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Survey of Veterinary Herbal Folk Medicine and its Threats in West Arsi Zone, Oromia Regional State, Southern Ethiopia

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Abstract: Veterinary Herbal Folk medicine offers drugs which are cheap and locally available than pharmacotherapy but, Ethno veterinary knowledge is declining from time to time due to the verbal passage of herbal heritage. This study was aimed to assess, identify and document Veterinary Herbal Folk Medicine and their threats in West Arsi zone. Ethno-veterinary botanical survey was conducted to gather information using semi-structured questionnaire based interviews, field observations and guided dialogue techniques. The study was conducted from November, 2015 up to April 2016 in West Arsi zone (Arsi-Negelle, Shashamane and Kofale), Oromia, Southern Ethiopia. Both the study sites and respondents were purposively selected based on the information of local authorities and elders accordingly, 54 traditional healers were chosen among which 50 were males and 4 were females. 54 medicinal plants which categorized under 31 families were observed. Among these, *Solanaceae* 11.1% and *Fabaceae* 8.1%% were the most dominant families used to treat 33 livestock ailments. The plant specimens were collected, compressed and submitted to the Biology Department Herbarium of Hawassa and Wollega University for botanical identification. The result revealed that, the principal source of medicinal plants included wild (66.7%), cultivated (9.3%) and both wild and cultivated (24.1%). The dominant habitat of surveyed medicinal plants were trees (44.4%) followed by herbs (29.6%). Leaves (35%) were majorly used plant parts accompanied by root (15%). The result indicated that, crushing (59%) which was followed by grinding (16.7%) frequently was the used mode of drug preparations in the study area. The common routes of drug administration used by traditional animal healers were oral and topical with 74.1% and 14.8%, respectively. However, medicinal plants are contributing crucial role for the livestock owners, they are facing continues threats like, timber work, agricultural expansion, overgrazing, oral transmission of knowledge and dose related problems. Thus, minimizing forest clearing, over grazing and illegal timber work and allocating budget for further scientific investigation to determine its efficacy, level of toxicity and develop safe and convenient dosage formulation will be warranted.

Key words: Ailments · Folk Medicine · Livestock · Traditional Healers · West Arsi

INTRODUCTION

Ethno veterinary medicine is the studies of traditional knowledge, folk beliefs, skills, methods and practices used for the treatment of livestock ailments. It offers medicines which are cheap and locally available than pharmacotherapy [1].

Traditional medicine (Also known as indigenous or folk medicine) comprises knowledge systems that developed over generations within various societies before the era of modern medicine. WHO [2] defines traditional medicine as "the sum total of the knowledge, skills and practices based on the theories, believes and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness. In developing African countries like Ethiopia, livestock production remains crucial and represents a major asset among resource-poor smallholder farmers by providing milk,

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meat, skin, manure and traction. However, the economic benefits of livestock populations remain marginal due to prevailing livestock diseases,[3]. In Ethiopia, plant remedies are still the most important and sometimes the only sources of therapeutics for nearly 80% of human and more than 90% in livestock population and estimated floras of 6500 to 7000 species of higher plants are of medically important and out of these medicinal plants 12% are endemic to Ethiopia [4].

Even though traditional medical healers are source of choice for information about herbal medicine it was found very difficult to obtain their traditional medicinal information as they considered their indigenous knowledge as professional secret, only to be passed orally to their older son at their oldest stage [5]. The use of ethno-veterinary practices to treat and control livestock diseases is an old practice in a large part of the world, particularly developing countries including Ethiopia where animal health service facilities arestill very poor or/and are found scarcely located at urban areas [6]. Although Western medicine has become widespread in developing countries, many rural communities are still heavily dependent on plant-based therapies for their primary health care [7].

The information collected indicated that dosing of herbal remedies usually involved 750ml in cattle and 375 ml in small stock, irrespective of the concentration of the remedies. As a result, farmers applied herbal remedies in variable concentrations and this, in turn, might provide variable results. On one hand, there was a possibility that application of a standard dose of very concentrated preparations could actually be toxic to animals. On the other hand, some preparations probably were too dilute to be effective, explaining why some farmers considered herbal remedies to be weak and ineffective [8]. Despite their vital role in catering for the health of human and livestock population, large part of the knowledge of ethno medicinal plants is on the verge of irreversible loss and declining to deterioration due to oral passage (Verbally) of herbal heritage from generation to generation rather than in written form [9].

