International Journal of Public Health, Pharmacy and Pharmacology
Vol 3, No.1, pp.39-68, April 2018
Published by European Centre for Research Training and Development UK (www.eajournals.org)

ETHNO VETERINARY MEDICINE KNOWLEDGE AND PRACTICES IN AND AROUND GONDAR, ETHIOPIA

Ayehu Mengesha and Debeb Dessie

University of Gondar, Faculty of Veterinary Medicine Gondar, Ethiopia and Ethiopian Veterinary Drug and Animal Feed Administration and Control Authority, Amhara Region Branch Office, Bahir Dar.

ABSTRACT: *A cross sectional study was conducted from November, 2013 to April, 2014 in and around Gondar town, northern Gondar administrative zone of the Amhara region with the objective of documentation of ethno veterinary medicine knowledge and practices and identifying the challenges of the traditional medicine practice by using semi structured questionnaire survey and focal person discussion. The information was collected on 96 traditional veterinary medicine knowledgeable live stock owners, among those 90(93.8%) were males while 6(6.2%) were females and 60(62.5%) of them were above 50 age group level. During the study 68 traditionally used medicinal plants and 24 non plants traditional remedy materials were documented and also the study was indicate that 45 live stock diseases could be treated locally. Among the total respondents, 43(44.8%) of them were predominantly indicate veterinary clinic was the common animal health management. likewise from the main sources of traditional knowledge, family (44.8%) followed by friends (19.8%) were the most sources of indigenous knowledge. furthermore, study revealed that simple to practice (25%), cost affordability (20.8%) and easily availability of raw materials (16.7%) were the most factors that drive for the practice of traditional medicine. The survey were indicate that root parts (67.7%) followed by leaf parts (35.4%) of the medicinal plants were the main plant parts for remedy preparations again pounding and crushing(79.2%) were indicate as the common methods of traditional remedy preparation predominantly. Additionally this study revealed that liquid dosage form (54.2%) followed by an ointment (20.8%) were the most dosage form of traditional remedies with predominant administration of oral route (75%) followed by topical routes (22.9%). Regarding to challenges of traditional medicine practices the study indicated that imprecise dosage (62.5%) was the main challenge of traditional medicine practice. The study revealed that as there were no any medicinal plant conservation activity and official training. From the study, conservation and utilization of medicinal plants, encouragement and exploitation of indigenous knowledge rich persons and further pharmacological study of medicinal plants should be recommended.*

KEYWORDS: Challenges, Ethno Veterinary Medicine, Indigenous Knowledge, Medicinal Plants

INTRODUCTION

Millions of people around the world have an intimate relationship with their livestock. Animals provide them with food, cloth, labor, fertilizers, cash and act as a store of wealth and a medium of exchange. [20] Ethiopia has the highest number of livestock in Africa and the country is listed among the top 10 countries in the continent known for their livestock wealth. Despite this large number of livestock and its important economic potential but still the sector has not developed

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

beyond a subsistence type of venture, whereas it also remained with low outputs for different reasons of which animal diseases are among the top factors. [7]

Animal health could be managed traditionally via Ethno veterinary medicine(EVM) practices which is a mode of identifying, use and integration of the local knowledge, related skills and custom procedures created by people for purpose of preserving health and welfare of working and productive animals. [10] The ethno veterinary systems are ecosystem and ethnic-community specific and therefore, the characteristics, sophistication, and intensity of these systems differ greatly among individuals, societies and regions. However, they are facing the threat of rapid erosion because of rapid socio-economic, environmental and technological changes. Even though indigenous knowledge systems are rapidly disappearing under the influence of Western culture, 80% of the world's populations exclusively rely on traditional medicine. Especially in developing countries traditional medicine has remained the main alternative treatment due to shortage of pharmaceutical products and their unaffordable prices. [4]

Traditional medicines are sometimes the only source of therapeutics for nearly 80% of human population and 90% of livestock in Ethiopia. [17] The persistence of ethno veterinary healthcare in Ethiopia is related to the high cost of treatment using modern veterinary drugs and the prohibitive distance of the veterinary stations from the rural areas.[27] According to the WHO (world health organization), at least 80% of people in developing countries depend largely on indigenous practices. [20] Global utilization of medicinal plants has increased enormously over the last three decades. [4]

The practice of ethno veterinary medicine has lagged behind that of its counterpart modern veterinary medicine many times partly. [14] The identification and acquisition of this knowledge was and is by no means an easy task in the lives of people. It was a gradual process of trial and error mechanisms. [33]

Despite ethno veterinary medicine being the equivalent body of knowledge for livestock that ethno medicine is for humans, it still lacks a high level of institutional backing from the World Organization for Animal Health OIE or from FAO. [14] Worldwide interest in documenting and validating ethno veterinary practices arose in the early 1980s, as people started to realize that ethno veterinary knowledge was disappearing. Elderly community members with this knowledge were dying and the introduction of modern practices made it difficult for the younger generations to appreciate and use the beliefs and practices of their ancestors. [20]

Despite the fact that ethno veterinary medicine has been very crucial for the animal health care of most developing countries, it has not yet been well documented, promoted, conserved and much effort is needed in research and integration activities in the country. There is a wide gap in our knowledge about ethno veterinary data and information from various parts of Ethiopia although we have rich and diverse ethno linguistic groups throughout the country.

Therefore this research will focus on:

1. Identifying and documenting the knowledge and ethno veterinary practices used for maintaining the health and the production of animals.

2. Identifying and understanding of challenges and draw backs that make the local people unable to use and develop the existing ethno veterinary practices.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

MATERIALS AND METHODS

Study Area

The study was conducted in and around Gondar town, North Gondar administrative zone at Amhara regional state of Ethiopia. Gondar town is located 740Km Northwest part of Addis Ababa. Geographically coordinates 12.3ºto13.38º north latitudes and 35.5ºto 38.3º east longitudes and the altitude ranges from 550 to 4620 meters above sea level in western lowland and in north Semen Mountain, respectively. The average annual rain fall vary from 880mm to 1772 mm, which is characterized by bimodal type of distribution. The mean annual minimum and maximum temperature is 10ºC in the highland and 41ºC in the lowland. [19] North Gondar zone has a human population of 2.9 million and a livestock population of 2.4 million cattle, 2.36 million small ruminants and 0.3 million equines. [3] And Gondar town has an estimated population about 276187 by North Gondar Zone Agricultural and Rural Development Office. The livestock production systems in the area included extensive, semi-intensive and intensive type but predominantly it is extensive type. The farming system in the area is mixed type (crop-livestock production). Generally the administrative zone is divided into three main agro-climatic zone; high land, midland and low land region. [21]

Study Design

Questionnaire survey

A community based cross sectional study was conducted by using semi structured questionnaire format which was targeted on ethno veterinary practice and knowledge and the data was collected from ethno veterinary practice knowledgeable livestock owners through purposive sampling methods. The informants were found and interviewed through folking system by one another and by using the local community. Informants were interviewed individually by translating the English language in to local Amharic language. The questionnaire addressed questions regarding name, age, gender, level of education, types of animal managements, common animal health management system, sources of indigenous knowledge, interests and attitudes on the traditional medicine practice, factors for traditional medicine practice, local names of medicinal plants, methods of remedy preparation, dosage form, routes of remedy administration, existing threats of traditional medicines/plants, seasons when traditional medicines predominantly practiced, species of animals treated by traditional medicine as well as question were also addressed regarding on challenges or constraints of traditional medicine practices and training, encouragements and the status of conservational activities on medicinal plants.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

Focal person discussion

During data collection, preliminary discussion was individually held with the informants to elaborate the objective of the study. That was done to clarify the purpose and persuade the respondents to provide reliable information without suspicion and to explain them that their cooperation is a valuable contribution to the documentation of the traditional veterinary use medicines of the area and indigenous knowledge. For instance, regarding locally used medicinal materials details like local name of plants used, modes of application and expression of the symptoms of disease in the locality which helped us to give veterinary name of those diseases that could be treated by traditional medicine in the area were focally discussed with respondents.

