

Research Article

ISSN 2320-4818
JSIR 2014; 3(4): 433-445
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Received: 10-06-2014
Accepted: 24-08-2014

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An ethno-veterinary botanical survey of medicinal plants in Kochore district of Gedeo Zone, Southern Nations Nationalities and Peoples Regional State (SNNPRs), Ethiopia

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Abstract

For many years, different social and ethnic groups of Ethiopia, the use of ethno-veterinary practices to treat and control livestock and human diseases is an old practice, particularly the marginal districts where animal health services are still poor. However, this traditionally medicine practices source of knowledge is not sufficiently documented, that hampers the extensively utilize, validation and evaluation tracks. This study was aimed to document the ethnoveterinary knowledge and practices used to treat and control of livestock and human diseases in Kochore district, SNNPRs, Ethiopia. A purposive sampling technique study was carried out using a semi-structured questionnaire and field observational to document indigenous knowledge of 23 traditional healers. Descriptive statistics were used to analyze and summarize the ethno-botanical data. Forty plants, which have medicinal value against a total of 29 livestock and animal diseases, were reported and botanically identified as belonging to various 26 plant families. Most of the plant species reported to belong to one of nine major families: So lanaceae (11.76%), Fabaceae (9.80%), Asteraceae (9.80%), Lobeliaceae (7.84%), Lamiaceae (7.84%), Euphorbiace (7.84%), Simaroubaceae (3.92%), Rutaceae (3.92%) and Rubiaceae (3.92%). Woody plants (trees 30% and shrubs 27.5 %) and herbaceous 27.5% were the major growth habit used, whilst leaves (62.5 %) were the major plant parts used in the study areas. The informants mostly practice oral drenching of plant technique preparations (64.7%). Out of the total 40 ethno-veterinary medicinal plant species were identified and documented in the study area 67.5% predominantly used to livestock ailments treatment followed by 27.5% and 5% for livestock and human (both) and human ailments treatment respectively. The distribution of healers indicated that the majority were in the range of 46- 60 years of age (91.3%, elders) and 8.7% between 30 and 45 years old. Majority of informants accounting for 82.6% were males, and the remaining 17.4% were females. This study revealed that traditional medicine is, playing a significant contribution in obtaining the first aid healthcare needs of the Kochore district community. The acceptance and continuation of this practice are due to the limited access to modern healthcare facilities, as main factors. Documentation of the traditional uses of medicinal plants is an urgent matter and important to preserve the knowledge, and can be used to support the country's livestock and human health care system and improve lives and livelihoods.

Keywords: Traditional healers, Livestock, Medicinal plants, Human diseases, Kochore, Southern Ethiopia.

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Introduction

In most developing African countries like Ethiopia, which has the huge livestock population in Africa with a total contribution of 15% GDP and 33% of the agricultural output¹, and possess about 41.5 million heads of cattle, 41 million sheep and goats, 5-8 million equine (horses, Donkeys and Mules), 1 million camels, and over 42 million poultry, livestock production remains crucial and represents a major asset among resource-poor smallholder farmers by providing milk, meat, skin, manure and traction.² However, the economic benefits of livestock populations remain low due to prevailing livestock diseases which are among the principal bottle necks of livestock performance and cause of high economic losses of the resource poor farmers.³ The majority of livestock raisers in Ethiopia is geographically far away from the sites of animal clinic stations; and those that are closer to the sites may not afford the fees for services. The inadequate funding at the national level for the prevention and control of animal diseases adds to the burden, especially among pastoralists who live in the remote arid and semi-arid lowland parts of the country.⁴

Modern veterinary medicine are not well developed in the country, nor are modern drugs available adequately to fight animal diseases. It is estimated that the traditional remedies are sometimes the only source of therapeutics for nearly 80% of human population and 90% of livestock in Ethiopia of which 95% are plant origin.⁴⁻⁷ Ethiopian farmers and pastoralists rely on traditional knowledge, practices and locally available materials, plants in particular, to control and manage livestock diseases⁸⁻¹⁰ and Ethiopians have used traditional medicines for many centuries, the use of which has become an integral part of the different cultures in Ethiopia, due to cultural acceptability, efficacy against certain diseases and economic affordability.¹¹ The indigenous peoples of different localities in the country have developed their own specific knowledge of plant resource uses, management and conservation.¹² According to Medicinal Plants Genetic Resources Department and Pound and Ejigu in some parts of the country, livestock diseases such as anthrax, blackleg, anaplasmosis, ascariasis, abscess, leeches, trypanosomiasis, lymphangitis, stomatitis, and coccidiosis have been treated using various natural plant product combinations.^{13, 14} Therefore, due to the inadequate animal health services in the different areas of country, traditional ways of treatment appear to be a viable alternative to tackling the problems approach.