Since information on ethno-veterinary medicine haven't been well documented, there is a danger that this knowledge will soon be lost as traditional social patterns are increasingly disturbed by globalization, environmental degradation, agricultural expansion, cultivation of marginal lands and urbanization [10]. In line with the above idea, there is no documented survey of herbal remedies in West Arsi zone and medicinal plants are encountering enormous challenges to exist. Therefore, the objectives of this study were to document the traditional herbal medicines and knowledge used by elders and to identify threats of veterinary Herbal Folk Medicine in the study area.

MATERIALS AND METHODS

Study Area: The study was conducted in selected districts of West Arsi zone(Arsi-Negelle, Kofale and Shashamane) of Oromia Regional State, Southern Ethiopia, from November, 2015 to April, 2016. West Arsi Zone is located at 250 km south of Addis Ababa, the capital city of the country and found in the Rift Valley Region. Most parts of the zone have elevations ranging from 1500 to over 2300 m.a.s.l. Shashamane town is the administrative center of the zone. The mean annual temperature of the zone is found between 20-25°C in the high land and 10-16°C in the low land area. However, there is a slight variation of temperature from Month to months. October to May is the hottest months while June to September is the Coldest. On average, the zone gets annual mean rainfall of 1300mm. Some forests, including Arsi forest, are found in Arsi-Negelle, Shashamane and Kofale districts.

The people of the three districts belong to the Oromo ethnic community and others. Afan Oromo (The Oromo language) is the widely spoken language in the area [11, 12]. Cattle population of west Arsi zone and Types of livestock's 2010, 2011, 2012, Cattle 3390756, 3510328, 3629900, Goats 317272, 312027, 322332, Sheep 543802, 639107, 694213, Horse 185706, 198013, 227784 Mules, 8438, 8605, 8953 Donkeys, 158008, 161524, 165367, Camels 515357, Poultry 198020, 245890 NA (Not Applicable)[13]. Arsi-Negelle district is one of the District in west Arsi zone located between 7°09 up to $7^0$41'N and 38°25'-38°54'E, in low land central rift valley region, 210 km south of Addis Ababa to the Shashemene-Hawassa road the and the overall farming system is strongly oriented towards grain production dependent on the use of oxen for land preparation. According to the National Metrological Services Agency at Arsi-Negelle station shows the mean annual minimum and maximum temperatures were 6.8°C and 27.2°C, respectively. While the rain fall varies between 250-750 mm per annum [14].

Shashamane is located 250 km south of the capital city of the country Addis Ababa and 25 km north of Awassa. The area lies within the Rift Valley, with altitudes ranging from 1700 to 2600 meters above sea level (m.a.s.l) and located at 7° 05'N to 7° 19'N and 38° 23'E to 38° 41'E. It receives an annual rainfall of 700-950 mm and has an

annual temperature range of 12-27ºC. Out of the total area of 76,888 hectares, crop land accounts for 48,975 hectares and the rest 7440, 5160 and 1320 hectares are forest land, grazing land and land for other purposes, respectively. The urban settlement accounts for 1733 hectares and the cattle population in the districts is 184,549 according to Shashamane district agricultural and rural development offices [15]. While Kofale districts is located at 280 km south of Addis Ababa and located at 7° 19'N to 7° 40'N and 38° 30'E to 38° 53'E (Kofale is a highland, agro-pastoral area with moderate to hot Temperature. Rain fall is sufficient, which Kofale has erratic type of bimodal rainfall, Kofale district agricultural and rural development office [16]. Human population in Kofale districts is estimated around 178,950.

Study Population: The target populations for this study were traditional animal healers' specifically knowledgeable elders and a total of 54 individuals were interviewed using semi-structured questionnaire based interview.

Study Design, Sampling Method and Data Collection: The study sites were purposively selected based on the availability of practice of traditional medicine and traditional animal healers, elders and farming system of the area on the recommendations of local authorities and elders. Ethno-veterinary botanical survey was conducted to gather information (Collect data) on the traditional usage of plants in livestock health care system using semi-structured questionnaire based interviews, open ended interviews, field observations and field guided walks and guided dialogue techniques with knowledgeable elders who were voluntary to share their indigenous knowledge. A total of 54individuals (Voluntary traditional animal healers) were purposively selected and interviewed based on their knowledge on traditional herbal medicine.

Collection and Identification of Plant Specimens: Information regarding ethno-Veterinary medicinal plants pertaining to livestock ailments in the districts was gathered by interviewing 54 local inhabitants using semi-structured questionnaires' based interviews by local language (Afan Oromo). The medicinal plants were collected from the wild and home gardens based on the report of the informants and the preliminary identification will be done at the site (Field).

