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Management of wound and pain in livestock using ethnoveterinary products, herbowound and herboease

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Abstract
Conventional medical management system is now trying to replace with the alternate medicine such as ethno-veterinary practices. Ethnoveterinary medicine is the most common alternative medicine that includes the belief and traditional practices about the health of animals using various herbs. The present study was carried out to evaluate the clinical efficacy of two ethnoveterinary compounds, the Herbowound against simple wounds and Herboease against general lameness in livestock. A total of 15 cattle of various age and 10 sheep that were showing open wound of various types *viz*., lacerated, punctured and dog bite wounds and 10 cattle presented with history and signs of lameness and limping were selected for the present investigation. Cattle and sheep selected for wound management were managed with herbowound i.e., the paste made from a spoon of herbowound powder with 15 ml of coconut oil and 2-3 pearls of garlic (made as paste) was warmed to luke warm temperature and applied over the wounds daily twice for 10-15 days. The herboease powder was also prepared in similar manner and applied topically over the painful areas for 10-15 days. Both the mixtures were applied over the lesions/wounds of the enrolled livestock uniformly and allowed to stay on its body. Care was taken to prevent licking of the mixture by the affected animal. However, a muzzle was also applied to prevent licking for two hours after application of the mixture. Following treatment with ethnoveterinary compounds, all the affected cattle and sheep showed marked improvement in alleviation of signs and the wound healing process.

Keywords: Open wounds, herbowound, lameness, herboease, cattle and sheep

Introduction
Ethnoveterinary practices are deeply rooted in local cultures and have been developed over time through observation, trial and error, and experimentation. Ethnoveterinary medicine refers to the traditional knowledge and practices used by communities to care for and treat animal illnesses. It encompasses a wide range of beliefs, skills, and methods passed down through generations, often utilizing locally available plants and other natural resources. This form of medicine is particularly important in regions where access to modern veterinary care is limited. Some of the livestock farmers are into this practice keeping the associated side effects of using allopathic drugs. Ethno-veterinary practice is based on folk beliefs, traditional knowledge, skills, methods and practices to cure diseases and maintain the health of animals (Tabuti *et al*., 2003) [14]. At the same time, ethno-veterinary practices are also equally economical and is being used for animal health and production (Kudi, 2003) [6]. The present report puts on record about the efficacy of two ethnoveterinary products, Herbowound and Herboease in the management of different wounds and lameness, respectively in naturally occurring clinical cases in livestock. The study was undertaken to evaluate the remedial efficacy of these products in a non-experimental method.

Materials and Methods
The present investigation was conducted for documentation of the remedial efficacy of Herbowound and Herboease, two ethnoveterinary products from M/S Yourfarm, Animeta Agritech PVT Ltd., Coimbatore and Tamil Nadu. Cattle and sheep that were showing lesions of open wounds like lacerated, punctured, traumatic wounds and clinical signs of unable to bear weight and lameness were considered for the evaluation protocol.

Affected cattle and sheep were evaluated for the presence of any associated systemic disease and fractures and dislocations. Based on the results, 5 calves, 7 cattle and 10 sheep and goat that were presented with various types of wounds *viz*., lacerated, dog bite and traumatic wounds of mild to moderate nature were selected for the study. A spoon of herbowound powder was mixed with 15 ml of coconut oil and 2-3 pearls of garlic (made as paste). The mixture was warmed to Luke warm temperature and applied over the wounds daily twice for 10-15 days. The mixture was applied over the lesions/wounds of the enrolled livestock uniformly and allowed to stay on its body. Similarly, 10 cattle and 10 sheep and goat that were presented with lameness associated with various causes (except open wounds) were treated with herboease powder mixed with 15 ml of coconut oil and 2-3 pearls of garlic (made as paste). The mixture was warmed to lukewarm temperature and applied over the areas where there was pain, swelling and other inflammatory signs daily twice for 10-15 days. Care was taken to prevent licking of the mixture by the affected animal. However, a muzzle was also applied to prevent licking for two hours after application of the mixture.

Results and Discussion

A total of 5 calves, 7 cattle and 10 sheep and goat that were presented with various types of wounds, *viz*., lacerated, dog bite and traumatic wounds of mild to moderate nature were included in the present study. Out of these, resolution of lesions and signs with wound healing was notived from day 3 in almost 50% of the cases. However, in 2 cattle and 3 sheep, with major deep wounds and loss of tissue, complete resolution with wound healing was noticed by day 15. Similarly, Alleviation of inflammatory signs such as., pain, swelling and redness of the affected areas that were reported in 10 cattle and 10 sheep and goat showed alleviation of inflammatory signs from day 5 and complete resolution by day 10. The farmers / owners reported that the affected animals showed marked improvement within 5-10 days. Based on the findings and owners' compliance, herbowound and herboease were found highly efficacious in treating mild to moderate wounds of various etiology and lameness associated with various causes of myositis and arthritis, Further, no untoward reactions were noticed in recruited livestock.

