



Traditional remedies used for the treatment of cattle wounds and myiasis in Amatola Basin, Eastern Cape Province, South Africa

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ABSTRACT

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A questionnaire survey was carried out to document traditional remedies used in the treatment of cattle wounds and myiasis in Amatola Basin. Eighty-three cattle farmers from nine villages were interviewed. The majority of respondents (67.9 %) use traditional remedies for treatment of these conditions. However, 25.9 % of them use a combination of traditional remedies with conventional medicines. The survey revealed that 13 medicinal plants belonging to 11 families were used. *Aloe ferox*, *Prunus persica* and *Phytolacca heptandra* were, however, the most commonly used. Leaves are the most frequently used plant part, often prepared as an infusion. Other non-plant remedies used include disinfectants, antiseptics as well as diesel and petrol. Manual removal of maggots from wounds was also practised and treatment is usually continued until the wound heals.

Keywords: Cattle, medicinal plants, myiasis, remedies, wounds

INTRODUCTION

Livestock are very essential to the economies of many developing countries of the world. For the resource-limited poor farming communities, livestock perform multiple functions, which are imperative for the livelihoods of the rural households. The Eastern Cape Province of South Africa is particularly known for its vast number of livestock. Of the various species of livestock raised by the rural farmers, cattle are undoubtedly most valued (Tapson 1983). The

number of cattle in the Eastern Cape as at May 2007 was estimated to be above 3 million, or approximately 23 % of the South African total (Anonymous 2008). Poor health conditions of livestock, however, constitute an important factor preventing them from achieving optimal productivity (Alawa, Jokthan & Akut 2002). Apart from various infectious diseases, of significant importance among livestock health problems are wounds and myiasis.

Wounds have been defined by livestock farmers in South Africa to include sores, abscesses, warts and inflamed skin lesions (Luseba, Elgorashi, Ntloedibe & Van Staden 2007). Myiasis remains an unresolved problem for animal production and is responsible for severe economic losses through poor hide quality, reduced weight gain, loss of fertility and reduction in the production of milk (Otranto & Stevens 2002). Animals may also die from infection of such lesions, as well as from loss of blood and tissue fluids. Treatment of cattle wounds and myiasis is therefore

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considered vital in order to improve and increase productivity.

In recent years, the cost of conventional medicines for use in animals has escalated and they have thus become unaffordable to most livestock raisers (Njoroge & Bussmann 2006). Traditional remedies and practices, the ethno-veterinary medicines (EVMs), are now sometimes the only available alternative to expensive or unavailable modern forms of health care (Luseba & Van der Merwe 2006). The World Health Organization (WHO 2002, cited by Kiringe 2006) attributed the popular use of traditional medicine among rural communities to it being affordable, readily accessible and culturally acceptable.

The use of EVMs in the treatment of animal health problems, including wounds, has been in practice for a long time in the Eastern Cape Province (Masika, Sonandi & Van Averbek 1997; Van Wyk, Van Oudtshoorn & Gericke 1997). An ethnobotanical study by Grierson & Afolayan (1999) documented 38 plant species frequently used for human wound treatment in the Province. However, traditional remedies for the treatment of livestock wounds and myiasis have not been documented. This fact underlines the urgency in documenting and preserving traditional knowledge before it is lost forever (Tabuti, Dhillon & Lye 2003). Therefore, the main objective of this study was to document the traditional remedies and practices used for the treatment of cattle wounds and myiasis by cattle owners in the Amatola Basin.

MATERIALS AND METHODS

Study area

The Amatola Basin is a remote area in the Amathole District Municipality of the Eastern Cape Province, South Africa. It is an area comprising 13 villages and is bounded to the north by the Amatola mountain range. The major part of the Basin is well suited for extensive livestock production; therefore, livestock constitute the main component of the farming enterprise among the inhabitants of the Amatola Basin (Tapson 1983).

Methodology

A questionnaire survey was carried out in nine villages selected randomly out of the 13 villages in Amatola Basin. A total of 83 structured questionnaires were administered by personal interviews with cattle farmers using the Snowball sampling technique (Singh, Pandey & Aggarwal 2007). Two

cattle farmers identified in each of the selected villages were interviewed. Thereafter they assisted in identifying other respondents and the cycle continued until the end of the survey period. Questionnaires were so structured to obtain information on the various traditional remedies and practices used for the treatment of cattle wounds and myiasis in the study area. Samples of plants used were collected with the help of the farmers and voucher specimens were deposited in the Giffen Herbarium at the University of Fort Hare. The data were analysed to obtain frequencies using the Statistical Analyses System, version 8.0 (SAS 1999) for Microsoft Windows.

