



Science

REVIEW ON TRADITIONAL ETHNO-VETERINARY MEDICINE AND MEDICINAL PLANTS USED BY INDIGENOUS PEOPLE IN ETHIOPIA: PRACTICE AND APPLICATION SYSTEM

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Abstract

The objective of the review paper was to highlight indigenous practice to traditional veterinary medicine and medicinal plants used by indigenous people. Traditional medicine has been defined as the sum total of all knowledge and practices whether explicable or not, used in the diagnosis, prevention and elimination of physicals, mental or social imbalances which passes from generation to generation, whether verbally or in writing. The application of traditional medicine to veterinary medicine has been termed as ethnoveterinary medicine. In Ethiopia up to 80% of the population uses traditional medicine due to the cultural acceptability of healers and local pharmacopeias, the relatively low cost of traditional medicine and difficult access to modern health facilities. Some of medicinal plants were *Monopsis Sellariodes*, *solanium anguivi Lam*, *Vigina spp*, *Nicotiana tabacum L*, *Argemone Mexicana L*, and *Platostoma Rotundifolium* etc. and they useful for different diseases. Traditional practitioners include bone setters, birth attendants, tooth extractors, (called *yetirs awolaki*, '*Wogasha*' and *yelimd awalaj*') respectively in Amharic) *herbalists*, as well as '*debtera*', '*tenquay*' (witch doctors), and spiritual healers such as '*weqaby*' and '*kalicha*'. Healing in Ethiopian traditional medicine is not only concerned with curing of diseases but also with the protection and promotion of human physical, spiritual, social, mental and material wellbeing. Drugs were administered using different routes, the main ones being, topical, oral and respiratory and are stored usually in containers such as bottles, papers, pieces of cloth, leaves and horns, and were kept anywhere at home.

Keywords: Ethnoveterinary; Medicine; Plant; Tradition; Healers; Indigenous.

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1. Introduction

Traditional medicine in Ethiopia has been widely used by various ethnic groups, about 90% of livestock population depends on traditional medicine and most of it comes from plants (Endashaw, 2007; Atinafu et al., 2017).

Ethnoveterinary medicine, the scientific term for traditional animal health care, provides low-cost alternatives to allopathic drugs. Research into ethnoveterinary medicine is often undertaken as part of a community-based approach that serves to improve animal health and provide basic veterinary services in rural areas (Shical et al., 2010). In addition to its focus on botanicals, ethnoveterinary medicine covers people's knowledge, skills, methods, practices, and beliefs about the care of their animals (Maine VAC, 2009). Ethnoveterinary medicine is frequently used for treating animal as well as human diseases by many different people around the world. According to the World Health Organization, at least 80% of people in developing countries depend largely on indigenous practices for the control and treatment of various diseases affecting both human beings and their animals (WHO, 2002).

Ethnoveterinary medicine provides valuable alternatives to and complements western-style veterinary medicine. Ethnoveterinary remedies are accessible and easy to prepare and administer, at little or no cost to the farmer (Jabbar et al., 2005) In many poor rural areas, ethnoveterinary medicine can play an important role in animal production and livelihood development, and often becomes the only available means for farmers treat ill animals (Tamboura et al., 2000, Jabbar et al., 2005, Shical et al., 2010).

Therefore, the objective this paper is to highlight indigenous practice to traditional veterinary medicine in local community people and review the medicinal plants used by indigenous people.

2. Definition of Some Phrases or Words

Traditional medicine has been defined by the world health organization (WHO,2008) as the sum total of all knowledge and practices whether explicable or not, used in the diagnosis, prevention and elimination of physicals, mental or social imbalances and relying exclusively on practical experience and observation handed down from generation to generation, whether verbally or in writing. This system of health care is also known as folk medicine, ethno medicine, or indigenous medicine (Belay, 2016).