During interview, data regarding the type of livestock ailment treated or prevented and the types of medicinal plants used to include their local names, source of plants (Cultivated, wild or both), types of habitat (Trees, Shrubs, Herbs and Climbers), parts of the plants used, Mode of preparation, Route of Administration, availability, public health importance of medicinal plants, socio-economic aspects, collection techniques and other social values of plants were well gathered. Then, the collected specimens was taken to the (Medicinal plant specimens) Awassa and Wollega University, Faculty of Natural science National Herbarium Department of Biology were consulted to be identified using taxonomic keys and by making a comparison with the already identified specimens that were deposited at National Herbarium of natural science.

Data Analysis: Finally, all the data collected through questionnaire Survey were entered in to Microsoft Excel Spread sheets. Data analysis was made using Statistical Package for Social Science (SPSS) version 20.Descriptive statistics was used to determine the percentage of herbal medicines and other variables.

RESULTS

Medicinal Plants Obtained and Their Medicinal Uses: A total of 54 informants were interviewed about 54 herbal medicines that were categorized into 31 families were found to be used by traditional animal healers in the Selected Districts of west Arsi zone (Arsi-Negelle, Shashamane and Kofale). According to this study,Solanaceae11.1%, Fabaceae 8.1%, Asteraceae 7.4%,Euphorbiaceae 5.6% and Convolvulaceae 3.7% were the most dominant families of herbal remedies identified in the study area (Table 1). This study also revealed, the identified remedies were used to treat Bacterial, Viral, Fungal, Protozoal, GIT parasites and ecto parasite diseases, Evil eye, repeat breeding, Tumor, Bloating and Snake envenomation, but bacterial and parasitic infestation are the major ailments indicated and most ethno veterinary drugs found are used to treat both Animal and Human diseases.

Description of Information Obtained from Respondents Based on Different Variables: Different variables like ages, sexes, districts, peasant associations and types of habitat were included in this study to obtain the required information. Among interviewed traditional healers, the most dominant age category was ≥50 years old 55.6% which were relatively higher as compared to 40-49 years old 44.4% and from interviewed respondents, males comprise 90.7% and females are 9.5%.

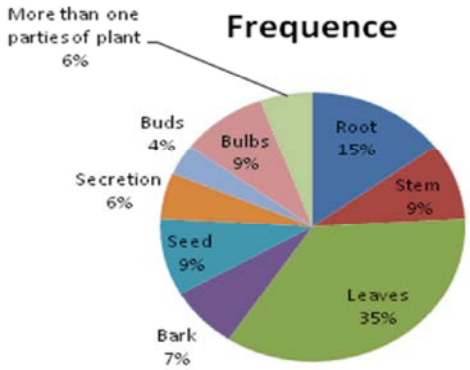

Fig. 1: Pictorial description of parts of medicinal plants used by society in the study area

Table 1: Age, Sex, District, Peasant association and types of habit versus their frequency

Variables	Categories	Frequency	Percentage (%)
Age	Adult (40-49)	24	44.4
	Old (≥50)	30	55.6
	Total	54	100
Sex	Male	49	90.7
	Female	5	9.3
	Total	54	100
Districts	Arsinegelle	22	40.7
	Shashamane	14	25.9
	Kofale	18	33.3
	Total	54	100
Peasant Associations	AlgeDilbato	5	9.3
	Gubeta	7	13.0
	SeyoMeja	5	9.3
	Lepis	5	9.3
	Abaro	3	5.6
	Kubi	5	9.3
	Chafaguta	3	5.6
	Watarashagule	3	5.6
	WanpagniAbosa	6	11.1
	Sayimanamudi	3	5.6
	Gurmicho	4	7
	WanpagniAlkeso	5	9.3
	Total	54	100
Type of habitat	Trees	24	44.4
	Herbs	16	29.6
	Shrubs	9	16.7
	Climbers		9.3
	Total	54	100

Number of traditional healers interviewed from each districts were 40.7%, 25.9% and 33.3% from Arsi-Negelle, Shashamane and Kofale, respectively. While it was 9.3%, 13%, 9.3%, 9.3%, 5.6%, 9.3%, 5.6%, 5.6%, 11.1%, 5.6%, 7% and 9.3% from Alge Dilbato, Gubeta, SeyoMeja, Lepis, Abaro, Kubi, Chafa Guta,Watara-shagule, Wanpagni Abosa, Sayimena Mudi, Gurmicho and Wanpagni Alkaso Peasant Associations, respectively. Also the result revealed that different types of habitat for these herbal medicines like trees 44.4, herbs 29.6%, shrubs 16.7% and climbers 9.3% (Table 2).

Parts of Medicinal Plants Used by the Society in the Study Area: The most commonly used parts of herbal medicine were, Root 8(15%), Stem 5(9%), Leaves 19 (35%), Bark 4(7%), Seed 5(9%), secretion or sap 3(6 %), Buds 2(4%), Bulbs 5(9%) and More than one part 3(6%). Leaves and Buds were the higher and the least parts of the plant majorly used by traditional animal healers in the Study area respectively (Figure 1).

