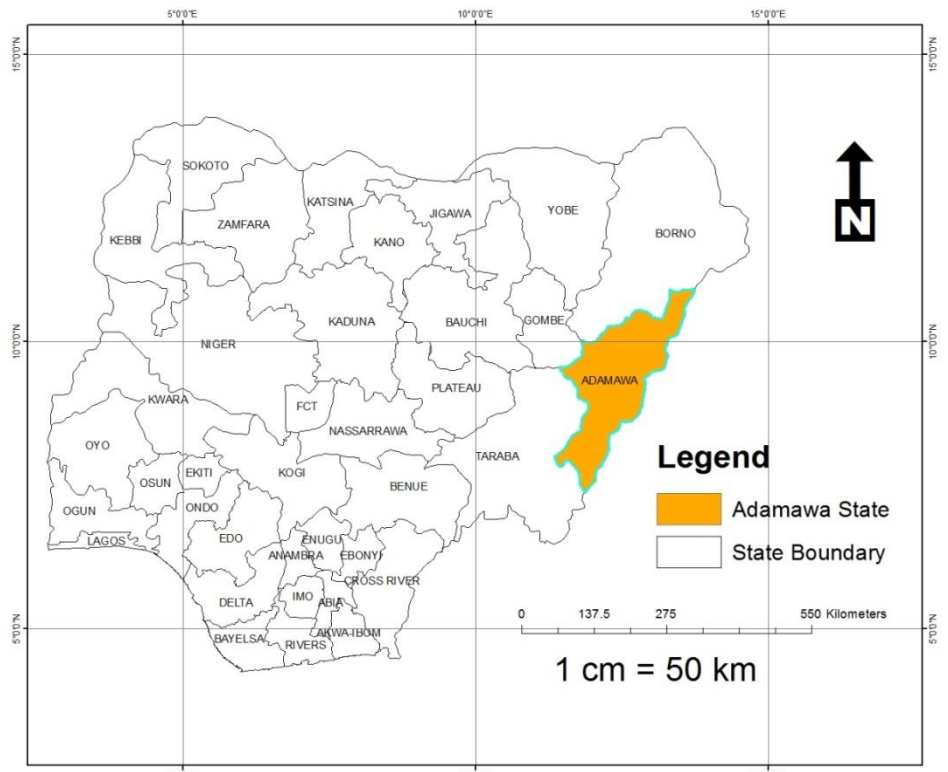


Figure 1. Map of Nigeria showing Adamawa State.

