

Ethnoveterinary Survey on Medicinal Plants in Aleta-Chuko District of Sidama Reginal State, Ethiopia

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Abstract

The survey was conducted from April to July 2021 to assess the ethnoveterinary medicinal plants in Aleta-Chuko district of Sidama reginal state, Ethiopia. Study population were traditional animal healers and elders. Data were collected using pre-tested structured questionnaires. Ethical clearance were obtained from Hawassa University, Faculty of Veterinary Medicine. Data were analyzed by descriptive statistics and using SPSS software version 21. A total of 31 well-known traditional animal healers, Males 16(51.6%) and females 15 (48.5%) were interviewed and 38 medicinal plants were identified with their local name, parts used, preparation method, disease type treated, rout of administration, forms, and availability of the plant were documented. As the traditional healer responded Gidincho and Hengedicho are most used medicinal plants, followed by Reejje, Duwancho and Noole respectively. The study revealed that the part of the plant which is highly used for the preparation of the remedies were leaves (65%) followed by bark (16%). Majority animal healer were elder farmers who work on animal healing for 20 years and above. They adopted their knowledge from their family member especial 64.5% from their fathers. The overall study revealed that the traditional healers have rich knowledge on ethno-veterinary medicines to manage their livestock through indigenous knowledge, to protect the health and increase productivity. However, this traditional knowledge is still transferred orally. Therefore, attention should be given on the documentation, plant cultivation and conservation practice. Further studies should be conducted to determine safety, toxicity and dose of the medicinal plants identified in this study.

Keywords: Medicinal Plant, Aleta-Chuko, Sidama, Ethiopia

Introduction

Domestic animal, production remains crucial and represents a major asset, in developing African countries like Ethiopia, among resource-poor smallholder farmers as sources of food traction, manure, raw materials, investment, cash income, security, social and cultural identity [1]. However, the economic benefits of livestock populations remain lower 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 [2]. Disease is major constraint to livestock production and development tin rural and peril-urban communities where most of the Ethiopian livestock population is found. Most of these communities live in marginal areas affected with endemic pathogens, vectors and diseases[3]. These situations have forced the majority of livestock owners in Ethiopia to rely chiefly on traditional animal health practice of their livestock [4]. In such circumstances ethno veterinary medicines like medicinal plants, surgery techniques and others provide readily available low-cost alternatives to the poor society of developing nations [5]. And in fact, most of the medicinal plants used in ethno veterinary medicines are derived from plants [6].

In Ethiopia, still Plants have been used for medicinal purposes due to poor availability of modern health care facilities and poverty of indigenous people and sometimes the only sources of therapeutics for human and livestock population[7]. Despite their crucial role in treating and control livestock diseases and health of human 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 of herbal heritage from generation to generation verbally rather than in writings[8]. And in most developing countries, including Ethiopian it has not yet been well documented and much effort is needed in research and integration activities [9, 10]

Ethno-veterinary medicine is in 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 [11-13]. As a result, to preserve this indigenous knowledge there is imperative need to document, research and integration activities to preserve them in written form for next generation. There was also no scientific study conducted on ethno-veterinary medicinal

plant in the current study areas. Therefore, the objective of this study was to document the indigenous knowledge of traditional healers and to identify the ethno veterinary medicinal plant species in the study area.

Materials and Methods

Study Area

The study was conducted from April 30, 2021 to August

07/2021 in Aleta-Chuko district, of Sidama national Regional State, southern Ethiopia. Aleta-Chuko is bordered on the south by Dara, on the southwest by the Oromia Region, on the west by Loka Abaya, on the north by Dale, and on the east by Aleta Wando. The administrative center is Chuko town. Aleta-Chuko was separated from Aleta Wando woreda. Aleta-Chuko, in an absolute location, is found within 6460'- 6720' N and 3820'-3856'E Longitude and Latitude respectively (Figure 1).

