Research Article

Assessment of indigenous knowledge of medicinal plants used for livestock treatment in five selected Kebeles of Kersa district Jimma zone, South western Oromia, Ethiopia

Emiru Chimdessa Gemechu
Oromia Agricultural Research Institute, Batu, Ethiopia

Balcha Abera Ena
Jimma University, Jimma, Ethiopia

Abstract

Plants have been as source of medicine in Ethiopia from time immemorial to treat different human and livestock ailments. The purpose of this study was to identify the medicinal plant species and associated indigenous knowledge in livestock treatment. A cross-sectional study was conducted to assess indigenous knowledge of local people on medicinal plants used for livestock treatment in five selected kebeles of kersa district from March to June 2014. A total of 40 traditional healers (33 male and 7 male) 7-9 from each study sites were selected purpouvely with the help of knowledgeable elders, local authorities and kebele leaders. Ethno botanical data regarding plant species, plant parts used, livestock disease treated, and method of preparation and route of administration were collected through structured interview and field observation. A total of 33 plant species distributed in 24 families were identified in the study area. The majority of the medicinal plants 63.63% were collected from the wild and 33.33% from home garden. The major growth habit of the medicinal plants identified in the study area were herbs 39.39%, followed by shrubs 33.33%.the most frequently harvested plant parts were leaves and roots with proportion of 57.7% and 21.21% respectively followed by seeds (9.09%) and fruits (6.06%). pounding and crushing were the most commonly used method of remedies preparation where as the widely used method of administration is oral. The study reveals that the local people of the study area harvest medicinal plants used to treat livestock health problem from the wild habitat. Therefore, awaring the local people of the study area to conserve medicinal plants in their home garden is recommended.

Keywords: medicinal plant, indigenous knowledge, traditional medicine

Introduction

In all countries of the world, there exists traditional knowledge related to the health of animals. In Africa, traditional healers and remedies made from plants play an important in the health of millions of animals (Rukangria, 2001), which is studied by ethno veterinary medicine.

Ethiopia is leading in livestock population in Africa .with an estimated population of 43 million cattle, 2.3 million sheep, 18.6 goats, 17 million horse, 0.6 camels, and 34.2 million poultry,4.5 million donkeys and 0.36 million mules(2006/7 CSA).However, livestock productivity is relatively poor owing to inadequate availability of feed, widespread diseases, poor health services and insufficient knowledge on the dynamics of the different farming systems in the country (Yirga and Hassen,2000).

Ethno veterinary medicine is frequently used for treatment of livestock diseases by many different ethnic groups in Ethiopia. Nearly 90% of livestock production in the country use plant based traditional medicine as their major health care system (Endashaw, 2007).Ethno veterinary medicine studies traditional knowledge, folk beliefs, skills, methods and practices used for treatment of livestock ailments(Tabuti et al.,2003).It offers medicines which are cheap and locally available than pharmacotherapy.

Because of the higher price of modern medicines and lack of accessibility to a modern veterinarian in the rural areas, farmers rely on traditional veterinary healers for treatment of livestock ailment (Harun-or- Rashid et al.,2010).in addition they believe that the medicinal plants were more efficacious for treating of livestock ailments than modern medicine(Harun-or- Rashid et al.,2010).

Various researchers in Ethiopia have reported the loss of valuable medicinal plants due to population pressure, agriculture and deforestation (Abebe, 2001; Getachew and Shiferaw, 2002; yirga, 2006).For generations, the ethno veterinary practices to treat and control livestock diseases is an old practice in a large part of the world, particularly developing countries where animal health services are still very poor or land are found scarcely located at urban areas (Kokwaro,1976;Mc corkle,1995;Sinha et al.,2002).

In Ethiopia people have been using plant species for medication of different animal diseases over centuries when there was no modern health service delivery. The practice was not stopped with introduction of modern pharmacotherapy and plant remedies are still the most important and sometimes the only sources of therapeutics for nearly more than 90% livestock population (Tadeg et al., 2005; Giday eta al., 2009).

However, information on veterinary herbal medicine has not been systematically documented (Sori et al., 2004) and there is a danger that knowledge will soon be lost as traditional social patterns are increasingly disturbed y globalization (Giday et al., 2009), environmental degradation, agricultural expansion, cultivation of marginal lands and urbanization(Taklehaymanot and Gidey,2007;Lulekal et al.,2008;Gidey et al., 2009) warranting urgent need to document and preserve indigenous knowledge(Kalayou at al.,2012).thus ,there is a gap in the documentation and records on medicinal plants in all parts of Ethiopia including Kersa district, Jimma Zone,Oromia Region, South Western Ethiopia.