The application of traditional medicine to veterinary medicine has been termed as ethnoveterinary medicine. It

is mainly concerned with folk beliefs, knowledge, skills, methods and practices which are used in the healthcare of animals. The knowledge varies from region to region, and from community to community.¹⁵ In general, ethnoveterinary practices have been developed by trial and error and by actual experimentation.¹⁶ Ethnoveterinary medicine comprises of traditional surgical techniques, traditional immunization, magico-religious practices, and the use of herbal medicines to treat livestock diseases.^{17, 18}

The relationship between the use of medicinal plants in animals and humans is rather complex. However, an overlap in the use of plant remedies for the same indications in animals and human beings may occur, pointing to a theory that humans may have tried these remedies in animals before they used them for their own medical problems. Alternatively, humans may have used their overall arsenal of medicinal plants to treat animals, irrespective of whether or not they used the remedies themselves. Some evidence indicates that some animals may develop a natural attraction towards certain healing chemicals in plants.¹⁶ According to some researchers, about 30% of botanical preparations that are used to treat livestock diseases in Africa are probably effective.⁵ For example, one research has indicated that among 31 medicinal plants used by the Fulani of Mauritania, 10 have been found to be useful for the treatment of eight types of animal diseases.

In most scenarios, similar to other forms of traditional knowledge, the ethnoveterinary medicinal plant knowledge, is not compiled¹⁹, in Ethiopia is passed verbally from generation to generation and valuable information can be lost whenever a traditional medical practitioner passes without conveying his traditional medicinal plant knowledge, and the younger generation is not interested in living the traditional way of life.²⁰ This situation is exacerbated by rapid socioeconomic, technological and environmental changes.²¹ In addition, the loss of valuable medicinal plants due to population pressure, agricultural expansion and deforestation is widely reported by different workers.²² As a result, the need to perform ethnobotanical researches and to document the medicinal plants and the associated indigenous knowledge must be an urgent task.^{23, 24}

The studies conducted on the traditional remedies used in animal health care in Ethiopia are inadequate when compared with the multiethnic cultural diversity and the diverse flora of Ethiopia. Thus, this study, it was necessary and important, was initiated to collect and document the traditional use of medicinal plants available in

Kocherie Woreda, Southern Nations, Nationalities and Peoples Regional State (SNNPR), which suppose that the data could be used as a source for further studies on medicinal plants in Kocherie Woreda and for future pharmacological and phytochemical studies. Therefore, this paper presents compiled ethno-veterinary medicinal plants used in the study districts, Kocherie woredas of the Southern Ethiopia.

Materials and Methods

Study areas

The study was conducted in the Kocherie district in Gedeo Zone, Southern Nations Nationalities and Peoples Regional State (SNNPR), southern Ethiopia. Kocherie is located 440 km from Addis Ababa and bordering with Oromia to Eastern and Southern Parts of the woreda, Gedeb woreda to west, and Yirgachefee woreda to North part of the woreda. It is approximately 20119.54ha and also the study district comprises of 25 kebeles i.e. 2 kebeles from urban and 23 kebeles from rural areas).

The altitude of the woreda is ranging from 1500-3700m.a.s.l and it has two agro-climate zones; Dega, 2300-3700m.a.s.l (26%) and Weyna Dega 1500-2300m.a.s.l (74%). Average annual temperature ranges between 25 and 31°C, the area is dominated by indigenous plants.

Mixed crop and livestock farming system is the mode of agriculture in the woreda with cattle (13,624), sheep (13,200), poultry (38,400), horses (6300), goat (4000), Donkey (2554) and mule (960) as the major livestock kept which are highly important for the livelihood of the local population in woreda. Cattle, sheep, and poultry production, particularly plays a central role in the farming system. And also the main crop dominants are maize, boleke, bakela, wheat, barely, and teff, from root crops: sweet potato, potato, cassava and carrot. There are no adequate veterinary manpower (only one veterinarian, 14 AHA, and 1 laboratory Technicians) and veterinary clinics, except one veterinary clinic located in the headquarter town of the woreda namely Chelelektu. Animal health professionals together with modern drugs, vaccines are mobilized to the rural areas and villages during disease outbreaks and yearly vaccination campaigns, but not sufficient and on time before the out breaks happened. The woreda has been got the drugs from the private drug shops (two in number), governmental clinic (one in number) and black market (Golecha kebele only), which comes from the Kenyan border.

Field survey

An ethno-veterinary botanical survey was conducted to congregate information on the traditional uses of plants in animals and human health care system using a semi-structured interview and observation²⁵ with the traditional healers who were willing to share to their indigenous knowledge. A prior communication was done with the zone and woreda livestock coordinators and veterinarian, kebele administrative and elders, and agricultural developing agents (animal health assistances) up on the objective of the study. And the selected traditional healers in the study areas clearly discussed and communicated with kebele administrative and elders, and agricultural developing agents (animal health assistances) on the objective of the study. At this point, the healers rose questions about their safety, payment and how prevent their intellectual from someone copied/stolen while the interviewing and collecting plants. Finally, we were mostly arrived to the agreement by avoiding the fear to feed us the genuine information, but no further attempt was made to influence those traditional practitioners who completely refused to provide information. A total of 23 individual healers was purposively selected and interviewed based on their knowledge on traditional medicine using semi-structured interviews and field observations.

Sample Size and Sampling Techniques

In this study three kebeles were selected from the study area using purposive sampling techniques. This is because of the kebeles are typically have an intellectual healers and covered by different plant species and these plants are used for traditional medicinal value to treat different livestock and human diseases. The researcher selected 23 healers using purposive sampling technique to gather the relevant data.