Snežana *et al*., (2018) [12] reported that the herbal remedies offer a traditional approach to wound management in livestock, utilizing plants with anti-inflammatory, antimicrobial, and tissue-regenerative properties. Commonly used plants include Aloe vera, Neem (*Azadirachta indica*), Turmeric (Curcuma longa), and others like those found in Panchavalkala. These remedies are often applied topically as pastes, infusions, or poultices, and can be helpful in treating various wounds and skin conditions in animals (Ali *et al*., 2017) [1]. The authors also documented that the common ingredients included with wound healing and anti-inflammatory properties include, aloe vera, *Azadirachta indica*, *Curcuma linga* and *Panchavalkala*. The aloe vera is applied topically as a gel or even used for oral consumption. It has been known for its soothing, anti-inflammatory, and wound-healing properties. The *Azadirachta indica*, commonly known as neem is known for its antibacterial and antifungal properties, and has been used as a potential therapeutic agent against many skin infections. It can be used as a paste for both topical application and oral administration. The Curcuma longa that is commonly available kitchen ingredient is a potent anti-inflammatory agent. It also acts as anti-bacterial agent with antioxidant properties. With these wide diversified properties, the turmeric has been proved to be an effective wound healing ethnoveterinary product. Panchavalkala is another commonly used herbal compound with anti inflammatory and wound healing properties. It is a combination of barks from *Ficus bengalensis, Ficus religiosa, Ficus glomerata, Ficus lacor*, and *Thespesia populenea* (Ali *et al*., 2017) [1]. Traditional, several medicinal plants and their parts like bark, seeds, leaves etc., belonging to 11 families has been used for treating different infectious and non-infectious wounds. However, *Aloe ferox, Prunus persica* and Phytolacca heptandra were the most commonly used. Among the parts, the leaves are the most frequently used plant part, often prepared as an infusion (Soyely and Masika, 2009) [13]. In a study conducted on Konnur community of Tamil Nadu by Jayakumar *et al*., (2018) [4], it was documented that the Konar community uses 38 plant species belonging to 23 families as medicine for 20 ailments prevailing among the livestock. Curcuma longa, *Azadirachta indica*, *Vitex negunda*, *Bambusa arundinacea* and *Zingiber officinale* were the most commonly used plants either independently or in combination were the most commonly used plants either in whole or a part of them. Among them, *Curcuma longa* (30%) and *Azadirachta indica* (21%) had the documented evidence for highest usage and efficacy. Of the 20 ailments reported, foot and mouth disease was the most common ailment (20%) followed by diarrhea (8%) and horn avulsion (8%). Whereas, the leaves and the crushing powders are the most commonly and effective forms of ethnoveterinary products from 95 plants in 44 families that were used by the healers for treatments of 45 livestock ailments that were mostly collected from wild habitat (Hassen *et al*., 2022) [3].

An ethnobotanical analysis showed that 128 plant species (105 wild, 22 cultivated and 1 wild/cultivated) are used in the treatment of wounds in both animals and human. The products of these plants or herbs were either applied externally, in the form of infusions, decoctions, tinctures, syrups, oils, ointments, and balms, or directly on to skin. Plantago major, *Hypericum perforatum, Plantago lanceolata*, *Achillea millefolium, Calendula officinalis, Sambucus nigra*, *Tussilago farfara* and *Prunus domestica* were the commonly used among the plants recorded. Based on several clinical studies and laboratory studies, the traditional use of plants in wound healing is confirmed by *in vitro* and/or *in vivo* studies for *P. major* and *P. lanceolata, H. perforatum, A. millefolium, C. officinalis, S. nigra* and *T. farfara* (Grierson and Afolayan, 1999) [2].

Treatment and management of wounds including maggot wounds in cattle and other livestock is as they can be fatal in some instances. The wounds are also involved either directly or indirectly in regular metabolism, productivity and reproduction. In the present scenario, apart from antibiotic resistance to the allopathic medicines, the cost escalation of conventional medicines have become a biggest constraint for the livestock farmers (Otranto and Stevens, 2002; Njoroge & Bussmann 2006) [9, 10]. Alternatively, the use of ancient and traditional remedial practices with the application of the ethno-veterinary medicine in the treatment of many infectious and non-infectious conditions are the only available alternative to expensive or unavailable modern forms of health care (Luseba & Van der Merwe 2006) [7]. Several authors and scientific communities have documented the use of traditional herbal medicine among rural communities as they are affordable, readily accessible with less or no side

effects (WHO 2002, cited by Kiringe 2006) [5]. Globally the use of ethno-veterinary medicine as one of the alternate methods of treatment of various animal diseases, including wounds, has been in practice for a long time (Masika, Sonandi & Van Averbeke 1997) [8]. Garlic has anti-inflammatory compounds like enzymes (alliinase), sulfur-containing compounds such as alliin, and compounds produced enzymatically from alliin. It also contains other components such as arginine, oligosaccharides, flavonoids, and selenium that help reduce the inflammatory signs like erythema, pain and swelling along with its anti-bacterial properties that help reduce infections. Additionally, the garlic also contains antioxidants that can protect skin from damage caused by free radicals (Payzar and Amir, 2011) [11].

Conclusion

From the present investigation, it may be concluded that the phenolic compounds and polysaccharides from aloe vera, proteins, carbohydrates and mineratls from curcuma longa in alkaline base and other componets from Acalypha, and acimum that are present in ethno-veterinary research products *viz*., Herboease and Herbowound are highly effective in treating lameness associated with inflammatory conditions of musculo-skeletal system and wounds in livestock.

Conflict of Interest

Not available

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Not available

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