Therefore, this study was conducted to assess and document medicinal plant species and associated indigenous knowledge in livestock treatment in the study area.

Materials and Methods

Study area and period

The study was conducted in kersa; one of the districts found in Jimma Zone, Oromia Region, and South Western Ethiopia from March to June 2014.Kersa is situated 18 km away to the North East of Jimma town and 328 km south west of Addis Ababa. The district is bounded by Limmu Kossa, TiroAfetta, Omonada and Manna Dedo to

the North, East, West and South respectively. The district has 3l kebeles and found on 1600 to 2400 m above sea level.

Study design

A cross-sectional study was conducted to assess indigenous knowledge of local people on medicinal plants used for livestock treatment.

Site selection

For the ethno botanical survey, a total of five selected kebeles (the smallest administrative units in Ethiopia) were selected purposively from the kersa district based on the availability of transportation and their closeness to Jimma town which are found at an average distance of 8 km from Jimma town. These kebeles are Merewa, Babo, Kombolcha Kuja Mujja and Ankaso.

Informant selection

Selection of informants was performed following Martin (1995) who indicated that when recording indigenous knowledge held by knowledgeably traditional healers or by certain social groups the choice of informant is crucial. According to Storck et al. (1991) the size of the sample depends on the available funds, time and other reasons and not necessarily on the total population. Accordingly, a total of 40 informants (33 male and 7 female) 7-9 from each kebele were selected purposively with the help of kebele elders and kebele leader.

Method of data collection

Ethno botanical data were collected through structured questionnaire and field observation. The questionnaire were prepared in English and translated to Afaan Oromoo Language.

Method of data analysis

The collected data were analyzed using Excell and presented using table, charts and graphs.

Results

The collected data regarding plant species, parts used, source, preparation method, route of administration, and ways of transferring knowledge and source of healing practice were analyzed and presented as follow:

Socio-demographic characteristics of the informants

In this survey, a total of 40 informants of which 33 male and 7 female informants were involved. The age of the informants ranged from 30 to 75 but the majority of the informant's age range from 30 to 50. Regarding the educational status, the majority of the informants were not educated 33 but only 7 have education below grade (Table 1).This shows that even though most of the traditional healers are not educated, they know more about medicinal plant than educated ones as indigenous knowledge on medicinal plants transferred orally and secretly from generation to generation.

Table 1.Socio-demographic characteristics of the informants

Characteristics	Gender				
Age	Male	Percentage	Female	Percentage	Total
30-40	10	25	4	10	35
40-50	11	27.5	3	7.5	35
50-60	5	12.5	-	-	12.5
60-70	4	10	-	-	10
70-75	3	7.5	-	-	75
Total	33	82.5	7	17.5	100
Educational status	**Frequency**	**Percentage**			
0	33	82.5			
1-4	4	10			
5-8	3	7.5			
Total	40	100			

4.1.2. Medicinal Plants used for livestock treatment

A total of 33 medicinal plant species belonging to 24 families were reported to e used for treating livestock ailment in the study area. Out of 24 families, the family Fabaceae was represented y the highest number of species (4 species, 12.12%).

Table 2.Medicinal plants families in the study area with the corresponding number of species

Family	Number of species	Percentage
Fabaceae	4	12.12
Solanaceae	2	6.06
Rutaceae	2	6.06
Euphorbiaceae	2	6.06
Asteraceae	2	6.06
Cucurbitaceae	2	6.06
Crassulaceae	1	3.03
Cupressaceae	1	3.03
Alliaceae	2	6.06
Brussulaceae	1	3.03
Spindaceae	1	3.03
Compositeae	1	3.03
Miemispermaceae	1	3.03
Phytolaccaceae	1	3.03
Myscinanceae	1	3.03
Oliniaceae	1	3.03
Viscaceae	1	3.03
Myrtaceae	1	3.03
Runanculaceae	1	3.03
Bignoniaceae	1	3.03
Lamiaceae	1	3.03
Moraceae	1	3.03
Piperaceae	1	3.03
Sapindaceae	1	3.03

