

## Review on Importance of Ethnoveterinary Practices in Pastoral Areas Of Ethiopia

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**Abstract:** The application of traditional medicine to veterinary medicine has been termed as ethno-veterinary medicine. It 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. In general, ethno-veterinary practices have been developed by trial and error and by actual experimentation. EVM comprises of traditional surgical techniques, traditional immunization, magico-religious practices, and the use of herbal medicines to treat livestock diseases. 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. Ethno veterinary medicine often provides cheaper options than comparable western drugs, and the products are locally available and more easily accessible. In the face of these and other factors, there is increasing interest in the field of ethno veterinary research and development. This growing interest had been encouraged by the recognition of some efficacious EVM products. In EVM diseases are diagnosed by palpating, looking and smelling. Some of the plants documented during the current study are used elsewhere in Ethiopia to treat same/similar livestock diseases. These include *Acacia nilotica* (used to treat diarrhoea); *Acalypha indica* (used against anthrax), *Aloe trichosantha* (used against anthrax, Contagious caprine pleuropneumonia and contagious bovine pleuropneumonia), *Balanites aegyptiaca* (used against anthrax), *Calotropis procera* (used against blackleg) and *Dobera glabra* (used against tick infestation).

**Keywords:** Ethiopia, Ethnoveterinary Medicine, pastoralists, traditional

**List of Abbreviations:** EVM: Ethnoveterinary Medicine, AVMA: American Veterinary Medicine Association, EVK: Ethnoveterinary Knowledge, B.C: Before Christ, ITDG: Intermediate Technology Development Group, IIRR: International Institute for Rural Construction, FAO: Food and Agricultural Organization, W H O: World Health Organization, CBPP: Contagious Bovine Pleuropneumonia, CCPP: Contagious Caprine Pleuropneumonia, FMD: Foot and Mouth Disease, USA: United States of America, PFE: Pastoralist Forum Ethiopia, EARO: Ethiopian Agricultural Research Organization

### 1. INTRODUCTION

With pressure from an increasing human population and declining per-capita production of food in Africa, there is an urgent need to develop marginal resources such as the semi-arid and arid lowlands and optimize their use through appropriate livestock production. Ethiopia has the largest livestock population in Africa. According to an estimate, about 31 million heads of cattle, 27 million sheep, 24 million goats, 7.02 million equine (horses, donkeys, and mules), one million camels and 56 million poultry are found in the country (EARO, 1999).

Correspondingly, there are also a myriad of diseases that affect this livestock population. According to a recent survey, about 36 traditionally characterized animal diseases occur in the country. Some of them do not have equivalent English names. A few examples of vernacular names of these diseases are abamegal, chefin, mendf, amenmn[kumegna](emaciation), dereba and kurtimis in the highlands, abasenga (anthrax), azurit (epilepsy), adrik and gendi (trypanosomiasis) in the medium highlands (weyna dega), and rinderpest (desta)(Giday and Ameni, 2003).

Although the country is rich in its livestock population, it is among the countries in the world with the lowest unit output due to the poor health condition of livestock (EARO, 1999). Animal diseases in general and infectious ones in particular are the major constraints to crop and livestock production in the humid and sub humid parts of the African continent (Palling and Dwinger, 1993).

In Ethiopia, pastoralism is extensively practiced in almost two-thirds of the national land area. They inhabit the arid and semi-arid parts of the country and they have been among economically and politically marginalized populations. The primary livelihood of pastoral communities is the management of livestock – cattle, goats, sheep and camels. Livestock are critical to the well being of pastoral households in terms of income, savings, food security and employment. They are mainly classified as pastoral and agro-pastoral production systems. They move the herd seasonally from one area to another for the search of pasture and water, whereas agro-pastoralists are based on mixed farming practices, livestock rearing with limited mobility as compared to pastoralists, and crop cultivation to supplement their livestock production (PFE, 2009).

The delivery of veterinary, public health and other basic services in pastoral areas in the tropics is more problematic compared to areas where livestock are kept in intensive or semi-intensive conditions. This makes them rely on traditional medicine for their primary health care (Yineger *et al.*, 2007). At least 80% of people in developing countries depend largely on these traditional medicines for the control and treatment of various diseases and parasites that affect both animals and humans. These traditional healing practices are called ethno-veterinary practice (WHO, 2001).