Data Management and Analysis

All the information obtained from the questionnaire survey was entered to Microsoft excel. Data were organized in excel data sheet and the responses given by sampled respondents were coded in to numerical form for descriptive statistics and frequency tables were used to display the findings from questionnaire survey.

RESULTS

Questionnaire Results

Demographic profile of the respondents:

From the group interviewed males 90(93.8%) accounted the majority. concerning educational status 42 (43.8%) were educated. Among the educated 16(38.1%) were clerically or informally educated and 26(61.90%) were formally educated. Among clerical educated most of were orthodox 11(68.8%) and the rest were Muslim 5(31.2%). likewise among formally educated 14(53.9%) were educated 1-4 grads, 9(34.6%) were educated 5-8grades, only 3(11.5%) were educated between 9-12 grades. Among the respondents most of them were found at the age group level of >50 age group 60(62.50%) (Table 1).

Table 1: Demographic profile of informants

Variables	Categories	Number (N=96)	Proportion%
Sex	male	90	93.8
	Female	6	6.2
Education	educated	42	43.8
	None educated	54	56.2
Age	.> 50	60	62.5
	29-50	26	27.1
	<28	10	10.4

In the area Animal managmental system and practice have been assessed and the responses collected from the respondents indicates that 67(69.8%) of animal management system was predominantly extensive followed by semi intensive 21 (21.9%) and 8(8.3%) intensive managmental system respectively.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

The common animal disease management practices in the area have been assessed and the responses collected indicated that the most common animal disease management practices in the locality were going to veterinary clinic (44.8%), followed by primarily use traditional medicine then going to veterinary clinic (34.4%), respectively (Table 2).

Table 2: Common practices to combat animal health problems

Common practices to combat animal health problems	Frequency (N=96)	Proportion %
Traditional veterinary medicine only	15	15.6
Modern medicines by their own then Veterinary clinic	5	5.2
Veterinary clinic	43	44.8
Initially Traditional medicine then going to veterinary clinic	33	34.4

The respondents also described that the traditional veterinary medicines that have been practiced in the locality were prepared /obtained or sourced from plants, animals' origins and others. However, 66(68.7%) of the respondents indicated that only plants were the most materials for the foundation of traditional medicine practices (table 3). According to the respondents the most frequently cited sources of traditional knowledge was family 43(44.8%), followed by friend 19(19.8%), God's gift, Religious institution, education, written material, and others were also reported as a sources of indigenous knowledge in the study area(Table 4).

Table 3: Sources of traditional veterinary use remedy preparation

Sources of medicinal preparations	Frequency (N=96)	Proportion %
Plants	66	68.7
Plants and animals	24	25
Plants and minerals	2	2.1
Plants and spiritual practices	4	4.2

Table 4: Sources of indigenous knowledge of ethno veterinary knowledgeable persons

Sources of indigenous knowledge	Frequency (N=96)	Proportion %
Family	43	44.8
Religious institution	9	9.4
God gift	9	9.4
Education	6	6.2
Friends	19	19.8
Written material	8	8.3
Others	2	2.1

A question was forwarded to the respondents to indicate the factors that make them to practice traditional veterinary medicines in the area and 25 % the respondents indicated that being simple to practice and no needs of or a little training requirement for the practice of ethno veterinary practice in the locality were the main reason to practice traditional medicines, followed by its cheapness (20.8%) and easy availability of raw materials (16.7%) respectively (Table 5)

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

Table 5: Factors that forces the local people to use traditional veterinary medicine

Factors	Frequency(N=96)	Proportion %
Simple and no need of or a little training requirement	24	25
Compatibility with culture	13	13.5
Has no negative effect to animals	4	4.2
No needs of special infrastructures	3	3.1
Distance of veterinary clinic	3	3.1
Shortage of veterinary professions	6	6.2
Cheap	20	20.8
Social value	7	7.3
Raw material are easily available	16	16.7

Even though different parts of plants were reported to be used for remedy preparation by the respondents, a majority of remedy preparations of traditional medicine was found to be from root parts (67.7%), followed by leafs (35.4%). But the rest parts of the plants like stem, seed, fruits, bulb, and blood latex have been accounted the rest. However flower parts of the plants was not utilized for medicinal value in the community (Table 6).

Table 6: Parts of medicinal plants for remedy preparation

Parts	Frequency (N= 96)	Proportion %
Leaf	34	35.4
Root	65	67.7
Bulb	5	5.2
Stem	1	1
Seed	8	8.3
Fruite	2	2.1
Blood latex	8	8.3
Flower	0	0
Barck	7	7.3
Whole part	5	5.2

N.B. One respondent may give more than one plant parts

About Preparation methods of traditional use of medicinal plants was interviewed for the respondents and they indicted that Various modes of remedy preparation were used in the area, and the result indicate that pounding or crushing the remedial part of the plants was found the major mode of remedy preparation (79.2%), followed by squeezing (22.9%) and concoction (19.8%) respectively (Table 7).

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

Table 7: Preparation methods of traditional medicinal plants of veterinary use

Methods of preparations	Frequency (N=96)	Proportion %
Pounding and crushing	76	79.2
Squeezing	22	22.9
Powdering	6	6.2
Concoction	19	19.8
Smoke	5	5.2

N.B. One respondent may give more than one remedy preparation methods

Respondents have also indicted that the other importance of medicinal plants in the area and some of the respondents (20.8%) reported that some veterinary medicinal plants were used for firewood, followed by for food (6.2%) and forage (5.2%) respectively. And medicinal plants in the area were also used for construction, fencing, toothbrush and timber at lower level. However, based on the majority of the respondents (53.1%) most medicinal plants were indicated as have no any other added values other than medicinal value only (Table 8).

Table 8: Other importance of medicinal plants

Other use of medicinal plant	Frequency (N=96)	Proportion %
No other use	51	53.1
Firewood	20	20.8
Construction	4	4.2
Forage	5	5.2
Food	6	6.2
Fencing	6	6.2
Toothbrush	1	1
Timber	3	3.1

The study has found that traditional veterinary use medicinal plants could be practiced in all seasons. However 52.1% of the respondents indicated that traditional medicine practice were highly involved during summer season (Table 9).

Table 9: Seasons at which traditional medicines are practiced

Season	Frequency(N=96)	Proportion %
Winter	9	9.4
Summer	50	52.1
Autumn	12	12.5
Spring	9	9.4
All the year	16	16.7

Some Traditional practitioners reported use of different objects for measurement of the dose of traditional veterinary medicines among those objects they used like cup, tin, kubaya, tea bottle in order to treat ailments; however among those equipments coffee cup (41.7%) was the main measurement objects for traditional medicine. But here there is no strictly standardized doses of traditional medicine preparations as known for modern veterinary medicine were reported

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

by respondents. While some of the respondents (19.8%) said that traditional medicine are prepared or prescribed through guessing (Table 10).

Table10: Traditional medicine measurement

Equipments/measurements	Frequency(N=96)	Proportion %
Guessing	19	19.8
Coffee Cup	40	41.7
Tea bottle	7	7.3
Tin	16	16.7
Mug (Kubaya)	14	14.6
Others	4	4.2

N.B. One respondent may give more than one answer (option)

The question also was forwarded to the respondents about the dosage forms of traditional remedy Preparations. Among all respondents, (54.2 %) respondents revealed that liquid dosage forms were the highly practiced dosage form, followed by an ointment (20.8%), respectively (Table 11).

Table 11: Dosage forms for remedy preparation

Dosageform	Frequency(N=96)	Proportion %
Liquid	52	54.2
Ointment	20	20.8
Pellet	4	4.2
Powder	6	6.2
Inhalation	14	14.6
Unprocessed herb	6	6.2

N.B. One respondent may give more one dosage forms

Traditional veterinary use medicines were reported to be administered through oral, topical, inhalation, surgical, nasal, injection, auricular routes, however among those routes oral application was the best represented routes of administration as (75%) of respondents revealed, followed by topical (22.9%), respectively (Table 12).

