DOI: https://doi.org/10.20372/star.v12i4.01
ISSN: 2226-7522 (Print) and 2305-3372 (Online)
Science, Technology and Arts Research Journal
Sci. Technol. Arts Res. J., Oct. – Dec. 2023, 12(4), 1-14
Journal Homepage: https://journals.wgu.edu.et

Original Research

Ethnoveterinary Medicinal Plants and Practices in Limu district, East Wollega Zone, Oromia Region, Ethiopia

Tena Regasa* & Gedefa Guteta

Department of Biology, College of Natural and Computational Sciences, Wollega University, Ethiopia

Abstract

This research aimed to explore the ethnobotanical understanding of ethno-veterinary plants used by Oromo people in the Limu district, western Ethiopia. 221 informants were surveyed, with 18 being important informants. The data was analyzed using SPSS version 20 and one-way ANOVA and t-tests. The study found 25 genera and 21 families of ethno-veterinary plant species with potential to treat 27 different livestock ailments, helping preserve the regions rapidly dwindling plant resources and ethnobotanical knowledge. The ethno-veterinary medicinal plants in the area include herbs, shrubs, and trees, with Asteraceae, Fabaceae, Solanaceae, and Cucurbitaceae being the most diverse families. The majority of treatments (66.48%) are made from fresh plant materials, with monoherbal preparations accounting for the majority (76.29%). Oral administration is the most common route, with local ingredients like salt, flour, milk, and injera added. Cattle, goats, and sheep are the most recorded categories with ethno-veterinary treatments. Knowledge about the use of medicinal herbs is typically transmitted orally and confidentially. Factors such as age, literacy level, distance from health centers, and informant experience significantly impact ethno-medicinal knowledge of medicinal plants. The survey's ethno-veterinary medicinal plants should be further researched to understand their phytochemical and pharmacological properties.

Article Information

Article History:
Received: 07-10-2023
Revised: 27-11-2023
Accepted: 28-12-2023

Keywords:
Ethnoveterinary, Fidelity Level, Informant Consensus, Livestock Ailments, Limu, Traditional Healers, Medicinal Plants

*Corresponding Author:
Tena Regasa

E-mail:
tenaregasa@gmail.com

INTRODUCTION

It is equally important to think about the health of the cattle in Ethiopia since they are a major part of the country's economy. When domestic animals like cattle got sick, the indigenous people of many rural areas would apply herbal remedies. According to Endashaw (2007) and Kebede et al. (2017), a large number of Ethiopian ethnic groups practice traditional medicine. Livestock illness is a major factor in the underperformance of Ethiopian animals and contributes to the growing demand-supply imbalance in the livestock market.EVM refers to the maintenance, treatment, and curing of cattle by the application of indigenous or local knowledge and traditions. This encompasses both cultural practices and the incorporation of livestock into farming systems. In ethnoveterinary medicine, the local population's knowledge of traditional beliefs, skills, techniques, and practices pertaining to animal productivity and health is utilized. Both first-hand accounts from people and oral traditions passed down over many generations provide the basis for this data (Haverkort et al., 1996). It starts a systematic analysis of regional approaches for livestock population expansion while acknowledging the cultural foundation of customary livestock management techniques (Misra & Kumar, 2004).

To treat a variety of diseases, many rural livestock owners rely on traditional medicinal plants since they lack access to modern amenities and veterinarians (Guruprasad & Prasad, 2019). Gathering data on traditional Oromian knowledge and widespread ethnoveterinary practices in the Limu district in western Ethiopia is the current study's overarching objective.

MATERIALS AND METHODS

Description of the study area

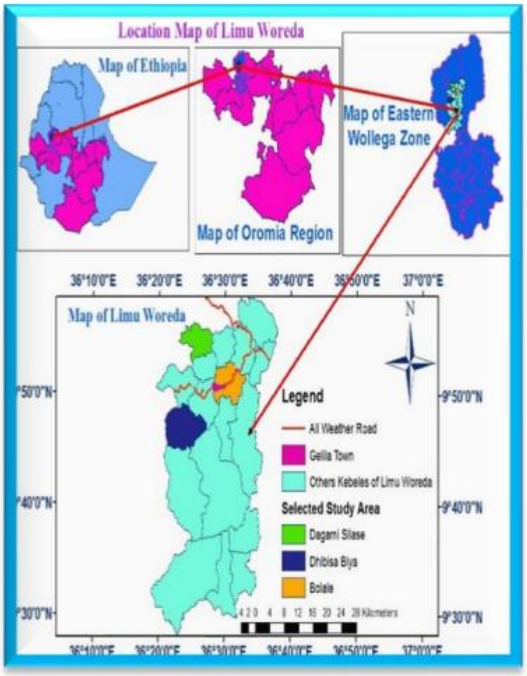
Study participants were recruited from the Limu area in the East Wollega Zone of the Oromia National Regional State in Western Ethiopia. Figure 1a The area in question can be found in the geographic coordinates 9˚25"-9˚56"24N and 36˚18"48-36˚5"40E. On yearly average, the district received 1713 millimeters of rain. On average, the high was 28.2°C and the low was 12.5°C (Figure.1b).