Data collection

Specimens of plants that were used by the traditional healers for treatment of livestock and human ailments were collected. The collection data were based on the information supplied by the healers during the interview. The specimens of plants were collected in the field using standard botanic methods together with the traditional healers, that including the vegetative part, leaves, and floral, fruiting and/or seed parts as it was appropriate for taxonomic identification. During collection information regarding habitat data, general description of the plant and geographical site of collection were recorded. The information collected included the local name of the

traditional medicinal plant, type (cultivated or wild), diseases treated, parts used, condition of the plant used, method of preparation, route of administration, ingredients added, other uses of the plant and existing threats to medicinal species. The collected samples of medicinal plants were coded, pressed, dried and then taken for botanical identification by botany specialists in Science Faculty of Addis Ababa University National Herbarium.

Data analysis

The ethno botanical data were analysis using descriptive statistics, i.e., Proportions (percentiles), figures and tables were used to summarize the collected ethno-veterinary medicinal data.

Results and Discussion

A total of 40 ethno-veterinary medicinal plant species belonging to various 26 families were documented with details on their importance, mode of application, use, ingredient added, traditional preparation, plant part used, habit, family name, scientific name, local name and code (Table 1). Solanaceae (11.76%), Fabaceae (9.80%), Asteraceae (9.80%), Lobeliaceae (7.84%), Lamiaceae (7.84%), Euphorbiaceae (7.84%), Simaroubaceae (3.92%), Rutaceae (3.92%) and Rubiaceae (3.92%) (Figure 1) and also *Solanum anguivi* Lam. (5.88%), *Vernonia amygdalina* Del. (5.88%), *Chenopodium ambrosioides* L. (5.88%), *Brucea antidysenterica* JF. Mill. (3.92%), *Calpurnia aurea* (Ait.) Benth. (3.92%), *Croton macrostachyus* Del (3.92%), *Solanum incanum* L. (3.92%), and *Tragia brevipes* Pax (3.92%) (Figure 2) have been the most frequently used and reported plant families and species for ethno-veterinary practices. Many plants were mentioned against particular diseases, one plant species to one disease, and mixing of two or more different medicinal plants against a single disease was also commonly observed.

The survey revealed that the major portion of the farmers in the villages relies on traditional veterinary knowledge, practices and locally available materials⁷ primarily medicinal plants to cure and prevent livestock health problems such as Mastitis, Internal parasites, External parasites, Blackleg, Calf diarrhea, Trypanosomosis, Leishmaniasis, Pasturellosis, Babesiosis, Equine colic, Bloat, local swelling, Actinobacillosis, Ulcerative lymphagitis, Dermathophilosis, Equine joint swelling, Rabbits, Retain placenta, Dystocia, *T. equiperdium*, Epizootic lymphagitis and swelling, and human health problems such as Menstrual disorder, Rabbits, Dandruff, abdominal pain, Trachoma, skin disordered, Internal

parasites, Abdominal swelling, Teeth pain/diseases, Bugunch and Re-disease (Table 2). Although, other local materials are used, the use of plants for the treatment of various ailments prevails.

In this study, 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 % (Figure 3). On the plant parts basis used for medicinal purposes, different plant parts like leaves, seeds, roots, bark and whole plant were used for treatment. However, the leaves were the predominantly, 62.5%, used plant part of herbal preparation in the areas, which agrees with the study in other part of Ethiopia²⁶; Leaves have been used as a remedy more than other parts since leaves seem to contain more active chemicals followed by 12.5% root, 12.5% bark, 7.5% seed, and 5% whole plant by the ethno-veterinary practitioners (Figure 4). Such wide harvesting of leaves and seeds compared to roots, barks and whole plants which are important for survival of plants has a less negative impact on the survival and continuity of useful medicinal plants and hence does not affect sustainable utilization of the plants, but in this study area the combine factors like the roots, barks and whole plants used for ethno-veterinary practice by the traditional healers and the residents also depend on medicinal plants for various purposes such as forage, firewood, spice, construction, agricultural expansion, and food they have the negative pressure on sustainability of the medicinal plants and climate change. A numerous techniques of preparation were employed before administering the remedies, while the leaves, roots, seeds, and barks of traditional medicinal plants are crushed/chopped and squeezed and then filtrated to get the plant juice needed for oral drenching (64.7%), topical (19.6%), nasal (13.7%) and ocular (1.9%) application (Figure 5). The quantity of plant part used were measured by the number of leaves, seeds, and length of root and bark. The units of measurements used to determine dosage were coffee cup, finger length, beer bottle, highland plastic, number of drops and teaspoons. Some of the plant parts are processed with other ingredients like butter, honey and coffee. Thus, the normality and accuracy dose determination and unit measurements of the medicinal plants were the problems or gaps of the traditional veterinary healers.

Table1: List of ethno-veterinary medicinal plants for treatment of livestock ailments in study area