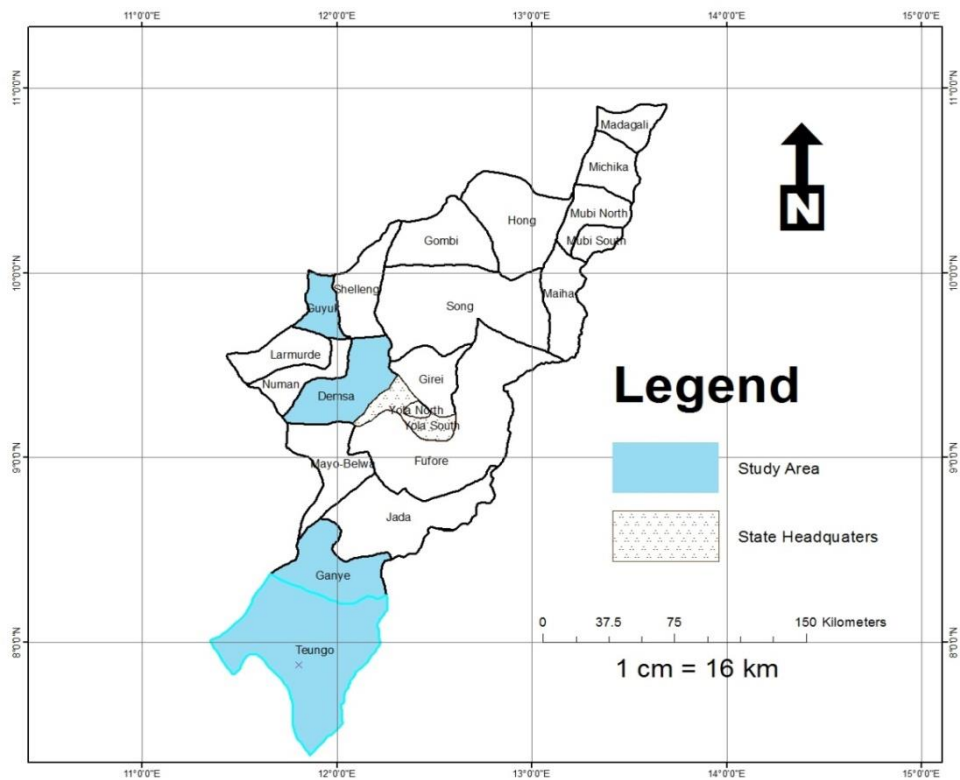


Figure 2. Map of Adamawa State showing the study area.

Table 1. Target population and Sample size.

LG As selected	Number of Registered members (sampling frame)	Number of respondents selected
Demsa	30,921	62
Ganye	29,491	59
Guyuk	26,898	54
Toungo	25,913	52
Total	113,223	227

Source: Pre-field survey, 2015.

Data Analysis

Frequencies and percentages were used to analyze the problems or constraints to the use of the control methods by the respondents in study area while disease affecting the cattle, the traditional control methods and the methods of preparation and administration of the control methods were presented on table.

RESULT AND DISCUSSION

Diseases and Parasites that affect Cattle in the Study Area and Control Methods

It was found that nomadic Fulani herdsmen utilize 51 plants species and other traditional practices and beliefs in the treatment of common livestock ailments such as Broncho-pneumonia, Black quarter, Foot and Mouth Disease among others (Table 2). Broncho-pneumonia is treated by drying and grinding *Boswellia dalzillii* stem bark and mix with feeds to feed the animals, similarly *Stereospermum kunthianum* stem bark is soaked in water over night with *Nicotiana tabacum* and is given to sick animal by drenching. Also *Detarium microcapum* stem bark when boiled and allowed to cool and given orally to treat Broncho-pneumonia. Foot and mouth disease (FMD) is treated by burning *sorghum bicolor* together with seeds of *Balanites aegyptiaca* to ash, the ash is soaked in water and sieved, the sieved liquid is used to wash the affected parts. *Acacia nilotica* seed when boiled together with common table salt, the liquid is used to wash the affected parts topically. Grain of *Zea mays* and *Pennisetum glaucum*, ground together with grains of *Pennisetum glaucumu* (Bulrush millet) to flour is soaked in water, allowed to ferment for 48 hours, the brew is then given to the animals and the hooves are washed with potash morning and evening. Honey mixed with monkey droppings are also applied to the diseased parts to treat FMD, also content of left over egg (un-hatch egg) is mixed with animal feeds, to feed the animal. Black quarter is treated using *Boswellia dalzilli* leaves and leaves of *Parkia biglobosa*. They are boiled and allowed

to cool then given to the affected cow orally. Another method of treating black quarter is by heating sand from termites' area and applied to the affected areas. Black quarter can be prevented by hanging bronze bell on the neck of the biggest bull in the herd. This is done because herdsmen believed that Black quarter is caused by evil spirit and bronze bell can drive away evil spirit.

Fractured bones are repositioned and immobilized using *Debregeasia dealbata* sticks to allow healing (Table 2). Incision is made in a boil site to make an opening for the pus to escape, then the area is cleaned and *Tamarindus indica* powder is applied to the affected part. The result in Table 2 showed that there are abundant remedies for the treatment of diseases and parasites in the study area.

According to Dennis (2010), there are total of 43 plant species used in the managing various cattle diseases by the pastoral herders in Kabira sub-county, Rakai District, Uganda in a research conducted on some pharmacological activities of selected medicinal plant species used for treating cattle diseases. The report further revealed that common cattle conditions/ailments treated in the area were diarrhea, eye infections, retained placenta, cough, bloat, wounds among others.

Constraints to the use of ethno-botanical knowledge

There is increasing threat to wild plant resources and their habitats because of over exploitation (Usman et al., 2015). These resources are threatened by forest removal and bush burning. About 97% of the respondents complained of forest destruction, 87.2% complained of lack of government recognition while 97.4% complained of concealment of knowledge by those who have it (Table 3). They only reveal the knowledge to their trusted children.