Site selection and sampling

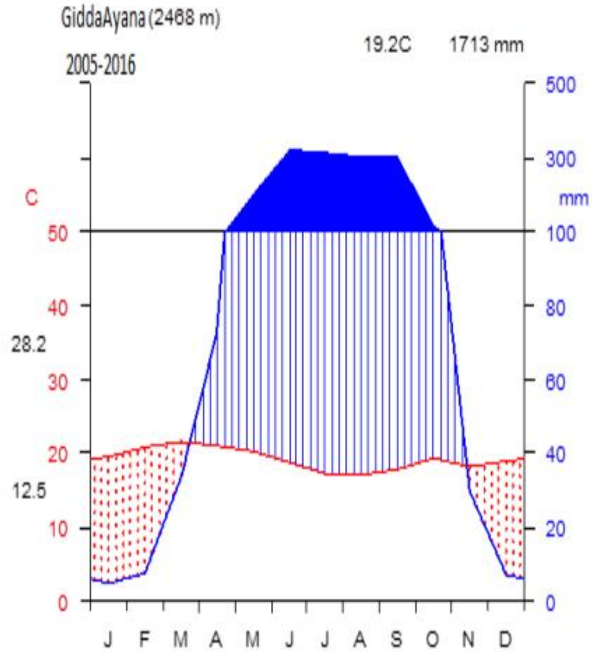
A study district and three kebeles (Bolale, Dagam-Silasse, and Dibisabiya) were selected using the purposive sample method. These research locations were chosen in part because of their high vegetative cover and proximity to an urban center (Figure 1). Using this method, 221 households (HH) were chosen from the three locations for the HH survey; 143 of these households were headed by men, while 78 were headed by women. There was a wide age range among the HH heads, from 26 to 90; 105 were in the 26–44 age bracket, and 116 were 45 and up. A representative sample size for a finite population can be obtained using the equation, according to this source.

$$Sample\ Size = X^2 NP(1-P)/ C^2(N-1) + X^2P(1-P)$$

The research only included one HH member. Eighteen HH/informants were selected as key informants based on their expertise with plant consumption. This included seven women and eleven men, selected through purposeful sampling approaches. The principal informants were people of the community who were either elderly or well-informed.



(a)



(b)

Figure 1 (a) Map showing Ethiopia, Oromia (b) Cliamadiagram of the study area

Methods of data collection and analysis

The ethnobotanical study took place in six different locations from October 15, 2018, to March 9, 2018. Quantitative and qualitative data were collected in addition to herbarium specimens. In order to build rapport with the informants, local authorities (including development and health agents, representatives of farmers' associations, and others) went over the study's objectives and encouraged a shared purpose in documenting and preserving EVMP knowledge before sending out the questionnaire. We sought letters of approval from the appropriate government offices and got all study locations' goals and methods authorized. It was also asked that all participants verbalize their consent to be interviewed and filmed.

The research community's local dialect, Afan Oromo, was used to translate open-ended and closed-ended questions from a pre-tested structured data collection format. These questions were then used for interviews and group discussions. Afterwards, at a separate face-to-face interview, the first author (now called the researcher) gave it to each of the identified informants. The interview duration was adjusted according to the interviewees' EVMP comprehension levels. The interviewers visited the respondents at their homes and, on occasion, went out into the field to gather data. Throughout the interviews, we covered the informants' names, ages, sexes, educational backgrounds, occupations, religions, and ethnicities. We also asked informants to detail the following: the EVMPs they use, the plant components used, how they manufacture herbal medicines, how they administer remedies, which animals were treated, and how well they manage EVMPs. Following each semi-structured interview, participants went on a self-guided field walk to learn about WSWEPs in their native habitat and how to find them, as well as how to manage them. Key informants and other locals were seen, discussed, and interviewed during the field walk. Additionally, to back up the information gained from the semi-structured interviews, three focus group discussions (FGDs) were conducted with eight to ten participants.

In order to prepare for statistical analysis, data regarding informant histories and the EVMPs employed in the Limu district were entered and organized using an Excel spreadsheet tool (Microsoft Corporation, 2007). The traditional knowledge dynamics on EVMP use were compared using the SPSS version 20 statistical package. The participants were categorized as either young to middle-aged (20-44 years) or elderly (45-90 years), literate (having completed at least primary education) or illiterate, knowledgeable (key) or general informants. At the 95% confidence level between means, a two-tailed t-test and one-way ANOVA were employed. Using descriptive statistics, we were able to ascertain the following: the quantity and proportion of EVMP species, genera, and families; the growth forms of these EVMPs; the condition of the plant parts utilized in their preparation; the method of remedy administration; the animals treated; and the level of management.