No.	Code	Local Name	Botanical/Scientific Name	Family Name	Habit	Preparation	Ingredients add	Use	Mode of application	importance
1	2.1	Dorie	Ipomea sp.	Convolvulaceae	Climber	Grinded seed mixed with water and then applied	water	Actinobacillosis, Menstruation disorder* Abdominal pain*	Oral	Veterinary Human
2	2.2	Jilo	Acmella caulirhiza Del.	Asteraceae	Herb	Roasted leaves grinded and mixed with salt and then applied	Salt	Actinobacillosis, Bugunch*	Topical	Veterinary Human
3	3.1	Unknow	Monopsis stellarioides (Presl) Urb.	Lobeliaceae	Herb	Crushed the whole parts and then mixed with little water	Water	Internal Parasite** Abdominal pain** Abdominal swelling **	Oral , Nasal	Veterinary Human
4	6.1	Chegogit	Cynoglossum lanceolatum Forssk.	Boraginaceae	Herb	Chopped root or crushed and dried root mixed with butter	Butter	Mastitis	Topical	Veterinary
5	6.2	Roriqa	Solanum anguivi Lam.	Solanaceae	Shrub	Dried and crushed leaves mixed with butter	Butter	Mastitis	Topical	Veterinary
6	7.1	Anamunre	Ajuga integrifolia Buch.-Ham. ex D. Don	Lamiaceae	Herb	Chopped leaves mixed with water	Water	Internal Parasite**	Oral	Veterinary Human
7	8.1	Gerawa	Vernonia amygdalina Del.	Asteraceae	Tree	Crushed seed mixed with water and filtered	Water	Equine Colic, Pastuerollosis , Abdominal pain, malaria*	Oral, Nasal	Veterinary
8	8.2	Embuay	Solanum incanum L.	Solanaceae	Shrub	Chopped leaves mixed with water and then sieved	Water	Pastuerollosis	Nasal	Veterinary
9	11.1	Kteketa Mesay	Dalbergia lactea Vatke	Fabaceae	Shrub	Crushed leaves mixed with water and then applied	Water	Mastitis, Internal Parasite, local Swelling*	Oral	Veterinary Human
10	12.1	Lalisa/Ale blabit	Tragia brevipes Pax	Euphorbiaceae	Climber	Chewed the root and swallowed	Noon	Abdominal pain*	Oral	Human
11	13.2	Bessana	Croton macrostachyus Del.	Euphorbiaceae	Tree	A Chopped bark is filtered and then orally drenching	Noon	Equine Colic, abdominal pain, Bloat	Oral	Veterinary
12	15.1	Qilitibata	Periploca linearifolia Quart.-Dill. & A. Rich.	Asclepiadaceae	Climber	Crushed leaves mixed with water and then applied	Water	Mastitis	Oral	Veterinary
13	15.2	Qosoro nech	Echinops amplexicaulis Oliv.	Asteraceae	Herb	Root is grinded and mixed with water	Coffee	Ulcerative lymphagitis	Oral	Veterinary

14	15.3	Shigidida	Gardenia ternifolia Schumach. & Thonn.	Rubiaceae	Tree	Leaf is crushed and mixed with water	Coffee	Ulcerative lymphagitis	Oral	Veterinary
15	17.1	Oodasa	Nuxia congesta R.Br. ex Fresen.	Loganiaceae	Tree	A crushed bark is mixed with water	Honey	Equin-Joint swelling, Gemtokie(Re-disease)*	Oral	Veterinary Human
16	18.1	Anonoo/ agansa	Ekebergia capensis Sparrm.	Meliaceae	Tree	A grinded bark is boiling	Water	Rabid animal, Rrabid human	Oral	Veterinary Human
17	19.1	Eticha	Dodonea angustifolia L.f.	Sapindaceae	Shrub	Chopped leaves mixed with water and filtered	Water	Retained placenta**, Distocia	Oral	Veterinary human
18	25.1	Tulange	Clerodendrum myricoides (Hochst.) Vatke	Lamiaceae	Shrub	Chopped root is mixed water	Water	Mastitis , Teeth pain/disease*	Topical Oral	Veterinary Human
19	26.1	Cheketa	Calpurnia aurea (Ait.) Benth.	Fabaceae	Shrub	Crushed leaves mixed with water	Water	Internal Parasites, Pasteurolosis, mastitis, dermathophillosis, ectoparasites(tick, fleas, lice)	Topical, Oral	Veterinary
20	26.2	Kaliecha	Thunbergia alata Boj. ex Sims	Acanthaceae	Climber	Crushed leaves mixed with water and filtered , and the sediments applied topically	Water	Internal Parasites	Topical Oral	Veterinary
21	27.1	Arenji	Phytolacca dodecandra L 'Herit.	Phytolaccaceae	Shrub	Crushed Leaves and mixed with water	Water	T.equiperdium, skin disordered*	Nasal	Veterinary
22	28.1	unknown	Platostoma rotundifolium (Briq.) AJ Paton	Lamiaceae	Herb	Crushed Leaves and filtrated	Noon	Trachoma*	Ocular	Human
23	35.1	Kellela	Vigina sp.	Fabaceae	Climber	Chopped leaves mixed with water and filtered	Water	Trypanosomosis	Oral	Veterinary
24	35.2	Kiete	Zehneria scabra (Linn.) Sond.	Cucurbitaceae	Climber	Crashed root mixed with water and filtered	Water	Trypanosomosis	Oral	Veterinary
25	35.3	Gliena /Korch	Erythrina brucei Schwein.	Fabaceae	Tree	Crushed bark mixed with water and filtered	Water	Trypanosomosis	oral	Veterinary
26	42.1	Abayi	Maesa lanceolata Forssk.	Myrsinaceae	Tree	Crushed Leaves mixed with water and then filtered	Water	Leech infestation	Nasal, Oral	Veterinary
27	42.2	Tobako	Nicotiana tabacum L.	Solanaceae	Shrub	crushed Leaves mixed with water and then filtered	Water	Leech infestation, tick infestation	Nasal, Oral	Veterinary

