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Survey on Ethno-Veterinary Medicinal Plants in Selected Woredas of East Wollega Zone, Western Ethiopia

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Abstract
Background: Plant remedies are still the most important therapeutics to treat livestock aliments; large part of the knowledge of ethno medicinal plants is declining to deterioration due to the oral passage of herbal heritage verbally. The objective of the study was to identify and document ethno-veterinary medicinal plants. **Methods:** The study was carried out from November 2013 to April 2014. The study sites were selected purposefully based on the recommendations of elders and local authorities. Ethno-botanical data were collected using semi-structured interviews, field observations and group discussion. 42 study participants were involved in this study during the study period.**Results:** A total of 28 ethno-veterinary medicinal plant species belonging to 22 families were documented with details on their local name, family, habit and their traditional preparation, mode of application. Solanaceae and Euphorbiaceae families constituted the highest proportion (10.7%) followed by Fabaceae and Cuccurbitaceae with the same proportion (7.14%). The informants were reported as there were 16 known livestock ailments which are treated by traditional healers. Herbs (74%) were the most widely used followed by shrubs (34.3%). Oral route of administration (53.5%) was the most commonly used followed by topical (35.2%). About 68% of the plant taxa were collected from the wild and, 32% from home gardens. Agricultural expansion (23%) has been found to be the first main threat followed by overgrazing (21.2%). **Conclusion:** The study revealed that the traditional healers were with a good of knowledge of medicinal plants used to treat livestock ailments. Thus, further research should be conducted to evaluate the efficacy and possible toxicity of the plants in the study area.
Keywords: Ailments, East Wollega Zone, Ethno-Veterinary Medicinal plants, Livestock

Introduction

In developing African countries like Ethiopia, livestock production remains crucial and represents a major asset among resource-poor smallholder farmers by providing milk, meat, skin, manure and traction. However, the economic benefits of livestock populations remain marginal 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 (Mesfin and Lemma, 2001).

In Ethiopia, plant remedies are still the most important and sometimes the only sources of therapeutics for nearly 80% of human and more than 90% in livestock population. Estimated floras of 6500 to 7000 species of higher plants are of medically important and out of these medicinal plants 12% are endemic to Ethiopia (Mengistu, 2004). Despite their vital role in catering for the health of human and livestock population, large part of the knowledge of ethno medicinal plants is on the verge of irreversible loss and declining to deterioration due to oral passage of herbal heritage from generation to generation verbally rather than in writings (Tadesse, 2007). Traditional healers and local farmer's (traditional health practitioners) have made remedies from plants that play an important role in the health of millions of people and animals, which is studied by ethno-veterinary medicine. Ethno-veterinary medicine studies traditional knowledge, folk beliefs, skills, methods and practices used for the treatment of livestock ailments (Tabuti *et al.,* 2003). It offers medicines which are cheap and locally available than pharmacotherapy. Farmers can prepare and use homemade remedies without any expenditure (Yirga *et al*., 2012). The use of ethno-veterinary practices to treat and control livestock diseases is an old practice in a large part of the world, particularly developing countries including Ethiopia where animal health service facilities are still very poor or/and are found scarcely located at urban areas (Kokwaro, 1976; McCorkle, 1995; Sinha *et al*., 2002). Still, those in close proximity to conventional drugs also use traditional medicinal drugs to treat their animals (Gemechu *et al*., 1997) due to cultural acceptability, efficacy against certain diseases and economic affordability (Teklehaymanot and Giday, 2007).

However, information on ethno-veterinary medicine haven't been well documented (Sori *et al*., 2004) and there is a danger that this knowledge will soon be lost as traditional social patterns are increasingly disturbed by globalization, environmental degradation, agricultural expansion, cultivation of marginal lands and urbanization (Teklehaymanot and Giday, 2007; Lulekal *et al*., 2008; Giday *et al*., 2009). Traditional medical knowledge of medicinal plants and their use by indigenous cultures are not only useful for conservation of

cultural traditions and biodiversity, but also for livestock healthcare and drug development in the present and future. The traditional knowledge of ethno-veterinary medicinal plant is not compiled in Ethiopia (Giday *et al*., 2003). As a result, there is imperative need to document and preserve the indigenous knowledge in written form for next generation is the most valuable work.

Even though traditional medical knowledge of medicinal plants is very crucial to treat different diseases, there is no study conducted in East Wollega Woredas on this regard. Thus, the present study was designed to identify and document ethno-veterinary medicinal plant species and traditional medicinal knowledge of the traditional health practitioners at study areas.