RESULTS AND DISCUSSION

The results of the survey indicated that wounds and myiasis were serious health problems of cattle in the study area. A great majority of the interviewed farmers reported incidences of wounds and myiasis (84.3 % and 92.5 %, respectively) in their herds. This could be because of the high level of parasitic infestations (particularly ticks) and poor management practices. Farmers attributed cattle wounds to various causes such as tick bites (56.6 %), castration (18.9 %), abscesses (13.2 %) and wire-cuts (9.4 %), as well as from fighting among cohorts (1.89 %). Thus, tick bite is the main cause of cattle wounds, predisposing animals to abscesses and fly larvae infestations (Kaufman, Koehler & Butler 2006; Moyo & Masika 2009). Similar results were also reported among the Tsonga people in Limpopo Province of South Africa (Luseba & Van der Merwe 2006). The high level of tick infestation in the Amatola Basin is strongly associated with ineffective and poorly managed dipping systems. Respondents indicated that there is no structured or routine maintenance programme in place to ensure the proper management of the diptanks.

About a half of the respondents (53.2 %) attributed the cause of myiasis to be unidentified blue-flies, which lay their eggs on the wounds of the animals. The rest did not know what its cause is. Respondents were able to diagnose myiasis when the animal wounds got bigger and drained blood-tinged fluid having a foul smell. The most damaging myiasis-causing flies (*Chrysomya* spp., *Cochliomyia* spp.) deposit their eggs in and around wounds. Their larvae crawl into the wound, and burrow deep into the underlying tissues to feed. They develop through three larval stages (Hall 2004), causing extensive local tissue damage. *Chrysomya chloropyga* has been reported to be a primary and secondary cause of sheep myiasis in South Africa and *Lucilia cuprina*

is responsible for the condition known as “blowfly strike” of sheep in a number of countries including South Africa (Hall 1991). However, there is inadequate data on the myiasis-causing flies of cattle and the direct economic losses that can be attributed to these flies in South Africa.

Resource-limited livestock farmers are often faced with the problem of low income and limited access to veterinary services. Therefore, for the management of animal health problems and also to improve productivity, they often depend on traditional knowledge (Meyer, Afolayan, Taylor & Engelbrecht 1996).

TABLE 1 List of plants used for the treatment cattle wounds and myiasis, plant part used and method of preparation reported by the respondents in Amatola Basin, Eastern Cape

Family and scientific name	Local name	Plant part	Method of preparation
Asphodelaceae			
<i>Aloe ferox</i> Mill	Ikhala	Leaves	(1) Infusion used as a wash for wounds (2) Juice applied as dressing for wounds
Asteraceae			
<i>Haplocarpha scaposa</i> Harv.	Isikhali	Root	Decoction used as a wash for wounds
Fabaceae			
<i>Calpurnia aurea</i> (Aiton) Benth	Umbethu Umhlahlampethu	Leaves	Infusion used as a lotion for wounds. Effective against maggot-infested wounds
<i>Acacia karroo</i> Hayne	Umnga	Leaves	Crush leaves and mix with Madubula
<i>Schotia latifolia</i> Jacq.	Umngxam	Bark	Decoction used as a wash for wounds
Lamiaceae			
<i>Plectranthus ambiguous</i> (Bolus) Codd	Irhajojo	Leaves Stem	(1) Infusion used as a wash for wounds (2) Sap applied to wounds. Effective against maggot-infested wounds
Phytolaccaceae			
<i>Phytolacca heptandra</i> Retz.	Umnyanja	Leaves	Infusion/decoction used as a wash for maggot-infested wounds
Pittosporaceae			
<i>Pittosporum viridiflorum</i> Sims	Umkwenkwe	Root	Decoction used as a wash for wounds
Ptaeroxylaceae			
<i>Ptaeroxylon obliquum</i> (Thunb.) Radlk	Umthathi	Leaves Bark	(1) Leaf decoction used as a wash for wounds (2) Crush bark and mix with used oil to form paste
Rosaceae			
<i>Prunus persica</i> (L.) Batsch.	Ipesika	Leaves	Infusion used as a wash for wounds. Effective against maggot-infested wounds
Sapindaceae			
<i>Hippobromus pauciflorus</i> (L.f.) Radlk	Ulatile	Leaves	Infusion used as a wash for wounds
Solanaceae			
<i>Solanum sodomeum</i>	Umthuma	Leaves Fruits	(1) Infusion used as a wash for wounds (2) Crush fruits and add fat to form paste
Tiliaceae			
<i>Grewia occidentalis</i> L.f.	Umnqabasa	Leaves Twigs	Infusion used as a lotion for wound

In this study, most of the respondents (67.9 %) use traditional remedies to treat cattle wounds and myiasis. Some of these farmers (25.9 %), however, combine the use of traditional remedies with the orthodox medicines. This practice is believed to result into a more effective remedy than using either of the remedies alone. In addition, the combination of remedies is perceived to hasten the healing process thus giving a better result. Masika, Van Averbeké & Sonandi (2000) made a similar observation in a survey among livestock farmers in the central Eastern Cape Province.