Considering the inadequate modern veterinary health services in the country commensurate with tackling the problems, traditional ways of treatment appear to be a viable alternative approach. Traditional medicines and methods have been woven into the culture of local communities for a long time (Fekadu, 2010). The majority of the treatments in ethnoveterinary practice are of plant origin and they have for several centuries been widely used as a primary source of prevention and control to livestock diseases and parasites (Kubkomawa *et al.*, 2013).

In recent years there has been an increased interest in ethno veterinary skill of pastorals in Africa (Shwarth and Dioli, 1992). This interest seems to have coincided with the using popularity of participatory development approaches which include the recognition of local skills and practices and the requirement for the animal health projects to address the problem of “sustainability” of veterinary services.

Objectives:

- To indicate the importance of ethnoveterinary practices of our pastoral community,
- To highlight the ethno-veterinary health management practices found amongst Ethiopian pastoralists and,
- To mention some plants used in ethnoveterinary practice.

## 2. ETHNOVETERINARY MEDICINE

### 2.1. Definitions of Ethnoveterinary Medicine

The application of traditional medicine to veterinary medicine has been termed as ethno veterinary medicine. It is mainly concerned with folk beliefs, knowledge, skills, and methods and practices which are used in the healthcare of animals (Fasil, 2001). According to Misra and Kumar (2004), it 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. This knowledge and methods varies from region to region, and from community to community.

EVM is defined simply as the traditional treatments and practices that livestock keepers are using now, other than modern synthetic drugs. It is described as the holistic interdisciplinary study of the local knowledge and the socio-cultural structures and environment associated with animal health care and husbandry. It has some synonyms. At times it is referred to as veterinary anthropology or traditional animal health care and practices. It involves different aspects of traditional animal health techniques and practices. Such aspects include pharmacology and toxicology, vaccination, surgery, management and Magico- religious practices and beliefs. It is also holistic comprehension of the

indigenous systems of animal health, their interpretation through western medicine and the development of effective and appropriate technologies (Mathias and McCorkle, 1989)

## **2.2. Origin and Development of Ethno Veterinary Medicine**

Veterinary medicine as practiced today has roots in herbal medicine, as practiced in prehistory in China, India and the Middle East. The literature indicates that Arabia was the world centre of veterinary and other medical knowledge in the early Middle Ages. With the spread of Islam some of this knowledge made its way into Africa and was adopted by stock raisers. EVM was practiced as early as 1800 B.C. at the time of King Hammurabi of Babylon who formulated laws on veterinary fees and charged for treating cattle and donkeys and has been around for a long time and was the only medicine available until nineteenth century (Schillhorn van Veen, 1996).

People used to treat and prevent livestock diseases using sometimes age old home made remedies, surgical and manipulative techniques. Taken together, these indigenous local animal health care beliefs and health care practices constitute an ethno veterinary medicine. Like other kind of local technical knowledge, ethno veterinary medicinal practice and skills are built up on over time empirical observation, mainly through trial and error and sometimes through deliberate or even desperate experimentation and innovation (McCorkle and Mathias, 1996). In fact, all veterinary practices before the coming of the orthodox veterinary medicine can be called "traditional" veterinary knowledge (Swaleh, 1999).

In Zimbabwe, Matekaire and Bwakura (2004) noted that EVK base differs from region to region and also among and within communities. Ethno-veterinary knowledge focusing on ethno-veterinary animal healthcare has existed alongside human evolutionary history, taking different forms (Wanzala *et al.*, 2005).

Ethno veterinary medicine often provides cheaper options than comparable western drugs, and the products are locally available and more easily accessible. In the face of these and other factors, there is increasing interest in the field of ethno veterinary research and development. This growing interest had been encouraged by the recognition of some efficacious EVM products (Swaleh, 1999)

## **2.3. Current Interest in Ethno Veterinary Medicine**

The recent revival of western interest in EVM has followed the regained interest in alternative medicines. There has been considerable expansion in the use of local knowledge practices in both humans and animals. This is evident in the USA where the number of people visiting traditional healers in 1988 was more than those visiting primary care physicians. In the light of this, and related developments, orthodox veterinarians are now accepting traditional knowledge. For example, acupuncture for treating diseases in animals is now widely embraced in conventional veterinary medicine in USA. In addition, the American Veterinary Medicine Association (AVMA) has fully recognized some of the local veterinary knowledge as acceptable for use by a valid veterinarian (Schillhorn van Veen, 1997).