MATERIALS AND METHODS

Study Area

The study was conducted at selected East Wollega Woredas in western Ethiopia (Oromia regional state) and far from Addis Ababa around 331km. The average temperature in the area is 21^{o}c. Its zone receives the minimum annual rain fall of approximately 1450mm and the maximum annual rain fall of 21500mm with the average rain fall of 1800mm. According to Nekemte District Agricultural Office (NDAO,2007), the altitude of the study area ranges from 1300-3140m above sea level and the district has various topographic features. The vegetation of the area is dominated by xerophylic plants. Mixed crop and livestock farming system is the mode of agriculture in the districts in which cattle and sheep kept as the major livestock which are highly important for the livelihood of the local population. There are no adequate veterinary services in case of drug availability, only some broad spectrum drugs were offered.

Data Collection

The study sites were selected based on the availability of practice of traditional medicine and on the recommendations of local authorities and agricultural developing agents. Moreover; the agro-climatic zones was considered to select the study kebeles. An ethno-veterinary botanical survey was conducted to gather information on the traditional usage of plants in livestock health care system using a semi-structured interview, observations and field guided walks (Martin, 1995) with the local farmers and traditional healers who were willing to share their indigenous knowledge. A total of 42 individuals were purposively selected and interviewed based on their knowledge on traditional medicine. The market survey was made to distinguish and record the type of herbal drugs sold in the market, and the multipurpose role of some medicinal plants was observed during the study period. Furthermore, herbal drug sellers and others who brought plant species were interviewed.

Plant Specimen Collection and Identification

The medicinal plants were collected from the wild and home gardens based on the report of the informants. The collected plants and the necessary recorded information were taken to the Preliminary identification was done at the site (field) and the collected voucher specimens were taken to the National Herbarium of Ethiopia (Addis Ababa University). After the specimens had taken to the department, plant species were identified using taxonomic keys; the volumes of the Flora of Ethiopia and Eritrea (Edwards *et al.,* 2000; Hedberg *et al.,* 2006) and by making a comparison with the already identified specimens that were deposited at National Herbarium.

Data Analysis

Descriptive statistical methods (Proportions (percentiles) and tables) were used to summarize the collected ethno-veterinary medicinal data.

RESULTS

General characteristic of the informants

Traditional healers and some local farmers involved in the study were male (88.1%) and female 5(11.9%). About twenty five (59.5%) and seventeen (40.5%) of the respondents were illiterate and literate respectively. Most of the respondents were older age groups (69.0%) (Table1).

Sources and Habit of Medicinal Plants

The ethno-veterinary medicinal plant data collected from the study site revealed that most of the medicinal plants were collected from the wild (68%) and others were from home gardens (32%). In addition, the habit of the medicinal plants indicated that most of them were herbs (42.4%) and then shrubs (33.6%).

Medicinal plant parts used for the preparation of the remedies

The study showed that the widely used plant part for the preparation of the remedies in the study area was leaves (43.3%) and followed by roots (34.4%) and the rest were fruits (6.85%) seeds/pods(6.82%) and Bark(5.84%) Bulb(2.90%).

Mode of preparation, route and ingredients added

The study revealed that the highest mode of preparation was in the form of grinding (49.3%); followed by crushing (27.7%) and others like chopping, decoction, roasting, consumption of whole plant part, streaking (23.0%). The majority of the plant remedies were prepared from fresh material of the plants which accounted for (82.5%) followed by fresh/dry (17.5%). The most widely used route of administration was oral which accounted

(53.5%) followed by topical (35.2%) and others (Table 2).

Types of Domestic Animal Diseases

The informants were reported as there were 16 known livestock diseases in the study area which are treated by traditional healers. Of the diseases, black leg (75.0%), wounds (31.0%), retained fetal membrane (31.0%) and rabies (25.0%) were the most common one. Traditional healers (key informants) ranked these plant taxa based on their perception of the degree of effectiveness. Accordingly, *Justicia shimperiana* was rated the most effective in treating Black leg and followed by *Cucumis ficifolius* as indicated (Table 3).

Availability of medicinal plants based on the season

Availability of some ethno-veterinary medicinal plants were affected by season; many of the plants were available every time (92.6%), some are available seasonally (4.90%), and the rest, difficult to get them (2.50%) as described in the study area (Table 4).