Traditional (Indigenous) means something which is communicated from ancestors to descending; only by oral means. Thus the knowledge of traditional medicine both for man and animal is handed down from one generation to another through practical demonstrations or through oral communications. Ever since the life started on the earth, diseases and death coexisted with him and with their animals. Therefore efforts have been made to get relief out of it by using herbs in various forms as medicine from the very beginning of human civilization (Belay, 2016; Kathmandu, 1991). The World Health Organization (WHO) defines traditional medicine as health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illnesses and maintain well-being (WHO, 2001). The world health organization (WHO) (2001) defined traditional medicine as the total combination of knowledge and practices that can be formally explained or used in prevention and elimination of physical, mental or social imbalance and relying exclusively on practical experience and observation handed down from generation to generation, whether verbally or in writing (Fassil, 2001).

Traditional medicine is mainly concerned with folk beliefs, knowledge, skills, methods and practices which are used in the healthcare of animals. The knowledge varies from region to region, and from community to community (Fassil, 2001). In general, ethnoveterinary practices have been developed by trial and error and by actual experimentation (Asayegn and Abiy, 2009). Ethnoveterinary medicine comprises of traditional surgical techniques, traditional immunization, magico-religious practices, and the use of herbal medicines to treat livestock diseases (Tafesse and Mekonnen, 2001; Fekadu, 2010; Yibrah, 2015).

Ethoveterinary medicine provides traditional medicines, which are locally available and usually cheaper than standard treatments. Livestock holders can prepare and use homemade remedies with minimum expense. So far, many livestock holders in rural areas where there are relatively few veterinarians and shortages of other facilities, traditional medicinal plants are the only choice to treat many ailments (McCorkle, 1995).

3. Traditional Ethno Veterinary in Ethiopia

Traditional veterinary healthcare has enormous potential; however, this potential has not yet been exploited at the national level (Tilahun and Giday, 2007). Recently, serious attempts have been made by the Institute of Biodiversity Conservation and Research (IBCR) on scientific research to develop medicinal plants for three major livestock diseases. The major diseases identified by the Institute were tapeworm infestation, mastitis and dematophilosis (Fekadu, 2010).

In Ethiopia as well as in most developing countries, animal disease remains one of the principal causes of poor livestock performance, leading to an ever increasing gap between the supply of, and the demand for, livestock products (Sori et al., 2004). In Ethiopia, livestock production directly constitutes important (Yeneayehu and Girma, 2017). Traditional medicine has maintained its popularity in all regions of the developing world and its use is rapidly spreading in the industrialized countries. WHO estimates that in several African countries traditional birth attendants assist in a majority of births (WHO, 2002).

In Ethiopia up to 80% of the population uses traditional medicine due to the cultural acceptability of healers and local pharmacopeias, the relatively low cost of traditional medicine and difficult access to modern health facilities. In 2000 only 9.45% of all deliveries in Ethiopia were attended by trained attendants and health workers. The rest were attended by traditional birth attendants or relatives (Kebede et al., 2006).

Ethno-veterinary medicine (EVM) is a scientific term for traditional animal health care that encompasses the knowledge, skills, methods, practices, and beliefs about animal health care found among community members (McCorke, 1996). According to Misra and Kumar (2004), EVM is the community-based local or indigenous knowledge and methods of caring for, healing and managing livestock. This also includes social practices and the ways in which livestock are incorporated into farming systems.

4. Traditional ethno veterinary medicine practice in Ethiopia

Indigenous traditional medicinal practices were carried out essentially based on private practice, i.e. private agreement between consenting parties, and the knowledge of traditional practice in most cases has descended through oral folk lore (Asfaw *et al.*, 1999). The secret of information retained by traditional healers is relatively less susceptible to distortion but less accessible to the public (Dawit, 2001; Abbink, 1993). It is widely believed in Ethiopia that the skill of traditional health practitioners is 'given by God' and knowledge on traditional medicines is passed orally from father to a favorite child, usually a son or is acquired by some spiritual procedures. Traditional Healing knowledge is guarded by certain families or social groups (WHO, 1990).

Traditional spiritual healers are known by different names, depending on the communities where they practice including *debtera*, *tenquay* (witch doctors), *weqaby and kalicha* (Papadopoulos *et al.*, 2002; Jacobsson and Merdasa, 1991). The study of ethno-veterinary practices is a growing area of inter-disciplinary research having immense potential to understand various nuances of folk knowledge on domesticated animals.