Source, Availability of Plants and Routes of Administration Used by Traditional Animal Healers: The common sources of plants were wild, cultivated and both cultivated and wild with 66.7% 9.3% and 24.1%, respectively. Informants responded that, the most popular availability of plants were year round (79.6%) and seasonal (20.4%). The most common routes of administration mainly used by traditional animal healers were oral, nostrils, topical and more than one routes with 74.1%, 7.4%, 14.8% and 3.7%), respectively (Figure 2).

Mode of Traditional Drug Preparation: Crushing (59%), Grinding (16.7%), Chopping (7.4%), Mixed with feed (1.9%), Decoction (1.9%), Cooking (1.9%), Scratching (1.9%) and more than one mode of preparation (9.3%) were mode of herbal medicine preparation in the study area. Crushing is the most dominant mode of Veterinary herbal folk medicine preparation followed by Grinding in the study area.

DISCUSSION

This study was conducted to identify medicinal plants found in selected Woredas of west Arsi zone namely, Arsi-Negelle, Shashamane and Kofale with their respective challenges. A total of 54 informants were interviewed about 54 species of Veterinary folk herbal medicines that are categorized into 31 families and used

Table 2: Herbal medicines with their Family, Species and Local name, Part used, Route of administration and Diseases treated

Nº	Local Name	Scientific Name		Parts used	Route of administration	Diseases Treated
		Family Name	Species Name			
1	Ebicha	Asteraceae	Vernoniaamygdalina	Leaves	Oral	Para tuberculosis (Johan's disease
2	Woleenaa	Fabaceae	Erithrinabrucei	Buds	Ocular	Conjunctivitis
3	Taruuraa	Lamifoliamceae	Ocimumlamifolium	Leaves	Oral	Circling disease (coenuruses)
4	Heexoo	Rosaceae	Hageriaabyssinica	Leaves	Oral	Endo parasites and Tineasaginata in human
5	DoobbiiGurraattii	Convolvulaceae	Ipomeaspp	Leaves	Oral	Foot and Mouth disease (FMD Urethral obstruction in Equine Gastritis in Human
6	Geeshoo	Rhamnaceae	Rhammusprinaideas	Buds and Leaves	Oral	Both types of bloating(frothy &gas bloating) and Salmonellosis
7	Mokkonniisa	Euphorbiacea	Crotonmacrostachyushochst	Buds	Oral and Topical	Both types of bloating & Wound healing
8	Gulbaanaa	NI	NI	Leaves	Oral	For both types of bloating
9	Arbooyyee	Convolvulaceae	Ipomea species	Leaves	Oral	For intestinal impaction or removal of undigested non feed materials
10	Buna duudaa	Rubiaceae	Coffee Arabica	Seed	Nostrils	Chocking in calves
11	Hiddiigurraattii	Solanaceae	Schumach	Seed	Nostrils	Chocking
12	Sukkee	Cucurbitaceae	Schumach	Bark	Nostrils	Glanders
13	Abbayyii	Myrsinaceae	Maesallanceolataforssk	Root	Oral	Repeat breeding or ajeessaa in afaanoromo
14	Tamboo	Solanaceae	Nocotanatabacum	Leaves	Oral	Pneumonic pasteurellosis in ovine
15	Ceekataa	Ulmaceae	Celtisafricana	Leaves	Topical	Ecto parasites
16	Dhittacha	Fabaceae	Acaccratortolis	Leaves	Oral	Lung cancer and Ascaris aquarium
17	Hargiisa	Liliaceae	Aloe species	Stem	Oral	For animal & human rabies control Malaria in human