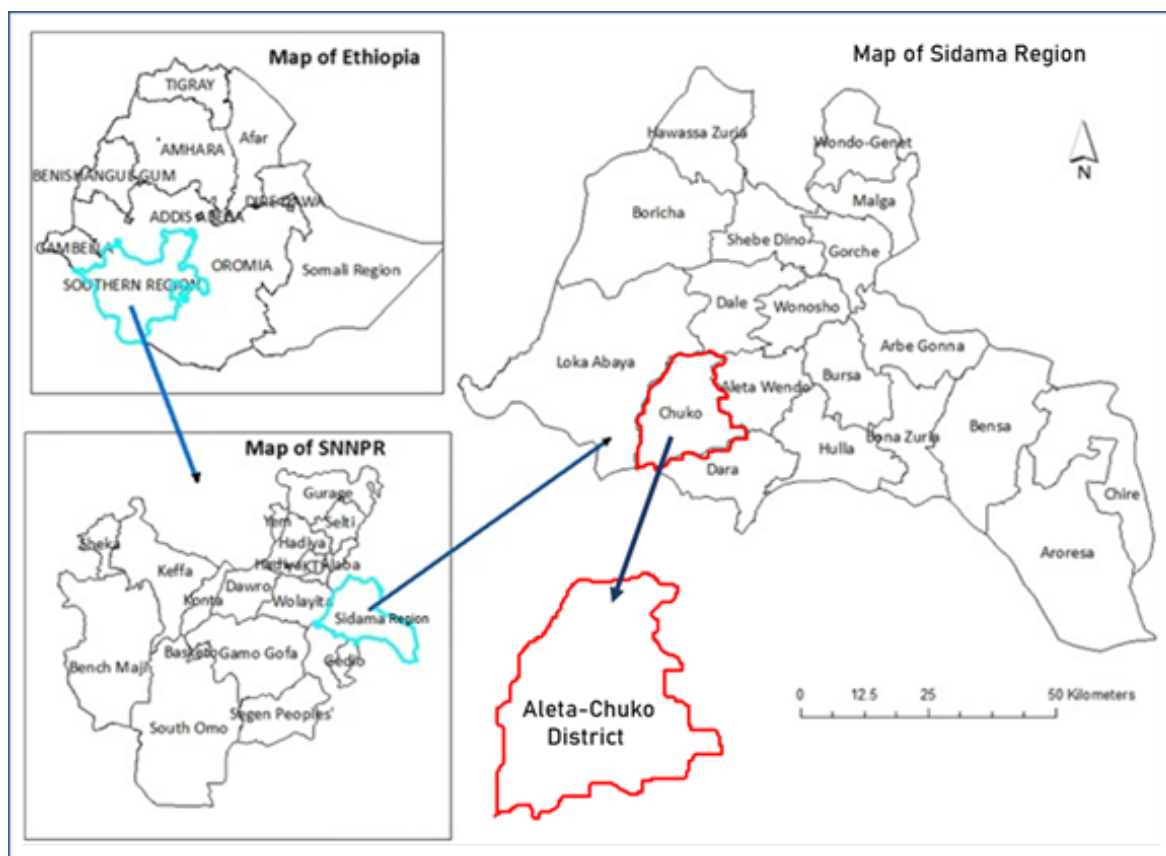


Figure 1: Map of the study area: Source Beyene *et al.*, [14].

Study Population

The target populations for this study were 31 voluntary traditional animal healers who participate and interview purposively based on the recommendation of local authorities of the district and agro-climatic zones and availability of practice of traditional medicine were considered to select the study kebeles.

Data Collection Methods

Purposive sampling technique was used to select the study district and study participants based on the availability of traditional healers and recommendations of local authority. The data were collected by using semi-structured interviews and pre-tested questionnaire for interview, observations and field guided walks [15]. The interviews were conducted in Sidama language, the widely spoken language in the study area, data on socio-demography of informant, local names of medicinal plants used in ethno veterinary practices, parts used, preparation methods, routes of administration, sources of medicinal plants and diseases treated were collected. Before collecting the data, written permission was obtained from the office of the district and permission was obtained from the administrator of each

selected kebele. During the sample collection, each informant was interviewed two to three times to confirm the reliability of the ethno-botanical information. The responses that are not harmonious with each other were excluded. Interviews and discussions were undertaken based on interview questions prepared in English and translated to local language of Sidama 'Sidamu-Afoo'. Likert 5 scale methods were used to assess knowledge, attitude and practice of animal healers and farmers on Ethno-veterinary medicine.

