

# **Potential Use of Ethnoveterinary Medicine for Retained Placenta in Cattle in Mogonono, Botswana**

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# Potential Use of Ethnoveterinary Medicine for Retained Placenta in Cattle in Mogonono, Botswana

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## Abstract

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A study was conducted to identify and document plants and/or practices used for retained placenta in cattle at Gakhukhu lands near Mogonono village in Kweneng District of Botswana. Rapid Rural Appraisal (RRA) techniques were employed to collect data from 42 herdboys (livestock carers) and stock owners themselves. Thirteen plant species that were utilized for treatment of retained placenta were identified by respondents. The plant parts utilized for treatment of retained placenta and their methods of preparation were also identified. Barks (57.14%), roots (40.48%) and bulbs (11.90%) were the common parts used. The common remedies utilized by livestock owners for retained placenta in decreasing order were salty water (19.05%), a solution of soap detergent (19.05%), Salt and soap detergent solution (16.76%), *Terminalia serecea* (14.28%), *Burkea africana* Hook (9.52%), *Spirostachys africana* (9.52%) and donkey dung (7.14%). The remedies were prepared and administered alone or as mixtures. These results showed that EVM is important in treatment of retained placenta in cattle and that it can be used to complement modern animal health services in the study area.

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**Key words:** Ethnoveterinary, ethnoveterinary knowledge, Gakhukhu, retained placenta

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## Introduction

Retained placenta in the bovine is defined as failure of the foetal placenta (tufts) to separate from the maternal placenta (crypts) (Weatherill, 1965) or failure to pass all or part of the placenta from the uterus within 24 hours of calving (Guard, 1999). According to Hanafi et al. (2011), retained placenta is failure of the placenta to be expelled within 12 hours post calving and 3 hours post foaling. Retained placenta causes great economic losses, mainly due to decreased milk yield and calf crop. Although the actual causes of retained placenta are not clear, the condition usually follows dystocia, maternal hypimmunity, mal and unbalanced nutrition, stress, hereditary predispositions or infections (Hanafi et al., 2011). In the opinion of McIntosh (1940), the fundamental cause for retained placenta is in the vast majority of cases an inflammation of the cotyledonary and placental structures. Toyang et al. (2007) noted that the causes of retained placenta are diseases such as brucellosis, a difficult birth, human assistance during the birth, dirty conditions and lack of calcium. There is no simple method for control and prevention as the causes of retained placenta are manifold.

In the rural areas where modern medicine is inaccessible to farmers, ethnoveterinary medicine (EVM) is often used to expel retained placenta in livestock. Ethnoveterinary medicine 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 DaSilva, 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). Iqbal et al. (2005) argued that EVM provides valuable alternatives to and complements western-style veterinary medicine. Ethnoveterinary 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.

Ethnoveterinary medicine is sustainable and ecologically sound because plant products with recognised 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 cheap and easily accessible alternative to expensive pharmaceuticals. In Nigeria, Chah et al. (2009) reported that farmers use traditional remedies because they are readily available and at low cost or no cost at all. Additionally, EVM is partly effective and practicable (Kaikabo et al., 2004). Guéye (1999) noted that all the ethnoveterinary 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.

Ethnoveterinary knowledge focusing on ethnoveterinary animal health care has existed alongside human evolutionary history, taking different forms (Wanzala et al., 2005). Sri Balaji and Vikrama Chakvarahi (2010) pointed out that ethnoveterinary practices concern to livestock is as old as the domestication of various livestock species. According to Wanzala et al. (2005), EVK comprises all ethnopractises, 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 (Iqbal et al., 2005). 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 smallholder livestock production.

Ethnoveterinary information is facing extinction because of the current rapid changes in communities across the world (Sri Balaji and Vikrama Chakvarahi, 2010). There is little documentation of EVM usage in livestock in Botswana. The main objective of this study was to identify and document plants and/or practices used for retained placenta in cattle in Gakhukhu lands near Mogonono village in Kweneng District of Botswana. This would form a basis for further studies to test and validate their pharmacological bioactivity, and to characterize and isolate the active principle(s).

### Materials and Methods

Rapid Rural Techniques (RRA) techniques were used to gather information on the use of EVM from 42 livestock herders/owners at Gakhukhu lands in Kweneng District through informal interviews. Data were collected on gender of herders/owners, retained placenta, plant species and their parts used. No traditional healers were interviewed and all the information presented here was obtained from herdboys and stockowners themselves. Data were analyzed using the Statistical Package for Social Scientists (SPSS) software.

### Results and Discussion

#### *Respondents' gender*

The majority of the respondents in this study were males (92.86%) compared to 7.14% for females. This is not surprising given that the care of livestock in Botswana, especially cattle is largely in the hands of men than women. Oladele and Monkhei (2008) reported that in Botswana women are most prominent in goat ownership and that the ratio of male to female ownership of cattle holdings is 3 to 1 while the ratio of population of animals owned by male to female is 5 to 1.

