

Review

Management and practices of ethno-veterinary health amongst livestock producers in Africa

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Accepted 22 October, 2015

The objective of this review paper is to highlight the ethno-veterinary health management practices found amongst livestock producers in Africa. It is to also help livestock agents and farmers to integrate and promote the use of ethno-veterinary medicine in animal health care, focusing on livestock diseases and parasites in Africa. Plants are the most commonly used ingredients in the preparation of ethno-veterinary medicines. All plant parts, including leaves, bark, fruits, flowers, seeds and roots are used in medicinal preparations. Edible earth from termite and anthills is also used in ethno-veterinary preparations. Limestone and minerals are commonly used in decoctions and concoctions. Part sand products of animals, such as skin sand hides, bones, milk, butter, castor oil, cod liver oil, fish oil, snake oil and even urine and dung are ingredients of ethno-veterinary medicines. Honey, vegetable oils, butter and salt are used for their healing and preservative properties. Spiritual forces maybe invoked by prayers during rituals. Rituals are important in the interaction between African livestock keepers and their animals. To ensure that the herd thrives, animal husbandry is strictly ritualized. Many different rituals are performed, such as invoking the gods through dance or the sacrifice of an animal. Other rituals involve writing a phrase from the Koranona slate and washing it in a calabash. The liquid is then used to drench the sick animal. Ritual incantations and prayers are sometimes connected with particular plants and special ingredients. To keep animals healthy, traditional healing practices have been applied for centuries and have been passed down orally from generation to generation. Before the introduction of western medicine, all livestock keepers relied on these traditional practices. Ethno-veterinary medicine is accessible, easy to prepare and administer, cheaper and forms part of our traditional culture. It is a good attempt on traditional African practices of treatment of animal diseases and parasites. However, we can skip those which are harmful methods like hot iron branding; snake oil leading to killing or loss of snakes and also be discouraged. 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.

Key words: Ethno-veterinary, ritual, livestock health management, Africa.

INTRODUCTION

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, 1986). 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. The EVM knowledge has been developed through trial and error and deliberate experimentation.

Africa is a rich source of medicinal plants; the best known species is *Phytolacca dodecandra* (Hoareau and Da Silva, 1999). In South Africa, a large proportion of the population relies on traditional remedies to treat themselves and their animals for common diseases (McGraw and Eloff, 2008). Roberts (1971) argued that EVM provides valuable alternatives to and complements western-style veterinary medicine. Ethno-veterinary medicine can play a significant role in grassroots development, which seeks to empower people by enhancing the use of their own knowledge and resources. The EVM is of specific value in developing countries where allopathic veterinary medicines are often not accessible to livestock producers. Hoareau and DaSilva (1999) noted that medicinal plants have for several centuries been widely used as a primary source of prevention and control to livestock diseases and parasites. 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 (Guéye, 1999). Similarly, McGraw and Eloff (2008) observed that EVM may be a cheaper and more easily accessible alternative to expensive pharmaceuticals. Most of the developing countries including Nigeria rely wholly or partly on traditional herbal medicine for treatment and control of animal and human diseases (Sofowora, 1993; Kudi and Myint, 1999).

The objective of this review paper is to highlight the ethno-veterinary health management practices found amongst livestock producers. It is to also help livestock agents and farmers' leaders integrate and promote the use of ethno-veterinary medicine in animal healthcare, focusing on livestock diseases in Africa.

Ethno-veterinary health management practices

In Nigeria, Chah et al. (2009) reported that farmers use traditional remedies because they are more readily available and are cheaper. Additionally, EVM is partly effective and practicable (Kaikabo et al., 2004). Guéye (1999) noted that all the ethno-veterinary knowledge

(EVK) is in the custody of older people, both men and women, who transmit it to younger generations by word of mouth, which is still the common means of communication in Africa.

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). SriBalaji and VikramaChakravarthi (2010) pointed out that ethno-veterinary practices concern to livestock is as old as the domestication of various livestock species. According to Wanzala et al. (2005), EVK comprises all ethno practices, approaches and traditional knowledge applied by humans with a view to alleviating health constraints that affect livestock and hence, improve their production performance. Many indigenous veterinary beliefs and practices persist in a wide majority of livestock raisers, particularly in the developing countries (Roberts, 1971).

As in other developing countries, livestock health management in Botswana is a combination of EVM and use of modern medicine with EVM usage predominating in small holder livestock production. Ethno-veterinary information is facing extinction because of the current rapid changes in communities across the world (SriBalaji and VikramaChakravarthi, 2010).