Ethical Consultation

The traditional animal healers and elders were consulted for ethical clearance orally for the survey and identification of the plants and associated traditional knowledge. Person privacy of the persons to be interviewed for the questionnaires was fully protected. For the confidentiality case, the name of specific healers and animal owners' names were not listed in this study.

Data Analysis

The data collected on Ethno-veterinary medicinal plants were entered into SPSS software version 21 and summarized using

descriptive statistical methods such as frequency and percentages. Chi-square correlation analysis was made on the association between the demographic profile factors and perception, practice and knowledge of the traditional healers. P-value less than 0.05 were considered as cut-value of statistical significance. Representative medicinal plants were identified by local name and pictures.

Results

Socio-Demographic Characteristics of Respondents

Total of, 31 well-known traditional animal healers, Males 16(51.6%) and females 15 (48.5%) were interviewed in study area. Most of the traditional healers were farmers with different ranges of educational status (Table 1). The number of healers found in the study area also varies with higher number in Guure and Falahe kebele (Figure 2).

Table 1: Demographic Characteristics of Respondents

Variable	Category	Frequency	Percent (%)
Age	Elders (Above 60)	31	100
Sex	Male	16	51.6
	Female	15	48.4
	Total	31	100
Occupation	Farmer	18	58.1
	Merchant	3	9.7
	Housewife	9	29
	Daily Labor	1	3.2
	Total	31	100
Educational status	Illiterate	8	25.8
	Read and write	8	25.8
	Primary School	10	32.3
	Secondary school	5	16.1
	Total	31	100
Religious	Muslim	2	6.5
	Orthodox	29	93.5
	Total	31	100
Marital Status	Married	30	96.8
	Divorced	1	3.2
	Total	31	100

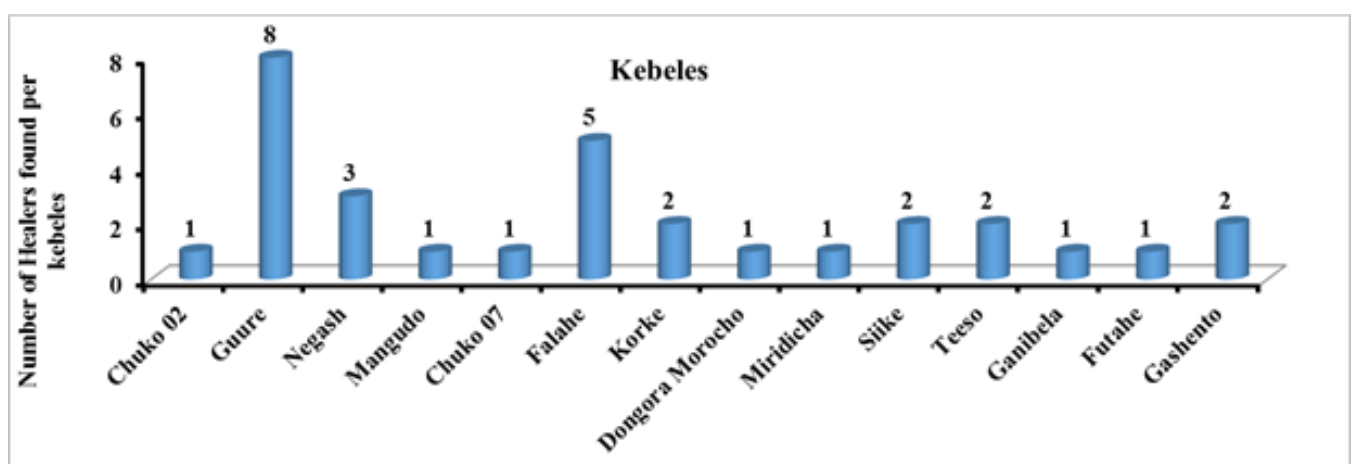


Figure 2: Location of the Traditional Farmers across the District

The entire respondent who surveys were conducted were animal healer and majority were work son animal healing for 20-35 years (51.6%) and the rests worked for 5 to 20 years (32.3%) respectively. Survey also conducted for traditional knowledge transition pathway and majority were adopted their knowledge

from their family member especial from their fathers (Table 2). Among the challenge they face include unavailability of the plant. Still the traditional healers think that they are still can access with cheaper cost than drugs (Table 2).