The long-term regular use of drugs and chemicals such as anthelmintics and acaricides leads to the loss of an animal's natural resistance. If for whatever reason the anthelmintics/acaricides are suddenly unavailable the animal is totally exposed to the worst effects of the parasites and organisms which these drugs are keeping under control. For this reason the routine use of acaricides, for example, has been questioned for some time. Because of this stock raisers prefer ethno veterinary practice (Norval, 1983)

## **2.4. Ethnoveterinary Medicine in Africa**

Over the centuries Africa stockowners, through their own methods of trial and error have learnt a great deal about animal diseases and their treatments. These therapies are now widely used. So far several studies on EVM have been conducted in Africa. Most of the developing countries including Nigeria rely partly on traditional herbal medicine for treatment and control of animal and human diseases and plays important role in livestock production (Kudi and Myint, 1999).

In Nigeria, Chah *et al.*, (2009) reported that farmers use traditional remedies because they are more readily available and are cheaper. The people of Karamoja of northern Uganda have been reported to chiefly rely on ethno veterinary knowledge to control common livestock health problems. A total of 209 plant species are used by them to treat cattle diseases, chief among which is anaplasmosis (Gradé, 2009).

A study in South Africa concluded that ethno veterinary medicine may provide a cheap and accessible alternative to modern expensive pharmaceuticals for treatment of animal diseases like coughs, wounds, skin diseases, mild diarrhea, and reproductive disorders (McGraw, 2008).

A research conducted at Botswana on ethno veterinary practice claimed that smearing or rubbing paraffin and used automobile oils on the birds resulted in parasites falling off the birds. In small ruminants, *Veronia confertia* (leaves), palm oil and engine oil are used against fleas, ticks and mange, respectively in Nigeria. The stock raisers of Botswana mentioned that administering potassium permanganate orally or bathing birds in a solution of potassium permanganate was effective in controlling parasites. The rearers said that oral administration of potassium permanganate makes the blood of birds bitter (acidic) or unpalatable to the parasites, thus helping to control parasites. The use of boiling water and hot ash in the shelter or where birds usually slept was reported to be effective in controlling parasites (Moreki, 2013).

In Ethiopia goat keepers boil the leaves of the castor oil plant (*Ricinus communis*) to provide a viscous liquid which they use to control mange in their goats. The active agent, ricin, is very poisonous for humans and provides an example of an EVM agent that must be handled with care (Peacock, 1996).

### 2.5. Ethno Veterinary Approach in Disease Etiology and Diagnosis

Before you diagnose the disease learn local names for disease: the local name of disease may not match with the scientific names, several diseases may group together under the same name, or the same disease may have different names. Learn these names and learn which traditional remedies are used to treat which disease. This will help you communicate better with local people (Kohler, 1996). In EVM diseases are diagnosed by palpating, looking and smelling (Bizimana, 1994). Some ethno-diagnostic methods are useful and have found their way into orthodox veterinary medicine. A good example is seen with camel healers in Niger who use the scent of an animal's expired air to diagnose most of the diseases (Schillhorn van Veen, 1996).

In other areas of the world, surra (camel trypanosomiasis) is diagnosed by mixing the urine of the sick animal with mud and assessing the dried mud (Kohler, 1996). This is supported by Bizimana (1994) who also indicated that diagnosis by smelling is useful in the case of trypanosomiasis in camels.

As cited in Swaleh (1999), in India, a pregnancy diagnosis is done by placing cereal seeds in the urine of animal under test - a positive diagnosis is considered when germination does not take place. As in ethno veterinary system globally, stock raisers classify most diseases according to their prominent clinical signs. Such examples are seen with Samburu herders who call Nairobi Sheep Disease (NSD) nadomanyita referring to red intestines due to bloody diarrhoea, which is the principal, clinical sign of the disease.

### 3. PLANTS USED IN ETHNO VETERINARY MEDICINE

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 (Swaleh, 1999).

Some of the plants documented during the study are used elsewhere in Ethiopia to treat same/similar livestock diseases. These include *Acacia nilotica* (used to treat diarrhoea); *Acalypha indica* (used against anthrax), *Aloe trichosantha* (used against anthrax, CBPP and CCPP), *Balanites aegyptiaca* (used against anthrax), *Calotropis procera* (used against blackleg) and *Dobera glabra* (used against tick infestation). The reported medicinal plants belonged to 23 families and 36 genera. Asclepiadaceae and Cappariaceae took the better share of the reported plants (five species each), followed by Euphorbiaceae and Solanaceae (four species each). The families Boraginaceae and Fabaceae had three species each and the families Acanthaceae, Amaranthaceae, Balanitaceae, Cucurbitaceae and Salvadoraceae had two species each. The remaining 12 families had one species each (Sori *et al.*, 2004).