Ethno-veterinary Health Management Practices in Ruminant Animals

In the rural areas where modern medicine is in accessible to farmers, ethno-veterinary medicine (EVM) is often used to expel retained placenta in livestock. 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 serecea* roots (14.29%),

Spirostachys africanum bark (9.52%) and *Burkea africanum* bark (9.52%). The herbal plants included *Ziziphus mucronata*, *Peltophorum africanum*, *Elephantorrhiza elephantina*, *Pouzolzia mixta*, *Dicerocaryum eriocarpum*, *Asparagaus spp.*, *Hermania guerkeana*, *Ozoro apaniculosa*, *Scadoxus* spp. and

Boscia albitrunca. Verma and Singh (2009) reported that medicinal herbs as potential sources of therapeutics aids have attained a significant role in health system all over the world for both humans and animals not only in the diseased condition but also as potential material for maintaining proper health. Moreki et al. (2012) stated that the predominant tree species appeared to be *T. serecea*, *S. africanum*, *P. africanum* and *Z. mucronata* and that *S. africanum* was facing extinction, indicating that conservation may be inevitable. The remedies were given either solely or as mixtures and administered either as a decoction or infusion.

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Moreki et al. (2012) reported that the common plant parts used for treatment of retained placenta were barks (57.14%), roots (40.48%) and bulbs (11.90%). Finch et al. (2003) reported that the parts of plants used for medicinal purposes by livestock producers were roots (59%), leaves (26%) and whole plant (13%). Furthermore, SriBalaji and VikramaChakravarthi (2010) stated that parts and products of animals such as skins and hides, bones, milk, butter and even urine and dung are ingredients of EVM. Salty water, as reported by Swaleh (1999); Koloka and Moreki (2011), in Kenya apart from being used as a tanning agent, is also used for medicinal purposes in both livestock and humans. *E. elephantine* (*mositsane*) is also used for medicinal purposes in both livestock and humans whereas the roots are used for high blood pressure (Mathias-Mundy and McCorkle, 1989). Similarly, Maphosa et al. (2009) mentioned that *E. elephantine* is a traditional remedy for a wide range of ailments both in humans and livestock. In goats, it is used by farmers in the Eastern Cape Province (South Africa) to control helminthes (Okoli et al., 2010). Roodt (1998) reported that a decoction of *T. serecea* roots 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 (Roodt, 1998), where also eye wash is made by soaking the roots in coldwater (Roodt, 1998; Drummond and Moll, 2002). 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.

The roots of *P. mixta* are used for retained placenta while Maphosa et al. (2010) reported that the leaves of *P. mixta* are used instead. These authors noted that *P. mixta* leaves are crushed to produce a slippery paste that is inserted in to the animal's vagina in order to stimulate the expulsion of the retained placenta. Roodt (1998) stated that *P. africanum* is 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. In humans, Maphosa et al. (2010) stated that the bark from *P. africanum* is chewed to relief colic; an infusion is taken orally to relief stomach disorders while the steam from a hot decoction is applied to sore eyes. The root of *P. africanum* is 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).

It is suggested that the plants with multipurpose uses may contain more than one type of physiologically active ingredients (Chah et al., 2009).

According to Moreki et al. (2012), *B. albitrunca* was identified as one of the plants used for the treatment of retained placenta in cattle. *B. albitrunca* leaves are used in folk medicine for the treatment of inflamed and infected umbilical cords in Nigeria. Additionally, cold infusion of *B.*

albitrunca leaves is applied as a lotion to the inflamed eyes of cattle while a decoction of the roots provides a treatment for haemorrhoids (Drummond and Moll, 2002).

In humans, roots are edible and used as substitute for coffee or chicory (Drummond and Moll, 2002). In Uganda, a concoction of the shoot of *Sida cuneifolia* and the roots of *Acacia sieberiana* roots are used for retained placenta (Drummond and Moll, 2002). 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 (Swaleh, 1999; Dold and Cocks, 2001; Lans et al., 2007; Chah et al., 2009). While the root of *Salvadora persica* (Toyang et al., 2007) and whole plant of *Tribulus terrestris* L. (Thomas et al., 2011) are used. Furthermore, Lans et al. (2006) reported that *Curcumalonga* rhizome is used for retained placenta in horses.