#### *Remedies used by livestock carers*

Traditional remedies used by livestock keepers in Gakhukhu are presented in Table 1. According to Table 1, the most common traditional remedies used for retained placenta are salty water (19.05%), soap detergent solution (19.05%), *Terminalia serecea* roots (14.29%), *Spirostachys africanum* bark (9.52%) and *Burkea africanumbark* (9.52%). Other herbal plants (19.05%) included *Ziziphus mucronata*, *Peltophorum africanum*, *Elephantorrhizaelephantina*, *Pouzolzia mixta*, *Dicerocaryum eriocarpum*, *Asparagaus spp.*, *Hermania guerkeana*, *Ozoroa paniculosa*, *Scadoxus spp.* and *Boscia albitrunca*. In agreement with these results, Verma and Singh (2009) mentioned 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.

In the current study, the predominant tree species appeared to be *T. serecea*, *S. africanum*, *P. africanum* and *Z. mucronata*. The respondents mentioned that *S. africanum* was facing extinction, indicating that conservation may be inevitable. As shown in Table 1, the remedies were given either sole or as mixtures. The remedies are administered either as a decoction or infusion.

The plant parts used by livestock owners to treat cows with retained placenta are shown in Fig 1. In the present study, 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 rearers were roots (59%), leaves (26%) and whole plant (13%). Furthermore, Sri Balaji and Vikrama Chakravarthi (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.

The finding on salty water (19.05%) in the present study is lower than the value (62%) reported by Swaleh (1999) in Kenya. Koloka and Moreki (2011) in Botswana reported that apart from being used as a tanning agent, *E. elephantina (mositsane)* is also used for medicinal purposes in both livestock and humans, whereas the roots are used for high

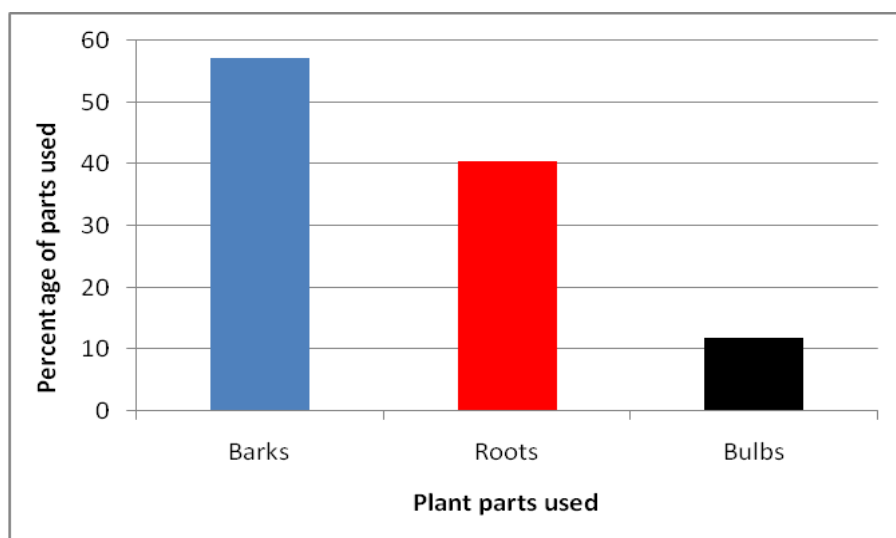
POTENTIAL USE OF ETHNOVETERINARY MEDICINE FOR RETAINED ...

blood pressure (Danley, 2006). Similarly, Maphosa et al. (2009) mentioned that *E. elephantina* 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 helminths (Maphosa and Masika, 2012).

**Table 1:** Traditional remedies used by cattle keepers for retained placenta

Category	No. of responses	Percent response
Salty water	8	19.05
Soap detergent solution	8	19.05
Salt + soap detergent solution	7	16.67
Monato ( <i>Burkea africanum</i> Hook)	4	9.52
Mogonono ( <i>Terminalia serecea</i> )	6	14.29
Morukuru ( <i>Spirostachys africanum</i> )	4	9.52
Makanangwane ( <i>Dicerocaryum eriocarpum</i> )	2	4.76
Mositsane ( <i>Elephantorrhizaelephantina</i> ) + soap detergent	2	4.76
Mogonono ( <i>Terminalia serecea</i> ) + soap detergent	2	4.76
Mongololo ( <i>Pouzolzia mixta</i> ) + salt	2	4.76
Mongololo ( <i>Pouzolzia mixta</i> ) + soap detergent	2	4.76
Monato ( <i>Burkea africanum</i> Hook) + salt	2	4.76
Monato ( <i>Burkea africanum</i> Hook) + soap detergent	2	4.76
Morukuru ( <i>Spirostachys africanum</i> ) + salt + soap detergent	2	4.76
Donkey dung	3	7.14
Donkey dung + salt	1	2.38
Donkey dung + monato bark + soap	1	2.38
Other	8	19.05