4.1.3. Source of Medicinal Plants

Regarding distribution of medicinal plants, out of 33 plant species, 22(66.66%) were obtained from wild whereas 11(33.33%) from cultivated (Table 3)
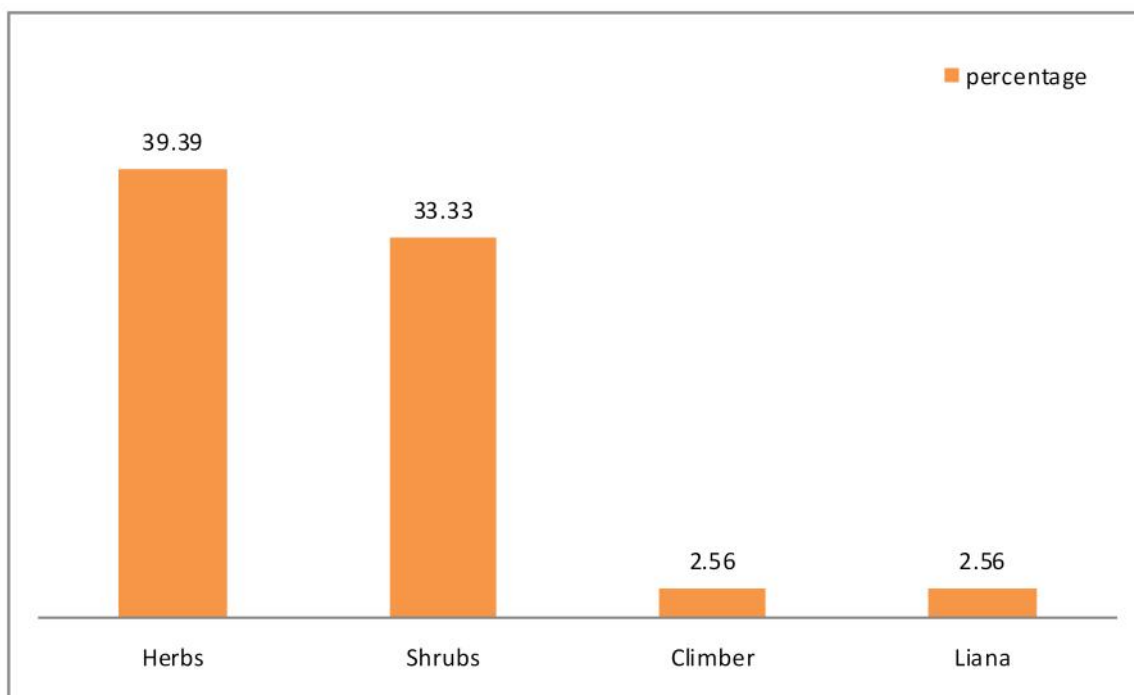
Table 3. Source of Medicinal Plants

Source	Frequency	Percentage
Wild	22	66.66
Cultivated	11	33.33
Both cultivated and wild	-	-
Total	**33**	**100**

4.1.4. Growth habit of medicinal plants

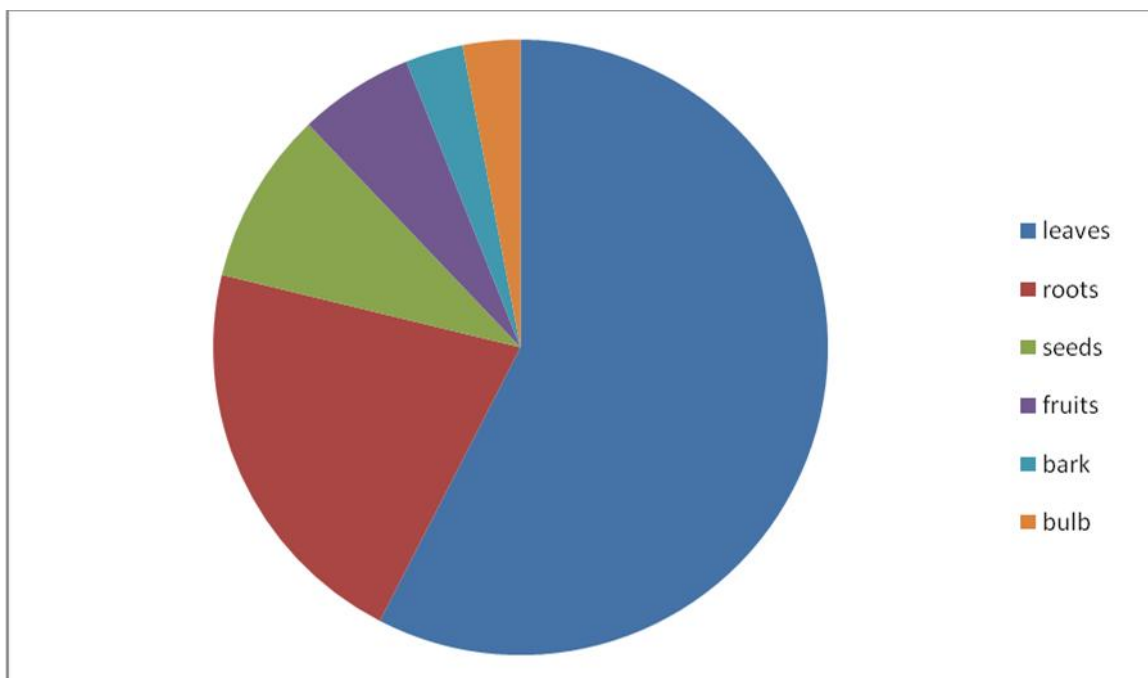According to the interview result from the study area herbs constitute the largest category 13(39.39%) followed by shrubs 11(33.33%) trees 7 (21.21 %), climber 1(2.56%) and liana1 (2.56%) (Fig 1).