In general, ethno veterinary practices have been developed by trial and error and by actual experimentation (Bekele *et al.*, 2012). It comprises of traditional surgical techniques, traditional immunization, magic religious practices and the use of herbal medicines to treat livestock diseases (Bekele and Musa, 2009). Ethiopia is believed to be home for about 6,000 species of higher plants with approximately 10% endemism (Fitsum and Amare, 2017).

The traditional knowledge on ethnoveterinary practices by local healers who are knowledgeable and experienced in traditional systems of treatment is important, but their knowledge are not documented and is dwindling fast (Bekele, 2007).

5. Some of Medicinal Plants Practiced and their Veterinary uses in Ethiopia

Ethiopian farmers and pastoralists rely on traditional knowledge, practices and locally available materials, plants in particular, to control and manage domestic animal diseases (Giday and Ameni, 2003).

Some of known medicinal plants were *Monopsis Sellariodes*, *solanium anguivi Lam*, *Vigina spp*, *Nicotiana tabacum L*, *Argemone Mexicana L*, and *Platostoma Rotundifolium* etc. and they useful for different diseases (Yeneayehu and Girma, 2017; Tesfaye *et al.*, 2009; Mersha, 2011; Anteneh, 2012).

The majority of livestock raisers in Ethiopia are geographically removed from the sites of veterinary stations, and those that are closer to the sites may not afford the fees for services. The inadequate funding at the national level for the prevention and control of animal diseases adds to the burden, especially among pastoralists who live in the remote arid and semi-arid lowland parts of the country. Therefore, a reasonable solution would be to complement modern veterinary health care with traditional care (Sori *et al.*, 2004). It is estimated that about 90% of the livestock population are treated with traditional medicines. In some parts of the country, livestock diseases such as anthrax (*quruba*), black leg (*aba gurba*), anaplasmosis (*afreera*), ascariasis (*wosfat*),

abscess (*ebach*), leeches (*alqt*), trypanosomiasis, lymphangitis (*gub gub*), stomatitis (*yaf qusil*), and coccidiosis (*fengel*) have been treated using various natural plant product combinations (Pound and Ejigu, 2009; Fekadu 2010).

6. Traditional Medicine Practitioners and Practices

Healers obtain their drugs mainly from natural substances and in descending order of frequency these constitute plants, animals and minerals. Drugs are prepared in various dosage forms including liquids, ointments, powders and pills. Drugs are also prescribed in a non-formulated form and additives are usually incorporated and more than one drug is used in a single dosage form (Dawit, 2001; Kebede et al., 2006). In addition to traditional medicinal practices by professional healers, there is also an old tradition of self-care in the home and another, more recently evolved subsystem of lay care of transitional medicine (Fassil, 2001).

Traditional practitioners include bone setters birth attendants, tooth extractors, (called '*Wogesha*' and '*yelimd awalaj*') respectively in Amharic) *herbalists*, as well as '*debtera*', '*tenquay*' (witch doctors), and spiritual healers such as '*weqaby*' and '*kalicha*' (Papadopoulos et al., 2002; Negussie, 1988).

Religious practices play a large part in the healing process for Ethiopians such as praying and going to church. Holy water for Orthodox Christians (called '*tsebel*' in Amharic) or '*zemzem*' in the case of Moslems is also frequently used for a wide variety of illnesses. Ethiopians believe that holy water cures when it is drunk or bathed in (Kebede et al., 2006). The ways are also as diverse as the different cultures. Healing in Ethiopian traditional medicine is not only concerned with curing of diseases but also with the protection and promotion of human physical, spiritual, social, mental and material wellbeing (Beshaw, 1991; Kebede et al., 2006). Members of the Orthodox Christian clergy are called the *debteras* and members of the Muslim community are known as *kalichas*. *Debteras* usually look upon mental disorders as possession by evil spirits, which are thus treated mostly by praying and using holy water or eventually exorcising the evil spirit. By means of the *degmit*, the *debteras* claim to have the ability to perform miracles, which are believed to be manifested by the reactions of their patients. *Tsebel* is commonly used to ward off evil spirits from patients who are believed to be possessed by the devil. *Kitabs* are worn for the purpose of protecting oneself against the evil eye or *buda*, as well as snake and scorpion bites (Kebede et al., 2006; Jacobsson and Merdasa, 1991).