Kers (2000) and Goyder (2003) reported that species of the two families are conspicuous in drier habitats. The efficacy of some the herbs such as *Albezia anthelementica* against intestinal helminthosis and that of the Aloe species in treating *Trychostogylus* species in sheep has also been confirmed and their pharmaceutical ingredients identified. *Azardirachta indica* is known to contain chemicals that could help to control more than 200 pest species as well as antimalarial limonoids that showed good

antimalarial action in vitro. Aqueous extracts of Euphorbia species have been found to have bacteriostatic effects in vitro against *Staphylococcus aureus*, and *Zingiber officinale* has been shown to contain zingerone, which is known to be a good remedy for colic.

### 3.1. Parts of Plants Used and Mode of Preparation

Different modes of application and preparations were used depending on the perceived diagnosis and which plant parts were intended for use. These remedial approaches have been established among communities other than Borana pastoralists. Leaf was the most frequently sought plant part accounting for 46% of the reported medicinal plant species, followed by root (22%) whole plant (16%) and above ground part (16%). Similarly in studies conducted elsewhere in Ethiopia, leaf was indicated to be the most frequently used plant part to treat livestock ailments (Sori *et al.*, 2004).

A study conducted by Giday and Teklehaymanot, (2013) at Afar regional state indicated that collection of leaves poses no significant threat to the survival of individual plants as compared to other parts such as underground part, stem, bark and whole plant. Most of the remedies were processed and used immediately after collection. Few (*Acacia nilotica*, *Aerva javanica*, *Cadaba glandulosa*, *Caralluma sp.*, *Grewia villosa* and *Seddera bagshawei*) were reported to be prepared and administered while they were fresh or after drying, and one (asahada) was processed and used only after drying. Remedies of three species (*Acalypha indica*, *Senna alexandrina* and *Caralluma sp*) were prepared either in the form of juice or decoction, and that of two (*Kleinia squarrosa* and *Sericocomopsis pallida*) were only prepared in decoction form.

However, some remedies in the current study area were prepared in a concoction form, by mixing two or more medicinal plants, which is similar to the findings of studies carried out elsewhere in the country. Many healers in Ethiopia believe that the potency of plant remedies could be enhanced when they are used in concoction form (Abebe and Ayehu, 1993).

Water was the most frequently used diluents in the preparation of remedies accounting for 90% of the medicinal plants and this could be attributed to either its abundance or to the fact that the active principles contained in most plants are water soluble. Remedies from three species (*Boscia coriacea*, *Calotropis procera* and *Solanum incanum*) were prepared with or without the addition of water, and that of *Justicia schimperiana* was prepared without the addition of a diluents. Remedy from one medicinal plant (*Pergularia tomentosa*) was prepared with the addition of milk as diluents. Other additives are rarely used. Only butter was reported to be used in the preparation of remedy from *Calotropis procera* against blackleg (Giday and Teklehaymanot, 2013).

### 3.2. Route of Remedy Administration and Dosage

The most widely practiced administration of medicinal plant preparations was oral administration of infusions, decoctions, and other preparations; topical applications of paste (poultice), sap, and other formulations were also common (Sori *et al.*, 2004). A report by Giday and Teklehaymanot, (2013) from afar regional state of Ethiopia indicated that some were administered locally on the skin or wound and ophthalmologically. The dominance of oral application of remedies could be related to the fact that most of the reported health problems are affecting internal organs.

Relatively small numbers of preparations were applied through nasal, ocular, auricular, anal, and vaginal routes. A few herbs were ignited to produce ash, which was used to treat skin diseases. The most frequently used form of preparation was infusion, followed by poultice and decoction; other methods were used less frequently. Most of the pastoralists interviewed frequently use herbal preparations to treat their animals, whereas the remaining preferred the complementary use of both herbal preparations and modern drugs (Sori *et al.*, 2004)

Almost all treatments were given on daily basis, the majority of which were prescribed once a day. Some treatments were given twice, trice or four times a day. Most treatments were reported to be completed within seven days. However, some were known to be given until cure. The dose could range from a few drops to one or more liters. All the reported medicinal plants, except one (*Balanites aegyptiaca*), were found not be toxic even taken at higher doses. The root of *Balanites aegyptiaca* could kill animals if given in excess during treatment due its toxic effect (Giday and Teklehaymanot, 2013).