28	44.1	Yehieto/Kosso	Hagenia abyssinica (Brace) JF. Gmel.	Rosaceae	Tree	Leaves chopped mixed with water and sieved	Water	Internal parasite**	Oral	Veterinary Human
29	45.1	unknown	Iresine herbstii Lindl.	Amaranthaceae	Herb	Chopped leaves and mixed with water	Water	Trypanosomosis	Oral	Veterinary
30	46.2	unknown	Chenopodium ambrosioides L.	Chenopodiaceae	Herb	Crushed the whole herbaceous parts and then mixed with little water	Water	Internal Parasite** Abdominal pain** Abdominal swelling **	Oral , Nasal	Veterinary Human
31	47.1	Hijija	Urera hypselodendron (A. Rich.) Wedd.	Urticaceae	Shrub	Chopped Leaves and mixed with water	Water	Retained placenta	Oral	Veterinary
32	50.1	Hagella	Flacourtia indica (Burm. f) J Merr.	Flacourtiaceae	Tree	Crushed leaves mixed with water and filtrated	Water	Pasteurollosis	Oral	Veterinary
33	55.1	Sisa	Fagaropsis angolensis (Engl.) Dale	Rutaceae	Tree	Chopped bark of the tree is mixed with water and then filtered	Water	Babesiosis	Oral	Veterinary
34	56.1	Baranga	Lobelia giberroa Hemsl.	Lobeliaceae	Shrub	Crushed leaves mixed with water	water	Blackleg	Topical	Veterinary
35	57.1	Lapha	Brucea antidysenterica JF. Mill.	Simaroubaceae	Tree	Chopped seeds mixed with water and then filtered	Water	Epizootic lymphagitis	Topical , Oral	Veterinary
36	58.1	Woriola	Leucas deflexa Hook.f	Lamiaceae	Herb	Chopped leaves mixed with water and then filtered	Water	Pasteurollosis	Oral	Veterinary
37	59.1	Edera	Hypericum revolutum Vahl	Hypericaceae	Tree	Chopped leaves and then filtered	Noon	Calf diarrhea	Oral	Veterinary
38	59.2	Helelanjo	Pentas lanceolata (Forssk.) Defiers	Rubiaceae	Herb	Chopped leaves and then filtered	Noon	Calf diarrhea	Oral	Veterinary
39	60.1	Gesho	Rhamnus prinoides L Herit.	Rhamnaceae	Shrub	Chopped leaves mixed little water and then filtered	Water	Equine colic, leech infestation, dandruff	Oral, Topical	Veterinary
40	60.2	Tenadam	Ruta chalepensis L.	Rutaceae	Herb	Chopped leaves mixed little water and then filtered	Water	Equine colic, abdominal pain	Oral, Topical	Veterinary

*= only for human disorders, **= for both animal and human disorders

Table 2: The number of ethno-veterinary medicinal plant remedies used to treat ailments/conditions in the study area

Aliments/conditions treated	Number of ethno-veterinary medicinal plant remedies used
Actinobacillosis	2
Mastitis	6
Trypanosomosis	4
Equine colic	4
Babesiosis	1
Blackleg	1
Pasteurellosis	5
Ulcerative lymphagitis	2
Epizootic lymphagitis	1
T.equiperdium	1
Equine joint swelling	1
Rabid animal	1
Internal parasite	7
Rabid man	1
Ectoparasites (Tick, Fleas, Lice...)	2
Dermatophillosis	1
Retained placenta	2
Dystocia	1
Teeth pain/ disease	1
Trachoma	1
Leech infestation	3
Calf diarrhea	2
Menstruation disorder	1
Abdominal swelling	2
Abdominal pain	6
Local Swelling	1
Bloat	1
Bugunch	1
Gemtokie/re-disease	1
Dandruff	1

In the study area the knowledge, information on the ethno-veterinary medicinal plants are rarely found in written form; the traditional healers are acquired from their

forefathers, friends, passengers, and by trial and error approaches and some of them transferred to their children, the majority often to the first-born and only some of the traditional healers to their honest and faithful children who can never leak information to others without regarding the age from generation to generation while the others kept the knowledge with them for the sake of secrecy. Derogatory attitudes towards the traditional medicine practitioners had forced healers to keep their knowledge and practices to themselves. Moreover, it is an income generation activity for these healers. This is analogous with the studies done in other part of Ethiopia.²⁷ Most of the plant species were collected from wild habitats¹⁰ and few of them obtained from around the home garden, and are being exploited to cure and control the livestock and human diseases. The truth is that the medicinal plants in largely found in the natural habitats faced a major threat to their survival of the mother plants due to the combined effect of factors like continues the mass destruction in their habitats⁷, cultivation of marginal lands/agricultural expansion^{28, 29}, grazing, soil erosion, orally transfer of endogenous knowledge from generation to generation, herbal preparation that involves roots, barks, and whole parts³⁰, draught, urbanization^{31, 32} and agricultural expansions. As a result, the stocks of the ethno-veterinary medicinal plants are coming shrink. Some of the surveyed traditional medicine plant species practiced by informants are recorded in other parts of the country like: *Cynoglossum lanceolatum* Forssk, *Ajuga integrifolia* Buch.-Ham. ex D. Don, *Vernonia amygdalina* Del., *Solanum incanum* L., *Tragia brevipes* Pax, *Croton macrostachyus*, *Dodonea angustifolia* L.f., *Calpurnia aurea* (Ait.) Benth., *Phytolacca dodecandra* L 'Herit., *Maesa lanceolata* Forssk., *Nicotiana tabacum* L., *Hagenia abyssinica* (Brace) JF. Gmel., *Chenopodium ambrosioides* L., *Brucea antidysenterica* JF. Mill., *Rhamnus prinoides* L 'Herit., and *Ruta chalepensis* L. *Hagenia abyssinica* is used to treat internal parasite in livestock in Tigray region, Northern Ethiopia³³, and in Kofle, Bale, and Debark rural communities of Ethiopia³⁴, and also used to treat tapeworm in human in Kofle, Bale, and Debark rural communities of Ethiopia, in Southeast of Ethiopia³⁵ and by Zay people in Ethiopia. Similar, its use for treatment of livestock ailments have been also documented.³⁶⁻³⁸ The medicinal uses of *Nicotiana tabacum* L. to treat a leech infestation in Tigray region, Northern Ethiopia³³, and tick infestation in South Omo, Southern Ethiopia³⁹. *Calpurnia aurea* (Ait.) Benth. Plant species use to treat mastitis, dermatophillosis, and ectoparasites (tick, fleas, lice) Tigray region, Northern, and also *Croton macrostachyus*