Table 2: Survey about Medicinal Plants Used In the Study Area

Variable	Category	Frequency	Percent (%)
Are you a traditional healer	Yes	31	100
For how long you have been working on traditional medicine	1 to 5years	3	9.7
	5 to 20 years	10	32.3
	20 to 35 years	16	51.6
	35 years and above	2	6.5
	Total	31	100
Where do you adopted this knowledge	My father	20	64.5
	My mother	8	25.8
	My localities	2	6.5
	Own experience	1	3.2
	Total	31	100
What are challenges for using medicinal plant	Plants are not easily available	19	61.3
	Preparation takes time	10	32.3
	Total	31	100
What are the advantages for using medicinal plant	more accessible than drugs	17	54.8
	collected at no costs	8	25.8
	cheap to obtain	2	6.5
	more affective	4	12.9
	Total	31	100

Medicinal Plants and Their Uses in the Study Area

The commonly used medicinal plants identified in in the study area are listed in Figure 3A. The plants were identified by local name of which Gidincho and Hengedicho is mostly used medicinal plants. The top lists of disease proportion treated by medicinal plant in study area were recorded. Accordingly, GIT problem

and FMD is most treated disease in the study district (Figure 3B). The proportion of plants part used in the study area were also identified and the highly used part for the preparation of the remedies were found to be leaves (65%) followed by bark (16%) (Figure 3C).

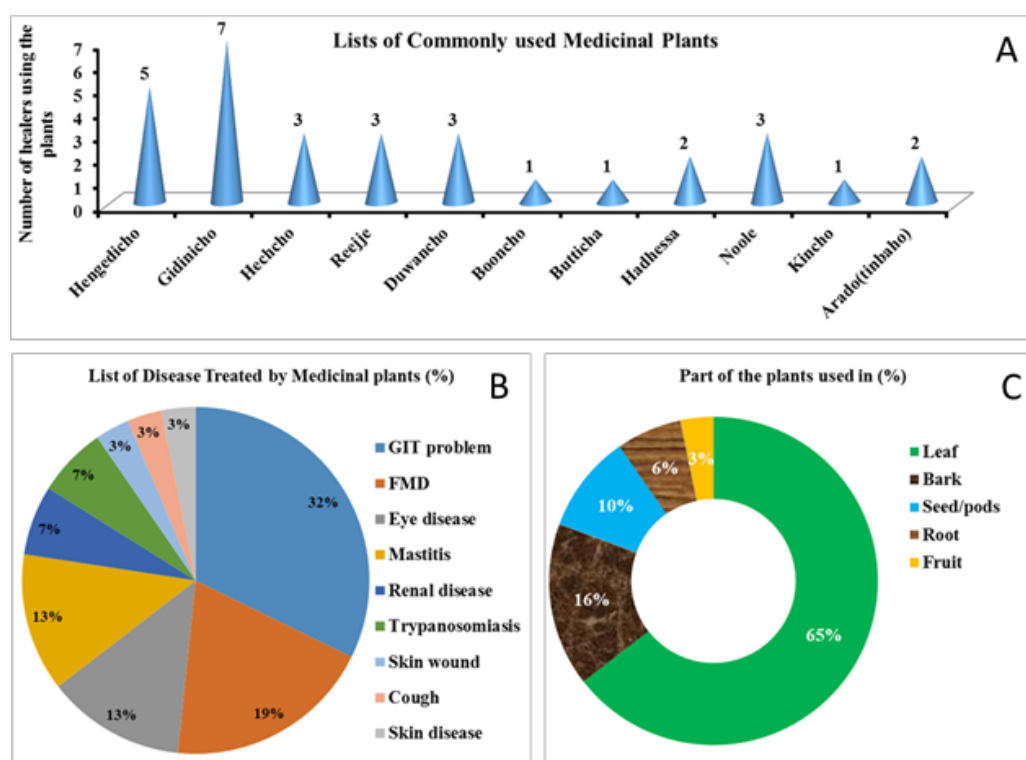


Figure 3: Lists of Medicinal Plants, Its Parts Used, and List of Disease Commonly Treated

To further investigate the use of each medicinal plant, compiled data on parts used, disease treated, route of administration as well as period of treatment and availability of each plant were

recorded (Table 3). The pictures of commonly used identified plant (Figure 4) and detail information on all the 38 identified plants were recorded (Supplementary table).