7. Routes of Application of Traditional Ethnoveterinary Medicinal in Ethiopia

Ethnoveterinary medicines can be administered in many different ways including drenching, bath, fumigation, spray, injection and topical application (Toyang et al., 2007). Drenching is applying medicine in liquid form through the mouth using a spoon, dropper or sorghum straw; on skin application a poultice, soft heated preparation (applied to a sore or abscess using wet cloth), warm stone or direct application; fumigation (the use of smoke to kill insects); steam (applied to affected part); hanging bouquet (when plants parts are bound in to a bouquet and hanged inside poultry house); in the eye application (medicine is dropped into the eye of the bird) and lastly medicine can be applied through feeds or water by mixing them with medicine (Fitsum and Amare, 2017).

The application of traditional medicines to veterinary medicine has been termed as ethno veterinary medicine. Ethnoveterinary medicine has been defined as an indigenous animal healthcare system that includes the traditional beliefs, knowledge, skills, methods and practices of a given society (McCorkle, 1996). The knowledge varies from region to region and from community to community (Fekadu, 2010). In general, ethno veterinary practices have been developed by trial and error and by actual experimentation (Bekele et al., 2012). The studies conducted on the traditional remedies used in animal healthcare in Ethiopia are inadequate when compared with the multiethnic cultural diversity and the diverse flora of Ethiopia, about 6500 species of higher plants, with approximately 12% of these endemic (UNEP, 2008).

Drugs were administered using different routes, the main ones being, topical, oral and respiratory. When side effects became severe, antidotes were claimed to be used. The healers imposed restriction when certain types of drugs were taken by patients. Drugs are stored usually in containers such as bottles, papers, pieces of cloth, leaves and horns, and were kept anywhere at home (Dawit, 2001; Kebede et al., 2006). A single medicinal plant was found to be applied in different routes depending up on the preparation and type of the disease needed to be treated. Of these, oral complementing each other, application was the highest and most commonly used route of application followed by topical and nasal application (Sori et al., 2004; Birhanu and Abera, 2015; Tekle, 2015; Yigezu et al., 2014; Yirga et al., 2012). Oral route is considered to have rapid physiological reaction with the causative agents and increase the curative power of the medicinal plant remedies (Fitsum and Amare, 2017).

Plants have played crucial role as a source of traditional medicine in Ethiopia from the time immemorial to combat different ailments and human sufferings (Asfaw et al., 1999, Kebede et al., 2006). The plant materials include seeds, berries, roots, leaves, bark or flowers are used for medicinal value (Arebussa, 2015).

8. Advantages of Medicinal Plants as Traditional Medicine

Ethno-veterinary medicine (EVM) is the use of medicinal plants, surgical techniques and traditional management practices to prevent and treat spectrum of livestock diseases (Negussie 1988).

In Ethiopia, about 80% of the human population and 90% of livestock rely on traditional medicines (Getachew *et al.*, 2001; Yineger *et al.*, 2008; Lulekal *et al.* 2008; Fisseha *et al.* 2009; Giday 2007). Traditional medicine is an integral part of the culture, belief structure and lifestyle of Ethiopian peoples (Dawit and Ahadu, 1993; Tesfaye *et al.* 2009). The issue of medicinal plant conservation in Ethiopia today calls for aggressive studies and documentation before accelerated ecological and cultural transformation distorts the habitats of these plants and culturally held knowledge bases (Endashaw, 2007).

The livestock or ethnoveterinary medicine provides traditional medicines which are locally available and usually cheaper than standard treatments. Not only in Ethiopia but also globally and in all developing countries and especially in tropical Africa, using traditional medicinal plants is common and form the back bone of traditional therapy since the majority of the people depend on this traditional medicinal plants for their health care, and this global importance and

utilization of medicinal plants has considerably increased in the last two decades (WHO, 2000; Dawit, 2001).

