

Application of Indigenous Knowledge in Treating Retained Placenta in Cattle

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Received: December 03, 2019; **Published:** February 04, 2020

Abstract

In most rural areas in Sub-Saharan countries, livestock plays an important role in people's livelihood and they have vast traditional knowledge of livestock management and ethno-veterinary practices. An ethno-veterinary survey of plants and/or practices used for management of retained placenta was carried out in three geographical areas of Eastern Cape Province between November 2013 and February 2014. Data was collected from the respondents through the use of semi-structured questionnaires and guided field walks. Forty eight respondents (31 men and 17 women) were interviewed on ethno-veterinary treatment used for retained placenta. Information on traditional ethno-veterinary medicine knowledge, preparation method, plant part used and mode of administration were recorded. In total, 6 medicinal plants representing 6 families were recorded as being used for the treatment of retained placenta in cattle. These plants were used in mixtures or used alone. All the plants species used were collected from the wild. The most frequently used plant parts were leaves (66.7%) followed by barks (33.3%), roots, bulb and flowers, contributing 16.7% each. Drying and crushing of plants parts mixed with warm water was the main methods of preparation, while oral was the main route of remedy administration. The current study revealed that respondents has vast knowledge on ethno-veterinary medicinal plants which are valuable resources to the local communities. This knowledge is in the custody of old people and is transferred vertical and horizontal through the word of mouth from one generation to another. There is therefore a dire need for documentation and scientific validation of medicinal plants for the development of alternative drugs as well as further develop strategies for domestication and propagation of these medicinal plants.

Keywords: *Indigenous Management; Placenta; Subsistence Farming*

Introduction

Retained placenta is one of the most common reproductive disorder condition experienced in cows following parturition. The actual causes of placenta retention in cows are not clear. Various authors are of the opinion that, increased parity, milk yield in the previous year and following birth of male foetus [1,2], brucellosis, difficult birth, human assistance during birth, dirty conditions and lack of calcium [3] are some fundamental causes. Moreki, et al. [4] reported that, there is no simple method for control and prevention of retained placenta due to its complex causes. Therefore, there is an urgent and ever present need to control and prevent placenta retention. Control is generally achieved by use of synthetic drugs in combination with best management practices. Livestock owners who reside in remote rural areas experienced challenges such as a lack of access to synthetic drugs due to poor infrastructure (roads, communication), high cost of concentrate (feed) and lack of financial capital and skilled human resource. This can lead to a situation where animals are becoming more prone to any potential abnormality or diseases condition.

Small-scale farmers have resorted to ethno-veterinary medicine as alternative to treat retained placenta in cows. The World Health Organisation confirmed that, about 80% of the population in developing countries depends on traditional medicine for livestock and human primary healthcare needs. Several medicinal plant had been documented in various parts of the world for the treatment of retained placenta in domestic animals [4-8].

Traditional medicine is considered to be cheap, safe and readily available to small-scale farmers [9,10]. Additionally, some medicinal plants are evergreen perennial, easy to grow without management and can provide required biomass through the year. It is relatively easy to prepare concoctions using basic tools or equipment which are readily available in the rural areas. Hence, the current study was conducted to identify and document the traditional ethno-veterinary knowledge and practices used by small scale farmers in order to provide some baseline information, which could be share with other communities. This can also serve as baseline information for further verification, validation and potential new drug development.

Materials and Methods

Study areas

This study was conducted from November 2013 to February 2014 in different agro-ecological zones of the Eastern Cape Province, South Africa. The villages targeted in the study were Ngqumeya and Ciko situated in the Amathole district municipality and Goso located in O.R. Tambo district municipality. The description of study areas are depicted in table 1.

District Municipality	Local Municipality	Description of the study sites
Amathole	Amahlathi	Upper Ngqumeya found 10 km South of Keiskammahoek town, 32°43'08.87"S longitude and 27°07'42.14"E latitude. Vegetation is a mixture of thicket, forests, savanna and grassland.
	Mbhashe	Ciko found 7 km East of Willowvale town, 32°16'11.18"S Longitude and 28°32'03.22"E Latitude. Vegetation is thicket of the Eastern Valley Bushveld
O.R. Tambo	Ngquza Hill	Goso found 15 km South of Lusikisiki town, 31°22'49.38"S longitude and 29°35'48.57"E latitude. Vegetation is Indian Coastal Belt.

Table 1: Description of the survey study sites.
 Source of vegetation and dominant plant species: Mucina and Rutherford, 2006.

Selection of study areas and participants

A cross-sectional survey was conducted using a pretested semi-structured questionnaire to gather information on the traditional usage of plants in the management of retained placenta. The study areas were purposefully selected as the majority of the people who reside in this communities rely heavily on traditional medicine for animal and human health care. A total of 48 knowledgeable (31 males and 17 females) from three rural communities, namely Ciko, Goso and Ngqumeya were selected purposively with the help of extension officers.