#### 4. ETHNO VETERINARY TECHNIQUES AND PRACTICES

##### 4.1. Pharmacology and Toxicology

The pharmacological aspect of EVM forms an extensive domain in the study of indigenous veterinary knowledge. A large variety of herbs and plants have been identified and documented. For example in one part of India *Leptademia reticulata* has been reported to increase milk production. *Carica papaya latex* is used for the treatment of swine ascariasis. *Mallotus phillippensis* has been shown to be effective against natural intestinal cestodes infection. Jantana® an anthelmintics preparation containing *Artemesia maritima*, *Brassicinigr*, *Cessia anceolata*, *Vernonia anthelmintica*, *Cuprium sulphas* and *Embelia ribes* was found to be effective against *Haemonchus* spp. *Trichostrongylus*, *Strongylus* spp and *Nematodirus* spp (Swaleh, 1999).

Bizimana, (1994) gave a number of plants that have anthelmintic properties. This author further suggested the decoctions made from the mixture of bark of *Anogeisus leiocarpus* with the leaves and stems of *Securinegar virosa*, bark of *Khaya senegalensis* and the roots of *Nauclea latifolia* can be the most effective dewormer. In Africa, stock raisers, have a wide indigenous knowledge of helminthology. Plant anthelmintics used in Tanzania include bark of *Albizia anthelmintica*, *Emelia schimper* and the roots of *Solanum incanum*. Bunyarwanda (one of the Rwandese tribes, some also live in Tanzania) drench infected calves with half glass of an extract from crushed leaves of *Ficus wakefieldii* as a broad spectrum anthelmintic. The Bedouins use urine as disinfectant and species of Aloe and Cassia are widely used in Nepal for treatments of various livestock diseases such as wounds (FAO, 1984).

In Latin America, sheep with hepatic distomiasis have been successfully treated with *Aspidium fulizmas* and *Minthostachys andina* (muna) is used against ectoparasites; and has antibacterial effect against *Escherichia coli* and *Staphylococcus aureus* (Swaleh, 1999).

##### 4.2. Immunization

History records suggest that the Chinese developed the first crude vaccine by using technique known as variolation - which means inoculating a small piece of infected material from a mild case - in human vaccination against small pox. This indigenous knowledge spread in Europe by the 1700s (Swaleh, 1999).

Many traditional farmers have their own folk knowledge of immunology. For example, Russian Cossacks, Arabs and Indian camel keepers effectively inoculate their camels against pox variola using variolation. The Indians use scabs from an infected animal and suspended in milk. A needle is then dipped in this vaccination solution and inoculated into the young camel in the lips. The Arabs use thorns from acacia plants for inoculation (Mathias and McCorkle, 1989).

In Africa, many pastoral societies have a wide knowledge of immunology. For example, the North African Fulani and the Maasai use similar immunization techniques for vaccinating against CBPP by inserting a piece of infected lung into the nostril of a healthy animal. The Samburu stock raisers make a powder by burning infected lung and inserting the powder under the cut skin in the ear (ITDG / IIRR, 1996).

The Somali pastoralists immunize their animals against rinderpest by employing a solution of urine, milk and feces obtained from animal with mild cases of rinderpest while Fulani infuse a piece of infected lung in the muzzle of immunizing against rinderpest (Mathias and McCorkle, 1989). Kavirondo herders have been reported to vaccinate against blackleg by sprinkling the blood of an animal that has succumbed to the disease over other susceptible cattle. They boil the meat from the animal that died of the disease and the 'soup' is orally given to the healthy animals (Swaleh, 1999)

##### 4.3. Wounds and Surgery

Livestock owners have developed different methods of wound care. Plants and other substances are used as wound dressings. For instance in Sri Lanka, wounds are dressed with crushed fresh turmeric cooked in oil of *Azadiracter indica* leaves. The Sudanese Dinkas dress fresh wounds with sterile cattle, ash and cow urine. The Maasai healers cleanse their livestock wounds with hot water and suture with thorns held in place by tendons. They also cauterize chronic wounds; remove injured eyes and suture intestinal and stomach wounds. With the Turkana of northern Kenya, the wounds are dressed using the leaves *Caralluma somalica* (Swaleh, 1999).

Cauterization and bloodletting are common techniques worldwide but more so among African pastoralists. Cauterization is used in different ways by stock owners. It can be applied to stop bleeding, heal chronic wounds, treat hoof problems, and prevent horn development in claves and to treat other ailments such as anthrax, trypanosomiasis, scabies, muscle pains and lizard bites. Castration is a widespread surgical practice in most parts of the world. Methods include open surgery using a knife; biting the seminal duct without damaging the scrotum as practiced by American and Australian shepherds, cutting the scrotum with a spear, then drawing the testicles and severing it from the body as used by the Nuer (Matthias and McCorkle, 1989).