It is not enough that they are useful but has disadvantage. One of the main disadvantages of traditional medicine is the lack of scientific proof of its efficacy. Lack of precise dosage which could lead to toxicity is also the other disadvantage of traditional medicine (Dawit, 2001; Getu, 2010).

9. Components of Ethno Veterinary Practices

Ethno veterinary term does not only comprise of herbal and traditional medicines but it also constitutes information, practices, beliefs, skills, tools and technologies, selection of breeds and human resources/traditional healers.

Pros and Cons of Ethno Veterinary Medicine

EVM has many advantages; as source of modern medicine (drugs), affordability, locally available and easily accessible, culturally appropriate and understood, effective, comfortably animal metabolize plants and plant extracts and user friendly. For common diseases and more chronic conditions such as colds, skin diseases, worms, wounds, reproductive disorders, nutritional deficiencies and mild diarrhea, EVM has much to offer and can be a cheap and readily available alternative to costly imported drugs (Sori et al., 2004). Globally, the ethno veterinary medicinal plant knowledge, similar to other several studies have been carried out, many reports written and numerous conferences and workshops held (Toyang et al., 2007; Yirga et al., 2010; Fitsum and Amare, 2017).

Ethiopian context, the traditional knowledge on ethno veterinary practices by local healers who are knowledgeable and experienced in traditional systems of treatment is important (Pondani et al., 2010), but their knowledge are not documented and is dwindling fast (Mesfin et al., 2009; Fitsum and Amare, 2017).

10. Conclusion and Recommendations

In Ethiopia, modern investigation on herbal remedies for human ailments has been going on for a while. On the other hand, similar efforts in the area of research on plant remedies for livestock diseases seem to be lagging behind. Traditional veterinary medicine, especially, the use of medicinal plants in the treatment of livestock diseases, needs to be scientifically explored. The application of traditional medicine to veterinary medicine has been termed as ethnoveterinary medicine which is mainly concerned with folk beliefs, knowledge, skills, methods and practices which are used in the healthcare of animals and comprises of traditional surgical techniques, traditional immunization, magico-religious practices, and the use of herbal medicines to treat livestock diseases. Ethiopia is believed to be home for about 6,000 species of higher plants with approximately 10% endemism. Traditional practitioners include bone setters birth attendants, tooth extractors, (called 'yetirs awolaki' 'Wogasha' and yelimd awalaj' respectively in Amharic) herbalists, as well as 'debertera', 'tenquay' (witch doctors), and spiritual healers such as 'weqaby' and 'kalicha'. Religious practices play a large part in the healing process for Ethiopians such as

praying and going to church. Drugs were administered using different routes, the main ones being, topical, oral and respiratory.

Generally, based on this review, the following recommendations are forwarded:

- Since ethnoveterinary medicinal plants were mostly found in nature, everybody and stakeholders (forestry and environmental protection office, departments and bureau) should give attention to protect from destruction.
- All traditional medicines were given through indigenous and traditional people so that they need to be approval (their residual effect).
- Application and recommended dose size should be adjusted be administration in to the body.