Plant families frequently used at study area

Solanaceae and Euphorbiaceae families were constituted the highest proportion (10.7%) and followed by Fabaceae and Cuccurbitaceae with the same proportion (7.14%), all the rest eighteen families constitutes (3.57%) proportion (Table 5).

Paired comparison

A paired comparison was made for four medicinal plants which were used to treat retained fetal membrane in the study area. For this, 18 key informants were requested to give rank to plant taxa according to their effectiveness. Accordingly, *Colocasia esculenta* stood first and followed by *Ricinus communis* (Table 6).

Transfer of Knowledge about the plants

According to the survey, transfer of ethno-veterinary knowledge of medicinal plants follows vertical transfer to the most selected family member orally with great secrecy. The highest number of transfer of knowledge about the plant is to trusted eldest son that accounted for (36.0%) followed by trusted sons (25.5%), and others are all members of the family (18.5%), relatives (12%) and friends (8%). The findings of the study showed that as people become older and older their knowledge of traditional medicine becomes better and better. Most of the informants were elders that indicated the trend of transferring (inheriting) the knowledge is usually at old age. The study also indicated that there is no widely observed trade of medicinal plants in the study area though some practitioners and women sell some medicinal plants in the market and in their homes. Some of the plant medicines that grow in home gardens and sold were *Allium sativum*, *Nicotiana tabacum*, *Zingiber officinale*, *Capsicum annum*, *Coffea arabica*, and *Colocasia esculenta*.

Conservation and Threats to Medicinal Plants

The study indicated that many of the informants who have knowledge on traditional medicine usage give priority to the immediate use of the medicinal plants than to its sustainable future uses, as a result their harvesting style is destructive. However, some plants has protected for their spiritual and cultural purposes. Thus, these places are good sites for the protection of the medicinal plants since cutting and harvesting are not allowed in such particular areas. The plant species such as *Allium sativum, Capsicum annum*, *Coffea arabica* and *Justicia shimperiana* are cultivated in or near the vicinity. This was indicated that a good practice for the conservation of medicinal plants through cultivation. The study revealed that there were a number of threats that factors affect the medicinal plants in the study area. The factors include agricultural expansion (23.1%) followed by overgrazing (21.2%) and soil erosion (20.4%) (Table7).

DISCUSSION

In the present study, a total of 28 ethno-veterinary medicinal plant species belonging to 22 families were documented with details on their local name, family, habit and their traditional preparation, mode of application. Solanaceae and Euphorbiaceae families constituted the highest proportion (10.7%) and followed by Fabaceae and Cuccurbitaceae with the same proportion (7.14%). The local community classifies plant habit of the area into different categories based on some criteria, in a similar way the local people of Konso special Wereda, SNNPR, Ethiopia classify plants into different categories (Gebre, 2005). This categorization is also true for the indigenous people at western Wollega and some parts of Horro Guduru Wollega, Ethiopia (Tolesa, 2007). This indicated that local people have an accumulated knowledge of their own that they use to classify, use, manage and conserve the natural resources. The use of traditional medicinal plants in most developing countries as a normative basis fance of good health has been widely observed (Kerro and Tarreke, 2003).

The majority of the respondents were older age groups however; very few youths were involved in traditional livestock treatment in the study area. This was in line with report of Yirga *et al*. (2012a, b) from Jimma. The findings was also agrees with reports of Tamiru *et al*. (2013) from Dabo Hana District, West Ethiopia and Gebrezgabiher *et al*.(2013) from Tigray region. Less medicinal knowledge in relation to young age might be attributed to the fact that traditional knowledge is built with years of experience (Awas, 2007). 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 (Khan *et al*., 2012). Similarly, difficulty of preparation, seasonal availability of medicinal plants, climatic change and deforestation were potential factors contributed for declining utilization of homemade remedies in the study area. This agrees with findings of Tamiru *et al*. (2013) and Abera (2014).

The survey revealed that the major portion of the traditional healers and some local farmers in the villages relies on traditional veterinary knowledge, practices and locally available materials (Giday and Ameni, 2003) primarily medicinal plants to cure and prevent livestock health problems such as wound , blackleg, rabies, retained fetal membrane, abdominal pain, bleeding, pastuerellosis, trypanosmosis, mastitis, leech infestation, bloating, dermatophilosis, skin diseases, lice infestation, ring worm and gastro intestinal parasites. This indicated that herbaceous medicinal plants were the widely used for the treatment of various ailments which agree with studies in other parts of Ethiopia (Tessema *et al*., 2001; Sori *et al*., 2004; Teklehymanot and Giday, 2007).