The informant consensus factor (ICF) was computed after classifying the diseases and reported traditional medications into thirteen groups. The ICF was calculated by subtracting the number of use citations for each illness category (nur) from the total number of use citations for each category minus one, and then dividing the result by the total number of use citations for each category. So, here's how we calculated the ICF: Here, ICF is the informant consensus factor, nur is the number of citations utilized in each disease category, and nt is the number of times a species has been used. After reading Heinrich et al. (1998), we may use the formula for the fidelity level index (FL): $FL = Ip/Iu \times 100$, where Ip is the number of informants and Iu is the total number of informants.

RESULTS AND DISCUSSION

Taxonomic diversity of ethnovetrinary medicinal plants

The Oromoo people's language, Afan Oromoo, was utilized to list the plants, together with information on their families, habits, amounts used, botanical names, and colloquial names (Table 1). Approximately twenty-five plant species belonging to twenty-one groups were discovered in the study area. The key goals of the ethnoveterinary practices in the Limu district are the treatment of animal illnesses such as babesiosis, mechanical trump, anthrax, rabies, synerosiscelebralis, bloat and febrifuge, ulcerative lymphoma, erythroblasts, wounds, ectoparasites, blackleg, snakebite, endoparasite, retained placenta, rabies, and foot and eye diseases.

Many people in the study area depend on cattle for their livelihoods, crops, and other goods and services.

Table 1

Ethno veterinary medicinal plants and practices of the study area

S.No	Scientific name	Family	Local Afaan Oromo name	Ha	Ailment treated (Local name)	PPU	CPU	MRPA	RA	MW	AT	DM	FL (%)	V.No
1	*Achyranthesaspera* L.*	Amaranthaceae	darguu	H	Babesiosis (DhigaFincessa)	Rt	Fr	2	Or	30	1	W	89	GG14
2	*Agave sisalana*Perro ex Eng.*	Agavaceae	qaca	Sh	Mechanical trump (Madaagatiitti)	Lf	Fr	3	Dm		9	W	64	GG07
3	*Allium sativum* L.*	Alliaceae	qulubiiadii	H	Anthrax (Abba sangaa)	Tu	Fr/dr	4	Or		1	C	86	GG05
4	*Arisaemaenneaphyllum*Hochst. ex Rich.*	Araceae	nitiibofa	H	Retained faeces (Dhoqqeegoge)	Rt	Fr	1	Or		1	W	81	GG01
5	*Asparagus africanus* Lam.*	Asparagaceae	saritii	H	Rabies (Dhukkubasaree)	Rt	Fr	2	Or		1	W	94	GG13
					Hyenabite (Cininnawarabessa)	BK	Fr	1	Or		1			
6	*Bothrioclineschimperi*Oliv. &Hiern ex Benth.*	Asteraceae	ulee hare	Sh	Synerosiscelebralis (Maranmarto)	Rt, Lf	Fr	2	Or		6,7	W	88	GG11
7	*Brassica carinata*A. Br.*	Brassicaceae	gomanzara	H	Bloat & Febrifuge (Bokoksaahorii)	Sd	dr	6	Or	8	1	C	82	GG17
8	*Bruceaantidysernterica* J.F.Mill.*	Simaroubaceae	qomonyoo	Sh	Ulcerticlymphagities (Biicheeharree)	ZZ	Fr	5	Dm		8	W	77	GG24
9	*Calpurnia aurea* (Ait.)Benth.*	Fabaceae	ceekaa	Sh	Rabies (Dhukkubasaree)	Rt	Fr	1	Or	53	1	W	95	GG09
					Ectoprasits (maxanttuuala)	Lf	Fr	2	Dm		1			
					Bloat & Febrifuge (Bokoksaahorii)	Sp	Fr	6	Or		1			