In Ethiopia, the Madosha (Means hammer in Amharic) is used for castration. This involves crushing the spermatic cord by laying it over a stick and striking the cord with the Madosha. In Kenya traditional methods of castration and classification of parturition among the Turkanas are well-documented (Swaleh, 1999).

### 4.4. Management Practice

#### 4.4.1. Traditional Management Techniques

##### *Restraining*

Before you examine or treat animal make sure it is restrained properly .This is necessary to avoid injuring animal, yourself, or the people helping you, and to ensure easy and proper treatment. There are different ways to restrain animal. Which one to use depends on treatment, animals and particular nature, and its relationship with handler (Evans *et al.*, 1995).

##### *Branding*

Applying hot iron is probably the most widely used traditional treatment method by camel pastoralists. Applying a red hot iron turns a chronic condition in to acute one, thus activating the body's defense mechanism. It results in increased blood circulation that can lead to healing process. The use of branding is controversial; it should be only as a last resort when no other treatment options are available (Mehari *et al.*, 2009)

Branding can be either organ specific or systematic. Herders and healers use it mostly to treat muscle and joint afflictions (such as wry neck). As well as skin disease such as contagious skin necrosis, abscess and swollen lymph nodes; but they also it for internal conditions including diarrhea, kidney problems, cough and infections of udder and womb. In some of these cases branding seems harmful. Yet it seems to help in some cases of vomiting in calves and intestinal obstruction, as well as joint and muscle problems (Schwartz and Dioli, 1992).

Various tools are used for branding. Striping done with bars that are about 1 to 3cm wide is most common, but point cross and ring firing are also practiced. Thus iron put into a very hot fire usually done from dang cases. When iron is glowing hot, it is pressed into the skin 20 to 60 seconds until the skin turns white. If the procedure is done properly, the burn marks heal within 2 to 3 days healing black smooth scars. If the iron poorly glow or duration of cauterizing are not sufficient, the wounds become red inflamed and infected, not healing well(Agab ,1998)

#### 4.4.2. Ethno-veterinary Health Management Practices in Ruminant Animals

According to a study carried out by Moreki *et al.*, (2012), the most common traditional remedies used for retained placenta in cattle are salty water (19.05%), soap detergent solution (19.05%), *Terminalia serecearoots* (14.29%), and *Spirostachys africanumbark* (9.52%) and *Burkea africanumbark* (9.52%). The herbal plants included *Ziziphus mucronata*, *Peltophorum africanum*, *Elephantorrhiza elephantina*, *Pouzolzia mixta*, *Dicerocaryum eriocarpum*, *Asparagus spp.*, *Hermania guerkeana*, *Ozoroapaniculosa*, *Scadoxus spp.* and *Boscia albitrunca*. The common plant parts used for treatment of retained placenta were barks, roots and bulbs.

Roodt (1998) reported that a decoction of *T. serecearoots* is administered orally to a cow suffering from a retained placenta and or internal parasites. In humans, a hot infusion of the root and bark treats pneumonia, where also eye wash is made by soaking the roots in coldwater.

Drummond and Moll (2002) mentioned that a hot infusion of the roots' outer layers is used to make a fomentation for treating pneumonia, while a decoction of the roots is used to cure diarrhoea and relief colic.

Roodt (1998) stated that *P. africanum* widely used medically as the bark and roots contain tannins. In addition, powdered debarked roots are used as local application for wounds, diarrhea and dysentery. The root of *P. africanum* used to promote the fertility of cattle (Drummond and Moll, 2002), while ash is applied to domestic birds infested with mites and lice (Moreki, 1997).

In the global perspectives, the various EVM materials used to expel retained placenta in cattle include the bark of *Vitex doniana*, fruit of *Hibiscus esculentus* and the leaves of *Carica papaya*, *Hedera helix L.*, *Debra glabra*, *Dobera loranthifolia*, *Aloe tenuior*, *Glyphaea Brevis* and *Spondia mombin* are used respectively. While the root of *Salvadora persica* and whole plant of *Tribulus terrestris L.* are used to expel retained placenta (Swaleh, 1999).