Supplementary Table: Overall Lists of the Plant Identified By the Survey

No	Plants local name	Part of the plant used	Plant part mixed	Preparation method	Disease they treat	Root of administration	For how long to be taken	Preparation	Availability of the plant	Local name of the diseases
1	Ara-do(tinbaho)	Dried Leave	no	Chopping	Bloat	Oraly	once	dried	Cultivated	
2	Argissa	Hole part	no	Streaking	topical	Mangy mites	once	fresh	Difficult to get	
3	Ashancho	lleave	no	Chopping	tuberculosis	topical	daily	fresh	available	Balamo
4	Bahirizafe(-bahrizaf)	Bulb	no	Chopping	GIT disorder	Oraly	once	fresh	availably	
5	Bararicho	Bulb	no	Chopping	For fungal skin diseases	topical	daily	fresh	avoible	Bararete
6	Booncho	Bark	no	Grinding	Cuffing	Oraly	once	fresh	Difficult to get	
7	Buna	Seed	no	Chopping	wound	topical	once	dried	Ocasionaly available	
8	Butticha	Roots	no	Chopping	Mastitis	Oraly	Three days interval 2	fresh	Available seasonally	
9	Buutancho	leaves	no	Chopping	topical	tuberculosis	Once	fresh	Ocasionaly available	Buutemo
10	Ceekatta	leaves	no	Chopping	oral	fashiolosis	Once	fresh	Difficult to get	
11	Demakasse	leaves	no	Chopping	topical	Febrildiseases	Once	fresh	Ocasionaly available	Miche
12	Duwancho.	Bark	no	Grinding	Mastitis	Oraly	Once	fresh	Available every time	
13	Faaxicho	Leaves	no	Chopping	Topical and oral	Febirildiseases	Once	fresh	Ocasionaly available	Miche
14	Gadda	Leave & bark	no	Chopping	Oral&topical	GIT disorder and cuphing	Once	fresh	Ocasionaly available	
15	Garbichcho	Leaves	Dagucho	Chopping	Oral	masititi	Once	fresh	Ocasionaly available	
16	Gidinicho	Leaves	Dagucho	Chopping	Cuffing	Oraly	Daily untily the animal heal	fresh	Available every time	

17	Godichcho	Bulb	Dagucho	Chopping	Oral	Renal diseases and dihydretion	Once	fresh	Oca-sionally available	
18	Hadhessa	Bulb	no	Chopping	For urinary tract infection	Oraly	2 days interval	fresh	Difficult to get	
19	Hechcho	Leaves	Dagucho	Chopping	GIT disorder	Oraly		fresh	Available every time	
20	Hengedichcho	Leaves	No	Chopping	GIT diseases	Oraly	Daily antil the animal hill	fresh	Available every time	
21	Kincho	Leave	no	Chopping	cuffing	Oraly	Once	fresh	Available every time	
22	Kishee	Root	Tuma	Crushing	woranto	Oraly	Once	fresh	Oca-sionally available	Woranto
23	Kooke	leaves	no	Chopping	Oral	Oraly	Once	fresh	Oca-sionally available	
24	Malasi-nichcho	leaves	Qiriqix-ichcho/ Ejjer-sa[woy-ira]	Chopping	Tuberculoss	Topical & Oral	Once	fresh	Oca-sionally available	Butamo
25	Massincho	Leave	no	Chopping	Topical	Ecto parasites	Once	fresh	Available every time	
26	Menigo	Bulb	no	Chopping	Oral		Once	fresh	Oca-sionally available	
27	Minancho	Root	no	Chopping	Renal diseases	Oraly	Continu-ous	fresh	Difficult to get	Kulalite
28	Mujetex-agichcho	Whole part	no	Chopping	Oral topical	Beniny-tumer	Once	fresh	Oca-sionally available	Muje
29	Muuze (muzi)	Whole part	no	Streaking	External Wound	Topical at site of wound	Once	fresh	Cultivat-ed	
30	Noole	Leave	no	Chopping	cuffing	Oraly	Once	fresh	Difficult to get	
31	Papaya	Root	no	Chopping	Oral	TRPS	Once	fresh	Oca-sionally available	Qiidaho
32	Qiriqix-ichcho	Leaves	no	crushing	masitis	Oral & topical	Daily	fresh	Oca-sionally available	Gadansa
33	Qoniboo	Seed	no	Chopping	topical	Fungal diseases	Once	dried	Oca-sionally available	Boroshho
34	Reejje.	Leaves	no	Streak-ing.	Skin wound	topical	stat	fresh	Difficult to find	