References

- [1] Abbink, J (1995). Medicinal and ritual Plants of South West Ethiopian. An account of recent research Indigenous knowledge and Development Monitor 3(2): 6-8.
- [2] Anteneh B. (2012): Medicinal plants potential and use by pastoral and agro-pastoral communities in Erer Valley of Babile Wereda, Eastern Ethiopia. 8-42.
- [3] Arebussa K. (2015): Ethno Medicinal study of plants in Jigjiga Woreda, Eastern Ethiopia. M.Sc thesis, Addis Ababa University, Ethiopia.
- [4] Asayegn Bekele and Abiy Musa. (2009): Ethnoveterinary practice in Chiro District, western Hararge, Ethiopia. Pharmacology on line; 1:128-139.
- [5] Atinafu Kebede, Shimels Ayalew, Akalu Mesfin, Getachew Mulualem, (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, Vol., 5, No. 1, 2017, pp. 34-42. doi: 10.11648/j.jps.20170501.15.
- [6] Bekele, D., Asfaw, Z., Petros, B. and Tekie, H. 2012): Ethnobotanical Study of Plants Used for Protection against Insect Bite and for the Treatment of Livestock Health Problems in Rural Areas of Akaki District, Eastern Shewa, Ethiopia. Top class Journal of Herbal Medicine, 1: 40-52.
- [7] Bekele, E. (2007): Actual Situation of Medicinal Plants in Ethiopia. Prepared for Japan Association for International Collaboration of Agriculture and Forestry (JAICAF). Available from: <http://www.endashaw.com>. [Accessed on 2017 Jul 30].
- [8] Belay, Jarso. (2016): Ethnobotanical study of Traditional Medicinal plants used by indigenous people of Jigjiga woreda, Somali regional state, Ethiopia, Haramaya University, Ethiopia, MSc Thesis paper (Unpublished paper).
- [9] Beshaw M. (1991): Promoting traditional medicine in Ethiopia: A brief historical overview of government Policy. Soc. Sci and Med, 1991;33:193-200.
- [10] Birhanu, T. and Abera, D. (2015): Survey of ethnoveterinary medicinal plants at selected Horro Gudurru districts, Western Ethiopia. African Journal of Plant Science, 9: 185-192.
- [11] Dawit A. and Ahadu A. (1993): Medicinal Plants and Enigmatic Health Practices of Northern Ethiopia. B. S. P. E, Addis Ababa, 419-431
- [12] Dawit Abebe (2001): The role of medicinal plants in Health care Coverage of Ethiopia, the possible benefits of integration. In: (Medhin Zewdu and Abebe Demissie (eds.)). Coservation and Sustainable Use of Medicinal plants in Ethiopia. Proceeding of the National workshop on Biodiversity Conservation and Sustainable use of medicinal plants in Ethiopia, 28 April- 01 May 1998, pp.107-118. IBCR, Addis Ababa.
- [13] Endashaw Bekele. (2007): Study on Actual Situation of Medicinal plants in Ethiopia. Prepared for JAICRF (Japan Association for International Collaboration of Agriculture and Forestry). 2007, 70-74.