Table 12: Routes of administration of traditional remedies

Routes	Frequency (N=96)	Proportion %
Oral	72	75
Topical	22	22.9
Inhalation	10	10.4
Surgical	6	6.2
Nasal	2	2.1
Injection	1	1.0
Auricular	1	1.0

N.B. One respondent may give more than one routes

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

According to the survey obtained from the respondents, 41(42.7%) of the respondents revealed that the therapeutic effects of traditional medicines were very high and 36(37.5%) of the respondents said traditional veterinary medicine have high therapeutic effects (table 13). The degree and the interest of the local people for the practice of those traditional medicines was assessed and the survey indicated that 17.7% of the respondents described that as they have no any attention or interest for traditional medicines. However 43.7% of the respondents revealed that as there was good interest for the practice of indigenous knowledge (Table 13).

Table 13: Therapeutic effects of traditional medicines

Item		**Frequency(N=96)**	**Proportion%**
Therapeutic effect	Very high	41	42.7
	High	36	37.5
	Low	16	16.7
	Have no any	3	3.1
		Frequency(N=96)	**Proportion%**
Degree of interest	No feeling	17	17.7
	Good	42	43.7
	very good	23	24
	Excellent	14	14.6

The survey revealed that bovine species, equine, canine, shoats, poultry species of animals could be treated by traditional medicines; however bovine species of animals were commonly treated by traditional remedies as the 63(65.6%) of the respondents revealed (Table 14).

Table 14: Species of animals treated by traditional medicines

Species of animals	**Frequency (N=96)**	**Proportion %**
Bovine	63	65.6
Equine	20	20.8
Canine	6	6.2
Caprine and sheep	3	3.1
Feline	0	0.00
Poultry	4	4.2

According to some respondents many traditional veterinary use plants in the area were highly threatened with different threats and 34(35.5%) of the respondents were reported drought was

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

the greater threat for veterinary medicinal plants, followed by fire 18(18.8%), and deforestation 17(17.7%) respectively (Table 15).

Table 15: Threats of traditional veterinary use medicines/plants

Threats	Frequency (N=96)	Proportion %
No threats	11	11.5
Fire	18	18.8
Deforestation	17	17.7
Drought	34	35.4
Overgrazing	9	9.4
Agricultural expansion	6	6.2
Others	1	1

Traditional medicines draw backs or challenges were revealed by the respondents among those imprecise dosage (62.5%) was the most drawback of in traditional medicine practice, followed by low hygienic status (15.6%) respectively (Table 16).

Table 16: Constraints/challenges for the practice of traditional veterinary use medicine

Challenges	Frequency(N=96)	Proportion %
Dosage problem	60	62.5
Low hygiene level	15	15.6
No written records about the patients	6	6.2
Interest of modern medicine	10	10.4
Secrecy of healing methods	3	3.1
Others (…etc)	2	2.1

The question was also forwarded for the respondents about the conservational activities of medicinal plants for ensuring of sustainable use, the presence of governmental encouragements of the indigenous knowledgeable persons or traditional healer as well as the training services requirements of the traditional healers. Among all respondents, 94(97.9%) was revealed that as there was no any governmental encouragements While only 2(2.1%) of respondents have gotten an encouragement from the government. All of the respondents 96(100%), revealed that as there was no any conservational activities for medicinal plants and they have indicated that most medicinal plant have been declining and disappearing unless strict measures is undertaken. Training facilities of traditional healers was also assessed and all of the respondents revealed that as there was no any official training about the traditional medicine application and utilization. However the respondents revealed that as they have get experience from the senior old experienced persons locally.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

Table 17: Medicinal plants, ailment treated, part used, dosage form, and modes of application

Local name of medicinal plants (amharich)	**Scientific name of medicinal plants**	**Local and/or veterinary name of disease treated**	**Part used**	**Dosage form**	**Modes of applications**
Endadilla		kosso (taeniasis)	seed	Liquid	-crushed and powdered, dissolve with water then filter and recommend one kubaya for 3 days orally.
Yemidir kulkual		General illness	fruit	Liquid	-crushed and dissolve with water then recommend 1 tin orally.
		coughing	whole part	Pellet	-moderately crush and add a little water and salt (sodium chloride) give to animal to then engulfing.
Yemidir embuay	*Cucumis prophetarum*	diarrhea	leaf	Liquid	-pound/crush, dissolve with water then filter and recommend one cup orally.
		wound	root	ointment	-crush with adding a little water then ointing and rubbing topically.
		colic	root	Liquid	-washed and pound the root, dissolve with one tin water, filter and then drench.
		Cowdriosis	root	Liquid	-washed and pounded 1 tip finger compartment root length, then squeezed and drenching orally.
		When there is repeated abortion around 7th month of pregnancy.	root	Pellet	-washed and crushed, mixed with local bread and making pellet form then given to animals orally.
		diarrhea	root	Liquid	-washed and crushed, add water then Drench (1 cup).
		Evil eye	root	Liquid	-washed and crushed, water is added then drench via mouth, nasal and ear with a little amount.
		Coughing due to hitting by stick or other	root	Liquid	-washed and crushed, water is added then drenching orally.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

		placenta retention	root	Liquid	-crushed and water is added then drenching.
Teliba	*Linum usitatissimum*	Placenta retention	seed	Liquid	-powdered and water is added (1 tin) then given to animal orally.
Lenkuata		Fetal membrane retention	fresh bark	Liquid	-the fresh barck is crushed, squeezed and water is added (1 tin water) then given to animal orally.

Table 17: continued… **medicinal plants, ailment treated, part used, dosage form, and modes of application**

Kendero/y ezinjero chilfa		Diarrhea in new born	Bark	Liquid	-powdered and water is added then 1 kubaya is recommended orally.
		saddle sore	Bark	Powder	- powdered and topically apply on the wound.
		rabies	Leaf	Pellet	-crushed and a little water is added then mixed with teff powder then make pellet form then given to animals to prevent rabies in dogs.
Kutintina	*Verbascum sinoiticum*	Diarrhea	Root	Liquid	-washed and pounded, water is added, filtered then1 tin or 1 kubaya is given to animal orally for 3 or 4 days.
		Colic	Root	Liquid	-crushed and water is added, filtered then given to animal orally.
		Snake bite	Root	Liquid	-pounded and waters is added and dissolved and filtered then given to animal orally.
		anthrax	Root	Liquid	-pounded and water is added then dissolved and filtered then given to animal orally.
		Wound	Root	Ointment	-crushed and a little water is added then apply topically then rubbing.
		Blackleg	Root	Liquid	-the root is crushed and waters is added then given to animals orally (1 tin).
		myiasis	Root	Ointment	-the root is crushed and a little water is added then mixed with butter finally apply topically.
Kulkual	*Euphorbia abyssinica*	Rabies	Blood Latex	Liquid	-a very little dose of blood latex (usually 1 tip finger compartment of the cup) is mixed with cow milk then given to dogs puppies.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

		Coughing in donkeys	Dried Bulb	Inhalation	-directly Fumigate after firing the dried bulb and by allowing to be have smoke.
		Wound	Blood Latex	Ointment	-Little blood latex is taken and topically apply and rubbing.
		Abscessed swelling	Blood Latex	Ointment	-the blood latex is taken and circularly the swelling is ointed at the boarder of the normal body and the swollen body part.