35	Surupha	Fruits	no	Squizing	GIT problem & colic	Oraly	Daily	fresh	Difficult to find	Godwu game
36	Tontona	Leaves	Qonboo/dagucho	Chopping	Renal diseases, dihydretion & Foot root	oraly	Once	fresh	Oca-sionally available	
37	Xena-dame	Leaves	no	Chopping	GIT problem	Oraly	Once	fresh	Oca-sionally available	Godowa-ho
38	Zeyitone	Bulb	no	Chopping	Oral	Kidney failar	Once	fresh	Oca-sionally available	Kulality

Table 3: Commonly Used Medicinal Plants and Their Corresponding Usage Mechanism

Plants Scientific name	Plants local name	Part of the plant used	Preparation method	Disease type treat	Root of Administration	For how long to be taken	Form	Availability of the plant
Milletia ferruginea	Hengedicho	Leaves	chopping	GIT disease	Oral	Daily until the animal hill	Fresh	Available
Ehretia cymosa	Gidinicho	Leaves	chopping	Cuffing	oral	Daily until the animal heal	Fresh	Available every time
Vernonia amygdalina	Hechcho	Leaves	chopping	GIT disorder	oral		Fresh	Available every time
Vernonia auriculifera	Reejje	Leaves	Streaking.	Skin wound	topical	stat	Fresh	
Syzygium guinnense	Duwancho	Bark	Grinding	Mastitis	oral	once	Fresh	Available every time
Pittosporum abyssinicum	Booncho	Bark	Grinding	Cuffing	oral	once	Fresh	Difficult to get
No Scientific name	Butticha	Roots	Chopping	Mastitis	oral	Three days interval	Fresh	Available seasonally
Lactuca inermis Forssk	Hadhessa	Bulb	Chopping	Urinary tract infection	oral	2 days interval	Fresh	Difficult to get
Achyranthes aspera	Noole	Leave	Chopping	cuffing	oral	once	Fresh	Difficult to get
No Scientific name	Kincho	Leave	Chopping	cuffing	oral	once	Fresh	Available every time
Nicotiana tabacum	Arado(tin-baho)	Dried Leave	Chopping	Bloat	oral	once	Dried	cultivated



Milletia ferruginea



Ehretia cymosa



Vernonia amygdalina



Vernonia auriculifera



Syzygium guinnense



Pittosporum abyssinicum



Lactuca inermis Forssk



Achyranthes aspera



Kincho (Un-identified)

Figure 4: Pictures of Commonly Used Plants in the Study Area

Knowledge, Attitude and Practice of Animal Healer

The knowledge, attitude and practice of animal healer interviewed in this survey also showed that traditional healers often use fresh plants (93%), given orally by grinding (67.7%). Most of the medicinal plants are found in wild but their availabilities vary (Table 4)

The likert's score of agreement analysis in this study showed that 70% of the respondents agree that medicinal plants are under risk of extinction, cheaper (100%) and can treat the disease. Although majority of the traditional healers agree that medicinal plant should be conserved, but there is disagreement on the documentation of knowledge on traditional medicine as well as the risk of toxicity while using medicinal plants (Table 5).