Table 1 Continues…

10	*Clerodendrummyricoides* (Hochst.) Vatke*	Lamiaceae	uleeharee	Sh	Cough (Qufaa/ Soffaa)	Rt	Fr	1	Or		1	W	96	GG03
					Snakebite (Iddaabofaa)	BK	Fr	2	Or		5			
11	*Cucurbita pepo* L.*	Cucurbitaceae	dabaqula	H	Internal parasites (Maxanttuukessaa)	Sd	dr	2	Or		1,2,3	C	84	GG25
					Babesiosis (DhigaFincessa)	Rt	Fr	2	Or		1			
12	*Dracaena afromontana* Mildbr.*	Dracenaceae	afarfatuu	T	Erythroblasts (Gatacha)	Lf	Fr	2	Or		1,2,3	W	88	GG08
13	*Echinopskebericho*Mesfin*	Asteraceae	qabaricho	Sh	Avian cholera (Fingillee)	Rt	dr	9	Or		5	W	75	GG20
14	*Ehretiacymosa* Thonn.*	Boraginaceae	ulagaa	Sh	Actinomycosis (Kurufsisaa)	Rt	dr	4	Or	2 7	5	W	69	GG12
15	*Erythrinabrucei*Schweinf.*	Fabaceae	walenssu	T	Anthrax (Abba sangaa)	SBK	Fr	6	Or		1	W	78	GG22
16	*Euphorbia ampliphylla*Pax*	Euphorbiaceae	adamii	T	Tongue infection (Arrabahiddaa)	Lx	Fr	2	Or		1	W	86	GG04
					Bloat & Febrifuge (Bokoksaahorii)	RBK	Fr	2	Or		1,2,3			
17	Gouanialongispicata Engl.	Rhamnaceae	looca	Li	Render pest (Mariyyee)	In	Fr	2	Or		1	W		GG06
18	*Hageniaabyssini*ca (Bruce) I.F. Gmel.*	Rosaceae	heexoo	T	Tape worm (Ramoogara)	Rt,In	dr	1	Or		3	W	92	GG10
					Coccidiosis (Mugsiisaalukkuu)	Lf	dr	7	Or		5			GG15
					Cough (Qufaa/ Soffaa)	Rt	Fr	2	Or		1			
19	*Nicandraphysaloides*(L.) Gaertn.*	Solanaceae	heleflefo	H	Retained faeces (Dhoqqeegoge)	Wp	Fr	2	Or		1	W	77	GG19

Table 1 Continues…

20	*Nicotianatabacum* L.*	Solanaceae	timboo	H	Pasturolosis (Gororsaa)	In ,ZZ	dr	1	Or		1	C	79	GG02
21	*Raw text note: the name below is printed without a space* *Raw:* *Scheffleraabysinica*(Hochst. ex A. Rich.) Harms*	Araliaceae	luqee, gatama	T	Breast ulcer (Dhiitooharmaa)	Lf	Fr	2	Or		2,3,4	W	93	GG13
					Cough (Qufaa/ Soffaa)	RBK	dr	6	Or		1			
					Anti dote for hyena bite(CininaaWarabesa)	SBK	Fr	2	Or		3			
22	*Sidaschimperiana*Hochst. ex A. Rich.*	Malvaceae	borkottee	Sh	Chronic wound (Madaa)	Lf	dr	7	Dm		5	W	96	GG21
23	*Urerahypselodendron*(A.Rich.)Wedd.*	Urticaceae	dhoqonu	Cl	Coccidiosis (Mugsiisaalukkuu)	Lf	Fr	6	Or		5	W	76	GG23
24	*Verbascumsinaiticum* Benth.*	Scrophulariaceae	-	H	Ecto-parasites (Maxanttuuala)	Lf	Fr	3	Dm	18	3	W	83	GG16
					Epizootic lymphagitis (Biicheefaradaa)	Rt	Fr	2	Or		6,7			
25	*Zehneriascabra* (Linn. f.) Sond*	Cucurbitaceae	sokoke	H	FMD (Foot and Mouth Disease) (Madarrahoolaa)	Lf	Fr	1	Or	3	2	W	76	GG18

Key: Ha=Habit (T=tree, Sh= shrub, H=herb, Li=liana, Cl=climber); PPU=Plant part used (Rt=root, Lf=leaf, BK=bark, Sd=seed, ZZ=fruit, RBK=root bark, Fsh =flesh of fruit, Ss=shoot, Bu=bulb, Tu= tuber, In=inflorescence, St=stem, Sp=sap, Wp=whole plant, Lx=latex, Rh=rhizome); CPU= condition of plant part used (dr=dry, Fr=fresh, dr/Fr=dry or fresh); MRPA= Mode of herbal remedy preparation: 1= Boil and drink the decoction up on cooling, 2=Crush and steep plant part in cold water and drink the infusion, 3=Paint/rub/paste the latex/sap/flesh/juice directly, 4=Eat the plant part (raw/cooked), 5=Crush, heat/burn or boil the part and inhale its smoke or steam, 6=Drink the concoction, 7=Grind and paint the powder or crushed part, 8=Grind, paste the crushed part and tie; RA=route of remedy administration (Or=oral, Na=nasal, Dm=dermal, Op=optical);AT=Animals treated: 1= Cattle, 2=Sheep, 3=Goats, 5= Cows, 5=poultry, 6= Horses, 7=Mules, 8=Donkeys, 9=Oxen; DM=Degree of management: W=wild, C=cultivated; V.No.= voucher number.

