Efficacy of herbal spray in treating subclinical mastitis in cattle

In today's world, safe and wholesome milk production is a challenge for farmers due to increasing incidences of different types of disease and the emergence of new and resistant pathogens from the indiscriminate and unjustified use of antibiotics/ antimicrobials.

When we are talking about prevalent diseases, mastitis is one of the major diseases which can not only cause trouble to animals and farmers, but also significant losses to the economy of the farm, society and ultimately to the country.

by Dr Amit Kumar Pandey and Dr Praful Kumar, Ayurvet. www.ayurvet.com

Bovine mastitis (defined as parenchymal inflammation of the mammary gland) is characterised by a range of physical and chemical changes of the milk and pathological changes in the udder glandular tissues.

According to the symptoms, mastitis may be classified as clinical or subclinical. Subclinical mastitis usually leads to the clinical form as it is of a longer period, difficult to diagnose, adversely affects milk production and quality and comprises a reservoir of pathogens that can lead to disease of other animals within the herd.

Cost intensive disease

Mastitis is the most cost intensive production disease in the dairy industry, causing a considerable financial burden.

According to a recent report, annual economic losses sustained by the dairy industry in India on account of udder infections have been projected at Rs. 6053.21 crores.

Out of this, a loss of Rs. 4365.32 crores (70-80%) was credited to subclinical udder infections. Subclinical mastitis is important due to the fact that it is 15-40 times more prevalent than the clinical form.

Control of bovine mastitis is a challenge because of multiple aetiological agents. Mostly antibiotics are used for the treatment and control of mastitis, but an intra-mammary infusion of antibiotics for mastitis therapy was cited as a major reason for milk contamination and frequent use of antibiotic therapy leads to antibiotic resistance. Increasing emergence of antibiotic resistant pathogens is further suspected to complicate the effectiveness of mastitis treatment.

WHO has also emphasised the use of medicinal plants as an alternative to antibiotics. Several herbal extracts have shown in vitro antibacterial activity against major mastitis pathogens. Some of these are Cedrus deodara, Curcuma longa and Eucalyptus globules which also has an anti-inflammatory effect.

Detecting mastitis in the early stages and keeping the animal's udder in the utmost healthy condition is the only way to prevent physical and economic losses due to mastitis. A solution is required which provides all round protection to the udder, not only from pathogens but also relief from the pathogenic effects on the udder.

All the above recommendations are fulfilled by Mastilap which is a herbal spray developed by Ayurvet.

Ayurvet is continuing their research studies through clinical and field trials to ascertain the efficacy of their product in different situations.

In this context, the efficacy of Mastilap for the treatment of mastitis was compared with another herbal product which is very much known in the market.

Table 1. Therapeutic efficacy determined by Modified California Mastitis Test (MCMT).

Group	Animals found positive (%)		
	Day 5	Day 14	Day 21
Brand A group	60	60	60
Mastilap spray group	60	20	10

Treatment	Day 0	Day 5	Day 14	Day 21
Control group	1.68±0.26	1.44±0.35	1.32±0.28	1.16±0.41
Brand A group	6.67±0.10	4.19±0.10	6.47±0.17	5.54±0.08
Mastilap spray group	4.74±0.09	3.30±0.06	1.52±0.06	1.01±0.09

Table 2. Average somatic cell count (SCC x 10^5).

Plan of trial

A total of 30 cows were screened, as per the guidelines of the International Dairy Federation (IDF), with 10 healthy cows plus 20 cows exhibiting the signs of subclinical mastitis:

- Control group with 10 healthy cows.
- Second group with 10 cows suffering from

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subclinical mastitis and treated with 'Brand A' (gel), applied gently by massaging the udder after each milking for five days.

- Third group with 10 cows suffering from subclinical mastitis and treated with Mastilap spray for five days.

Results

Therapeutic efficacy was determined on the basis of Modified California Mastitis Test (MCMT) readings, improvement in the somatic cell count and the milk yield.

Table 1 shows the results on day 0, 5, 14 and 21 of the trial. In the Brand A treated group 60% of animals were found to be positive after treatment on day 5, 14 and also on 21.

In the Mastilap treated group, 60% of animals were positive on day five after treatment, 20% remained positive at day 14, and on day 21 only 10% remained positive for subclinical mastitis.

Data shows the high antimicrobial potential and anti-inflammatory properties of Mastilap against subclinical mastitis.

In the control group the average somatic cell count ($x10^5$) ranges between 1.15 to 1.67. The average SCC ($x10^5$) of the Brand A treated group shows a 16.94% decrease in the SCC from day 0 to 21, whereas in the Mastilap treated group there is a 78.52% decrease in the SCC from day 0 to 21 (Table 2). A decrease in the average SCC is due to the antimicrobial and anti-inflammatory properties of the herbal ingredients of Cedrus deodara, Curcuma longa and Eucalyptus globules plants, which are the component ingredients of the herbal spray Mastilap.

There was a significant increase in the average milk production of the Mastilap treated group, from 9.040 litres/day on day 0 to 10.63 litres/day on day 21, whereas there was no significant increase in the average milk production of the Brand A treated group and the control group (Table 3).

A significant increase in average milk production may be due to the anti-inflammatory and antimicrobial properties of the ingredients of Mastilap, which leads to a quick recovery of the mammary glands from the infection and inflammation. As a consequence, the mammary gland becomes healthy and more milk is produced by the gland.

Treatment	Milk yield (litre/day)			
	Day 0	Day 5	Day 14	Day 21
Control group	7.78±0.07	8.09±0.08	8.02±0.12	8.27±0.26
Brand A group	8.00±0.08	8.31±0.07	8.66±0.06	8.02±0.09
Mastilap spray group	9.04±0.12	9.34±0.14	9.39±0.15	10.63±0.07

Table 3. Comparison of average milk yield between treatments.

Conclusion

The results of the trial show that the efficacy of the herbal spray Mastilap was better than that of the Brand A treated group. Mastilap has shown excellent results in the form of improved SCC and increased milk yield.

Therefore application may be recommended to cure subclinical mastitis. ■

For further information please contact
techsupport@ayurvet.com