4.1.5. Plant parts used

According to the interview result in the study area, leaves are the most commonly used plants parts accounting for 57.57% followed by roots 21.21%, seeds 9.09%, friuts 6.06%, bark 3.03% and bulb 3.03% (Fig 2).

4.1.6. Method of preparation

According to the interview result in the study area pounding is the most commonly used method of preparation which accounts 48.48% followed by crushing 33.33%, powdering 12.12%, pulverization 3.03% and concoction 3.03% (Fig 3).
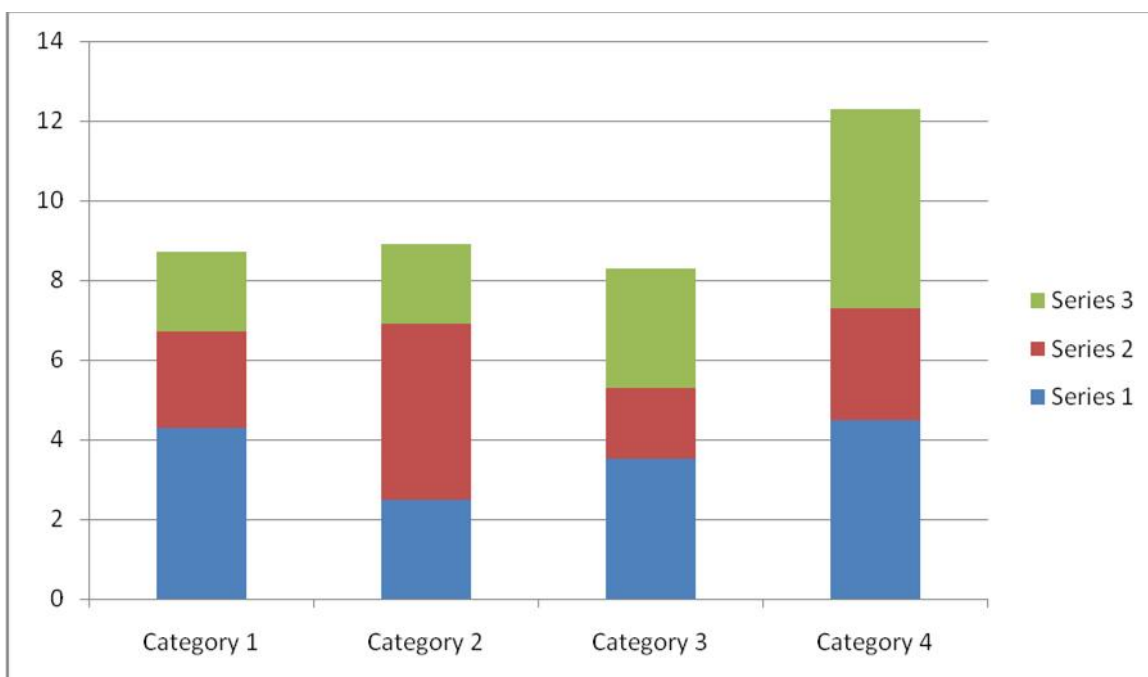
4.1.7. Route of Administration

The major route of administration in the study area is oral 78.78% followed by dermal 9.09%, both nasal- oral 6.06% and oral-dermal 6.06% (Table 4).