Movement of animals through time and space so as to avoid pests and disease is an alternative and commonly used practice in continental Africa. Such movement leads to nomadisms or transhumant patterns in which herds spent certain seasons at particular places, but move about at other times of the year searching for water and pasture. A good example is given by Schillhorn van Veen, (1996) among the West African herders who move their stock to the north during the rainy season to avoid the risk of tick and fly -borne diseases while in dry season the animals are taken to the south in search of pasture. Manual removal of ticks, avoidance of pest in infested areas and use of homemade fly repellants are also employed to deal with external parasites (Ibrahim, 1986).

### 4.4.3. Ethno-veterinary Health Management Practices in Camel

Traditional camel herders have detailed knowledge of medicinal plants and how to use them to treat particular disease. Many of those herbal medicines are effective at treating particular disease, or at least help to relieve the symptoms. However they are least effective than modern medicine and some may be ineffective or even harmful. Relatively little scientific research has been done on camel disease much remains to be learned about the type of herbal medicines used and their effectiveness (Evans *et al.*, 1995).

Certain people in society know a lot about traditional medicines; they are able to identify which plants useful against particular disease, and use them to prepare and administer medicine. These people are often elderly, have learned their skills over many years of apprenticeships, observation and experiment. The owner of sick animals is going to them first, before (as well as) seeking outside help. These indigenous specialists can be very valuable allies for veterinarian or para-veterinarian in the treating animals, or in alerting the authorities about disease outbreak (FAO, 1994).

### 4.5. Magico-Religious Practices

Ethno medical systems for both humans and animal are usually related to magic religion and cosmology. However, orthodox science maintains a strict division between natural and supernatural approaches to health care, even though both coexist in virtually every culture. In the Northern hemisphere, people also make vows to Saints and offer prayers for patients hospitalized for serious operations. Similar approaches are reported in veterinary field. This is evident with catholic farmers in Ireland who sprinkle holy water on cattle bought from Protestants as a precaution against any religious impurity associated with the exchange. Magico religious practices form an integral part of Ethno veterinary practices and are in wide existence. Some people suspend amulets or bouquets over animals or their quarters to protect them from diseases, evils or accidents (Swaleh, 1999).

## 5. ETHNO VETERINARY PRACTICES IN ETHIOPIA

In Ethiopia, as in other developing countries, livestock production plays an important role in the livelihood and economy of majority of the population. Although, the gain from livestock production is directly related with safeguarding animal health convention, veterinary medical system is among the smallest in Ethiopia. Techniques such as those to treat the more wide spread ailments are common knowledge among livestock holders (ITDG and IIRR, 1996).

The Afar people of Ethiopia reside in the Afar Regional State. The great majority of them are pastoralists and, as a result, highly dependent on livestock and livestock products. Livestock productivity is, however, frequently affected by different diseases. They, therefore, give high priority to the well being of their domestic animals. As access to modern veterinary facilities in the Afar Region is very limited, the people are still expected to largely rely on their traditional knowledge in the management of livestock health problems (Giday and Teklehaymanot, 2013).



Borana pastoralists have a wealth of knowledge about herbal medicine. Medicinal plants that are found in the rangelands are harvested and used for treatment of sick animals. Recognizing the value of this indigenous knowledge empowers livestock owners to attempt to solve their animals' health problems in a cost-effective way (Ibrahim, 1986)

As Gebremedhin *et al.*, (2013) reported, the major portion of the farmers in Tigray regional state relies on traditional veterinary knowledge, practices and locally available materials; primarily medicinal plants to cure and prevent livestock health problems such as wound, local swellings, mastitis, ectoparasites, tape worm, anthrax, dermatophilosis, diarrhea, jaundice, ear infection (otitis), lice infestation, pastuerellosis, snake and scorpion bites, and bone fracture. Although, other local materials are used, the use of plants for the treatment of various ailments prevails.

In the Amaro district of Southern Ethiopia people have been practicing the traditional treatment of animal trypanosomosis and some of them have been using the traditional tsetse fly repellent. A total of 18 types of medicinal plants and a Mekado soil were indicated for ethno veterinary practices against animal trypanosomosis. Several bioactive compounds isolated from piper species have been reported to display antileishmanial and trypanocidal activities. Leishmanicidal activity of the Piperaceae family *Piper malacophyllum* is related with its alkenylphenol gibbilimbol B compound to cause plasma membrane disruption (Abiy *et al.*, 2013).