for bloat in Borana Pastoralists, Southern Ethiopia.⁴⁰ The result of this study is agreed with the all above citation and documentation.

The distribution of healers indicated that, of the 23 traditional medical practitioners interviewed, the majority was in the range of 46- 60 years of age. Further analysis showed that 91.3% were over 46 years old, and 8.7% between 30 and 45 years old. Majority of informants

accounting for 82.6% were males, and the remaining 17.4% were females. This work indicated that among the informants, nearly 91.3% traditional veterinary healers were elders. Out of the total 40 ethno-veterinary medicinal plant species were identified and documented in the study area 67.5% predominantly used to livestock ailments treatment followed by 27.5% and 5% for livestock and human and human ailments treatment respectively (Figure 6).

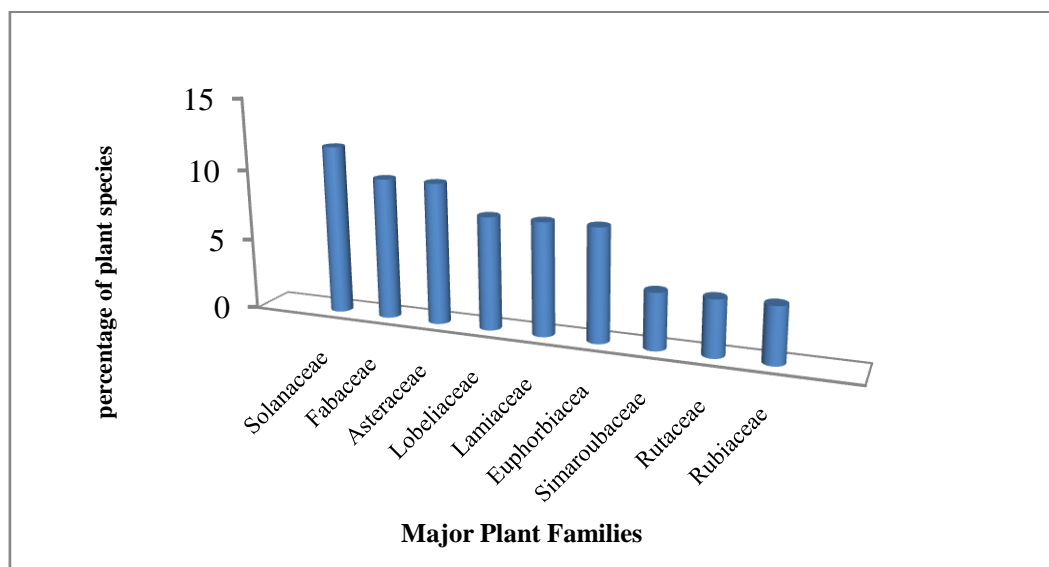


Figure 1: The most frequently used and reported plant families for ethno-veterinary practice in Kochore woreda, Southern Ethiopia