18	Buqqeearbaa	NI		NI	Stem	
19	Banjii	Liliaceae	Daturastramonium	Leaves	Oral	Rabies control in all livestock
20	Sariitii	N	NI	Root		
21	Hadaamii/adaamii	Euphorbiaceae	Euphorbiampliphyllapax	Stem	Topical	Benign tumor or warts
22	Aannannoo	Kleineceae	Euphorbia	Secretion	Topical	Benign tumor
23	Handoodee	Phytolaceae	Phytolaceaedodecandra	Leaves	Oral	GIT parasites and Actinobacillosis or Wooden tongue
24	Uleefoonii	Euphorbiaceae	Clucialanceolata	Root	Oral	Rabies
25	Agamsa	Fabaceae	Carrissaspinarum	Root	Oral	Ring worm, antipyretic &common cold in human
26	Qobboo	Euphorbiaceae	Ricinuscommunis	Root	Oral	Retained fetal membrane For softening of hide & skin (seed). other function
27	Baalabofaa (Qorichabofaa)	Zygophyllaceae	Pollieriahygrometra	Leaves	Oral	Snake bite or Envenomation both in human & Animal
28	Anfaaree(Anfaara)	Budlejaceae	Budlejapolystachyafresen	Leaves	Nostrils	Pneumonic pasteurellosis
29	Warqee	Musaceae	Ensetventricosum	Stem	Oral	Placental retention or removal of retained placenta
30	Surumaa	Urticaceae	Pileabrevistipulaurb	Leaves	Oral	Bone fracture
31	Ciiree(Harkis)	Cactaceae	Opuntieficusindica	Stem	Oral	For placental retention
32	Qullubbiiadii	Lidiaceae	Alliumsatuvum L	Bulb	Oral	Michi and stomatitis
33	Qilxuu	Astercaceae	Vernoniahymenolepis, A	Secretion or sap	Oral	Internal parasites
34	Loomii	Rutaceae	Citrus auranti folia	Seed	Oral	Avian Influenza or bird flu
35	Dhummuugaa	Acantaceae	Justiciaschimperiana	Leaf	Oral	Rabies
36	Ejersa	Dacaceae	Oleaeurpea	Leaves	Oral	Arthritis, Paralysis, Back pain Skin diseases
37	Dammakasee	Lamifolium	Ocimumlamifolium	Leaves	Oral	Black leg
38	Maxxannee	Boraginoceae	Cynoglossumlanceolatumforssk	Root	Topical	Mastitis
39	MukkureeyknArriyyee	NI	NI	The whole plant	Oral	Ulcerative lymph angitis
40	Jiloo	Asteraceae	Acmellacaulirhizadel	Leaves	Oral	Actinobacillosis
41	Annaamuroo	Lamiaceae	AjugaintegrifoliaBuch- Hum ex D. Don	Leaves	Oral	Endo parasites
42	Wontefullaasa	Celastraceae	Maytenusobscura	Bark	Oral	Abdominal discomfort or pain or colic
43	Lacee	NI	NI	Leaves and Root	Oral	Repeat breeding
44	Qarcaccee	NI	NI	Bark	Oral	Anthrax
45	Waaccuu	Fabaceae	Acaciaseyal	Leaves	Oral	Lice infestation
46	Qoricha saree maraattee	Papilionioceae	Phaseoluslunatus	Root	Oral	Rabies
47	Gunaa	Fabaceae	Erythrinaabyssinica	Leaves	Oral	Cancer & complicated wound
48	Qurquraaadii	Rhamnaceae	Ziziphusmauritiana	Leaves	Oral	GIT parasite infestation and Dermatophytosis (Ring worm)
49	Mi'eessaa	aguifliciae	Ilese mites	Leaves	Oral	Black leg
50	Darguu	Amarantaceae	Achayrentesaspera	Root	Oral	Frothy bloating, michi and colic
51	Ajoo	Fabaceae	Acacia brevispica harms	Bark	Oral	Enteritis
52	Roobaanjireettii (baalbaxxee)	Solanaceae	Solanumanguivicam	Root and leaves	Oral	Envenomation or snake bite and
53	Boraraa	NI	NI	Leaves	Topical	Dermatophytosis (Ring worm)
54	Kurreebaarzaafii	NI	Eclophytus tree	seed	Topical	Hemostatic effect, michi and evil eye