- [14] Fasil Kibebew (2001): The status and availability of oral and written knowledge on traditional health care in Ethiopia. In: Conservation and sustainable use of medicinal plants in Ethiopia .Proceeding of the national work shop on biodiversity conservation and sustainable use of medicinal Plants in Ethiopia, 28April-01May1998, PP, 107-119, (Medhin Zewdu and Abebe Demissie eds.). IBCR, Addis Ababa.
- [15] Fekadu Fullas (2010): Ethiopian Medicinal Plants in Veterinary Healthcare A Mini-Review, Ethiopian e-journal for Research and Innovation foresight. Vol 2, No 1 (2010) - Health Issue pp (48 - 58).
- [16] Fisseha Mesfin, Sebsebe Demissew and Tilahun T. (2009): An ethnobotanical study of medicinal plants in Wonago district, SNNPR, Ethiopia Journal of Ethnobiology and Ethnomedicine 5:28.
- [17] Fitsum, D., Amare, M. (2017): Ethnoveterinary Medicine Practices in Ethiopia: Review. Advances in Biological Research 11 (3): 154-160, 2017 DOI: 10.5829/idosi.abr.2017.154.160
- [18] Getachew Addis, Dawit Abebe and Kelbessa Urga (2001): A survey of traditional medicinal plants In Shirka District, Arsi Zone, Ethiopia. Ethiopian Pharmaceutical Journal, 19:30-47.
- [19] Getu, Alemayehu. (2010): Ethnobotanical Study on Medicinal plants used by Indigenous local people in Minjar Shenkora Woreda, North Shewa zone of Amhara region, Ethiopia, Addis Ababa, MSc Thesis, Addis Ababa University, unpublished paper.
- [20] Giday M and Ameni G (2003): An Ehnobothanical Survey of Plants of Veternary Importance in Two Woredas of Sothern Tigray, Northern Ethiopia. SINET: Ethiop. J. Sci., 26 (2): 123-136.
- [21] Jabbar A, Akhtar MS, Muhammad G, Lateef M: (2005): Possible role of ethnoveterinary medicine in poverty reduction in Pakistan: Use of botanical Anthelmintics as an example. J Agri Soc Sci 2005, 1(2):187-195.
- [22] Jacobsson L, Merdasa F. (1991): Traditional perceptions and treatment of mental disorders in western Ethiopia before the 1974 revolution. Acta Psychiatr Scand 1991;84(5):475-81.
- [23] Kathmandu, J. (1991): Traditional veterinary medicine, Information Exchange Unit, FAO Regional Office for Asia and the Pacific Bangkok, Thailand.
- [24] Kebede, D., Alemayehu, A., Binyam, G., Yunis, M. (2006): A historical overview of traditional medicine practices and policy in Ethiopia, Ethiop. J. Health Dev. 20(2), pp127-134.
- [25] Lulekal, E., Kelbessa, E., Bekele, T. and Yineger, H. (2008): An ethnobotanical study of medicinal plants in Mana Angetu District, southeastern Ethiopia. J. Ethnobiol. Ethnomed., 4: 1-10.
- [26] MaCorkle, C.M. (1995): Back to the future lessons from ethnoveterinary research, development extention for studying and applying knowledge. Journal of the Agricultural, Food and Human Values Society. 22(2): 52-80.
- [27] Maine VAC, Lívia ETM, José SM, Rômulo RNA (2009): Animals to heal animals: ethnoveterinary practices in semiarid region, Northeastern Brazil. Journal of Ethnobiology and Ethnomedicine 2009, 5:37.
- [28] McCorkle, C.M. and Mathias, E. (1996): Animal Health Biotechnology: Building on Farmers Knowledge. Bunders, J, Haverkort, B. and Heiemstra, W, (eds.). Pp. 22-55. Macmillan Education Ltd., London.
- [29] Mersha Ashagre (2011): Ethnobotanical Study of Medicinal Plants in Guji Agro-pastorilists, Blue Hora District of Borana Zone, Oromia Region, Ethiopia. M.Sc. Thesis. Addis Ababa University, Addis Ababa, Ethiopia. 2011.
- [30] Mesfin, F., Demissew, S. and Teklehaymanot, T. (2009): An ethnobotanical study of medicinal plants in Wonago Woreda, SNNPR, Ethiopia. J. Ethnobiol. Ethnomed., 5: 28.
- [31] Misra KK, Kumar KA (2004): Ethno-veterinary practices among the Konda Reddi of East Godavari district of Andhra Pradesh. Stud.TribesTribals, 2(1): 37- 44.
- [32] Negussie B. (1988): Traditional wisdom and modern development: A case study of traditional peri-natal knowledge among women in southern Shewa, Ethiopia. Doctoral dissertation, University of Stockholm, December 1988.