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 (Giday *et al*., 2009), Pakistan (Farooq *et al*. 2008) and Brazil (Barboza *et al*., 2007; Monteiro *et al*., 2011). 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. In addition, the habit of the medicinal plants indicated that most of them were herbs (42.4%) and then shrubs (33.6%). The knowledge about the type, part used, dosage, administration of the medicinal plants is circulating chiefly among practitioners of traditional medicine or other members of the community (Tadesse, 1986). All plant growth forms were not equally used as remedies, because of the difference in distribution among the growth forms. This leads to the wide use of herbs and shrub for their medicine. The study revealed that the part of the plant which is highly used for the preparation of the remedies were leaves (43.3%) followed by roots (34.4%). This agrees with the reports of Giday *et al*. (2003) and Mesfin (2007). Based on the information gathered from the key informants especially from those who are highly accepted by the society for their ability in healing different health problems, the condition of preparation of remedies was not the same. The highest condition of preparation was fresh (82.5%) followed by fresh/dry (17.5%). In contrast to this idea, some professional traditional healers sell their plant medicines in dried form in the market and also store the dried plant medicines in different containers in their homes. This agrees with another findings conducted at Tigray region (Gebrezgabiher *et al*., 2013).

The study also showed that the information gathered from the key informants especially from those who are highly accepted by the society for their ability in healing different health problems, the condition of preparation of remedies was not the same. The highest condition of preparation was fresh (82.5%) followed by fresh/dry (17.5%). The plant remedies were administered orally (53.5%) followed by topical (35.2%). This study agrees with similar studies elsewhere in Ethiopia (Abebe and Ayehu, 1993; Teklehaymanot and Giday, 2007). But, the dosage determination was the big problem in the study area because there is no standardized known unit of measurements of the plant remedies. However, the dose was determined by using homemade remedies using cup, glass, plant parts like number of bulbs and number of seeds and their own hand as handful were the identified means to treat animals in the study area. The dosage regime is generally dependent on the degree and duration of the ailment, age, size and body condition of the animal. This agrees with report of ethno-medicinal plant knowledge and practice by Yineger *et al*. (2008) from Jimma and Abera (2014) from Gimbi district, Southwestern Ethiopia.

The majority of the claimed ethno-veterinary medicinal plants were collected from natural habitat (wild) without cultivation so that the remedies are under a big threat to their existence as long as the mass destruction of their habitats continues (Giday *et al*., 2003; Abera, 2014). There is also an increase threat to these medicinal plants due to continuous draught, agricultural expansions and cultivation of marginal lands. The stock of the vegetation of medicinal plants is shrinking and in a big threat due to the combined effects of these factors (Bekele, 2006).

The traditional medicinal use of some surveyed medicinal plants is recorded in other parts of the country. *Hagenia abyssinica* is used to treat Taneasis in human in Bale, Debark and Kofle rural communities of Ethiopia (Assefa *et al*., 2010). Similar, its use for treatment of livestock ailments have been also documented (Mesfin and Obsa, 1994; Abebe *et al*., 2000; Wondimu *et al*., 2007; Yineger *et al*., 2007). The therapeutic value of *Achyranthes aspera* is known for skin diseases (Goyal *et al*., 2007) and various gastrointestinal and respiratory problems (Bhandari, 1990). The medicinal use of *Azadirachta indica* to treat endoparasites and ectoparasites is also documented by Sori *et al*. (2004) in the Borena pastoralists, southern Ethiopia. Moreover, the efficacy of leaves of *Azadirachta indica* to reduce the parasitic load (Khan, 2009) and that of the Aloe species in treating *Trychostogylus* in sheep (Ibrahim, 1986) has also been confirmed. It is also shown that *A. indica* contain chemicals that could help to control more than 200 pest species as well as antimalarial limonoids that showed good antimalarial action *in vitro* (Leeuwenberg, 1987; Lambert, 1997). The study depicted that the

traditional healers and local farmers have a wealth of knowledge about ethno-veterinary medicines to treat and manage their livestock through indigenous knowledge to protect the health and increase productivity.

CONCLUSION

The present study was conducted to document medicinal plants and their Ethnoveterinary knowledge and practices in East Wollega Woredas. Twenty eight species and twenty two families of ethno-veterinary medicinal plants were documented which are used to treat 16 different animal health ailments. The result revealed presence of large number of valuable resources, practices and knowledge of ethno-veterinary medicine, which can solve problems of shortage of drugs at rural areas as well as drug resistance in different diseases. The plants were mainly collected from the wild by consultation of traditional healers. Among the threats, agricultural expansion and overgrazing were found to be the main threats for the medicinal plants. Thus, priority for conservation of these medicinal plants and research should be needed to determine safety, toxicity optimal dose and concentrations of preparations.