NB: NI= Not Identified

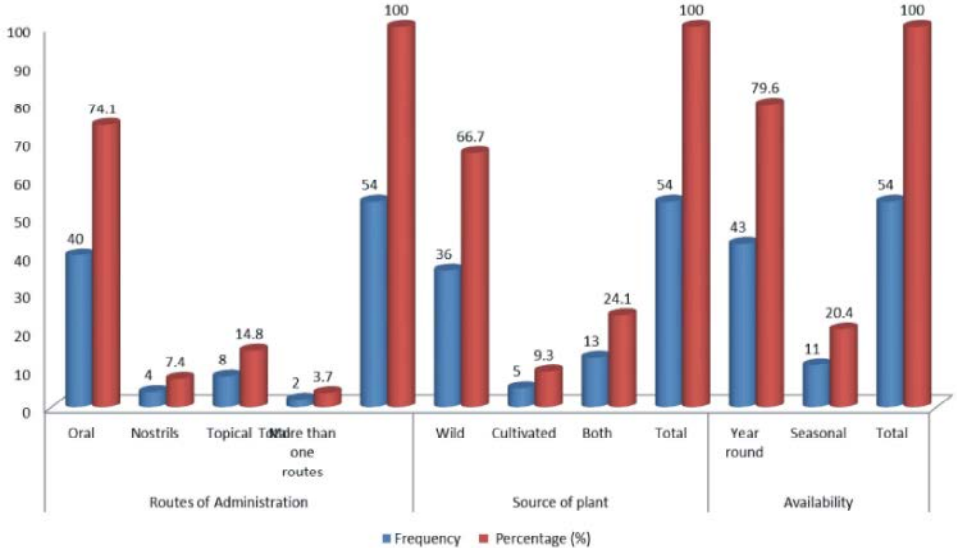

Fig. 2: Routes, Source and Availability of the plants versus their frequency

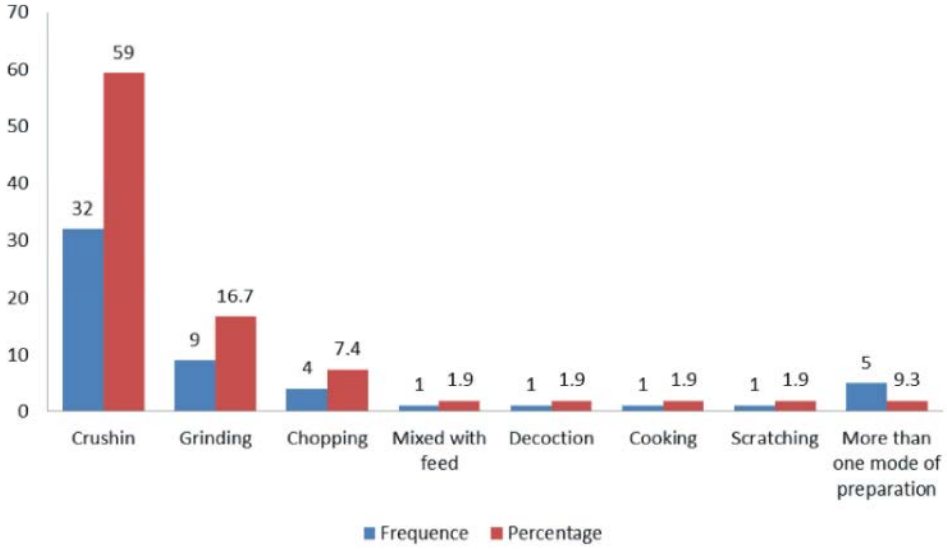

Fig. 3: Mode of traditional drug preparation

by traditional animal healers to treat 33 various livestock ailments in the study areas. According to this study, *Solanaceae* (11.1%), *Fabaceae* (8.1%), *Asteraceae* (7.4%), *Euphorbiaceae* (5.6%) and *Convolvulaceae* (3.7) were the most dominant families of herbal remedies identified in the study area.

This finding is consistent with [17] who conducted and reported *Solanaceae* (11.76%), *Fabaceae* (9.80%), *Asteraceae* (9.80%), *Lobeliaceae* (7.84%), *Lamiaceae* (7.84%) and *Euphorbiaceae* (7.84%) on ethno-veterinary botanical survey of medicinal plants in Kochore district of Gedeo Zone, Southern Nations Nationalities and Peoples Regional State (SNNPRs). This study also revealed that, the identified remedies were used to treat Bacterial, Viral, Fungal, Protozoal, GIT parasites and Ecto parasite diseases, Evil eye; Repeat breeding, Tumor, michi, Bloating and Snake envenomation, but bacterial and parasitic infestations were the major livestock ailments indicated. This finding agree with [18] in eastern Wollega who reported dominant plant families in and around Nekemte and this compatibility might be due to similar climatic and echo logical condition of the two areas. As this study result reveals, more than half of surveyed plant species 59.26% are used to treat both Livestock and Human diseases and this result also indicated most of traditional herbal medicines were being used treat animals

and human diseases in different peasant association of the study areas even by the single traditional healers or animal health practitioners similarly throughout Ethiopia. In contrary, some medicinal plants (40.74%) were exclusively used to treat animal's ailments. This finding is reliable with [19] from India, Traditional Veterinary Medicine used by livestock owners of Rajasthan, there is certain overlap between plants used for Animal and Human medicine however, the dose varies greatly.

This study mismatch with [20] from Northern Ethiopia who stated that, major proportions of medicinal plants were used to treat human ailments. This divergence might be due to different study objectives, less consideration for animal health and rare availability of medicinal plants that had Veterinary importance.