In many parts of the world, the majority of ethno-veterinary practices are based on the use of medicinal plants available in the respective localities as compared to the other traditional remedies (Dilshad, Najeeb-ur-Rehmana, Iqbal, Muhammad, Iqbal & Ahmed 2008). A total of 13 plant species belonging to 11 families (Table 1) were reported to be used in the study area for the treatment of cattle wounds and myiasis. The most frequently used of these plants are *Aloe ferox* Mill. (25.3 %), *Prunus persica* (L.) Batsch. (25.3 %) and *Phytolacca heptandra* Retz. (24.1 %). Results from the present study showed that farmers use different plant parts for the treatment of cattle wounds and myiasis. Leaves were reported as the most frequently used plant part constituting 52.9 % of the herbal preparations followed in descending order by the bark (17.6 %), roots and stem (11.8 % each) and fruit (5.9 %).

Herbal remedies are prepared mainly by soaking crushed plant material in water (infusion) but sometimes it was boiled (decoction). Others are prepared as paste and, in some instances, sap from plant parts is squeezed out and applied as a dressing for wounds. Another observation was that more than one method of preparation or plant part could be used in the preparation of these remedies (Table 1). All respondents applied herbal remedies topically on animal wounds, as this is the preferred form of administration employed in the treatment of skin diseases and various forms of skin conditions (Tabuti *et al.* 2003).

The survey also revealed five non-plant remedies used by the cattle farmers in the study area. 'Madubula' (phenols, cresols and xylenols; Boardman Bros, Stutterheim), a commercial household disinfectant, is the most popularly used product (90.6 %) among the non-plant remedies. The other four products are Dettol (4.8 % Chloroxylenol, 9 % terpineol; Reckitt Benckiser, South Africa), used by 6.3 % of the respondents, 'Zifozonke' (potassium permanganate), used by 18.8 % of the farmers, and petrol and

diesel (hydrocarbons) by 12.5 %. 'Madubula', Dettol and 'Zifozonke' are usually diluted in water before use as a wash for animal wounds. Thereafter, some farmers may decide to apply either petrol or diesel to the affected portion of the animal skin. Farmers claimed that 'Madubula', Dettol and 'Zifozonke' hasten the healing process while petrol and diesel are believed to have the power to expel maggots that are deeply situated in the wounds. However, the rationale behind the acclaimed effectiveness of non-plant materials could be attributed to the disinfectant properties of 'Madubula' and 'Zifozonke' as well as the antiseptic properties of Dettol. Petrol and diesel have also been reported to possibly have an anti-feedant effect on the maggots in wounds (Farooq, Iqbal, Mushtaq, Muhammad, Iqbal & Arshad 2008). The repelling odour of the petroleum products, in addition to their anti-feedant property, is believed to lead to starvation and eventual death of maggots. Farmers also manually remove maggots from wounds with their bare hands or by using a tablespoon before the application of the remedies. This practice is considered as a faster way of getting rid of the invading maggots in the wounds.

Respondents prefer and still use traditional remedies because of their greater availability, easy accessibility, low costs and apparent effectiveness. All the medicinal plants, except the peach, *Prunus persica*, used for the treatment of cattle wounds and myiasis are locally available in the bushveld around the study area. The peach is the only plant species reported to be cultivated and was grown by 21.1 % of the respondents, mainly because of its edible fruit. Apart from the aforementioned reasons, respondents also prefer using traditional remedies because they believe the plants are safe to use and that they do not have any side effects on their animals. In addition, there is no need for withdrawal periods before the consumption of meat from animals treated with herbal remedies (Luseba *et al.* 2007).

In general, knowledge of the respondents on ethno-veterinary remedies was acquired mainly from their parents or grandparents (65.1 %) and neighbours (25 %); only a few learn from their friends and extension agents. It was observed that indigenous knowledge resides mainly with the older generation, as the majority of respondents (85.5 %) were aged 50 years or older. Parents often verbally transfer their knowledge of traditional remedies to their children. However, the younger generation are no longer keen on learning or using this knowledge (Van der Merwe, Swan & Botha 2001). The major concern here is that information given orally might become distorted, and that the cycle of oral transfer from

one generation to another might soon be broken. Hence, there is need for proper documentation, which will also encourage scientific validation of the efficacy of traditional remedies.

The results of this survey add to our understanding of the various innovations and practices that farmers put into use in order to ensure the health of their livestock. Medicinal plants used for the treatment of livestock ailments are believed to possess pharmacologically active compounds (Coetzee 2000). However, there is limited information in literature on many of the plants documented in this study, especially, regarding their wound healing abilities. Information generated from this study will therefore form a basis for further validation of the efficacy, mode of action and safety of traditional remedies used in wound and myiasis treatment.

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