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REFERENCES

Abebe G, Dawson LJ, Detweiler G, Gipson TA, Sahlu T. 2000. *Hagenia abyssinica* (Kosso) for internal parasite control in goats. In the opportunities and challenges of enhancing goat production in East Africa. (Eds: R. C. Merkel, G. Abebe and A. L. Goetsch) E (Kika) de la Garza Institute for Goat research, Langston University, Langston OK, Debub University, Awassa, Ethiopia, 10-12 November, 190- 195.

Abebe, D, Asfaw Debela and Kelbessa U. 2003. Medicinal and other useful plants of Ethiopia. EHNRI, Addis Ababa, Ethiopia, 25-43.

Abebe,D. and Ayehu,A. 1993. Medicinal plants and Enigmatic Health practices of Northern Ethiopia. B.S.P.E. Addis Ababa.

Abera B. 2014. Medicinal plants used in traditional medicine by Oromo people, Ghimbi District, Southwest Ethiopia, Journal of Ethnobiology and Ethnomedicine, 10:40. http://www.ethnobiomed.com/content/10/1/40.

Assefa B, Glatzel G, Buchmann C. 2010. Ethnomedicinal uses of Hagenia abyssinica (Bruce) J.F. Gmel. among rural communities of Ethiopia. J. Ethnobiol. Ethnomed, 6:20.

Awas, T. 2007. Plant Diversity in Western Ethiopia: Ecology, Ethnobotany and Conservation. PhD Dissertation, Faculty of Mathematics and Natural Sciences, University of Oslo, Norway.

Barboza RRD, Souto WMS, Mourão JS. 2007. The use of zootherapeutics in folk veterinary medicine in the district of Cubati, Paraíba State, Brazil. J. Ethnobiol. Ethnomed, 3:1-14.

Bekele E. 2006. A study on actual situation of medicinal plants in Ethiopia. http://www.endashaw.prepared by JAICAF.

Bhandari MM. 1990. Flora of the Indian desert, MPS Repros, Jodhpur, India , 287-288.

CSA. Central Statistical Agency). Federal Democratic Republic of Ethiopia 2004.

Edwards, S. 2001. The Ecology and Conservation status of Medicinal plants in Ethiopia. What do we know? In: Conservation and Sustainable use of Medicinal plants in Ethiopia, Pp. 46-55, (Medhin Zewdu and Abebe Demissie, eds.), Proceedings of the National workshop on Biodiversity Conservation and Sustainable use of Medicinal Plants in Ethiopia. IBCR, Addis Ababa, 61-69.

Farooq Z, Iqbal Z, Mushtaq S, Muhammad G, Zafar M, Iqbal AM. 2008. Ethnoveterinary practices for the treatment of parasitic diseases in livestock in Cholistan desert (Pakistan). J. Ethnopharmacol, 118:213-219.

Gebre, T. 2006. Ethnobotanical study of medicinal plants in the Konso Special Woreda (SNNPR), Ethiopia. M.Sc. Thesis Addis Ababa University.

Gebrehiwot M., Nemomissa S. and Awas T. 2010. An ethnobotanical Study of Medicinal Plants in Seru Woreda, Arsi Zone of Oromia Region, Ethiopia. Master Thesis, Addis Ababa University, Ethiopia.

Gebre-Mariam,T. and Asres,K. 2001. Applied Research in Medicinal Plants. In: Conservation and Sustainable use of Medicinal Plants in Ethiopia, pp. 3445, (Medhin Zewdu and Abebe Demissie, eds). Proceedings of the National workshop on Biodiversity Conservation and Sustainable use of Medicinal plants in Ethiopia, IBCR, Addis Ababa.

Gebrezgabiher G., Kalayou S. and Sahle S. 2013. An ethno-veterinary survey of medicinal plants in Woredas of Tigray region, Northern Ethiopia. International Journal of Biodiversity and Conservation, 5(2): 89-97. http://www.academicjournals.org/IJBC.

Gemechu W, Girma A, Temesgen S, Ensermu K. Aspects of farmers' knowledge, attitudes and practices (KAP) of animal health problems in the central highlands of Ethiopia. Presented at Intern Conf. Ethnovet. Med; Pune, India 1997.