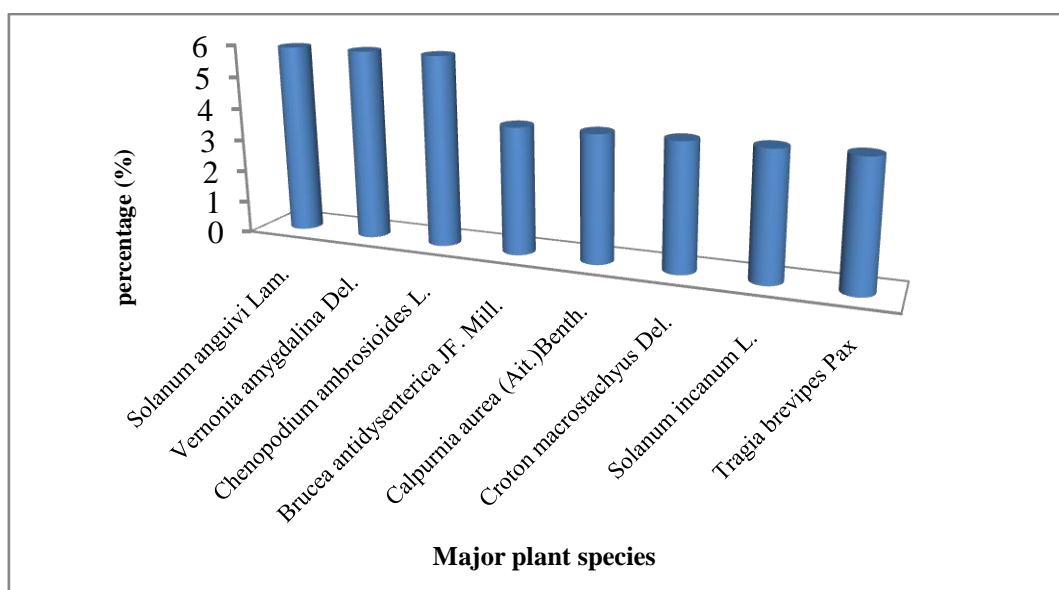


Figure 2: The most frequently used and reported plant families for ethno-veterinary practice in Kochore woreda, Southern Ethiopia

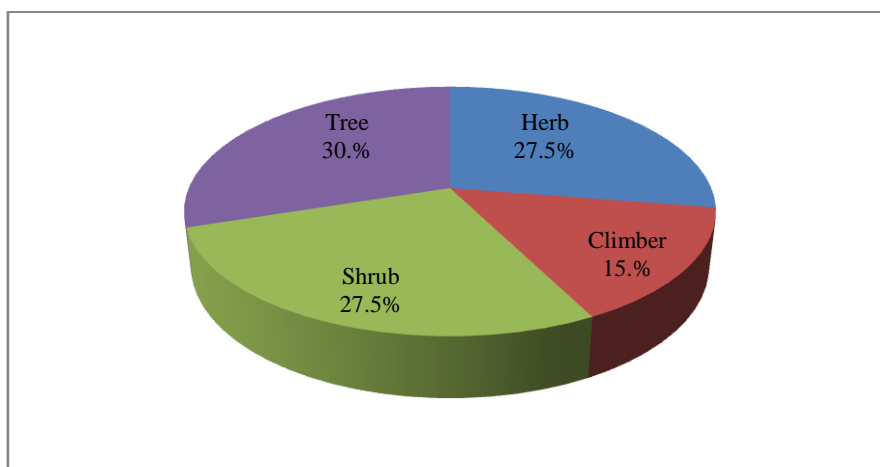


Figure 3: Proportions of growth form of medicinal plants identified for treatment of different livestock and human ailments in Kochore woreda, Southern thiopia

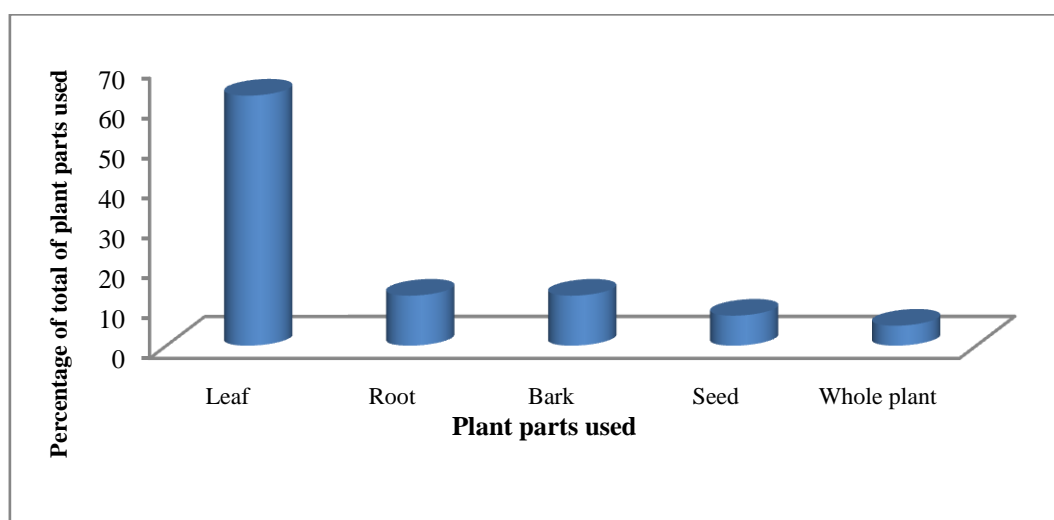


Figure 4: Proportions of growth form of medicinal plants identified for treatment of different livestock and human ailments in Kochore woreda, Southern Ethiopia