**Fig. 1:** Percentage of plants and plant parts used for medicinal purposes

Table 3 shows the plant species used by respondents for retained placenta. Plants are arranged along with their family names, scientific names, English names, local (*Tswana*) names and

parts used for treatment. In agreement with these results, Roodt (1998) reported that a decoction of *T. serecea* roots is administered orally to a cow suffering from a retained placenta. Additionally, the

respondents in this study mentioned that *T. serecea* was used for treatment of internal parasites in livestock. In humans, a hot infusion of the root and bark treats pneumonia (Roodt, 1998), whereas eyewash is made by soaking the roots in cold water (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, whereas a decoction of the roots is used to cure diarrhoea and relief colic.

**Table 3:** Plant species and parts used for retained placenta in cattle

Family name	Scientific name	Tswana name	English name	Part used
Combretaceae	<i>Terminalia serecea</i>	Mogonono	Silver cluster-leaf	Root bark
Caesalpinioideae	<i>Burkea africana</i> Hook	Monato	Wild syringa	Bark
Euphorbiaceae	<i>Spirostachys africana</i>	Morukuru	Tamboti	Bark
Rhamnaceae	<i>Ziziphus mucronata</i>	Mokgalo	Buffalo thorn	Roots
Caesalpinioideae	<i>Peltophorum africana</i>	Mosetlha	African wattle	Root
Urticaceae	<i>Pouzolzia mixta</i>	Mongololo	Soap nettle	Root
Mimosoideae	<i>Elephantorrhizaelephantina</i>	Mositsane	Elephant foot	Bulb
Pedaliaceae	<i>Dicerocaryum eriocarpum</i>	Makanagwane	Large devil's thorn	Roots
Asparagaceae	<i>Asparagaus spp.</i>	Mositwasitwane	Asparagus	Roots/nods
Sterculiaceae	<i>Hermania guerkeana</i>	Moreba	Hermania	Roots
Anacardiaceae	<i>Ozoroa paniculosa</i>	Monokana	Resin tree	Roots
Alliaceae	<i>Scadoxus spp.</i>	Sekaname	Bloodlilly	Roots
Capparaceae	<i>Boscia albitrunca</i>	Motlopi	Shepherd's tree	Leaves

In the present study, the respondents mentioned that they used the roots of *P. mixta* for retained placenta while Maphosa et al. (2010) reported that the leaves of *P. mixta* are used instead. The authors noted that *P. mixta* leaves are crushed to produce a slippery paste that is inserted into the animal's vagina in order to stimulate the expulsion of the retained placenta. Roodt (1998) stated that *P. africana* is widely used medically as the bark and root contain tannins. In addition, powdered debarked roots are used as local application for wounds, diarrhoea and dysentery. In humans, Drummond and Moll (2002) stated that the bark from *P. africana* 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. africana* is used to promote the fertility of cattle (Roodt, 1998) while ash is applied to domestic birds infested with mites and lice (Moreki, 1997). It is suggested (Chah et al., 2009) that the plants with multipurpose uses may

contain more than one type of active physiologically active ingredients.

In the current study, *B. albitrunca* was identified as one of the plants used for 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 (Motlhanka et al., 2008). In Uganda, a concoction of the shoot of *Sida cuneifolia* and the roots of *Acacia sieberiana* roots are used for retained placenta (Ejobi et al., 2007).

Worldwide, various EVM materials are used to expel retained placenta in cattle including *Vitex doniana* (bark), *Hibiscus esculentus* (fruit), *Carica papaya* (leaves), *Salvadora persica* (root) (Toyang et al., 2007), *Tribulus terrestris* L. (whole plant) (Thomas et al., 2011), *Hedera helix* L. (leaves)

(Lans et al., 2007), *Debra glabra* (leaves) and *Dobera loranthifolia* (leaves) (Swaleh, 1999), *Aloe tenuior* Haw (leaves) (Dold and Cocks, 2001), and *Glyphea brevis* (leaves) and *Spondin monbin* (leaves) (Chah et al., 2009). Furthermore, Lans et al. (2006) reported that *Curcuma longa* rhizome is used for retained placenta in horses.

Although *Z. mucronata* was used for retained placenta in this study, no record of it being used as a remedy for retained placenta could be found in literature. 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 in human the powdered leaf and bark has been used to relief chest complaints while an infusion of the bark alone is used to cure coughs. According to Danley (2006), *Z. mucronata* roots are used for general pain relief and menstrual pain.

### Conclusion

Smallholder livestock farmers in Gakhukhu utilized 13 plant species in the treatment of retained placenta. The three main plant species utilized by farmers were *T. serecea* (14.28%), *B. africanum* Hook (9.52%) and *S. africanum* (9.52%). The predominant parts utilized for treatment of retained placenta were barks (57.14%) and roots (40.48%). Plant parts were prepared and administered alone or as a mixture.

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