- [33] Papadopoulos R, Lay M, Gebrehiwot A. (2002): Cultural snapshots: A guide to Ethiopian refugees for health care workers. Research Center for Trans-cultural Studies in Health, Middlesex University, London UK. N 14 4YZ, May 2002. Available at: www.mdx.ac.uk/www/rctsh/embrace.htm.
- [34] Phondani, P., R. Maikhuri and C. Kala, (2010): Ethnoveterinary uses of medicinal plants among traditional herbal Healers in Alaknanda catchment of Uttarakhand, India; *African Journal of Traditional Complement.*, 7: 195-206.
- [35] Pound B and Ejigu Gonfa. (2009): Cattle in southern Ethiopia: Participatory studies in Wolaita and Konso woredas. FARM-AFRICA Working papers; Available at: www.farmafrica.org.uk/documents/137,PDF (Accessed 3 Nov 2016).
- [36] Shical, Sh., Jie, Q., Jian, R., Shen, E. (2010): Ethnoveterinary plant remedies used by Nu people in NwYunnan of China. *Journals of Ethiopia and Ethnomedicine*, 6(24), [HTTP://WWW.ETHNOBIOMED.COM/CONTENT/6/1/24](http://WWW.ETHNOBIOMED.COM/CONTENT/6/1/24)
- [37] Sori, T., M. Bekana, G. Adugna and E. Kelbessa, (2004): Medicinal plants in the ethno veterinary practices of Borana pastoralists, Southern Ethiopia. *Int J Appl Res Vet Med.*, 2: 220-225.
- [38] Tafesse Mesfine and Mekonnen L. (2001): The role of traditional veterinary herbal medicine and its constraints in the animal health care system in Ethiopia. In: *Conservation and Sustainable Use of Medicinal Plants in Ethiopia*. Medhin Zewdu and Abebe Demissie (Eds); Institute of Biodiversity Conservation and Research, Addis Ababa, Ethiopia, 2001; pp 22-28. Researchers have reported use of native African plants in veterinary medicine. http://www.eureklaert.org/pub_releases/2009-03/ksu-reu33009.php (Accessed 2017).
- [39] Tamboura HH, Sawadogo LL, Kaboré H, Yameogo SM (2000): Ethnoveterinary medicine and indigenous pharmacopoeia of Passoré Province in Burkina Faso. *Annals of the New York Academy of Sciences* 2000, 916:259-264.
- [40] Tekle, Y., (2015): Study on Ethno Veterinary Practices in Amaro Special District Southern Ethiopia. *Med Aromat Plants*, 4: 186.
- [41] Tesfaye Bekalo, Sebsebe Demissew, Zemedede Asfaw (2009): An ethno botanical study of medicinal plants used by local people in the lowland of Konta special district, SNNPRS, Ethiopia. *Journal of Ethnobiology and Ethnomedicine*. 5:26. Resources. 2009; 4(1):107-122.
- [42] Tilahun Teklehaymanot and Giday, Mirutse. (2007): Ethnobotanical study of medicinal plants used by people in Zegie peninsula, northwestern Ethiopia. *J Ethnobiol Ethnomed* 2007; 3:12.
- [43] Toyang, N.J., H. Marten's and S. Otterloo-Butler, (2007): *Ethno veterinary Medicine: A Practical Approach to the Treatment of Cattle Diseases in Sub-Saharan Africa*. 2nd ed. Technical Centre for Agricultural and Rural Cooperation. Agromisa, Wageningen, Netherlands. pp: 1-87.
- [44] UNEP. (2008): *Indigenous Knowledge in Disaster Management in Africa, Application and Use of Indigenous Knowledge in Environmental Conservation* Nairobi, Kenya.
- [45] WHO (1990): *Regulatory situation of herbal medicine. A worldwide review*, Pp.19, WHO 98.1, Geneva.
- [46] WHO (2002): *Traditional Medicines Strategy 2002-2005*. World Health Organization, Geneva: <http://www.who.int/medicines/organization/trm/orgtrmmain.shtml>. Accessed on November 15, 2010.
- [47] WHO. (2000): *General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine* WHO/EDM/TRM/2000. 1, Geneva, Switzerland 2000.. Lambert J. Ethiopia: Traditional medicine and the bridge to better health. World Bank, available at: <http://www.worldBank.org/afr/ik/default.htm>.
- [48] WHO. (2001): *Legal Status of Traditional Medicine and Complementary/Alternative Medicine: A World Wide Review*. Geneva 2001.
- [49] WHO. (2008): *Traditional medicine fact sheet* World Health Organization.No34.
- [50] Yeneayehu, F., Girma E. (2017): A review on ethnobotanical studies of medicinal plants use by agro-pastoral communities in, Ethiopia, *Journal of Medicinal Plants Studies*; 5(1): 33-44.

- [51] Yibrah, T. (2015): Study on Ethnoveterinary practices in Amaro Special district southern Ethiopia, European Journal of Pharmaceutical and Medical Research, www.ejpmr.com, ejpmr, 2(3), 01-20.
- [52] 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: 165–181.

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