Ethno-veterinary information like any other form of traditional knowledge is orally transmitted from generation to generation, and hence in danger of extinction as older people die and younger generations fail to learn the traditional way of life. This situation is worsened by rapid socio-economic, technological and

Table 2. Diseases and Specific Control Methods for Used to Treat the Diseases and Control Parasites.

Diseases	Plant	Part used	Preparation	Administration
Diarrhea	<i>Adansonia digitata</i>	Leaves	Fresh leaves	Feed to animals fresh
		Leaves	Dry, grind to powder + potash mix with water	Oral
		Leaves	Dry, grind to powder mix with fresh cow milk	Oral
	<i>Acacia nilotica</i>	Seed	Soak seeds in water for 24 hours	Oral
	<i>Khaya senegalensis</i>	Stem bark	Boil allow to cool	Oral
			Boil with potash allow to cool	Oral
	<i>Stereospermum kunthianum</i>	Stem bark	Soak in water for 24 hours	Oral
	<i>Detarium microcarpum</i>	Stem bark, Roots, Leaves	Boil and allow to cool	Oral
	<i>Stegonotacchia araliacea</i>	Stem bark	Boil and allow to cool	Oral
	<i>Annona senegalensis</i>	Roots	Boil with Red potash and allow to cold	Oral
	<i>Tamarindus indica</i>	Leaves	Boil allow to cool	Oral
	<i>Azadiracha indica</i>	Leaves	Boil allow to cool	Oral
	Anthrax	<i>Prosopis africana</i>	Roots	Boil with <i>Khaya senegalensis</i> stem bark allow to cool
<i>Leptadenia hastata</i>		Whole legume	Boil with <i>Dichrosta chyscinerea</i> allow to cool	Oral
<i>Vigna unguiculata</i>		Leaves	Boil with Salt and <i>Carica papaya</i> allow to cool	Oral
-		-	-	Proper cleaning of area
<i>Maerua angolensis</i>		Leaves	Boil and allow to cool	Oral
		Stem bark	Dry grind to powder mix with feeds	Feed to animals
<i>Nicotina tabacum</i>		Roots and leaves	Boil allow to cool	Oral
-		-	-	Cut ear, small at the upper part
<i>Boswelliadalzilii</i>		Leaves	Boil allow to cool	Oral
<i>Piliostigma reticulatum</i>		Bark	Make twine rope and incantations	Tie to the head of the Animal
Black quarter	<i>Boswellia dalzillii</i>	Leaves	Dry, grind to powder+ potash add to feeds	Feed to animals
	<i>Boswellia dalzilli</i>	Leaves	Leaves + leaves of <i>Parkia biglobosa</i> , boil and allow to cool	Oral
	-	-	Heat fine sand, from termites area and apply to affected areas	Tropical
	-	-	Hanging of bronze bell	Hang on the Neck
	<i>Piliostigma reticulatum</i>	Bark	Make twine rope and incantations	Tie to the head of the Animal
Streptothricosis	-	-	Heat sharp metal	Scarification
	<i>Aframomum molequetta</i>	Seeds	Grind, mix with cow butter (cheese)	Topical
	<i>Parkia biglobosa</i>	Stem bark	Dry, grind to powder, mix with Shea butter oil	Topical
CBPP	<i>Balanites aegyptiaca</i>	Leaves	Dry and grind to powder with dried leaves of <i>Khaya senegalensis</i> then mix to feeds	Feed to animals

Table 2. Contd.