Table 4.Routes of administration

Route of administration	Frequency	Percentage
Oral	26	78.78
Nasal-oral	2	6.06
Dermal	3	9.09
Dermal-oral	2	6.06
Total	**33**	**100**

4.1.8. Sources healing knowledge

According to the interview result, most of the traditional healers of the study area reported the highest and most commonly cited sources of healing was from father mother, which accounts 7.5%(30) followed by wife husband 17.5%(7) and other neighborhoods 7.5%(3) (Table 5.2).

Table 5. Sources healing knowledge

Source	Frequency	Percentage
Father	30	75
Wife/husband	7	17.5
Sister/brother	-	-
Other neighborhood	3	7.5
Total	**40**	**100**

4.1.9. Transferring knowledge of traditional medicinal plants

The informants from the study area reported that the highest number for the ways of transferring knowledge on traditional medicinal plants is to eldest son 19(47.5) followed by all children of the family 15(37.5%) and eldest daughter 6(15%) (Table 6).

Table 6. Transferring knowledge of traditional medicinal plants

To whom transferred	Frequency	Percentage
Eldest soon	19	47.5
Eldest daughter	6	15
All children of the family	15	37.5
Total	**40**	**100**

Table.7 Medicinal plants used for treatment of livestock disease, scientific name, vernacular names, parts used, .preparation method, disease treated and administration route

S.No	Vernacular name	Scientific name	Family name	Plant collection	Plant parts used used and preparation method	Route of administration	Disease treated
1	Andoodee	Phytolacca dodecandra	phytolaccaceae	w	Leaf concoction is drunk	Oral	rabies
2	Abasuuda	Nigella Sativa	Runancculaceae	D	Seed is powdered ,mixed with water and given to cattle	Oral	Stomachache
3	Bakkanniisa	Croton macrostachyus	Euphorbiaceae	W	Leaves crushed ,and rubbed on infected part	-oral -Dermal	Bloat Scabies
4	Baargamooadii	Eucalyptus globulus	Myrtaceae	D	Leaf is pounded ,boiled and drunk	Oral	Cough
5	Bosoqqee	Kalanchoe petitiana	Crassulaceae	W	Root is pounded and given to affected cattle	Oral	Blackleg
6	Ceekaa	Calpurniaurea	Fabaceae	W	Leaves are pounded and used to wash scabies	Dermal	Scabies
7	Burii	Impatiens rothii	Miemispanceae	D	Fresh leaf is crushed and given to cattle	Oral	Bloat
8	Dambii	Ficusthonningiblume	Moraceae	W	Leaves are pounded and mixed with salt and given to cattle	Oral	Blackleg
9	Dichoo	Civisium vulgare	Asteraceae	W	Root is pounded and given to cattle	Oral	Diarrhea
10	Eebicha	Ver amygdalina	Asteraceae	W	Leaves crushed ,socked in water ad given to cattle	Oral	Blackleg
11	Faca'aa	Cucumis ficifolius	Cucurbitaceae	W	The root and leaf pounded ,mixed with salt and water then given to cattle	Oral	Blackleg

12	Botoroo	Stereospermum kunthianumcham	Bignoniaceae	W	Barks pounded ,mixed with water and drunk	Oral	Snakebite
13	Gaattiraa	Juniperus procera	Cupressaceae	D	Leaves crushed, mixed with water and given to cattl	Oral	Abdominal pain
14	Gurra hantuutaa	Vigna vexillata	Fabaceae	W	Leaves cushed and rubbed on affected part	Dermal	Spider poison
15	Gursadii	Allophyllus macrobotryolsoile	Sapindaceae	W	Fresh leaves are crushed ,mixed with water and given to cattle	Oral	Internal parasite
16	Harmoo	Viscum tuberculatum	Viscaceae	W	Leaf is pulverized and given to cattle	Oral	Blackleg
17	Hidda hantuutaa	Vigna membraceae	Fabaceae	W	Leaves are pounded ,dried ,mixed with water and given to cattle	Oral	Epilepsy
18	Ittacha	Dodonaceae angustifolia	Spindaceae	W	Fresh leaves are crushed with water added and given to cattle	Oral	Diarrhea
19	Haanquu	Embelia schimperi	Myscinanceae	W	Leaves are pounded, mixed with salt and water and given to cattle	Oral	Blackleg
20	Loomii	Citrus lemon	Rutaceae	C	Fresh paste is crushed and poured	Oral Dermal	Tick infestation
21	Maraarisa	Clerodendron mycricoides	Lamiaceae	W	Root is pounded	Oral	Diarrhea
22	Minaan bofaa	Momordica foetida schumach	Cucurbitaceae	W	Root is pounded, mixed with water and gien to cattle	Nasal Oral	Abdominal colic
23	Noolee	Olinia rochetiana	Oliniaceae	W	Leaf is crushed, mixed with salt and gien to cattle	Oral	Interna parasite
24	Mimmixa	Capsicum annum	Solanaceae	D	Fruit is powdered,mixed with water and given to cattle	Oral	Bloat
25	Qullubbii	Allium sativum	Alliaceae	D	Bulbs are pounded and	Oral	Blackleg