Table 4: Practice of Medicinal Plants Usage in the Study Area

Variable	Category	Frequency	Percent (%)
How you use medicinal plant?	Dried	2	6.5
	Fresh	29	93.5
	Total	31	100
How do you prepare it for use?	Grinding	21	67.7
	Crushing	8	25.8
	Decoction	1	3.2
	Streaking	1	3.2
	Total	31	100
How is the preparation administered?	Oral	21	67.7
	Topical	6	19.4
	Aerosol	2	6.5
	Others	2	6.5
	Total	31	100
For how long you have to take the preparation	only once	1	3.2
	2 times per day for 1 weak	2	6.5
	daily for 1 weak	11	35.5
	Other	17	54.8
	Total	31	100
Where this medicinal plant is found	Wild	17	54.8
	Home gardens	7	22.6
	Cultivated	7	22.6
	Total	31	100
Availability of medicinal plants	Available every time	15	48.4
	Available seasonally	8	25.8
	Difficult to get	8	25.8
	Total	31	100

Table 5: Knowledge and Attitude of Animal Healers

Factors	Score	Likert's score of agreement analysis					Total
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
Do you think the medicinal plant can be lost/extinct?	Frequency	7	15	6	2	1	31
	Percent (%)	22.6	48.4	19.4	6.5	3.2	100
Do you think medicinal plant is cheaper?	Frequency	17	14				31
	Percent (%)	54.8	45.2				100
Do you think, the medicinal plant can treat the disease	Frequency	23	8				31

	Percent (%)	74.2	25.8				100
Do you think, the medicinal plant's Knowledge can be documented	Frequency	4	14	6	7		31
	Percent (%)	12.9	45.2	19.4	22.6		100
Do you think medicinal plant should be conserved?	Frequency	16	8	3	3	1	31
	Percent (%)	51.6	25.8	9.7	9.7	3.2	100
Do you think the medicinal plant is easily available?	Frequency	1	15	2	13		31
	Percent (%)	3.2	48.4	6.5	41.9		100
Do you think the medicinal plant can be miss used?	Frequency		13	7	11		31
	Percent (%)		41.9	22.6	35.5		100
Do you think, using the medicinal plant can be opportunity?	Frequency	8	21	1	1		31
	Percent (%)	25.8	67.7	3.2	3.2		100
Do you think medicinal plant can case toxicity?	Frequency	1	17	9	2	2	31
	Percent (%)	3.2	54.8	29	6.5	6.5	100

Furthermore, the chi sure correlation analysis showed that among and attitude of traditional healers includes gender, occupation the demographic factors that significantly affect the knowledge and localities of the healers (Table 6).

Table 6: Correlation Analysis of Factors Associated with Knowledge of Traditional Healers

		Do you think the medicinal plant can be misused?						
Variable	Category	Strongly agree	Agree	Neutral	Disagree	Total	χ^2	P-value
Sex	Male	0	8	6	2	16	8.69	0.013
	Female	0	5	1	9	15		
	Total	0	13	7	11	31		
		Do you think the medicinal plant is easily available?						
Occupation	Farmer	0	10	2	6	18	34.8	0.0001
	Marchant	0	2	0	1	3		
	Housewife	0	3	0	6	9		
	Daily Labor	1	0	0	0	1		
	Total	1	15	2	13	31		
Location	Chuko 02	0	0	0	1	1	72.0	0.001
	Guure	0	6	0	2	8		
	Negash	0	3	0	0	3		
	Mangudo	0	0	0	1	1		
	Chuko 07	0	0	1	0	1		
	Falahe	0	2	0	3	5		
	Korke	0	2	0	0	2		
	DongoraMorocho	0	1	0	0	1		
Miridicha	1	0	0	0	1			

Siike	0	0	1	1	2		
Teeso	0	0	0	2	2		
Ganibela	0	0	0	1	1		
Futahe	0	1	0	0	1		
Gashento	0	0	0	2	2		
Total	1	15	2	13	31		

Discussion

In the current study, a total of 38 medicinal plants species were documented with details on, their local name, parts used, traditional preparation, Mode of application, Disease type treats, root of administration, forms, and availability of the plant. Gidincho, Hengedicho, Reejje, Duwancho, Booncho, Butticha and Hadhessa with local name were the most frequently used and reported plant species for ethno-veterinary medicinal practice. On the plant parts basis used for traditional healing purposes, different plant parts like seeds/pods, leaves, bark, fruits and bulb flower were used for treatment. However, leaves were the predominantly used plant part for herbal preparation in the current study areas followed by root and bark by the ethno-veterinary practitioners which agree with studies report in other parts of Ethiopia [16] and [3] in Jimma Zone, [17] from Horro Guduru Wollega distinct, west Ethiopia. The findings was also agrees with reports at Dabo Hana district West Ethiopia[18] and in Tigray Region[19]. Most of the respondents were older age groups; however, very few youths were involved in traditional animal treatment in the study area. This was in line with report from Jimma [20]. The findings was also agrees with reports from Dabo Hana District, West Ethiopia [18] and Tigray region [19]. The less medicinal knowledge in relation to young age might be attributed to the fact that traditional knowledge is built with years of experience [21].