			Or Leaves of <i>Balanites aegyptiaca</i> and <i>Khaya senegalensis</i> boil allow to cool	Oral
	<i>Vitellaria paradoxa</i>	Leaves	Leaves + leaves of <i>Khaya senegalensis</i> dry, grind and mix with feeds	Feed to animals
Lumpy skin Disease	<i>Oncoba spinosa</i>	Leaves	Dry, grind, mix with feeds	Feed to animals
	<i>Guiera senegalensis</i>	Leaves	Boil and allow to cool	Oral
	-	-	Heat sharp metal	Scarification on affected parts
	-	-	Bronze bell to drive away evil spirit that causes diseases	Hang on the neck
	<i>Striga hermontheca</i>	Whole plant	Dry, grind to powder, mix with feeds	Feed to animals
	<i>Balanites aegyptiaca</i>	Seed	Oil extract from seed + oil extracted from seed of <i>Vitellaria paradoxa</i>	Topical
	-	-	Cow urine warm it	Topical
Brucellosis	<i>Detarium microcarpum</i>	Root & leaves	Dry, grind to powder + mix in water	Topical
	<i>Khaya senegalensis</i>	Seed	Oil extract from seed	Topical
	<i>Oncoba spinosa</i>	Stem bark	Dry, grind to powder mix with feeds	Feed to animals
	-	-	Heat sharp metal until hot	Scarification on affected parts
	<i>Khaya senegalensis</i>	Stem bark	Dry with Leaves of <i>Dichrosta chyscineroa</i> grind to powder and mix with feeds	Feed to animals
	<i>Piliostigma reticulatum</i>	Stem	Twine rope and Quran verses read over it	Tie to the neck of affected animal
	<i>Vitellaria paradoxa</i>	Seed	Oil extract	Topical
	-	-	Heat sharp metal until become hot	Scarification on affected parts
	<i>Piliostigma reticulatum</i>	Bark	Make twine rope and incantations	Tie to the head of the Animal
		<i>Citrus aurantifolia</i>	Fruits	Lemon + Red potash + <i>Aframomum moleguetta</i>
Tuberculosis	<i>Allium sativa</i>	Bulb	Boil	Oral
	<i>Allium sativa</i>	Bulb	Oil extract also	Oral and Scarification at the chest
			Heat metal until hot	Scarification at the chest
	<i>Jetrophacurcas</i>	Leaves	Raw or dried, grind and mix with feeds	Feed to animals
	<i>Allium sativa</i>	Bulb	Fried with cow butter (cheese)	Oral
	<i>Carisaedulis</i>	Leaves	Boil and allow to cool	Oral
Fever	<i>Ipomea isarifolia</i> or <i>I. ripens</i>	Whole legume	Boil and allow to cool	Oral
	<i>Leptadenia lancitolia</i> (L.haState)	Whole legume	Latex from the legume	Topical on head
	<i>Boswollia dalzielii</i>	Stem bark	Stem bark boil & allow to cool	Oral
	<i>Tamarindus indica</i>	Stem bark	Boil allow to cool	Oral
	<i>Khaya senegalensis</i>	Stem bark	Boil allow to cool	Oral

Table 2. Contd.

	<i>Parkia biglobosa</i>	Stem bark	Boil allow to cool	Oral	
	<i>Vitellaria paradoxa</i>	Seeds	Oil extracted from the seed	Topical	
	<i>Ricinus communis</i>	Seeds	Oil extracted from the seeds	Topical	
Ring worm	<i>Khaya senegalensis</i>	Stem bark	Dry, grind mix with pasteurized milk	Topical	
	<i>Khayase negalensis</i>	Stem bark	Dry, grind mix with salt	Add to feeds	
	<i>Calotropis procera</i>	Whole plant	Extract latex	Topical	
	-	-	Used engine oil	Topical	
		<i>Ziziphus spina-christi</i>	Leaves	Dry, grind mix with water	Topical as paste on udder
		<i>Vitellaria paradoxa</i>	Seeds	Extract oil from seed	Topical on the udder
Mastitis	<i>Asparagus recemosus</i>	Leaves	Dry, grind mix with water	Topical as paste on the udder	
	<i>Eclipta proState</i>	Leaves	Dry, grind mix with water	Topical as paste on the udder	
		Ash	Mix with water	Topical as paste on the udder	
	<i>Khaya senegalensis</i>	Seed	Extract oil from the seed	Topical on the udder	
		<i>Ricinus communis</i>	Leaves	Dry, grind mix in water	Topical as paste on the udder
		<i>Boswellia dalzillii</i>	Leaves	Dry, grind mix with water	Topical as paste on the udder
		<i>Piliostigma reticulatum</i>	Leaves	Dry, grind mix with <i>Vitellaria paradoxa</i> oil	Topical
Mange	<i>Adansonia digitata</i>	Seeds	Grind, mix with <i>Vitellaria paradoxa</i> oil	Topical	
	<i>Detarium microcarpum</i>	Roots	Boil allow to cool	Oral	
	<i>Elaeis guineensis</i>	Seed	Extract oil	Topical	
	<i>Aframomum Meleguetta</i>	Seeds	Grind, mix with cow butter	Topical	
	<i>Calotropis procera</i>	Roots	Boil, allow to cool	Topical	
	-	-	Cow butter (cheese) mix potash	Topical	
	-	-	Pasteurized milk	Topical	
		<i>Vitellaria paradoxa</i>	Seed	Oil extract mix salt	Topical
	<i>Calotropis procera</i>	Stem	Boil allow to cool	Oral	
Poor milk laid down	<i>Ricinus communis</i>	Stem, leaves	Roots boil allow to cool	Oral	
	<i>Carcia papaya</i>	Roots, stem Stem bark and leaves	Boil allow to cold Dry, grind add to feeds	Oral Feed to animals	
	<i>Crimium zylanicum</i>	Whole climber	Dry, grind, mix with millet powder and mix with large volume of water	Oral	
	<i>Parkia biglobosa</i>	Seed	Pound to get powder	Feed to animals	
	<i>Psidium guajava</i>	Leaves and stem	Boil with salt allow to cool	Oral	
	<i>Musa sapientum</i>	Friuts	Boil peels + salt and water allow to cool	Oral	
		<i>Vitellaria paradoxa</i>	Seed	Oil extract from seed	Topical
Open wounds	<i>Boswellia dalzillii</i>	Stem bark	Dry, grind to powder mix with water	Topical	
	<i>Calotropis procera</i>	Whole plant	Latex from plant	Topical	