39

	adii				given to cattle		
26	Sanaamakii	Sennadidy mobotrya	Fabaceae	W	Leaves are pounded and given to cattle	Oral	Blackleg
27	Shinfaa	Lepidium sativum	Brassicaceae	D	Seed is powdered, mixed with salt and given to cattle	Oral	Bloating
28	Sigiluu	Fagaropsis	Rutaceae	W	Fresh leaves are crushed, mixed with water and given to cattle	Oral	Blackleg
29	Qabarichoo	Echinops kebericho mesfin	Compositeae	W	Root pounded, mixed with water and given to cattle	Oral	Blackleg
30	Qobboo	Ricinus communis	Euphoriaceae	D	Leaves pounded, mixed with water and given to cattle	Oral	Blackleg
31	Tamboo	Nicoticam tabacum	Solanaceae	D	Leaves are crushed, soaked in water	Oral Nasal	Leech Blackleg
32	Tunjoo	Piper capense	Piperaceae	W	Root is pounded and given to cattle	Oral	Leech
33	Sunqoo	Allucepal	Alliaceae	D	Seed is powdered ,mixed with water	Oral	stochache

Discussion

In this study, a total of 40 traditional healers of which 82.5% (33), male and 17.5% (7) female respondents were involved. The age o the respondents ranged from 3o to 75. The majority of the traditional healers were not educated 33 (82.5%) but only 7 (17.5%) have education below grade 8. This shows that even though most of the traditional healers were not educated, the know more about medicinal plants than educated ones as indigenous knowledge on medicinal plants transferred orally and secretly from generation to generation.

The results of this study revealed 33 medicinal plant species belonging to 24 families used to treat 13 livestock ailments in the study area. The family Fabaceae was represented by the highest number of species 4(12.12%) followed by Solonaceae, Rutaceae, Euphorbiaceae, Asteraceae, Cucurbitaceae, Alliaceae, each represents 2 species (6.06%). Each of the remaining 17 families had single species represent actives. This finding is comparable with the results of Megersa (2010) study conducted in Wayu Tuka Woreda who showed that Fabaceae was the leading family in the study area.

Out of 33 identified medicinal plant species, 21(63.63%) were obtained from wild followed by domesticated 12 (36.36%). Similar study conducted by Gidey et al. (2003) from Zay people in Ethiopia indicates harvesting of 82%medicinal plants from the wild. According to Megersa (2010) Wayu Tuka Wored revealed that large numbers of medicinal plants are collected from wild areas. This shows wild habitats are subjected to the loss of number of species due to anthropogenic factors such as fire wood, agricultural expansion, drought and other. Analysis of growth habits revealed that herbs and shrubs constitute the largest category with the proportion of 39.39% and 33.33% respectively followed by trees 21.21%, climber 2.56% and liana 2.56%.

The most commonly used plant parts for remedies preparation in the study area were leaves 57.7% followed by roots 21.21%, seeds 9.09%, fruits 6.06%, bark 3.03% and bulb3.03%. This find is in line with the results of Tamene et al.(2000) study conducted in Cheffa showed that the highest plant parts used for preparation of remedies is leaf (56.89%). The methods of remedies preparation commonly used were pounding and crushing with the proportion of (42.42%) and (30.3%) respectively, followed by powdering (21.21%), concoction (3.03%) and pulverization (3.03%). This finding is also in agreement with the results of Tamene at al. (2000), in Cheffa revealed that pounding, crushing and squeezing (88.88%) are the most commonly used mode of preparation. The route of administration commonly used in the study area were oral constituting the largest category of 78.78% followed by dermal 9.09% ,both nasal-dermal 6.06% and oral -dermal6.06%. This is parallel with the results of Sori et al.(2004), study conducted in Borena,Southern Ethiopia, oral (54%) followed by topical (4%) are the main route of administration.