Ethnoveterinary plant knowledge dynamics of the community

The use of plants by senior/elderly members (6.00 ± 2.02) compared to younger members (4.09 ± 2.14), as revealed by a study that evaluated the knowledge of medicinal plants among community members of different ages in the study area (P<0.05). The knowledge of illiterate and key informants on ethnoveterinary medicinal plants was higher than that of literate and general informants (P<0.05).

Table 2.

Statistical test of significance, t-test, on average number of reported ethnoveterinary medicinal plants among different informant groups in the study area

Parameter	Informant group	N	Average±SD	t-value**	P-value
Gender	Male	143	5.88 ± 1.93	0.51	0.612
	Female	78	6.00 ± 1.59		
Age	Young members	83	4.09 ± 2.14	-6.51	0.000*
	Senior members	139	6.00 ± 2.02		
Literacy level	Illiterate	140	6.05 ± 2.02	6.69	0.000*
	Literate	81	4.17 ± 1.99		
Distance from health centre	Near to health centre(≤ 6 km)	99	5.27 ± 1.33	-3.90	0.000*
	Far from health centre (>6 km)	122	6.11 ±1.88		
Experience (Informant Category)	Key/Knowledgeable	18	7.53± 2.53	5.24	0.000*
	General	203	4.07 ± 1.47		

Key: *Significant difference (p < 0.05); ** t (0.05) (two tailed), df = 219, N = number of respondents.

Younger, more educated community members may be less affected by modernization due to a lack of cultural contact and experience with medicinal plants, according to other ethnobotanical studies carried out in different nations (Lulekal et al., 2013; Silva et al., 2011; Tena, 2016; Regassa et al., 2015). Indigenous people in the research area may be losing touch with their healing traditions as a result of younger generations' lack of interest in traditional treatments and the extreme secrecy around the transmission of medicinal plant knowledge from father to son.

Type of livestock treated

The animals that were treated the most frequently in the region included sheep, cattle, goats, cows, poultry, horses, mules, and donkeys, among others (Table 2). Cattle(39.64%), goats(13.01%), and sheep (18.34%) were the categories with the most recorded ethnoveterinary treatments. The quantity of known ethnoveterinary cures for a particular breed of livestock may be indicative of the animal's cultural and traditional importance as well as the community's socioeconomic status. This could also explain the sequence in which the domesticated animals were acquired by the society at different stages of their life cycles (Gakuubi & Wanzala, 2012; Feyera et al., 2017). The largest percentage of ethnoveterinary herbs for treating cattle ailments has also been found among other cultural groups in the nation (Yineger et al., 2008; Gakuubi & Wanzala, 2012; Lulekal et al., 2014; Feyera et al., 2017).

Ethnoveterinary medicinal plants growth forms, parts used, mode of remedy preparation and administration

The study's findings further confirmed prior studies in the country, revealing that herbs were the most commonly employed ingredients in remedy composition, with shrubs and trees following closely behind. The finding that leaves were the most often collected plant component for ethnoveterinary remedy creation in the study area, followed by roots, may suggest that remedy preparation is straightforward. In addition, according to Tena (2016) and Mohammed et al. (2016), harvesting medicinal plants from their leaves rather than their roots has a less negative impact on their survival and continuity. This means that the plants can still be used responsibly.Of all the plant parts used to make cures in the district, the most common were leaves (44, 36.36%), roots (26, 21.28%), and other components had smaller percentages (Figure 2).

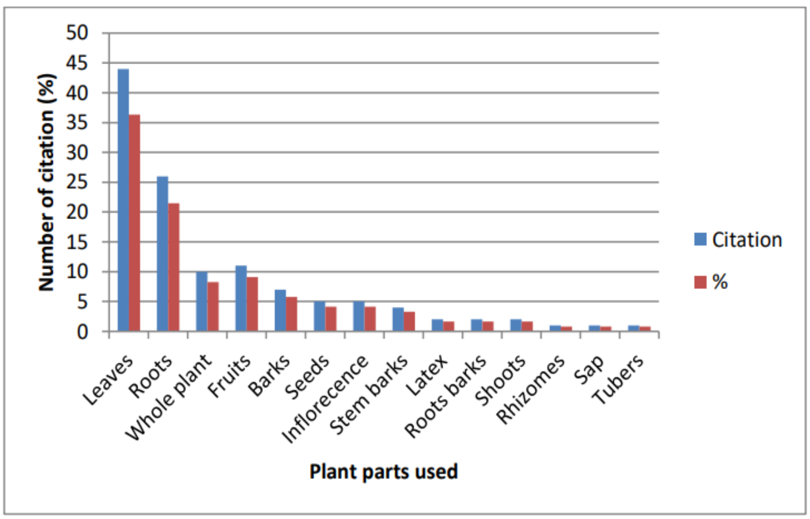


Figure 2. *Frequency of ethnoveterinary medicinal plants parts used in remedy preparations in the study area.*

The results of research done elsewhere in Ethiopia (Giday & Teklehaymanot, 2013; Eshetu et al., 2015; Tena,2016; Feyera et al., 2017) are consistent with the preparation of the majority (76.29%) of treatments, which involved a single medicinal plant (monoherbal preparation). Accordingly, it has been documented that polyherbal preparations used by other peoples in southwest Ethiopia (Giday et al., 2007) and northwest Ethiopia (Dawit & Ahadu, 1993) are effective in treating a variety of illnesses.