Table 17: continued… **medicinal plants, ailment treated, part used, dosage form, and modes of application**

Yehod dirket medihanit		constipation	Root	Liquid	-crushed and water and salt are added then given to animal orally (1 tin).
Kebericho(ras abera)	*Echinops kebericho*	(Coughing)/ pneumonia	Root	Inhalation	-firing the root and allow it to be smoked and then fumigate.
		Mich(Amharic) / pasturalosis	Root	Inhalation	Firing the root and allow it to be smoked and then fumigate the animal.
		General ilnees	Root	Inhalation	-firing the root and allow it to be smoked and then fumigate the animal.
		Evil eye	Root	Inhalation	-firing the root and allow it to be smoked and then fumigate.
		teaniasis	Root	Liquid	Crushed and water is added and filtered then given orally (1 tin).
Hareg	*Clematis simensis*	anthrax	Whole Part	Liquid	crushed, water is added, filtered then given orally (1 cup).
Enquay		Myiasis and wound	Bark	Powder	-powdered and applied topically.
		Generals medicine	Bark	Inhalation	-firing the barck and allow it to be smoked and then fumigate the animal.
Amoch	*Rubus steudneri*	Bloat	Root	Liquid	The root is crushed, waters is added, filtered then given to animals orally (1cup).
		diarrhea	Root	Liquid	-the root is crushed, waters is added, filtered then given to animals orally (1cup).
		Blackleg	Root	Liquid	-the root is crushed and waters is added and filtered then given to animals orally (1cup).

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

		Constipation with mucuid feces	Root	Liquid	-the root is crushed and waters is added and filtered then given to animals orally (1 cup).
Sire bizu	*Thalictrum rhynchocarpum*				
		Newcastle disease	Root	Liquid	-washed and crushed, water is added, filtered then given to hen to drink it.
		Blackleg	Root	Liquid	-washed and crushed, water is added, filtered then given to animal.
		Diarrhea	Root	Liquid	-washed and crushed, water is added, filtered then given to animal
		sudden sickness	Root	Liquid	--washed and crushed, water is added, filtered then drenching.

Table 17: continued… **medicinal plants, ailment treated, part used, dosage form, and modes of application**

Telanj	*Hypoestres oristate*	Nasal infection	Root	Liquid	-washed and crushed, water is added, filtered then given to animal nasal.
		Wound	Leaf	Ointment	-crushed the leaf and rubbed the wound.
		Abscessed swelling	Leaf	Liquid	-crushed, water is added, then drenching orally.
Tobiya	*Calopteris procera*	Wound	Blood Latex	Like Ointment	-the blood latex is taken and applied on the wound and rubbed.
		Shink(Amharic) when animals drink non drainage/stopped and stagnant river water: salivation, severe depression, shivering, hair erection and cloudiness appearance showen.	Blood Latex		-First a clean traditional cotton cloth is taken, immersed with the blood latex then surgically inserting at the dewlap of the animal and after 7 days remove out.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

Zingible	*Zingiber officinale*	Colic	Root	Liquid	-crushed, water is added, then drench (1 cup).
		Eye defect: lacrimation, slightly closed and reddish color	Root	Liquid	-chewed and spited tin to eye topically.
		Diarrhea due to stomack parasite	Root	Liquid	-First crushed, water is added, then drenching (1 cup).
Doge	*Ferrula communis*	Infertility in cows	Root	Pellet	-crushed, a little water and salt are added; pellet is made, and then given orally.
Bisana	*Croton macrostachyus*	When Cow hat her calf	Leaf	Liquid	-crushed, water and salt are added, the calf body part especially neck and head regions are ointed, then again the dam similarly is ointed and allow the dam to lick its calf.
		dermatophytosis	Leaf	Ointment	-pounded, a little water is added then an ointment is made and topically applied and rubbed.
		Wound	Bark	Powder	-powdered, then topically poured on.
		Bloat	Leaf	Liquid	-Crushed, water is added then drenching (1 cup).
		Eye defect	Bark	Powder	-The dried barck is powdered, and applied topically or made eye ointment mixing with butter and inserting in to eye.

Table 17: continued… **medicinal plants, ailment treated, part used, dosage form, and modes of application**

Embis		Diarrhea due to colostrums feeding of new born	Leaf	Liquid	-crushed, water is added, filtered then drenching (1 kubaya).
Ameraroo	*Discopodium penninerium*	Blackleg	Leaf	Liquid	-Crushed, water is added then drenching.
		Wound	Leaf	Liquid	-Crushed, water is added then drenching.
		myiasis	Root	Ointment	-Crushed, mixed with butter and topically applied and rubbed.
Endod	*Phytoalacca dodecandra*	leech	Leaf	Liquid	-pounded, water is added, filtered, then inserting via Nasal,

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

					oral, auricular with a very low dose.
		mange	Leaf	Unprocessed Herb	-washing the animal by the leaf of the plant by immersing in water.
Nech shinkurit	*Allium sativum*	Mange and internal parasite)	Bulb	Liquid	-pounded, water is added, then drenching orally.
Azo hareg	*Clematis hirsute*	Blackleg	Root	Liquid	-pounded, water is added, then drenching.
		To rip abscess swelling	Leaf	Ointment	-pounded, a little water is added then ointment is formed, and topically applied and rubbed.
		Wound) and myiasis	Leaf	Powder	-First the leaf is Dried, powdered then the powder is applied topically.
Endawulla/ awured	*Kalanchoe petitiana*	anthrax	Root	Liquid	-washed and pounded 1 tip finger compartment root length, water is added then drenching.
		General medicine	Root	Liquid	-washed and pounded 1 tip finger compartment root length, water is added then drenching.
		Fasciollosis	Root	Unprocessed Herb	-Surgically inserting at the ventral region of neck /swollen region of the one tip finger compartment length root by tying with a cotton threads then removing out after 3 days.
		Yoke sore	Root	Unprocessed Herb	-1 tip finger compartment of the root is measured and taken then tied with cotton threads and surgically inserting at the dewlap of the animal by leaving a cotton thread outside then after 2/3 days remove out the root.

Table 17: continued… **medicinal plants, ailment treated, part used, dosage form, and modes of application**

Yeset kest	*Asparagus africanus*	Coughing due to hitting by stick or other objects	Root	Liquid	-crushed, water is added, filtered then insert via ear (1/2 of the cup).
Mimie	*Melia azedarach*	Diarrhea	Leaf	Liquid	-crushed, water and salt are added then drenching orally.
Yayit hareg	*Stephania abyssinica*	anthrax	Root	Liquid	-pounded, water is added, then drenching (1 tin).

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

		Rabies	Root	Liquid	-pounded, water is added, then drenching (1 tin).
		foot and mouth disease	Whole part	Liquid	-pounded, water is added, then drenching (1 tin).
Dried pea straw	*Pisum sativum*	Coughing in donkeys			-The straw is fired, allowed to be smoked, and then fumigate.
Asengilla		Eye defect	Leaf	Ointment	-pounded, squeezed then a single drop is topically applied.
Duba	*Curcubite maxima*	Placenta retention	Fruit	Liquid	--pounded, water is added, then drenching.
		diarrhea	Leaf	Liquid	-pounded, water is added, then drenching.
Yeberie milas or tult	*Rumex hepalensis*	Bloody diarrhea	Root	Liquid	-First the root is crushed; water is added then drenching (for young 1 tea bottle for3or 4 days).
Etse menahe	*Securicada longipedicu lata*	Abnormality an animal showing like: Head swelling, Lacrimation ,Salivation, Anorexic and Head down	Root	Inhalation	-Boiled and fumigate the smoke.
Damekasie	*Ocimum lamifolium*	Mich (pasteirellosis)	Leaf	Liquid	-Crushed, squeezed, a little water is added then drenching orally.
Temenay		Mich (Amharic)	Root	Inhalation	-boiled and fumigate with the smoke.
		General medicine	Root	Inhalation	-boiled and fumigate with the smoke.
Atuch	*Verbene officinalis*	Diarrhea due to stomach parasite	Leaf	Liquid	-pounded, water is added, then drenching orally.
		Swelling at the lower jaw	Leaf	Ointment	-pounded, a little water is added then ointment is formed, and topically applied and rubbed.
		mastitis	Leaf	Liquid	-pounded, water is added, then drenching orally.
		poison	Root	Liquid	-pounded, water is added, then drenching orally.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