The finding of the study with regard to the source of healing knowledge showed that (75%) of healers acquired their knowledge and experience from their parent (Fathers/Mothers) followed by wife/husband (17.5%) and other neighborhoods (7.5%). In line with this study, the results of Abdurhaman (2010) in Ofla Woreda showed that the highest number for traditional medicinal plant knowledge gain is from father/mother 40(47.66%). Analysis of data from this study indicated that knowledge and practices on medicinal plants reside with few families. This finding agrees with the results of Abdurrahman (2010) who showed that the highest number for the ways of transferring knowledge on medicinal plants is to eldest son 25(29.6%). The secrecies of more knowledge and practices with less people could be series for the sustainability and continuity of traditional knowledge of medicinal plants.

Conclusion

Majority of the reported medicinal plant species were from wild habitat. The conclusion made from this finding is presented as follows:
This study revealed 33 medicinal plant species used for livestock treatment. Leaves are harvested for medicinal purpose than other plant parts in the

study area. Herbs and shrubs are highly utilized for medicinal purpose than others. Pounding and crushing are the most frequently used method of traditional medicine preparation. Most of the medicinal plants were administered orally. Most of the knowledge on herbal remedies in this study area acquired from the parents (fathers/mothers). The highest number for ways of transferring knowledge on traditional plants is to the eldest son.

References

1. Central Statistical Authority (CSA) (February 2006/7). Agric sample survey report on livestock and livestock characteristics .volume 11 Addis Ababa, Ethiopia.
2. Yirga C. Hassen M(2000).Crop livestock farming system on the highlands of Ethiopia: small holder farmers management practice and constraints
3. Tabuti JRS, Dhilion SS, Lyak (2003). Ethno veterinary medicines for cattle in Bulamogi country Uganda: plant remedies and mode of use.J.Ethno.pharmacol.88:279-286.
4. Harum-or Rashid MD, Tanzin R. Ghosh KC,Jahan R,Khatun A,Rahmatullah M.(2010). An ethno veterinary survey of medicinal plants used to treat cattle diseases in Birishiriarea, Netrakona district, Bangladesh, Advances in Natural and Applied sciences 4(1):10-13.
5. Abebe, D. (2001). The role of medicinal plants in healthcare coverage of Ethiopia, the possible integration. In: Zewdu, M, and Demissie, A. (eds). Conservation and sustainable use of medicinal plants in Ethiopia proceeding of the national workshop on biodiversity conservation and sustainable use of medicinal plants in Ethiopia, 28April-01 May 1998.IBC, Addis Ababa, pp.6-21.
6. Getachew, B. and Shifera, D. (2002).medicinal plants in Bonga forest and their uses. Biodiversity new slett. 1:9-10 IBCR, Addis Ababa.
7. Yirga, G.(2006). Use of traditional medicinal plants by indigenous people in Mekelle town, capital city of Tigray regional state of Ethiopia. Journal of medicinal plants research, 4(17):1799-1804.
8. Tadeg H. Mohammad E, Asres K, Gebremariam T (2005). Antimicrobial activities of some selected traditional Ethiopian medicinal plants used in the treatment of skin disorders.
9. Giday, M., Asfaw, Z and Woldu.Z.(2009). Medicinal plants of the main ethnic groups of Ethiopia. An ethno botany study. Journal of ethno pharmacology. 124(3):513-521.
10. Sori T, Bekana M, Adugna G, Kelbessa E.(2004). Medicinal plants in ethno veterinary practices of Borana pastoralists, Southern Ethiopia. In.J.Appl.Res.vet.Med.2:220-225.

How to cite this article:
Emiru Chimdessa Gemechu, Balcha Abera Ena. (2021). Assessment of indigenous knowledge of medicinal plants used for livestock treatment in five selected Kebeles of Kersa district Jimma zone, South western Oromia, Ethiopia. Int. J. Curr. Res. Chem. Pharm. Sci. 8(4): 31-42.
DOI: http://dx.doi.org/10.22192/ijcrcps.2021.08.04.004