According to Drummond and Moll (2002), *Z. mucronata* is considered immune to lightning in Botswana, so any person that shelters under it is thought to be safe. In addition, *Z. mucronata* leaf paste can be used to treat boils and other skin infections in both humans and livestock. Drummond and Moll (2002) stated that inhuman the powdered leaf and bark has been used to relief chest pains, while an infusion of the bark alone is used to cure coughs. According to Mathias-Mundy and McCorkle (1989), roots of *Z. mucronata* are used for general pain relief and menstrual pain in women.

Ethno-veterinary health management practices in monogastric animals

Rural poultry farmers are aware of the need to keep birds in good health and when they are sick to seek for prescription and procure medicine for treating rural poultry diseases and parasites. A study by Mapiye and Sibanda (2005) has shown that large number of farmers gives traditional medicine to chickens indicating that traditional medicines in some instances have potential to improve the health status of rural household flocks. The major plant used by the rural chicken farmers for the treatment of rural chickens against Newcastle Disease (ND) are mahogany (*Khaya senegalensis*) bark/roots (25.1%), wild garden egg (*Solanum nodiflorum*) (20.3%), bitter leaf (*Vernonia amygdalina*) (7.8%) and pepper (*Capsicum frutescens*), as the main sources of remedies (Musa et al., 2008). The root of *P. africanum* is used to promote the fertility of cattle (Musa et al., 2008) while ash is applied to domestic birds infested with mites and lice (Moreki, 1997).

It was also observed that 2% of the farmers employed the use of white maggi (Monosodium glutamate), which

they usually soak in water and administer to chickens orally for the treatment of ND. Their findings also revealed that about 50.16% of the farmers obtained prescription and medicine for the treatment of ND in chicken from ethno-veterinary sources, 29.40% from modern veterinary services, 9.74% from pharmaceutical shops and 10.71% from open shops/markets.

In Nigeria, studies have shown that ND is endemic in both rural and commercial poultry with epidemic outbreaks being recorded in highly susceptible flocks (Sa'idu et al., 2006). Traditional remedies are reported to be much more easily and readily obtained and affordable (Abdu et al., 2000). Some plants influence the immune system or are effective against internal and external parasites (Abdu and Faya, 2000). Antihelminthic and antiprotozoan properties of *Khaya senegalensis*,

Vernonia amygdalina and *Solanum nodiflorum* have been reported by Abdu and Faya (2000), Nwude and Ibrahim (1980) and Atawodi et al. (2000).

The practice of sourcing for medicine through the traditional method is mostly and popularly adopted by rural farmers for treatment of birds. It may not be perfect enough to ensure good health due to poor knowledge and understanding of the etiology and pathology of poultry disease by the farmers. Hence, they may succeed in treating the observable symptoms of the disease without dealing with the actual cause. Dosages are imprecise as most of the remedies are soaked in water without regard to quantity of the remedy or volume of water used. This may expose the birds to dangers of over or under dosing and may lead to kidney or liver damage. These remedies used by rural farmers in the study may or may not have direct effect on ND virus, but could affect protozoan and helminth parasites of rural poultry by reducing the parasites burden, and boosting the immunity of the birds against infection. As a result, extension services are required in educating rural farmers in matters relating to the use of appropriate medicaments and adopting new technologies for improving rural household chicken production and disease control. Alders and Spradbrow (2001) have recommended extension services and community participation for the successful adoption of the oral feed vaccine for the control of Newcastle Disease (ND) in rural areas.

CONCLUSION

A lot of people around the world have a close relationship with livestock. Many people depend on livestock for the provision of food, clothing, labour, fertilizers and cash, while they act as storage of wealth and a medium of exchange. Animals are a vital part of culture and in many societies are regarded as equal to humans. To keep animals healthy, traditional healing practices have been applied for centuries and have been passed down orally from generation to generation. Before the introduction of western medicine, all livestock keepers relied on these

traditional practices.

According to World Health Organization, at the moment, at least 80% of people in developing countries depend largely on these practices for the control and treatment of various diseases and parasites that affect both animals and humans. These traditional healing practices are called ethno-veterinary medicine. 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 African practices of treatment of animals. We can skip those which are harmful methods like hot iron branding; those such as snake oil lead to killing or loss of snakes and can be discouraged. 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.

RECOMMENDATIONS

Researchers are advised to take good inventory of medicinal plants used by traditional farmers in treatment of livestock diseases and parasites and to determine their chemical properties, concentrations and routes of application. This is because medicinal plants are facing extinction, indicating that conservation may be the only way out.

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