



Management of Mastitis by The Use of Herbal Medicine

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Abstract

Mastitis, the most expensive and costly disease, is defined as inflammation of the parenchyma of the mammary glands, which is characterized by physical, chemical, and usually bacteriological changes in milk and pathological anomalies in glandular tissues. Antibiotics are considered to be the first choice in the treatment of the disease. However, uncontrolled antibiotic therapy in dairy animals around the world has resulted in the issue of antibiotic residue and antimicrobial resistance, as well as the impact of antibiotic abuse on global health. Therefore, the use of traditional herbal medicinal plants for the treatment of mastitis may prove to be immensely beneficial to public health.

Keywords: Mastitis, Milk, Herbal medicine, Homoeopathic

Introduction

Bovine mastitis is an inflammation of the mammary glands in dairy cows caused by pathogenic microorganisms, invading and destroying milk producing tissues. Mastitis is a common infectious disease that occurs during lactation and is caused by staphylococci, streptococci, and *E. coli*. About 137 microorganisms, including bacteria, yeasts and algae, are known to cause mastitis. Contagious bacteria such as *Staphylococcus aureus*, *Streptococcus agalactiae*, and *Mycoplasma* spp. are transmitted from an infected cow to a healthy cow during milking by using hands, towels, and the

milking machine as bacterial reservoirs. Mastitis causes financial losses in dairy sector due to decreased milk yield, poor milk quality, increased culling, and additional treatment and labour costs. India is the world's largest milk producer, accounting for 24% of global milk production. According to Bansal and Gupta (2009), the annual economic losses due to mastitis in India are Rs 7,165.51 crore, with subclinical mastitis accounting for Rs 4,151.16 crore and clinical mastitis accounting for Rs 3,014.35 crore.

According to Sinha et al., the losses from mastitis were roughly 49% due to milk value loss

and 37% due to veterinary costs. Crossbreed cattle suffered the greatest losses because of their high milk production potential due to mastitis. Subclinical mastitis was noticed to be more common in India, with subclinical mastitis being 15 to 40 times more prevalent than clinical mastitis. Subclinical mastitis is a major silent problem and is a leading cause of low milk yield and low-quality of milk or milk products, which cause significant financial loss to owners.

Jingar et al., 2017, the losses caused by mastitis are not only economic but also affect animal health and animal welfare, milk quality, antibiotic use, and the dairy industry's reputation are all major reasons to focus on mastitis reduction.

How severe can mastitis be?

In Clinical: Changes in the physical appearance of milk such as clumps and clots in milk and approximately 5-10% of all mastitis cases.

In Sub-Clinical: Do not exhibit any gross changes in milk or udder and approximately 90-95% of all mastitis cases.

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Medicinal herbal treatments were observed to be the least expensive. As a result, it can be used to effectively treat clinical or subclinical mastitis. Some herbal extracts may have anti-inflammatory and antioxidant properties that aid in the treatment of udder inflammation and the reduction of oxidative stress.

Homoeopathic medicine such as **Phytolacca**, **Calcarea fluorica** and **Belladonna** was effective and economical management of mastitis.

NDDB recommends an **ethno-veterinary oil** base formulation which contains (A) 250gm aloe vera (B) 50gm turmeric (C)15gm lime (D)600ml mustard/till oil. Apply 3 times a day for 5 days on udder in a circular motion. Along with this, feed 2 lemons thrice a day for three days.

Moringa

In bovine udder epithelial cells, moringa extract reduced inflammatory mediators and increased antioxidant systems. It inhibited proinflammatory cytokine expression (TNF-, IL-1, and IL-6), cyclooxygenase-2 expression and downregulated NF- κ B, upregulated heme-oxygenase-1, NADPH, quinoneoxidoreductase-1 and increased casein protein expression.

Pablo Pinedo *et al.* 2013 found that the United States they are using botanical preparations (**PHYTO-MAST**) which contains the following active chemical Thymol, methyl salicylate, glycyrrhizin, and α -pinene. These ingredients have anti-inflammatory, analgesic, antipyretic and antiseptic properties and can be effective in treating mastitis.

Mastilep topical herbal gel

100 gm Mastilep gel contains: A)5gm Glycyrrhiza glabra (B) 2gm Curcuma longa (C)10gm Cedrusdeodara (D)5gm Paederia foetida (E) 10 gm sulfur

This gel has antibacterial and immunomodulatory properties in the treatment of bovine subclinical mastitis. It lowers the total bacterial count while raising cytokine expression in somatic cells in the bovine mammary gland.

According to Rahman, intramammary administration of antibiotics alone had a 40% recovery rate, while Mastilep gel had a 30% recovery rate.

Plants such as **Spathodea campanulata** and **Tridax procumbens** are used to treat mastitis while also preventing antibiotic residue and antimicrobial resistance. Mastitis is treated in British Columbia with **Achillea millefolium**, **Arctium lappa**, **Salix alba**, **Teucrium scorodonia**, and **Galium aparine**.

Essential oils of **onion and black cumin**, as well as Egyptian honey, and it has strong antibacterial properties against multidrug-resistant bacteria.

The administration of **M.citrifolia** fruit juice to mastitis-affected cows caused a

favourable change in milk composition, improving udder health.

Hashemzadeh *et al.* 2014 found that the **phytobiotics-rich** herbal mixture which contains A)18% turmeric root (B)18 %cinnamon bark (C) 60 %rosemary leaves (D) 4 % clove buds.

Conclusion

The efficacy of herbal medicinal plant and homoeopathy treatment for control and prevention of mastitis was found to be better than the use of antibiotics. Use of these treatments was also found to increase milk yield and milk quality. There will be less economic loss to the farmers as these treatments are cheaper and do not have milk withdrawal periods. Less usage of antibiotics will lead to less antibiotic residues in milk and milk products, reduced antibiotic resistance, and improved consumer and public health.

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