Giday M, Asfaw Z, Woldu Z. 2009. Medicinal plants of the Meinit ethnic group of Ethiopia: An ethnobotanical study. J. Ethnopharmacol, 124:513-521.
Goyal BR, Goyal RK, Metha AA. 2007. Phyto-pharmacology of *Achyranthes aspera* : A review. Plant Rev, 1: 143-150.
Hedberg, I., Ensermu Kelbessa, Edwards, S., Sebsebe Demissew, Persson, E. 2006. Gentianaceae to cyclocheiaceae. In: Flora of Ethiopia and Eritrea vol.5. The national herbarium Addis Ababa, Ethiopia and Uppsala, Sweden.
Ibrahim MA. 1986. Veterinary traditional practices in Nigeria: livestock systems research in Nigeria's sub-humid zone. Proc 2nd Intern Livestock Center Africa Symp.
Kokwaro JO. 1976. Medicinal Plants of East Africa. East African Literature Bureau, Nairobi, 292-294.
Lambert J. Medicinal plants: 1997. Rescuing a global heritage. World Bank Technical, 355. Washington DC.
Leeuwenberg AJM. 1987. Medicinal and Poisonous Plants of the Tropics. Proceedings of the Symposium of the 14th International Botanical Congress, Berlin.
Martin, G.J. 1995. Ethnobotany: A method Manual. Chapman and Hall, London. Pp. 265-270.medicine in Ethiopia: Prospective and Development Efforts. In: Ethiopian Pharmaceutical Association, Pp45-53, (Tamirat Ejigu, edn.) Silver Jubilee Anniversary, Special Issue. Addis Ababa, Ethiopia.
McCorkle CM. 1995. Back to the future lessons from ethnoveterinary research, development extension for studying and applying knowledge. J. Agric. Food Human Values Society, 22(2):52-80.
Mengistu A.K. 2004. The Effect of Herbal Preparations on Staphylococcus aureus and Streptococcus agalactiae isolated from clinical bovine mastitis (Un published MSC thesis Faculty of veterinary medicine, AAU).
Mesfin T, Obsa T. 1994. Ethiopian traditional veterinary practices and their possible contribution to animal production and management. Rev. Sci. Technol,13:417-424.
Mesfin T., Lemma M. 2001. The role of traditional veterinary herbal medicine and its constraints in animal health care system in Ethiopia. In: Biodiversity Conservation and Sustainable use of medicinal plants in Ethiopia, 23-33.
Mesfin, F. 2007. An Ethnobotanical study of medicinal plants in Wonago Woreda, SNNPR, Ethiopia. M.Sc. Thesis. Addis Ababa University. Addis Ababa.
Nekemte District. 2007. Annual report on population size and agriculture of the district. Nekemte: NDAO.
Sahle, S. 2002. A Study on Medicinal Plants used in the traditional veterinary Practices for treatment of bovine mastistis in selected sites of central Ethiopia (Un published DVM thesis Faculty of veterinary medicine, AAU).
Shanker D. 1993. Medicinal Plants and Biodiversities. Elselvier Scientific Publisher, Ireland Itd. Ireland. Journal of Ethiopharmacology, 33:100-119.
Sinha P, Govil NJ, Singh VK. 2002. Diseases and their management, recent progress in medicinal plants, Sci. Tech, Pub LLC, USA, 1-105.
Sori T, Bekana M, Adunga G, Kelbesa E. 2004. Medicinal plants in Ethnoveterinary practices of Borana pastoralists, Southern Ethiopia. Int. J. Appl. Res. Vet. Med, 2: 220-225.
Tabuti JRS, Dhillion SS, Lye K. A. 2003. Ethnoveterinary medicines for cattle (*Bos indicus*) in Bulamogi County, Uganda: plant species and mode of use. *J. Ethnopharmacol*, 88: 279-286.
Taddese, T. 2007. In-vitro Antimicrobial effects of Combertummolle on Staphylococcus aureus Isolates (Un published DVM thesis Faculty of veterinary medicine, AAU.
Tadesse T. 2007. In-vitro Antimicrobial effects of Combertummolle on Staphylococcus aureus Isolates (Un published DVM thesis Faculty of veterinary medicine, AAU).
Tamiru F., Terfa W., Kebede E., Dabessa G., Kumar Roy R. and Sorsa M. 2013. Ethno knowledge of plants used in Veterinary Practices in Dabo Hana District, West Ethiopia. Journal of Medicinal Plant Research, 7(40), 2960-2971. http://www.academicjournals.org/JMPR
Teklehaymanot T, Giday M. 2007. Ethno botanical study of medicinal plants used by people in Zegie peninsula, north western Ethiopia. J. Ethnobiol. Ethnomed, 3:12.
Tessema T, Giday M, Aklilu N. 2001. Stacking and information on the medicinal plants of Ethiopia. In National Biodiversity strategy and action plan project Medicinal plant Team, Addis Ababa: IBDA.
Tolosa, E. 2007. Use and Conservation of traditional Medicinal Plants by Indigenous people in Gimbi Woreda. MSc thesis. Addis Ababa, Ethiopia. Tropical Forest: Biodiversity and its Importance to Human Health. Colombia press, Colombia. University.
Wondimu, T.; Zemede Asfaw and Kelbessa E. 2007. Ethnobotanical Study of food plants around Dheeraa'town,Arsi zone, SINET: Ethiop.J.Sc,29(1):7180.
Yineger H, Kelbessa E, Bekele T, Lulekal, E. 2008. Ethnoveterinary medicinal plants at Bale Mountains National Park, Ethiop. J. Ethnopharmacol, 112(3):55-70.
Yirga G. 2012a. Ethnobotanical Study of Medicinal Plants in and Around Alamata, Southern Tigray, Northern Ethiopia. Current Research Journal of Biological Sciences, 2(5): 338-344.
Yirga G., Teferi M., Gidey G. and Zerabruk S. 2012b. An Ethnoveterinary survey of medicinal plants used to