The present study result showed that, out of 54 informants, 90.7%and 9.3% were males and females respectively. Males are the most responsible part of family in learning and passing information related to ethno veterinary herbal drugs verbally to the next generation as well as treating livestock ailments. In contrast to this, females are far less than males up to total exclusion since knowledge transfer is considered as professional secrete and passed almost all to the elder son and rarely to the daughters.

This finding is Coherent with [18] from eastern Wollega, who reported traditional healers and some local farmers involved in the study were male (88.1%) and female (11.9%) and the respondents were older age groups (69.0%). This important Consistency between two results reflects presence of constant factors in the study area. This result agrees with [21]. Males are 100% and females were zero on an ethno veterinary survey of medicinal plants used to treat livestock diseases in Seharti-Samre district, Northern Ethiopia. This correspondence may be due to professional secrete and social or culture exclusion of females.

From age point of view, among 54 individuals interviewed the major participants were old age groups(55.6%) while that of Adults were (44.4%) and less as compared to Old one (Table 1), this indicates that, the more they live the more knowledge accumulation and the more contribution against livestock diseases. This result correspondent with [22] from Mekele northern Ethiopia who reported that majority of the respondents were older than 41 years and very few youths were involved in the administration of herbs in the study area and youngsters consider this drugs as back warded or outdated information and neglect them.

An effort has been made to observe the main source of ethno herbal medicines in the study area. Different sources of plants like wild, cultivated and both cultivated and wild were observed with the percentages of 66.7%, 9.3% and 24.1%, respectively (Table 1). The result indicated that wild type is the most dominant source while those obtained from cultivation and both sources were less common in the study areas. This is closely related with [23] from Pakistan which documented wild plants (68%), cultivated as well as wild (18%) and cultivated only (14%). Again it also uniform with [24] who reported wild source dominancy 76.5% followed by home gardens 13.7% and both (9.6%) from Horo Guduru Wollega. This uniformity might be due to similar weather condition of the study areas and very lesser degree of domestication of medicinal plants.

This finding showed that, availability of herbal drugs in the study area was 79.6% and 20.4% year round and seasonal, respectively (Table 1). This result in concurrence with [18] from East Wollega availability of some ethno-veterinary medicinal plants were affected by season; many of the plants were available every time (92.6%), some are available seasonally (4.90%) and the rest, difficult to get them (2.50%). This Reliability is due to similar climatic condition between study areas and nature of plants surveyed. This study finding reflected types of habitat that were found in the study areas were trees (44.4), herbs (29.6%), shrubs (16.7%) and climbers (9.3%) and trees constitute the largest percentage while climbers are the least (Table 1). The current finding agree with [17] from Kochore district of Gedeo Zone, Southern Nations Nationalities and Peoples Regional State who reported, trees, herbaceous and shrubs medicinal plants were the widely used for the treatment of various ailments that constituting the 30, 27.5 and 27.5% respectively, followed by climbers with 1.5 %.

This consistency might be because of similar habit of society to use similar types of plants and treating identical livestock ailments in different areas by traditional healers and it disagrees with [25] and [26] who documented that herbaceous were widely used for the treatment of domestic animal diseases. This statement opposes each other may because of different culture of society in using herbal medicine and availability of traditional medicinal plant in the two study areas.

The result of this study showed that, the common parts of the plants used for medicinal value in the study areas were root (15%), stem (9%), Leaves (35%), bark (7%), seed (9%), Secretion or sap (6%), Buds (4%), Bulbs (9%) (Fig 1) and more than one parties 3(6%) in which

leaves are frequently used part of the medicinal plant to treat livestock diseases in the study area as compared to the rest parts and this finding is consistent with [23]. Ethno veterinary study of medicinal plants I Malak and Valley, from Pakistan, Mostly the leaves (28%) of the plant were used by the local inhabitants for curing different ailments of livestock and in line with [22] from Mekele northern Ethiopia. The most commonly used plant parts for ethno veterinary medicine preparations were leaves (68.2%). According to this study result, using of leaves for drug preparation had positive impacts for continuity of medically important plants when compared to the other parties like root and bark. Because, unwanted uprooting and complete debarking of plants end up in the destruction of medicinal plants. This result is in agreement with [27] who documented persistent unscientific harvesting of root of single stemmed; sparsely distributed plant may threaten the survival of important plant species.

Findings of the present study indicates that, the common routes of ethno veterinary drug administration mainly used by traditional animal healers are by Oral (74.1%), Nostrils (7.4%), Topical (14.8%) and more than one routes (3.7%) (Table 1) and the choice of appropriate route of administration was greatly dependent on the type of livestock ailments to be treated. This result is consistent with [28-30]. Who reported Routes and mode of application of herbal remedies varied, depending on the perceived diagnosis. Topical application of lotions and leaf/root paste was common practice in the treatment of skin conditions, such as wounds, sores, warts and cuts, as also recorded by and Drenching of prepared medicinal plants through oral means followed by Topical application were effective for the treatment of livestock ailments. Since, both (Topical as well as oral) of them were applied directly to the affected parties of animal's rapid recovery is maintained.