Data collection method and type of data collected

Ethno-botanical data was collected through the use of pre-tested questionnaire. Each participant was separately interviewed in their vernacular language (IsiXhosa) and later translated to English by the research team from Dohne. Data regarding the kind of livestock ailments treated, plants parts used, modes of remedy preparation, route of administration and dosages were collected. Specimens of the 03 reported medicinal plants were collected, dried and identified by their scientific name, and vouchers were deposited at Dohne Agricultural Development Institute Herbarium, Eastern Cape Province.

Statistical analysis

Data were captured on Microsoft Excel 2013 computer package, coded and analyzed using the Statistical Package for Social Science (SPSS, 2000) in order to generate descriptive statistics like frequencies, graphs, percentages and charts.

Results and Discussion

Respondent demographics

The minimum, mean and maximum ages of the respondents were 21, 40 and 82 years respectively. It was observed that the majority of respondents were above 50 years of age (Table 2). A possible reason for this may be that transfer of indigenous knowledge is done in this age group. Such findings have also been reported by Chinsebu., et al. [11] and Mthi., et al. [12] where nearly 80% and 60% of livestock owners belong to this age group. The overall ratio of male to female was 2:1 in the study areas. A possible explanation for this is the fact that livestock farming (except poultry and piggery production) is dominated and culturally preserve for males.

Category	Total	%
Gender		
Male	31	64.6
Female	17	35.4
Age groups		
< 35	10	20.8
35 - 50	15	31.3
> 50	23	47.9

Table 2: Socio-demographic characteristics of respondents.

Parts used and mode of preparation

Leaves were the most frequently used plant part accounting for 66.7%, followed by barks (33.3%), roots, bulb and flowers each contributing 16.77%. Similarly in studies conducted in Eastern Cape, leaves were indicated to be most frequently used plant part to treat other livestock ailments in the Eastern Cape [13]. These findings are in contrast with the results of Chauke., et al. [14] who reported that villagers in Mopani district of Limpopo mainly used roots to prepare concoctions. All of the remedies were processed and mixed with some other products (soap, vinegar and coca-cola) and used immediately. The concoction were prepared through drying, crushing and mixed water. The results are in agreement with findings of Abdisa (2018) in Ethiopia, where warm water is used to prepare concoction.

Route of remedy administration and dosage

Oral was the only method of administration accounting for 100% (Table 3). This in agreement with results of Giday and Teklehaymanot [15] in Afar Regional State, Ethiopia. Livestock owners in three surveyed villages used water extracts from the leaves, bark, roots, bulb and flowers of *Cussonia spicata*, *Salix capensis*, *Chlorophytum cremnophilum*, *Elephantorrhiza elephantine*, *Rhoicissus tomentosa* and *Ficus polita Vahl subsp. polita* to treat retained placenta in cattle.

Family and Scientific name	Local name	Part used	Preparation method	Administration	Indication	Citation
Araliaceae						
<i>Cussonia spicata</i>	umSenge	Leaves and bark	Dried, crushed and mixed with warm water	Oral	Retained placenta	4
Salicaceae						
<i>Salix Capensis</i>	umNgcunube	Bark and leaves	Dried, crushed and mixed with warm water	Oral	Retained placenta	11
Anthericaceae						
<i>Chlorophytum cremnophilum</i>	umKhonzi	Bulb and flowers	Dried, crushed and mixed with warm water	Oral	Retained placenta	6
Fabaceae						
<i>Elephantorrhiza elephantine</i>	uHlololwane	Roots	Dried, crushed and mixed with warm water	Oral	Retained placenta	18
Vitaceae						
<i>Rhoicissus tomentosa</i>	uChithibhunga	Leaves	Dried, crushed and mixed with warm water	Oral	Retained placenta	9
Moraceae						
<i>Ficus polita Vahl subsp. polita</i>	umKhiwane	Leaves	Dried, crushed and mixed with warm water	Oral	Retained placenta	02

Table 3: Plants used to manage retain place, preparation methods and citation.

Conclusion

The majority of participants have a wealth knowledge about traditional veterinary medicines for treating livestock diseases. All the six plant species and families used for treatment of retained placenta are known to have pharmacological importance for the treatment of other animal and human diseases. In order indigenous knowledge to be incorporated to healthcare system, the scientific validation of medicinal plants for the development of alternative drug and further develop strategies for domestication and propagation of these medicinal plants are essential. Further research on the chemical composition, potential active ingredient, dosage and efficacy of treatment are essential.

Acknowledgements

This study was financially and logistically supported by the Department of Rural Development and Agrarian Reform. Facet No.: D5633/37/1/1. The authors are thankful to Dr Thenius Morgenthal for identifying plants. We are also grateful to the Animal and Pasture section and analytical lab staff at Dohne as well as Rhodes University for their help and support. We also wish to thank the local informants of the study areas for their contribution and willingness to share their precious indigenous knowledge with us.

Competing Interests

The authors declare that there are no competing interests.

Authors' Contributions

SM and JMR designed the study and helped in data collection, data capturing and data analysis. SM prepare the manuscript. JMR provided useful scientific and technical inputs on the manuscript. All authors read and approved the final manuscript.

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Volume 5 Issue 3 March 2020

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