treat livestock diseases in Seharti-Samre district, Northern Ethiopia. African Journal of Plant Science, 6(3):113-119.

Table1. General characteristic of the informants

No	Item	Character	Count/response	Percentage (%)
1	Sex	Male	37	88.1
		Female	5	11.9
		Total	**42**	**100**
2	Age	Young	13	31.0
		Adult	29	69.0
		Total	**42**	**100**
3	Educational status	Illiterate	25	59.5
		Literate	17	40.5
		Total	**42**	**100**
4	Marital status	Married	32	76.2
		Single	10	23.8
		Total	**42**	**100**

Table2. Summary of ethno veterinary medicinal plants, disease treated, habit, part, route, and uses of the plants

Scientific name	Family name	Local name	Habit	Part	Routes	Indications
.Achyranthes aspera	Amaranthaceae	Maxxannee	Herb	root	oral	Backleg, mastitis, Bleeding
Allium sativum	Alliaceae	Qullubbii adii	Herb	Bulb	oral	Abdominal pain, blackleg, leech, Pastuerellosis, bloat
Azadiracta indica	Meliaceae	Ninnii	Tree	leaf	oral	Blackleg, Trypanosomosis, abortion
Brassica carinata	Brassica ceae	Sanyii raafuu	Herb	seed	oral	Bloating
Brucea-anti dysentrica	Simaroubaceae	Qomonyoo	Herb	fruit	oral	Rabies
Calpurnia aurea	Fabaceae	Ceekkataa	Shrub	leaf	topical/nose	Lice infestation, leech
Capsicum annum	Solanaceceae	Mimmixa	Herb	seed/pods	oral	Abdominal pain, bloat, black leg, Pastuerellosis, leech
Carrissa- spinarum	Apocynaceae	Hagamsa	Shrub	root	oral	Ring worm, wound
Clucia lanceolata	Euphorbiaceae	Uleefoonii	Shrub	root	oral	Rabies
Coffea Arabica	Rubiaceae	Buna	Shrub	Seed	topical	Wound
Colocasia-esculenta	Araceae	Godarree gurraacha	Shrub	Root	oral	Retained fetal membrane
Croton-macrostachyus	Euphorbiaceae	Makkanniisa	Tree	Leaf	oral/topical	Ring worm, bloating, wound
Cucumis- ficifolius	Cuccurbitaceae	Faca,aa	Herb	Leaf	oral	Blackleg
Dracaena-steudneri	Draceanaceae	Afarfattuu	Shrub	Leaf	oral	Rabies
Dynaria volkensi	Polypodiaceae	Baala balleessaa	Herb	Leaf	oral	Retained fetal membrane
Grewia bicolar	Tliaceae	Harooressa	Tree	Bark	ora	Retained fetal membrane
Justicia-schimperiana	Acanthaceae	Dhummuugaa	Shrub	root/leaf	oral	Black leg, rabies
Nicotiana- tabacum	Solanaceae	Tamboo	Shrub	Leaf	oral	Leech
Plantago spps	Plantaginaceae	Gurra hantuutaa	Herb	Leaf	topical	Wound, stop bleeding
Phragmanthera macrosolen	Loranthaceae	Dheertuu	Climber	Leaf	oral	Bloating, black leg
Prunus Africana	Rosaceae	Hoomii	Tree	Bark	topical	Wound
Phytolacea-dodecandra	Phytolaca ceae	Handoodee	Herb	Leaf	oral	GIT parasites, rabies
Ricinus- communis	Euphorbiaceae	Qobboo	Shrub	Root	oral	Retained fetal membrane, rabies, headache(human)
Sena peter siana	Fabaceae	Raamsoo/mukaraammoo	Shrub	Balk	topical	Skin disease, wound
Solanium- incanum	Solanaceae	Hiddii	Herb	leaf/root and fruit	oral	Black leg, Pastuerellosis, dermatophilosis
Vernonia-anygdalina	Asteraceae	Eebicha	Tree	Leaf	oral	Increase milk Production
Zehneria scara	Cuccurbitaceae	Hidda reeffaa	Herb	Leaf	oral	Blackleg, Pastuerellosis
Zingiber-officinale	Zingebiraceae	Jinjibila	Herb	Root	oral	Blackleg, Pastuerellosis, abdominal pain, leech