Table 17: continued… **medicinal plants, ailment treated, part used, dosage form, and modes of application**

Damekasie	*Ocimum lamifolium*	Mich (pasteurellosis)	Leaf	Liquid	Crushed, squeezed, a little water is added then drenching orally.
		coughing		Liquid	-Crushed, squeezed, a little water is added then drenching orally.
Biribira	*Millettia femuginea*	Ecto parasite	Leaf	Unprocessed Herb	-wash the animal at the infestation site by immersing the leaf in to water repeatedly.
Yekura mechat		Yolk sore	Leaf	Ointment	-pounded, squeezed then topically applied and rubbed.
		Bloat	Whole Part	Liquid	-pounded, water is added, filtered then drenching.
Eret	*Aloe vera*	Wound	Bulb Discharge	Ointment	-topically applied and rubbed.
		Myiasis occurred when an animal is fractured or broken	Bulb Discharge	Ointment	Topically applied and rubbed.
Sterile endod	*Phytolaca dodecandra*	Rabies	Leaf	Liquid	-crushed, mixed With milk, filtered then the puppies are allowed to drink it for prevention of rabies.
		Koreba	Leaf	Liquid	-pounded, water is added, filtered then drenching orally (¾ of cup).
Woyira and tunjut	*Olea europaea (Olive tree) and Otostegia integrifolia* (Tunjit)	LSD	Leaf	Inhalation	-firing and allowed it to be smoked and then fumigate the animal in the hidden place.
		Kortum(Amharic): -gait problem -depressed -reluctant to walk -difficult to relax its body rather being compressed	Leaf	Inhalation	-firing and allowed it to be smoked and then fumigate the animal in the hidden place.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

Astenager/ badimateba qi	*Datura stramonium*	Yolk sore	Leaf	Ointment	-pounded, squeezed then topically applied and rubbed.
		Wound	Leaf	Ointment	-pounded, squeezed then topically applied and rubbed.
		Dermatophytosis	Leaf	Ointment	-pounded, squeezed then topically applied and rubbed.
		Mastitis	Leaf	Ointment	-pounded, squeezed then topically applied on the udder and rubbed.

Table 17: continued… **medicinal plants, ailment treated, part used, dosage form, and modes of application**

Embuay	*Solanum incanum*	Horn fracture and forms myiasis	fruit	Ointment	-the fruit fluid is taken and applied topically.
		manges		Ointment	-the fruit fluid is taken and applied topically.
Checho	*Premna schimperi*	Eye defect	leaf	Ointment	-Chewed and spitted topically in to the eye.
Mekimekoo	*Rumex abyssinica*	Diarrhea in newborns	root	Liquid	-pounded, water is added, filtered then drenching.
Gimeroo and agam	Agam*(Carissa edulis)*	Evil eye	root	Liquid	-pounded, water is added, filtered then drenching.
		Colic	root	Liquid	-pounded, water is added, filtered then drenching.
Yetobiya tekil teketila(Tobiya epiphytes)		Koreba	Leaf	Liquid	-pounded, water is added, filtered then drenching.
Bikil	*Hordeum vulgare*	Colic	Seed	Liquid	-crushed and powdered, add one liter water then drench orally.
Dechimerech	-	Traumatic injury of the eye	Root	Ointment	-Chewed and spitted topically in to the eye.
		Abscessed swelling /wound/	Seed	Ointment	-Powdered, a little water is added; an ointment is formed then topically applied and rubbed.
		mastitis	Root	Liquid	-pounded, water is added, filtered then drenching orally.
Chewchawit		Koreba	Root	Liquid	-pounded, water is added, filtered then drenching orally.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

		When an animal Unable to urinate, defecate and a simple bloat is manifested.	Leaf	Liquid	pounded, water is added, filtered then drenching.
		Black leg	Root	Liquid	-pounded, water is added, filtered then drenching orally.
Chifirgae	*Sida schimperi*	constipation	Leaf	Liquid	-pounded, water is added, filtered then drenching orally.
Tirmey		-Eye defect when an eye is lacrimmated, reddish.	Leaf	Liquid	-crushed then Squeezed and droppleting one or two times in to the eye.

Table 17: continued… **medicinal plants, ailment treated, part used, dosage form, and modes of application**

Girawa	*Veronia anygdalina*	colic	Leaf	Liquid	-pounded, water is added, filtered then drenching orally.
Tobacco	*Nicotiana tubacum*	leech	Leaf	Liquid	-pounded or crushed, water is added, then Drench via nose, mouth, ear with a very small dose.
Kitikita	*Dodenaea angustifolia*	Saddle sore	Leaf	Powder	-First the leaf is Dried, powdered then powder is applied topically on the wound.
Zikita	*Calpurnia qurea*	mite infestation	Leaf	Unprocessed Herb	--washing the body of the infested animal by the leaf of the plant by frequently immersing the leaf with water repeatedly.
Nech bahir zaf	*Eucalyptus globulis*	-Mich	Leaf	Inhalation	-the leaf is moderately boiled with water then fumigate by the smoke.
		lumpy skin disease	Leaf	Inhalation	-the leaf is moderately boiled with water then fumigate by the smoke.
Hareg eresa/chachate	*Zchneria acabra*	Mich	Leaf	Inhalation	-the leaf is moderately boiled with water then fumigate by the smoke.
		Yolksore	Leaf	Liquid	-pounded or crushed, then water is added, filtered

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

					then drenching orally (2 cup).
		dermatitis	Whole Part	Ointment	-pounded, a little water is added then an ointment is prepared then topically applied on the defecated skin and rubbed.
Minchiruri		coughing	Root	Liquid	-pounded, water is added, filtered then drenching orally (one kubaya).
Womberet		wound	Leaf	Ointment	-pounded, squeezed topically applied on the wound and ointing.
Shola	*Picus glomerata*	Urinary problem	Leaf	Liquid	-pounded, water is added, filtered then drenching orally.
Yegib amoch		Snake bite	Stem	Unprocessed herb	First, firing the tip of the stem then contacting to the bitted site and rubbing the bitted surface.
Feto	*Lipidium sativum*	Blackleg	Seed	Liquid	-powdered, dissolved with water then drenching orally
		Diarrhea	Root	Liquid	-pounded or crushed, then water is added, filtered then drenching orally.
		bloat	Root	Liquid	-pounded, water is added, filtered then drenching one kubaya orally.

Table 17 continued… **medicinal plants, ailment treated, part used, dosage form, and modes of application**

Gemeroo	*Calotropis procera*	conjunctivitis	Bark	Powder	-powdered, the dried barck then pour on to the defected eye topically.
Gesho	*Rhamnus prinides*	Abscess swelling	Leaf	Ointment	-the leaf is crushed and a little water is added and an ointment is prepared then ointing the swelling topically.
Akorarichign	*Ajugare mota*	Bloody diarrhea	Leaf	Liquid	-pounded, water is added, filtered then drenching orally.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

simiza	*Adhatoda schimperiare*	Diarrhea in hens	Leaf	Liquid	Crushed, water added, filtered give to hen to drink it, it can be give with food
		When hens show symptom of mouth, nose, and ocular discharge, blindness, depression, loss of appetence	Leaf	Liquid	Crushed, water added, filtered give to hen to drink it
Gulo/bulka/chakima	*Ricinus communis*	Diarrhea in new born	Seed	Liquid	-pounded, water is added, filtered then drenching orally (one cup).
		Wound	Seed	Ointment	-powdered, little water is added and an ointment is formed and then the wound is ointed.
		Sudden sickness	Seed	Liquid	-powdered, water is added then drenching orally (one kubaya).
		Bloat	Seed	Liquid	-powdered, water is added then drenching orally.
		Skin rashs/dermatitis	Bark	Ointment	-powdered, a little water is added then an ointment is prepared then topically applied on the defecated skin and rubbed.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