Consistent with this outcome, other cultural groups have also reported using cold infusion to prepare herbal remedies for a variety of diseases (Yineger et al., 2007; Lulekal et al., 2014). This may have to do with long-standing customs based on the demonstrated effectiveness of certain kinds of herbal remedies.

Oral administration was the most popular method (79.82%), followed by dermal/topical (16.66%). The prevalence of oral medication application may be attributed to the fact that internal organs are affected by the majority of reported health issues. Oral routes of recipe administration were thought to allow for a quicker physiological response from pathogens, thereby enhancing the medicinal efficacy of the medication. These results were nearly in line with those of other research conducted in various parts of Ethiopia as well as in other geographic regions (Tariq et al., 2014; Al Mamun et al., 2015) and elsewhere (Yigezu et al., 2014; Tekle, 2014; Araya et al., 2015; Tena, 2016).

Consensus building amongst key informants on livestock ailments treated

By compiling the 27 cattle ailments reported by informants in the research area, seven broad categories were established. The Limu district had the highest ICF score for dermatological and sensory disorders at 0.80, followed by septicemia concerns at 0.68, and wound, external injury, and animal bite at 0.66. The most severe ICF in all three districts was reported by those with skin and sensory problems (0.80), then by those with animal bites and external injuries (0.66), as shown in Table 3. In cases where the plants are chosen at random or where the informants refrain from disclosing any information regarding their use, the ICF are negligible, hovering around 0. Obtaining high ICF values (almost one) requires well-defined selection criteria and informants' disclosure of use knowledge. As a shortcut for describing the data's homogeneity, the ICF used the degree of consensus in the answers from key informants. Preserving and managing important ethnomedical plant species that are in danger of extinction has been made possible through the documentation of intrinsically rich traditional ethnoveterinary and ethnomedical knowledge based on ICF values. This work has also produced valuable information on new pharmacological dimensions that can improve healthcare for both humans and livestock in relation to many ailments. If the theory that some plants may cure a wide range of diseases in humans and animals turns out to be correct, it might provide much-needed funding for healthcare systems.

Table 3

Informant consensus factor (ICF) of ethnoveterinary medicinal plants in Limu district

S. No.	Ailment category	Species	Use Citation	ICF
1	Dermatological and sensorial problems	7	36	0.82
2	Wound, external injury and animal bite	15	45	0.68
3	Reproductive disorders	16	31	0.50

Table.3 continues...

Table.3 continues,

4	Locomotor problems	12	23	0.50
5	Respiratory tract problems	14	26	0.48
6	Digestive system and parasitic problems	17	31	0.46
7	Septicaemic problems	17	47	0.65

In cases where the plants are chosen at random or where the informants refrain from disclosing any information regarding their use, the ICF are negligible, hovering around 0. Obtaining high ICF values (almost one) requires well-defined selection criteria and informants' disclosure of use knowledge. As a shortcut for describing the data's homogeneity, the ICF used the degree of consensus in the answers from key informants. Indeed, by recording traditionally rich ethnomedical and ethnoveterinary knowledge grounded in ICF values, we have been able to better manage and conserve important but rare ethnomedical plant species and gain insight into new pharmacological dimensions that can improve healthcare for both humans and cattle with a wide range of illnesses. Assuming this theory holds water, it might lead to novel uses for medicinal plants that are already in use in traditional medicine, which could improve healthcare systems worldwide.

This group's high ICF score could be due to the simplicity of their clinical symptoms, the high frequency of the primary conditions, or the chance that the respondents correctly diagnosed the conditions, depending on whether it's dermatological or sensory difficulties. Both international (Tabuti et al., 2003) and Ethiopian (Lulekal et al., 2014) studies corroborate this finding. However, several ethnoveterinary studies found that gastrointestinal diseases had high ICF values (Tariq et al., 2014; Eshetu et al., 2015), which contradicts this finding. Furthermore, the ICF score was 0.47 for locomotory difficulties. Gakuubi and Wanzala (2012) state that conventional animal healthcare practitioners may not properly diagnose diseases with low ICF values or that these diseases may be relatively new to the area.