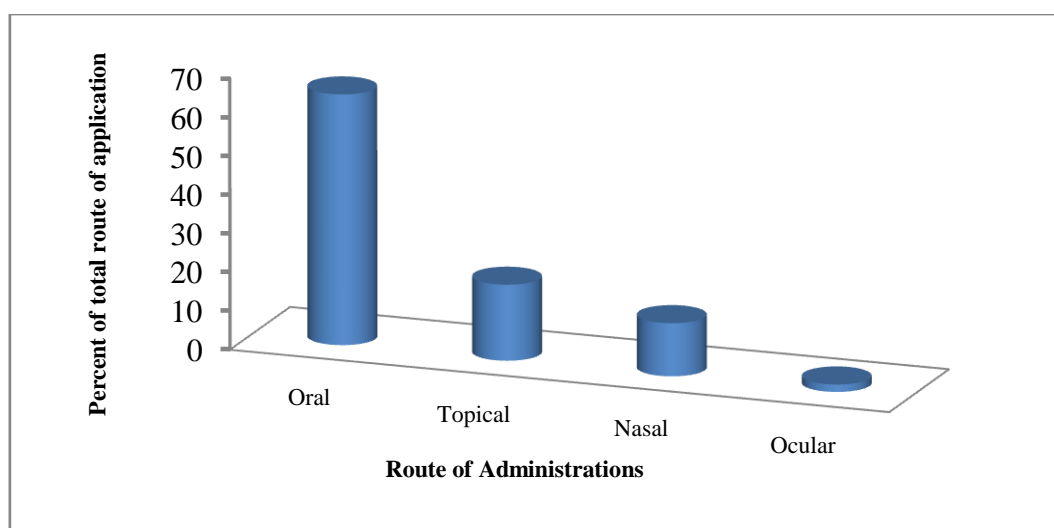


Figure 5: Proportion of route of administration of plant preparations for treatment of livestock and human ailments in kocheore woreda, Southern Ethiopia

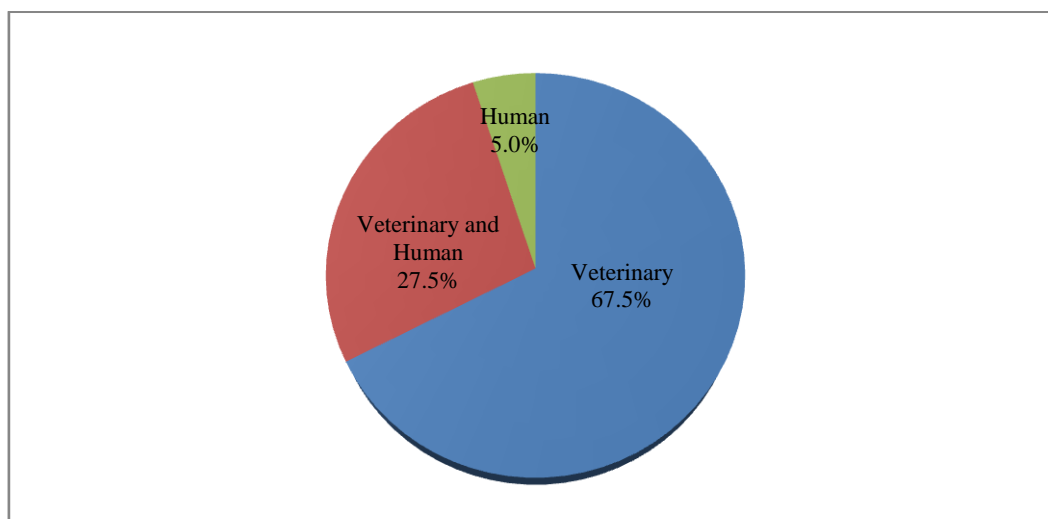


Figure 6: The total proportion of the ethno-veterinary practices used for the treatment of livestock, human and both diseases by the healers in Kochore woreda, Southern Ethiopia

Conclusion

The people of Kochore districts were shown in this study to have a wealth of knowledge about traditional veterinary medicines for treating and controlling their livestock and human diseases. For centuries, the local farmers have learnt a great deal about animal and human diseases and their way of managing through indigenous knowledge to protect their health and enhance productivity. The region possesses a particularly wide range of potentially useful medicinal plants, more extensive indeed than available in many other parts of the country.

This study indicates that, the fear of destruction of medicinal plants due to plant parts collected for the purpose of medicine is minimal as the leaves were the leading plant parts sought in the area. Moreover, the harvest of whole plants is not often practiced in the area, but the combined effect of factors faced a major threat to the survival of the mother plants, stock source.

This finding shows us that there is lack of precision in the determination of doses in the study area since there were variations in the units of measurement and the quantity of plant parts used. Hence, the precision and standardization dosage as one drawback for the recognition of the traditional health care system.

Herbal preparations are crude and could potentially be toxic. Research is therefore needed to determine optimal doses and concentrations of the preparations and to identify the side effects of the remedies. Moreover, the efficacy of the preparations, techniques, and practices need to be investigated to identify promising plants for use in

livestock development proposals. The documentation and conservation of medicinal plants are highly recommended.

Training and awareness creation should be given to traditional healers and the local community, respecting the management of medicinal trees and shrubs, to encourage and permit their cultivation on a large scale.

Acknowledgements

The author gratefully acknowledges Southern Agricultural Research Institute (SARI), Hawassa, Ethiopia for financial and logistic support. I would like to express my deepest gratitude to the informants for sharing their time and knowledge genuinely. I grateful to Dr. Kedir, who facilitated the communication with kebele DA's and administrative in identifying the traditional healers and his assisted during data collection and sample exploration. I appreciate Mr. Melaku Wondafrash, Herbarium specialist, for his valuable support in the identification of plant specimens at the National Herbarium, Addis Ababa University. And I like to appreciate Mr. Kefyalew Megene and Yared Fanta who assisted me with data collection and sample exploration. At the last but not least, I want to say thank to Mr. Adisu Afrasa, SARI's driver, for his kind cooperate in transporting the researcher, specimens, assistants and informants from place to place.

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