Table 18: Non plant veterinary use traditional remedies, ailments treated and modes of applications

Medicinal material /remedies	ailment treated	modes of applications
Fresh milk and salt solution	eye defect	washing the eye
Fresh milk	bloat	drenching orally
	poison in the eye	droplet on to the eye
Solution of Wood ash, cow urine and water	lice infestation	washing the infested body part
Butter and bandaging	bone fracture	align bones back into their normal position rub by butter around the affected part then tie the splits with bandage.
Butter	blackleg	first the crepitate is incised then butter is inserted by boiling with tube material
Fresh Cow dung	wound	apply on the wound topically
Honey and urine	FMD	apply on the vesicles topically
Warm water	Foot rot	washing the leg (hoof)
Fresh milk	Oestrous ovis	drenching a little amount via nose
Flat stone	for castration	hold the testicle compressed then hitting.
Needle, blade and thread	eye cataract	surgical removal of cataract
Hot knife and sickle	over growth and deformity	cutting mechanically of hoof and horn
Oil, soap and omo	bloat	drenching orally
Boiled butter	bloat	drenching (1 cup) orally
Solution of clay powder and arera	diarrhea	drenching with (1 tin)
Teff enjera and butter	back pain	engulfing as a pellet
Charcoal powder	wound	topically apply
Solution of teff powder, egg and telela	diarrhea	drenching (1 tin)
Ash	mastitis	rubbing topically
Tsebel	For general medicine	spraying or immersing
Berberie/chew	Orf	ointment on the mouth topically

DISCUSSION

Ethno veterinary medicine knowledge and practice

This study has documented the ethno veterinary practices and communities' knowledge and traditional live stock treatments. Understanding indigenous knowledge, attitudes and practices of traditional communities about occurrence, treatment, prevention, control and local importance of different livestock ailments and traditionally used medicinal plants against respective ailments is crucial to design and implement meaningful animal health improvement and production strategies. [12]

According to Pieroni and co investigators [22] ethno veterinary studies have long term output of developing eco sustainable projects with primary goals of using traditional medicines or remedies in the traditional and also new agricultural and animal breeding system. Results of this investigation show that people in the study area have age-old indigenous knowledge on the use of traditional remedies to treat various livestock ailments. The deep-rooted culture of plant use for successive generations might have played the role for a sentimental adherence of the community to ancestral medical traditions which are still held as highly valued heritage of the society. [12]

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

The study showed that the majority of the traditional healers were above 50 (62.5%) age level this signaled that the young generation had little knowledge about the traditional medicines while the elder people know much more about the traditional knowledge to treat livestock ailments. This finding is in line with the study of Yirga [35] who reported that majority of the respondents were old age people and very few youths were involved in traditional livestock treatment. This might be due to that young people might be assumed that the practice is traditional and absence of interest to perceive it and traditional knowledge might be acquired as results of many years of human interaction and cultural contact. Similarly, other studies by Tolossa [31] Rindos [23] as well as Silva [25] revealed that traditional knowledge could be acquired as results of many years of human interaction and cultural contact, therefore systematic documentation of indigenous knowledge on traditional veterinary medicine is essential to safeguard such fast eroding knowledge among successive generations.

The gender distributions of traditional veterinary knowledge showed most of the traditional healers were males 90(93.8%) as there were very few females 6 (6.2%) traditional healers. This might be due to most of the time males are involved in outdoor activities especially in rural areas however females are involved indoor as they look after babies and carry out domestic work and this revealed that males were the main sources of indigenous knowledge which is in agreement with the findings of studies conducted in Ethiopia. According to the study by Teklehaymanot, [30] the relative dominance of traditional knowledge tradition by men which could be associated with the traditional flow of information along the male line in the country.

According to the questionnaire survey of the traditional knowledgeable respondents traditional medicines could be prepared or obtained from plants, animals' origin, and minerals as well as spiritual practices. However 66(68.7%) of the respondents indicated that only plants were the most sources of traditional medicine or remedy preparation for live stock health managements. This might be due to the fact that plants contained an active ingredient that have anti illness activity and many disease could be treated. This is in agreement with another study which reported more than 95% of traditional medicinal preparations in the county are of plant origin. [35]

WHO in [34] revealed that traditional medicines is a health practice, approaches, knowledge and beliefs incorporating plants, animals, mineral based medicines , spiritual therapies, manual techniques and exercise applied to treat, diagnose and prevent illness or maintain well being. Ethno Veterinary Practice can be practiced based on the three elements: Application of natural products (Medicinal plants, minerals, Parts and products of animals and other ingredients like Honey, vegetable oils and butters, and salt), Appeal to spiritual forces, Manipulation and surgery. [11]

The study indicated that being simple to practice and/or no need of or a little training requirement and cheapness were the main deriving factors that force the local people to practice traditional medicine practices. The indigenous knowledge of ethno veterinary medicine provides such an opportunity for livestock health practice. Ethno veterinary medicine offers medicine, which are cheap and locally available than pharmacotherapy. Farmers can prepare and use homemade remedies without any expenditure. Moreover, almost all of the rural community lives in marginal areas which are not easily accessible to the rare modern veterinary services which are also known for their scorching prices totally unaffordable to the less economically endowed people living there. [7] And ethno veterinary medicine can be useful when stock raisers have no other animal health care option. [8], [25] However another study by Yineger [35] as revealed that one of the traditional force which made the people of the area to

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

rely on traditional medicines of ethno veterinary importance to veterinary ailments was inadequate numbers of veterinary clinics and shortage of veterinarians.

This study showed that in the area traditional veterinary medicines and knowledge were applied predominantly for bovines even though equines, canines, caprine, sheep, and poultry could be treated by using traditional medicines. This might be due to that in the area bovine were frequently diseased in the area than other animals in the area this similarly reported by another study Lulekal and his co investigators [12] as well as Lynam. [13] In contrast this the study indicated that feline species were not treated by traditional medicine this might be due to the fact that felines were not frequently diseased, or treating cats was not culturally adopted even they are diseased. As the study indicated traditional medicines or medicinal plants could be practiced in all season of the years however as the respondents revealed that predominantly medical plants using remedies in the study area was during summer, this might be due to the reason that since summer is rainy season in Ethiopian context most of the medicinal plants have a probability of growing and accessible.

Medicinal plants part used, method of preparation and routes of administration

In the study area a lot of medicinal plants were documented based on the questionnaire survey, therefore we can conclude that the area was rich in accessibility of medicinal plants and Identification of specific livestock ailment types in the area was found to be made based on age-old cultural knowledge on symptoms and corresponding livestock illnesses held in the memories of indigenous people. The study have found that the most commonly traditionally treated live stock ailments in the area were like coughing, diarrhea, wound, anthrax, black leg, myiasis, bloat, skin problem or rashes and eye problems were the top diseases that could be treated by traditional veterinary medicine practice in the study area. Among from locally documented medicinal plants the 11 plants were used for 4 and more than 4 types of diseases in the locality, those were like kutintina (*Verbascum sinoiticum*), yemidir embuay (*Cucumis prophetarum*), gulo (*Ricinus communis*), astenager (*Datura stramonium*), atuch (*Verbena officinalis*), endawulla (*Kalanchoe petitiana*), bisana (*Croton macrostachyus*), sire bizu (*Thalictrum rhynchocarpum*), amoch (*Rabus steudnerii*), kebericho (*Echinops kebericho*) and kulkual (*Euphorbia abyssinica*).