Estimation of healing potential of ethnoveterinary plants

Plants with higher informant consensus ratings are thought to be more potent than plants with lower scores. The frequency with which these plants occur in the study area may be inferred from this as well. Consequently, it is possible that medicinal plants with high FL values have a relatively high potential to cure diseases that fall into the relevant categories (Lulekal et al., 2014; Tariq et al, 2014 and Alhaji and Babalobi, 2015). More research into the phytochemical and pharmacological properties of these plants is necessary to prove their medicinal worth.

Species of medicinal plants that are widely utilized to treat particular diseases or ailments always get the highest faithfulness grade. Species of medicinal plants that are widely utilized to treat particular diseases or ailments always get the highest faithfulness grade. When it comes to treating septicaemic problems, respiratory tract problems, wounds, external injuries, and animal bites, Sida schimperiana is the go-to herb at 94% success rate, while Calpurnia aurea is the go-to ecto-parasite remedy at 97% success rate in the dermatological and sensorial problems category. The efficacy of Dracena afromontana in treating erytroblasts (known as gatachaa in Afan Oromo) was 93%. Nearly all of the ethnoveterinary medicinal plants used in the study came from natural places, making up 91.76 percent of the total.

CONCLUSION

Additional study is needed in the field of traditional veterinary medicine, specifically with the use of medicinal herbs to cure cattle diseases. The scarcity of veterinary pharmaceuticals and the challenges faced by pastoralists and farmers in remote areas in gaining access to modern veterinary healthcare facilities bolster the case for medicinal plant use. Research and standardization of traditionally used medicinal plants have the potential to make them more accessible, inexpensive, and effective therapeutic alternatives. Traditional veterinary medicine is based on the same method of verbal transmission that is used for all other systems of traditional knowledge. But conventional veterinary wisdom may perish in the face of fast environmental, economic, and technological change, along with the erosion of cultural traditions in the name of progress. Consequently, documenting is the most crucial need for undertaking systematic investigations to protect this invaluable legacy. The goal was to accomplish this by utilizing the 25 medicinal plants found in the study district, which were found to cure 27 different animal ailments. This can be due to a combination of biological and cultural variables as well as insufficient veterinary healthcare resources. Additional research on the ethnoveterinary medicinal plants identified in this survey should focus on their phytochemical and pharmacological properties.

ACKNOWLEDGMENTS

The authors are thankful to Wollega University for providing the necessary facilities.

DECLARATION

The authors declare that there is no competing interest

DATA AVAILABILITY

Data will be made available on request.

REFERENCES

Al Mamun, A., Tumpa, S. I., Hossain, M. I., & Ishika, T. (2015). Plant resources used for traditional ethnoveterinary phytotherapy in Jessore District, Bangladesh. *Journal of Pharmacognosy and Phytochemistry*, *3*(6), 260-267.

Alhaji, N. B., & Babalobi, O. O. (2015). Participatory epidemiology of ethnoveterinary practices Fulani pastoralists used to manage contagious bovine pleuropneumonia and other cattle ailments in Niger State, Nigeria. *Journal of veterinary medicine*, *2015*.

Araya, S., Abera, B., & Giday, M. (2015). Study of plants traditionally used in public and animal health management in

Seharti Samre District, Southern Tigray, Ethiopia. *Journal of ethnobiology and ethnomedicine*, *11*, 1-25.

Dawit, A., & Ahadu, A. (1993). Medicinal plants and enigmatic health practices of Northern Ethiopia. *Berhanena Selam Printing Press*, *Addis Ababa*.

Endashaw, B. (2007). Study on Actual Situation of Medicinal Plants in Ethiopia.Prepared for JAICAF (Japan Association for International Collaboration of Agriculture and Forestry). http://www.endashaw.com.

Eshetu, G. R., Dejene, T. A., Telila, L. B., & Bekele, D. F. (2015). Ethnoveterinary medicinal plants: preparation and application methods by traditional healers in selected districts of southern Ethiopia. *Veterinary world*, *8*(5), 674.

Feyera, T., Mekonnen, E., Wakayo, B. U., & Assefa, S. (2017). Botanical ethnoveterinary therapies used by agro-pastoralists of Fafan zone, Eastern Ethiopia. *BMC veterinary research*, *13*, 1-11.

Gakuubi, M. M., & Wanzala, W. (2012). A survey of plants and plant products traditionally used in livestock health management in Buuri district, Meru County, Kenya. *Journal of ethnobiology and ethnomedicine*, *8*(1), 1-20.

Giday, M., & Teklehaymanot, T. (2013). Ethnobotanical study of plants used in management of livestock health problems by Afar people of Ada’ar District, Afar Regional State, Ethiopia. *Journal of Ethnobiology and Ethnomedicine*, *9*, 1-10.