Table3. The number of ethno-veterinary medicinal plant remedies used to treat livestock disease in the study area

		No of ethno-veterinary medicinal plant remedies used
1	Black leg	12 (75.0%)
2	Wound	5 (31.0%)
3	Rabies	4 (25.0%)
4	Retained fetal membrane	5 (31.0%)
5	Abdominal Pain	4 (25.0%)
6	Bleeding	2 (12.5%)
7	Pastuerellosis	3 (18.8%)
8	Trypanosmosis	1 (6.25%)
9	Mastitis	1 (6.25%)
10	Leech infestation	1 (6.25%)
11	Bloating	5 (31.0%)
12	Dermatophilosis	2 (12.5%)
13	Skin disease	1 (6.25%)
14	Lice infestation	1 (6.25%)
15	Ring worm	3 18.8%)
16	GIT parasites	2 (12.5%)
Total		**52**

Table4. Availability of Ethno veterinary medicinal plants based on the season

S.No.	**Season**	**Percentage**
1.	Available every time	25 (92.6%)
2.	Available seasonally	2 (4.9%)
3.	Difficult to get	1(2.5%)
Total		28 (100%)

Table5. Plant families frequently used among traditional healers and livestock owners in the study area

S.No	**Family name**	**No of ethno-veterinary medicinal plant species**	**Proportion (%)**
1	Amaranthaceae	1	3.57
2	Alliaceae	1	3.57
3	Meliaceae	1	3.57
4	Brassicaceae	1	3.57
5	Simaroubacea	1	3.57
6	Fabaceae	2	7.14
7	Solanaceceae	3	10.7
8	Apocynaceae	1	3.57
9	Euphorbiaceae	3	10.7
10	Rubiaceae	1	3.57
11	Araceae	1	3.57
12	Cuccurbitaceae	2	7.14
13	Draceanaceae	1	3.57
14	Polypodiaceae	1	3.57
15	Tliaceae	1	3.57
16	Acanthaceae	1	3.57
17	Plantaginaceae	1	3.57
18	Loranthacea	1	3.57
19	Rosaceae	1	3.57
20	Phytolaca ceae	1	3.57
21	Asteraceae	1	3.57
22	Zingebiraceae	1	3.57

Table6. Paired comparison of Ethno veterinary medicinal plants for treating of retained fetal membrane

Scientific name	Family name	Local name	No of informants
Colocasia esculenta	Araceae	Godarree gurraacha	7
Ricinus communis	Euphorbiaceae	Qobboo	6
Dynaria volkensi	Polypodiaceae	Baala balleessaa	3
Grewia bicolar	Tliaceae	Harooressa	2
Total			**18**

Table7. Priority ranking of factors perceived as threat to Ethnoveterinary medicinal plants based on the level of destructive effects in Guto Gidda district, based on interviews (n=42).

Factors	Frequency	Percentage (%)	Rank
Agricultural expansion	26	23.0	1
Overgrazing	24	21.2	2
Soil erosion	23	20.4	3
Deforestation	18	15.9	4
Drought	12	10.6	5
Low cultivation	10	8.8	6
Total	**113**	**100**	

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