Table 2. Contd.

	-	-	Pasteurized milk	Topical
	-	-	Cow cheese	Topical
	<i>Detarium microcapum</i>	Stem bark	Dry,, grind to powder mix with water	Topical
	<i>Ricinus communis</i>	Seeds	Oil extract from seed	Topical
	<i>Ricinus communis</i>	Stem bark	Dry, grind to powder mix with water	Topical
	<i>Adansonia digitata</i>	Stem	Latex from stem	Topical
	<i>Crimium zylanicum</i>	Whole climber	Grind	Topical
	<i>Oncoba spinosa</i>	Stem bark	Dry, grind mix with <i>Vitellaria paradoxa's</i> seed oil	Topical
	<i>Arachys hypogea</i>	Shell	Burnt, ash mix with oil from <i>Butylosperum paradoxum</i>	Topical
	<i>Nicotiana tabacum</i>	Whole plant	Soak in water	Intramuscular injection
	<i>Adansonia digitata</i>	Leaves	Dry, grind to powder soak powder in water	Oral
	<i>Striga hermontheca</i>	Whole plant	Soak in water with red potash	Oral
	<i>Tamarindus indica</i>	Seeds	Boil and allow to cool	Oral
	<i>Arachis hypogea</i>	Seeds	Oil extract from seeds	Oral
	-	-	Soak red potash in water	Oral
	-	-	Soak cow dug in water	Topical over stomach
	-	-	Potash + table salt add to feeds	Feed to animals
	-	-	Fresh cow milk	Intramuscular injection
	-	-	Back side of shoes	Hit Tommy
	-	-	Do not graze animals early in the morning on wet pasture	-
	-	-	Do not feed animals for few hours and make them to move around	-
			Chicken gizzard soak in water	Oral
	<i>Boswellia dalzillii</i>	Stem bark	Dry, grind to powder mix with feeds	Feed to animals
	<i>Stereospermum kunthianum</i>	Stem bark	Soak in water with <i>Nicotiana tabacum</i>	Oral
	<i>Detarium microcapum</i>	Stem bark	Boil allow to cool	Oral
	-	-	Cow butter (Cheese) boil allow to cool	Oral
	-	-	Do not allow the affected animal to drink water throughout the day	Starvation
	<i>Sorghum bicolar</i>	Roots	Burnt together with Seeds of <i>Balanites aegyptiaca</i> to ash, then soak in water and sieve, used the sieved liquid to wash the affected parts	Topical
	<i>Acacia nilotica</i>	Seed	Boil together with common table salt wash the affected parts	Topical
	<i>Acacia nilotica</i>	Seed	Soak in cow urine for 24 hours, wash the affected parts	Topical
	<i>Habiscus sabdarifa</i>	Leaves	Pound and soak in water was affected parts	Topical
	<i>Zea mays + Pennisetum glaucum</i>	Grain	Grind together +grains of <i>Pennisetum glaucum</i> (Bulrush millet) to flour soak in water, allow to ferment, then give the brew to drink. While hooves are wash with potash morning & evening	Oral and Topical

Table 2. Contd.