Guruprasad, N. M., & Prasad, A. D. (2019). Ethno Veterinary Medicinal Plants and Practices in Honnavar Taluk, North Kanara District of Karnataka. *Journal of Drug Delivery and Therapeutics*, *9*(3), 117-120.

Haverkort, B., Bunders, J., & Hiemstra, W. (1998). *Biotechnology: Building on farmers' knowledge*. DIANE Publishing.

Heinrich, M., Ankli, A., Frei, B., Weimann, C., & Sticher, O. (1998). Medicinal plants in Mexico: Healers' consensus and cultural importance. *Social science & medicine*, *47*(11), 1859-1871.

Kebede, A., Ayalew, S., Mesfin, A., & Mulualem, G. (2017). An ethnoveterinary study of medicinal plants used for the management of livestock ailments in selected kebeles of Dire Dawa Administration, Eastern Ethiopia. *Journal of Plant Sciences*, *5*(1), 34-42.

Lulekal, E., Asfaw, Z., Kelbessa, E., & Van Damme, P. (2013). Ethnomedicinal study of plants used for human ailments in Ankober District, North Shewa Zone, Amhara region, Ethiopia. *Journal of ethnobiology and ethnomedicine*, *9*, 1-13.

Lulekal, E., Asfaw, Z., Kelbessa, E., & Van Damme, P. (2014). Ethno-veterinary plants of Ankober district, north Shewa zone, Amhara region, Ethiopia. *Journal of ethnobiology and ethnomedicine*, *10*(1), 1-19.

Misra, K. K., & Kumar, K. A. (2004). Ethno-veterinary practices among the Konda Reddi of East Godavari district of Andhra Pradesh. *Studies of Tribes and Tribals*, *2*(1), 37-44.

Mohammed, C., Abera, D., Woyessa, M., & Birhanu, T. (2016). Survey of ethno-veterinary medicinal plants in Melkabello District, eastern Harerghe zone, Eastern

Ethiopia. *Ethiopian Veterinary Journal*, *20*(2), 1-15.

Regassa, T., Kelbessa, E., & Asfaw, Z. (2015). Ethnobotany of wild and semi-wild edible plants of Chelia District, West-Central Ethiopia. *Science, Technology and Arts Research Journal*, *3*(4), 122-134.

Silva, F. D. S., Ramos, M. A., Hanazaki, N., & Albuquerque, U. P. D. (2011). Dynamics of traditional knowledge of medicinal plants in a rural community in the Brazilian semi-arid region. *Revista Brasileira de Farmacognosia*, *21*, 382-391.

Tabuti, J. R., Lye, K. A., & Dhillion, S. S. (2003). Traditional herbal drugs of Bulamogi, Uganda: plants, use and administration. *Journal of ethnopharmacology*, *88*(1), 19-44.

Tariq, A., Mussarat, S., Adnan, M., AbdElsalam, N. M., Ullah, R., & Khan, A. L. (2014). Ethnoveterinary study of medicinal plants in a tribal society of Sulaiman range. *The Scientific World Journal*, *2014*.

Tekle, Y. (2014). An ethno-veterinary botanical survey of medicinal plants in Kochore district of Gedeo zone, southern nations nationalities and peoples regional state (SNNPRs), Ethiopia. *Journal of Scientific and Innovative Research*, *3*(4), 433-445.

Tena, R. (2016). Vascular Plant Diversity and Ethnobotanical Study of Medicinal and Wild Edible Plants in Jibat, Gedo and Chilimo Forests, West Shewa Zone of Oromia Region, Ethiopia (PhD Dissertation), Addis Ababa University, Ethiopia.

Wirtu, G., Adugna, G., Samuel, T., Kelbessa, E., Gelato, A., Mathias, E., ... & McCorkle, C. (1997, November). Aspects of farmers’ knowledge, attitudes and practices of animal health in central Ethiopia. In *Proceedings of an International Conference on Ethnoveterinary Medicine, Alternative for Livestock Development: 4–6 November 1997; Pune, India* (pp. 41-52).

Yigezu, Y., Haile, D. B., & Ayen, W. Y. (2014). Ethnoveterinary medicines in four districts of Jimma zone, Ethiopia: cross sectional survey for plant species and mode of use. *BMC veterinary research*, *10*(1), 1-12.

Yineger, H., Kelbessa, E., Bekele, T., & Lulekal, E. (2007). Ethnoveterinary medicinal plants at bale mountains national park, Ethiopia. *Journal of ethnopharmacology*, *112*(1), 55-70.

Yineger, H., Yewhalaw, D., & Teketay, D. (2008). Plants of veterinary importance in Southwestern Ethiopia: the case of Gilgel Ghibe area. *Forests, Trees and Livelihoods*, *18*(2), 165-181