Many Somali remedies for livestock ailments utilize locally available plants or other resources and in some cases, treatment or disease management strategies appear rational when compared with western, scientific knowledge. For example, the use of salt in wound treatments; the separation of sick from healthy stock; the avoidance of tick-infested areas (Hadriil, 1993).

The rich Somali vocabulary for livestock diseases and vectors, and the scope of the traditional pharmacopoeia indicates that indigenous knowledge should feature more prominently in the development of primary veterinary services (Catley and Walker, 1998). While some documentation of indigenous veterinary knowledge has taken place and more than 135 veterinary medicinal plants have been recorded in the Ogaden alone (Catley *et al.*, 1996).

A survey conducted in Dabat District, Northwestern Ethiopia showed that 18 plants were used for various animal diseases. The types of medical conditions treated included trypanosomiasis, anthrax, rabies, abdominal bloat, leech infestation and sun-stroke fever. The traditional healers who administered the remedies were all followers of the Ethiopian Orthodox Church (Berhanemeskel, 2008).

In Fentalle District, East Shewa Zone, a total of 25 plant species were used for animal healthcare. The most common method of preparation of the remedies used by Kerreyu pastoralists who live in this area was by homogenizing the plant material with water. Yineger *et al.*, (2008) have reported on 29 medicinal plant species that were used for 16 livestock diseases in the Gilgel Ghibe Area in southwestern Ethiopia. In this area, traditional medicine practitioners collected the fresh plant parts to prepare the needed veterinary remedies (Balemie 2008).

Ethno veterinary practice in the country is, however, being affected due to acculturation and depletion of plants as a result of environmental degradation, deforestation and over exploitation of the medicinal plants themselves. However, very little of the ethno veterinary knowledge in Ethiopia in relation to the use of medicinal plants is so far properly documented and analyzed (Yineger *et al.*, 2007).

### **5.1. Advantages and Limitation of Ethno Veterinary Practice**

#### *5.1.1. Advantages of EVM*

Ethno-veterinary medicine is sustainable and ecologically sound because plant products with recognized medicinal properties are far more accessible to the villagers than Western medicine and it is a cheaper and more easily accessible alternative to expensive pharmaceuticals (Kubkomawa *et al.*, 2013).

It can be easily administered, Mostly given orally or topically and it is cheap and readily available. Most EVM products are effective to some extent especially those with anthelmintic properties, for example *Eucalyptus grandis* was found to be effective against *Haemonchus contortus*. Livestock owners are already familiar with EVM and the practice is considered when no effective therapy is available (Swaleh, 1999)

### 5.1.2. Limitations

EVM is sometimes inappropriate when it comes to treating a large herd. For example, washing the wounds and applying warm ashes mixed with salt to pastoralist herds of 400 - 2500 animals suffering from FMD is practically difficult. In addition to this here is difficulty in standardizing herbal therapies as the concentration of active ingredient varies in different parts of the plants and seasonal availability of certain medicinal plants. Lack of Scientific validation of most ethno veterinary therapies and time consuming and inconveniences involved in their preparations and use are also limitation of EVM. Existence of inappropriate practices like cauterizing the vulva of the cows to induce heat or treat urinary blockages, and for the treatment of the infectious diseases has negative impact on health of animal. There is Paucity of treatment against the infectious epidemic diseases such as Rinderpest and Foot and Mouth Diseases (Swaleh, 1999).

## 6. CONCLUSION

Ethno-veterinary medicine is accessible, easy to prepare and administer, cheaper and forms part of one's own traditional culture. However, it is a good attempt on traditional Ethiopian practices of treatment of animals we can skip those practices which are harmful such as using very hot iron for branding. The majority of treatments are of plant origin. Therefore documentation of plants and ethnoveterinary practice with their corresponding importance is valuable for the communities and their future generations and for scientific consideration of wider uses of traditional knowledge in treating domestic animals. Researchers, healers and livestock keepers can together experiment the practices / evaluate them after careful selection of few best practices and test them at field level and then disseminate with more confidence. Extracting roots or barks of trees /plants can also be discouraged to preserve the wealth of plants or only sustainable harvesting practiced. This approach will prevent loss of knowledge on EVM and promote low cost solutions locally.

Therefore, based on the above conclusion, the following recommendations are forwarded;

- Recognitions and intellectual property rights should be given to traditional healers, either through certification or through organizing them at community or woreda level, which popularizes their indigenous knowledge and medicinal plants value.
- The efficacy of the preparations, techniques, and practices need to be investigated to identify promising plants for use in livestock development proposals.
- The documentation and conservation of medicinal plants is highly recommended.

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