	<i>Allium sativa</i> + <i>Allium cepa</i>	Bulb	Grind and mix with poultry droppings wash affected parts	Tropical
	<i>Lawsonia inermis</i>	Leaves	Grind to powder mix with ash & water, then rob	Topical as paste
	<i>Leptadenia hastata</i> (formally <i>L. lancifolia</i>)	Leaves	Boil allow to cool, drink and wash parts	Oral and Topical
	<i>Khaya senegalensis</i> + <i>Ziziphus spina-christi</i>	Leaves	Boil allow to cool, drink and wash parts	Oral and Topical
	<i>Ziziphus mauritania</i>	Leaves	Boil allow to cool, drink and wash parts	Oral and Topical
	<i>Balanites aegyptiaca</i>	Fruits	Boil allow to cool	Oral
	<i>Adansonia digitata</i>	Stem bark	Boil and wash affected parts	Topical
	<i>Mimosa pigra</i>	Stem bark	Boil and wash affected parts	Topical
	<i>Khaya senegalensis</i> + <i>Ziziphus Mauritania</i>	Stem bark	Boil and allow to cool, wash parts & drink	Oral and Topical
	<i>Piliostigma reticulatum</i>	Leaves	Boil and wash affected parts	Topical
	<i>Jatropha curcas</i>	Whole plant	Boil and wash affected parts	Topical
	<i>Khaya senegalensis</i>	Stem bark	Grind to powder put to affected parts	Topical
	<i>Sesamum indicum</i>	Plant	Burnt to ash mix with water apply to parts	Topical
	<i>Citrus aurantifolia</i>	Leaves	Dry, grind to powder wash parts	Topical
	<i>Prosopis Africana</i>	Leaves	Boil to drink and wash parts	Oral and Topical
	<i>Parkia biglobosa</i>	Stem and leaves	Boil, then wash affected parts	Topical
	<i>Vitellaria paradoxa</i>	Seeds	Oil extract mix with honey apply to parts	Topical
	-	Horney	Honey mix with monkey droppings apply to parts	Topical
	-	Chicken	Stew made from chicken apply to parts	Topical
	-	Cow	Cow urine use to wash affected parts	Topical
	-	Potash	Powder apply to affected parts	
	-	Chicken eggs	Left over egg (un-hatch egg), mix with feeds	Oral
	-	-	Isolate affected animal, clean affected parts and keep in dry area	Topical
	<i>Asparagus flagellaris</i>	Aerial parts	Grind to powder	Topically on the calf
To foster love between Dam and calf	-	-	-	Incantations
Fractured of bone	<i>Debregeasia dealbata</i>	Sticks from the plant	Remove bark of stem	Reposition and immobilized the fractured part
Fixation of fractured mandibular	<i>Acacia nilotica</i>	Fresh sticks		Reposition and immobilized
Boils	<i>Tamarindus indica</i>	Stem bark	Dry, grind to powder. Cut the made with affected part with knife, apply powder to the wound	Topical

Source: Field Survey, 2015.

Table 3. Constraints to Utilization of Ethno-botanical Knowledge.

Constraint	*Frequency	Percentage
Deforestation	220	96.9
Lack of Government recognition	198	87.2
Western education	176	77.5
Concealment of knowledge	221	97.4
Bush burning	191	84.1

Source: Field Survey, 2015 *Multiple responses exists.

environmental changes as many youths are into western education and they preferred western veterinary medicine which they considered less stressful.

Conclusion

From the investigation made the livestock herders in Southern Zone of Adamawa State use a variety of medicinal plants and other traditional technologies for treatment of diseases. The traditional knowledge underlying this kind of science has not been explored to the benefit of livestock farmers, to cause significant improvement in their wellbeing.

Much as local use of medicinal plants and other traditional methods for treating livestock diseases exists in the study area, their conservation status is not known. Motivation and value to study the conservation status of such plants and other beliefs can be realized if their local use is scientifically proven by validation studies of the locally used medicinal plants in the area. Otherwise potentially useful knowledge may become prone to threats of endangerment before scientific interventions are made. This is in belief that people love to conserve what they know is of use to them.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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