The study revealed that different parts of medicinal plants of veterinary use have been used except flower part and also different methods of preparation and modes of application were used for remedy preparation, however the widely used plant parts in the preparation of remedies in the study area were root, followed by leaf. The widely utilization of root and leaf parts of medicinal plants in the community might be due to the anti illness effects of their potential for different ailments similarly Yineger [35] and Voeks [32] reported that the findings of root and leafs to be the most harvested plants parts used for ethno veterinary remedy preparation might be associated with traditional beliefs, about a powerful therapeutics effect or anti illness effects of leafs and root parts for treating various ailments. However, completely flower part of the plants was not practiced in the locality for medicinal value, it might be due to that beliefs, flower parts of the plants do not contain anti illness potential for ailments and it might be that the local community is not adapted culturally or not experienced or inherited from previous senior indigenous knowledge experienced persons. Leaves were frequently used as part of the ethno veterinary medicinal plants in central zone of tigray, northern Ethiopia. [35]

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

Several methods of applications or administration of traditional remedies depending on the particular disease to be treated was adapted. Crushing or pounding, fumigation, squeezing, powdering, concoction and smoke were methods of preparation in the study area. However crushing or pounding and squeezing were the two most methods of preparations in the area as the respondents revealed. Another study revealed that crushing and soaking or boiling of medicinal plants is the common method for drugs extraction or preparation. [6] Depending on the active ingredient to be extracted, application routes, and the medicinal objective preparation methods of ethno veterinary medicine differs. [16]

Regarding to routes of remedy administration, the commonly used routes or administration of traditional medicine in the study area were oral, followed by topical routes, though inhalation, surgical, nasal, injection and auricular routes were also used at lower level. Those findings of oral route followed by topical route were consistent with other studies like (Abebe, [1] reported most of medicinal plants used by through oral route followed by topical route. The drugs is usually drunk for internal condition or applied topically for external infection. [2] The current study revealed that there were different dosage forms for the preparation of different remedy, however liquid preparation was the most common dosage form in the study area. Another study by (Teferi [29] revealed that liquid preparation was reported to be the predominant dosage form of traditional remedy preparation.

Challenges of traditional veterinary medicines practice

A traditional medicine poses pharmacological properties and therefore, they had possible therapeutic effect. [26] The study established that traditional or herbal medicines were having good or better acceptance level but there were challenges and constraints that made the traditional medicine usage under limitation. The result indicated that imprecise dosage, low hygiene, the secrecy of some healing methods, absences of written records about the patients; modernization and other were the challenges and constraints for the practice of traditional medicines in the area. Absence of precise dosage was the most important challenge or drawback for the practice of traditional medicine in the area and this describes standardization is a challenge and cited as one of the most important short comings of the traditional health care system in Ethiopia. [1], [28] Ethno veterinary studies conducted in Pakistan by Hussain [9] also reported the lack of standardized doses in traditional prescriptions of livestock remedies is a challenge. And this problems or challenges of traditional healers might be due to that the abscess of getting training, absences of well organized or associated works between modern veterinary practitioner and traditional healers.

According to the report by Sujon [28] the major problems associated with the use of herbal medicine relates to lack of scientific evaluation, cultural infiltration has also been identified as a threat to indigenous knowledge as it leads to the erosion of human intellectual capital this means the movements of the people is leading to loss of farming communities, languages and indigenous cultures. the decline could be attributed to a numbers of issues including high adoption of conventional drugs, difficulty in tracing the needed plants, lack of knowledgeable people and information concealment, and lack of documented information on the use of medicinal plants, selfishness and request for payment in return of knowledge sharing. Invasion of western systems and involvements of pastoralist in administrative domain: weaken the traditional system, in some instance totally replaced by modern system. [18]

According to Sheldon [24] the main factor to be considered for conservation and sustainable use of medicinal plants is the particular plants harvested for its curative value the way it's

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

harvested. Herbal preparation that involves roots, rhizomes, bulbs, barks, stems or whole parts have effects on the survival of the mother plants. [5]

Quality and standardization of ethno pharmacological practices is as important as preservation and conservation of indigenous knowledge. Standardization of medicinal plants utilization in live stock managements is urgently needed not only to improve efficacy and promote conservation but also safeguard animals' products consumers. Currently natural habitants of many valuable plants are being lost to other land uses or being degraded as a result of population security and other livelihood needs.

The finding of the current study revealed that ethno veterinary medicinal plants were under serious threats like drought, deforestation, fire, overgrazing, agricultural expansion and others however drought, deforestation and fire were the main threats in the study area. Another study conducted by Yineger, [35] at bale mountain national park also showed that deforestation for various purposes like fuel wood, agricultural expansions and drought were principal threats.

As the current study revealed even though medicinal plants were threatened by different factors strict conservational activities were not undertaken. This might be due to lack of awareness by local peoples and lack of governmental encouragements for conservational and sustainable utilization of those locally available medicinal plants. The healers in consultation with government officials should take care not to eradicate the medicinal plant species altogether. Awareness creation among the traditional healers and community at large is important in order to preserve the indigenous medicinal plant species. [35]

CONCLUSION AND RECOMMENDATIONS

The current study has revealed that the natives in the study area of have been heavily dependent on traditional veterinary medicine for the treatment of variety of livestock ailments. Traditional knowledge always provides a baseline for further phytochemical and pharmacological investigation. Therefore the documentation of the ethno veterinary practices was necessary before this precious knowledge is lost forever. This study suggested that traditional medicine knowledgeable live stock owners of the study area have sound ethno veterinary knowledge and practices. Accordingly, the study enabled us to document about 68 medicinal plants and 24 none plant traditional remedies that have been used against 45 types of livestock diseases in study area, so far. In general, available traditional medicines, plant parts, methods of preparation, dosage forms and drawbacks and challenges of those traditional medicines were also elaborately presented. Traditional remedies of Medicinal plants of veterinary importance might not be well protected, as a result can be threatened and lost due to droughts, fire, deforestation and over grazing. Conservational activities of medicinal plants, governmental encouragements of traditional healers as well as training activity of those traditional healers were not strictly well addressed.

Based on the above conclusions the following Recommendations are forwarded:

- Indigenous knowledge and practices of the study area communities should be supplemented by scientific methods to evaluate the safety, efficacy and dosage of the common medicinal plants through phyotochemical and antimicrobial experimentation to determine appropriate mode of delivery, drug development and dosage in pharmacological laboratory while the plants is potentially toxic when used

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

consecutively for a long period of time, further work will focus on the pharmacological properties.

- Awareness creation among the traditional healers and community at large are important measures to preserve their indigenous medicinal plant species knowledge. This is because medicinal plants are facing extinction, indicating that conservation may be the only way out.
- The government should identify and organize those indigenous knowledgably persons and their golden knowledge should be used for the country development as well as training of those healers should be addressed.
- A national campaign is urgently required to identify, collect and document important traditional remedies of veterinary used plants; those should be evaluated to provide reliable information on most useful plants to be conserved.
- Establishment of a green line of medicinal plants with particular reference to those under extinction and Genetic improvement of medicinal plants to increase their quality and quantity should be required.
- Formulation of a national drug policy for herbal medicines should be addressed and develop legislative protocols that facilitate use of ethno veterinary medicine.
- Traditional healers should be given some incentive, such as being appointed as veterinary scouts and valuable information, an association of traditional healers should be structured. Such an initiative would also expose traditional practitioners to training in modern veterinary medicine, and would narrow the differences and reduce the bias between the two approaches, leading to better integration.

REFERENCES

[1] Abebe, D., 1998. The role of medicinal plants in healthcare coverage of Ethiopia, the possible benefits of integration. In conservation and sustainable use of medicinal plants in Ethiopia, Proceedings of the National workshop on Biodiversity, institute of biodiversity conservation and research; Addis Ababa vol.**23**, Pp. 6-12.

[2] Blood, D.C., Radostitis, O. M. And G, C., 1994. Veterinary medicine, a text book of the disease of cattle, sheep, pig, goats and houses. 8 th ed. Bailliere Tindal. Over road, london.

[3] Central Statistical Agency (CSA) (2009) Federal Democratic Republic of Ethiopia Central Statistical Agency. Agricultural sample survey 2008/09.Volume **II**. Report on livestock and livestock characteristics, Addis Ababa, Ethiopia.