The survey also showed traditional veterinary medicine knowledge is transferred orally to the most selected family member with great secrecy from generation to generation and it may disappear because of rapid socioeconomic, environmental and technological changes and as a result of the loss of cultural heritage under the guise of civilization [22]. In this study, different livestock diseases: febrile diseases, Blackleg, gastrointestinal parasites infestations, external injuries, mastitis, cuffing, urinary tract infection and others diseases as well as disease conditions were treated by the medicinal plants in study area. This agrees with the report from Bangladesh that indicated the most common cattle diseases observed were fever, meningitis, gastrointestinal disorders, and helminthiasis[23]. This might be due to similarity in climatic condition and the purpose for which the medicinal plants used in both study areas. The result was also consistent with Tadesse Birhanu and Dereje Abera [24] who reported the dominant plant species at selected districts of Horro Guduru Wollega Zone, western Ethiopia as well as from Sidama region southern Ethiopia [25]. In the current study area, numerous techniques of preparation were employed before administering the remedies. Some of the plants are fed directly to the affected animals to achieve desired effects, while the leaves of others are crushed and squeezed to get the plant juice needed for topical, aerosol and auricular application. In other cases, aqueous decoctions are drenched; the end product preparations of the traditional medicinal remedies were commonly in the form of crushing followed by chopping and decoctions.

The results of the study also showed that the plant remedies were commonly administered orally followed by topical appli-

cation. This study agrees with similar studies elsewhere in Ethiopia [26]. Based on the information gathered from the survey the condition of preparation of remedies was not the same. The highest condition of preparation was fresh followed by fresh/dry. In contrast to this, some professional traditional healers sell their plant medicines in dried form in the market and store the dried plant medicines in different containers in their homes. This agrees with another finding at Tigray region [19]. On the plant parts basis used for medicinal purposes, most of the medicinal plants were collected from the wild (68%) and others were from home gardens (32%). This was in line with studies in other parts of Ethiopia [13], Pakistan [27] and Brazil [28]. This indicated that the practice of cultivation of plants for their medicinal purpose in home gardens of most of the country is low though many plants are cultivated for other purposes, mainly for food. In a similar way, people in the study area have less effort to cultivate medicinal plants in their home gardens rather they go to the nearby or far places and harvest the plants.

The overall study revealed that the traditional healers and local farmers have rich knowledge on ethno veterinary medicines to treat and manage their livestock through indigenous knowledge, to protect the health and increase productivity. However, the traditional healers are reluctant on sharing or documenting medicinal plants. There is a risk of plant extinction unless the proper conservation is made by government as well as by traditional healers.

Conclusion and Recommendation

The present study showed presence of widely used ethno veterinary practices in the study area. Based on the traditional healer's response a total of 48 medicinal plants were identified and documented in detail with their local name, parts used, traditional preparation, Mode of application, which are used to treat 17 different animal diseases. This study showed presence of large number of valuable resources, practices, and knowledge of ethno-veterinary medicine, which play an important role in addressing the healthcare needs of rural areas farmers. The study also indicates that availability of plant decreases associated with agricultural expansion and overgrazing. The awareness on cultivation, documentation and plant conservation practice were found to be lower and knowledge transfer is only oral. These factors threat for the extinction of the medicinal plants as well as the traditional knowledge of using them. Therefore, attention should be given on conservation of medicinal plants and further scientific research should be needed to determine safety, toxicity and dose of the medicinal plants identified in this study.

Conflict of Interest Statement

The author has no conflicts to disclose

Funding Statement

No funding was received for this study

Availability of Data and Materials

The data supporting the findings are presented in the manuscript.

The corresponding author can also be reached for any data inquiry.

Ethics Approval and Consent to Participate

The study was approved by the research proposal review committee of the faculty of veterinary medicine, Hawassa University. Written informed consent was obtained for both questionnaires interview to keep the confidentiality of traditional knowledge of animal healers.

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