This finding is in agreement with [31] from southern Ethiopia, who reported that oral (58.33%) and topical (29.17%) application and oral and topical or both12.5% applications and these routes of administrations, both oral and topical routes were considered of rapid physiological reaction with the causative agents and increase the curative power of the medicinal plant remedies. The present study showed that, the known mode of herbal medicine preparation used by traditional animal healers in the study area were Crushing (59%), Grinding (16.7%), Chopping (7.4%), Mixed with feed (1.9), Decoction(1.9%), Cooking (1.9%), Scratching (1.9%) and more than one mode of preparation (9.3%) (Figure 3) this finding is in agreement with [32] who reported crushing is the dominant mode of drug preparation.

This study is also in consistent with [33] from Nigeria, Ethno veterinary medical practice for ruminants in the sub humid zone of northern Nigeria. The methods of processing vary from grinding or soaking in water to obtain solutions that are given per os to inclusion in feed stuff and fed to the animal. The present finding concurrent with [10]. Medicinal Plants in the Ethno veterinary Practices of Borana Pastoralists, Southern Ethiopia and disagree [24] who reported highest mode of preparation is Grinding (49.3%) followed by Crushing (27.7%) and others like chopping, decoction, roasting, consumption of the whole parts and Streaking (23%) from Wollega, selected Horo Guduru Districts. This disparity might be due to various knowledge of traditional healers, practice of herbal medicine and different weather condition between two study areas.

As current study showed, medicinally important Folk herbal drugs were encountering many threats in the study areas and all most all of them were human made challenges which had paramount negative effect on the perpetuation of medicinal plants as well as to the life of rural herdsmen especially who are located at the periphery of country in which traditional medicine remain the only treatment option. The principal threats in the study area were Agricultural expansion (Shifting and clearing of forest), Timber work (The most worst challenges criticized by local community of study areas), fire wood, construction wood, over exploitation of plants by commercial herbalist and other challenging factors which endangers medicinal plants are, oral passage of knowledge, keeping the information as professional secrete and transferring it to the elder or most trusted son, Lack of interest of new generation by considering it as back warded knowledge and dose related problems like toxicity and less effectiveness of the medicinal plants this result is compatible with [34] and[35].

CONCLUSSION AND RECOMMENDATIONS

The present study was conducted to document Veterinary Herbal Folk medicine and the indigenous Ethno veterinary knowledge and Practices of community in West Arsi zone. A total of fifty-four traditional healers were interviewed and 54 medicinal plant species which are grouped in to 31 families were identified in the study area and used to treat 33 livestock ailments and the

most common ailment mediated in the study area were Bacterial and Parasitic infestation. The present finding indicated that, majority of the plants were gathered from wild and followed by those collected from home garden based on the knowledge of local elders and different parts of the plant were involved for various drug formulation mainly through crushing and grinding among which leaves comprises greater proportion. According to this finding, the principal root of drug administration was Oral followed by Topical, Nostrils and both oral and topical. However, medicinal plants are contributing crucial role for the livestock owners, they are facing continues threats from the environment like, Timber work, agricultural expansion, overgrazing, oral transmission of knowledge and dose related problems.

So, based on the above conclusion some recommendations were forwarded as Government and local community should give more attention to conserve medicinally important plants, Forest clearing, over grazing and illegal timber work should be minimized, Plants which have medicinal value should be Domesticating from forest, Eethno veterinary knowledge should be Documented in durable format rather than transmitting through oral tradition, Budget should be allocated for further scientific investigation to be done to determine its efficacy, level of toxicity and develop safe and convenient dosage formulation and Special attention should be given for indigenous and seasonally available medicinal plants those having crucial societal need.

Abbreviations:

AAU: *Addis Ababa University*; CSA: *Central Statistic Agency;*
DVM: *Doctor of Veterinary Medicine;*
ESCOP: *European Scientific Cooperative on Phytotherapy*;
FVM: *Faculty of Veterinary Medicine*;
GIT: *Gastrointestinal tract*;
KDARDO: *Kofale Districts Agriculture and Rural Development Office;*
NA: *Not Applicable;*
NMSA: *National Metrological Service Agency;*
SDARDO: *Shashamane Districts Agriculture and Rural Development Office;*
SNNPR: *Southern Nations Nationalities and Peoples Regional States*;
SPSS: *Statistical Package for the Social Science*;
WHO: *World health Organization*.

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