[4] Damtew, B., Zemede, A., Beyene, P. and Habte, T., 2012. Ethno botanical study of plants used for protection against insect bite and for the treatment of livestock health problem, in rural areas of Akaki District, Eastern Shewa, *Journal of Herbal Medicine* Vol.**1**(2),Pp.12-24. And available online at http://www.topclassglobaljournals.org ISSN 2315-8840 ©2012.[accessed at April 16/ 04/2014].

[5] Dawit, A. and Ahadu. A., 1993. Medicinal Plants and Enigmatic Health Practice of North Ethiopia. Berhanina Selam Printing Enterprise, Addis Ababa, Ethiopia.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

[6] Deeba., F., 2009. Documentation of ethno-veterinary practices in urbanand peri-urban areas of Faisalabad (pakistan). PhD dissertation, University of Agriculture, Faisalabad, Pakistan.
[7] Dinesh, K.Y., 2007. Ethno-veterinary practices: A boon for improving indigenous cattle productivity in Gaushalas Livestock Research for Rural Development 19 (6). National Bureau of Animal Genetic Resources Haryana (India).
[8] Endashaw, B., 2007. Study on actual situation of medicinal plants in Ethiopia. Prepared for JAICAF (Japan Association for International Collaboration of Agric and Forestry).
[9] Hussain, A., Khan, M.N., Iqbal, Z. and Sajid, M.S., 2008. An account of the botanical anthelmintics used in traditional veterinary practices in Sahiwal district of Punjab, Pakistan. *J ournal Ethnopharmacology* , (119): Pp.185–190.
[10] Jarakabande, K, 2002. Ethno veterinary medical traditions and methodologys for their documentation, assessment and promotions. Foundation for Revitalisation of Local Health Traditions (FRLHT), Bangalore – India.
[11] Kamal, K. M. and K. A, Kumar. 2004. Ethno-veterinary Practices among the Konda Reddi of East Godavari District of Andhra Pradesh. Students. Tribes Tribals,. Department of Anthropology, University of Hyderabad, Central University (P.O), Hyderabad 500 046, Andhra Pradesh, India2(1): Pp.37-44.
[12] Lulekal, E., Kelbessa, E., Bekele, T. and Yineger, H., 2008. An ethnobotanical study of medicinal plants in Mana Angetu District, southeastern Ethiopia. *Journal of Ethnobiology Ethnomedicine,* Pp.4-10.
[13] Lynam, T., De Jong, W., Sheil, D., Kusumanto, T. and Evans, K., 2007. A review of tools for incorporating community knowledge, preferences, and values into decision making in natural resources management. *Ecololgy Soc*, **12**(1):p.5.
[14] Mathias, E. R. and C. M., McCorkle., 2004. Ethno veterinary Medicine: An Annotated Bibliography of Community Animal Healthcare, ITDG, London, UK.
[15] Mathias, E., 2001. Introducing ethno veterinary medicine. Also available at www.ethnovetweb.com/whatisevm.pdf [accessed may 10/05/2014].
[16] McCorkle, C. M., 1998. An introduction to ethnoveterinary research and development. *Journal of Ethnobiology*, 6(1):129-149.
[17] Mesfin, T and obsa.T., 1994. Ethiopian traditional veterinary practices and their possible contribution to animal production and management. Addis Ababa, Ethiopia Rev. Sci. tech. Off. int. Epiz.**13** (2), Pp. 417-424.
[18] Mussa, M., 2004. A Comparative study of pastoralist parliamentary groups, case study on the pastoral affairs standing committee of Ethiopia. Rtrived from WWW. Nri. Org/projects/ pastioralim/Ethiopia PPG final.doci.
[19] National metrological agency, 2011. Annual Climatical Bulletin for the year 2011. National Metrological Agency of Ethiopia.
[20] Ngeh, J. T., Jacob, Mopoi Nuwanyakpa, Sali Djang., 2007. Ethno veterinary medicine, a practical approach to the treatment of cattle diseases in sub-Saharan Africa, Agromisa Foundation and CTA, Wageningen. Nigeria. *Research Journal of Agricultural and Environmental Management*. Vol. 1(**1**), Pp. 25- 33.
[21] NGZARDO (North Gondar Zone Agricultural and Rural Development Office), 2009. Annual Report of North Gondar Zone Cooperative Office
[22] Pieroni, A., Giusti, M.E., De Pasquale, C. And Lenzarini, M., 2009. Circum-Mediterranean cultural heritage and medicinal plant uses in traditional animal healthcare: a field survey in eight selected areas within the RUBIA project. *Journal of Ethnobiology and Ethnomedicine,* Pp.25-34.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419

[23] Rindos, D., 1984. The Origins of Agriculture: An Evolutionary Perspective. Cornell University. Orlando: Academic Press, INC.
[24] Sheldon, J. K., Balick, M. J., Laird, S., 1997. Medicinal plants: can utilization and conservation coexist, advance in economy botany, **12**: 1-124.
[25] Silva, F.D.S., Ramos, M.A., Hanazaki, N.and Albuquerque, U.P., 2011. Dynamics of traditional knowledge of medicinal plants in a rural community in the Brazilian semi-arid region. *Brazilian Journal of Pharmacognosy*, volume **2:** Pp. 382-391.
[26] Singh, G.K. and Bhandari, A., 2000. Textbooks of pharmacology. CBS publishers and distributors, india. Studying and applying local knowledge. Agr. Human Values, **15**(2): Pp. 139-144.
[27] Sori, T., Bekana, M., Adugna, G. and Kelbessa, E., 2004. Medicinal Plants in the ethno veterinary practices of Borana pastoralists, Southern Ethiopia. *International Journal.* Appl. Res. Vet. Med. **2**(3), Pp. 220-225.
[28] Sujon, M.A., Mostofa, M., Jahan, M., Das, A.R. and Rob, S., 2008. Studies on medicinal plants against gastro intestinal nematodes of goats. Bangladish *joiurnal of veterinary medicine*. 6(2):179183.doi:10.3329?bjvm.v6i2.2333.alsoavailable http://www.banglajol.info/index.php/bjvm/article/view/2333/2046[accsesd at march, 28/03/2014].
[29] Teferi, G., Heinz, Jurgen Haln., 2002. Herbalist in Addis Ababa and butajira, central Ethiopia: mode of service delivery and traditional pharmaceutical practice. *Etiop. J.health* dev. 2002; **16**(2):Pp. 191-197.
[30] Teklehaymanot, T., 2009. Ethnobotanical study of knowledge and medicinal plants use by people in Dek Island in Ethiopia. *Journal of Ethnopharmacology*, 124:Pp. 69–78.
[31] Tolossa, K., Debela, E., Athanasiadou, S., Tolera, A., Ganga, G. and Houdijk, JGM., 2003. Ethno-medicinal study of plants used for treatment of human and livestock ailments by traditional healers in South Omo, *Journal of Ethnobiology* Southern Ethiopia**,** 26(3): Pp. 123-136.
[32] Voeks, R.A., 2009. Traditions in transition: African Diaspora ethno botany in lowland South America**.** In Mobility and Migration in Indigenous Amazonia: Contemporary Ethno ecological Perspectives. London: Beghahn, Pp.275–294.
[33] Wanzala, W., Zessin, K.H., Kyule, N.M., Baumann, M.P.O., Mathias, E., and Hassanali, A., 2005. Ethno veterinary medicine: A critical review of its evolution, perception, understanding and the way forward. Livestock Research for Rural Development, **17**(11), Pp.1–31.
[34] WHO (2002). WHO policy perspective on medicines Traditional medicine growing needs and potential. World Health Organization, Geneva. p. 6.
[35] Yirga, G., 2010. Assessment of indigenous knowledge of medicinal plants in Central Zone of Tigray, Northern Ethiopia African J. Plant Sci., 4(1): Pp. 6-11.

ISSN: (Print) ISSN 2516-0400, ISSN: (Online) ISSN 2516-0419