

THERAPEUTIC MANAGEMENT OF CLINICAL MASTITIS IN A BUFFALO WITH HERBAL PASTE ADJUVANT: A CASE REPORT

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ABSTRACT

An old buffalo was referred to the Department of Veterinary Medicine, College of Veterinary and Animal Sciences, Parbhani. The anamnesis of animal was swelling of udder since five days with abnormal milk, inappetence and earlier treated at local veterinary polyclinic with various treatments but still no improvement observed. On clinical examination, animal was having good body condition, dull and slightly depressed behavior, no abnormality in posture and gait, moist muzzle, slightly congested conjunctival mucous membrane, 103.4 °F temperature, respiration rate - 30 breath per minutes, pulse rate - 68 beats per minutes, one ruminal motility per three minutes. The udder was having marked painful swelling and flaked milk was coming out from the three quarters and blood-tinged milk coming out from left hind quarter. Milk was collected from all four quarters and applied diagnostic test MCMT, SCC, EC and pH and found positive for clinical mastitis. The buffalo was treated with inj. Marbofloxacin 10 mg/kg BW I/M as a single-dose along with

a topical herbal paste adjuvant containing *Aloe vera*, turmeric and lime in proper proportion was applied topically on whole udder and all teats. The paste was applied four times a day and repeated for 6 days with fresh preparation. The buffalo responded positively to the herbal paste with early recovery. There were marked improvements in udder health with reduction in swelling with no pain on palpation of udder and change in color and consistency of milk towards normal from third day onwards. In conclusion, a single dose injection of marbofloxacin along with herbal paste adjuvant is safe and efficacious for the treatment and early recovery of mastitis in buffalo.

Keywords: *Bubalus bubalis*, buffaloes, herbal paste, mastitis, diagnosis, adjuvant

INTRODUCTION

Mastitis is the inflammation of the parenchyma of the mammary tissue (Constable *et al.*, 2017). It is characterized by the presence of a

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significant increased somatic cell number in the milk of the affected glands which leads to various abnormal physical and chemical changes in the milk and mammary tissues. In clinical mastitis, common changes in milk contain discoloration, presence of clots, and the presence of large numbers of leukocytes and in the mammary gland, swelling, heat, pain and edema.

The mastitis disease cluster can be identified and used for early identification and prevention by prominent application of geographic information system (Siddiqui *et al.*, 2018). The prevalence of mastitis during 4th to 6th lactation was found around 51% while the prevalence of clinical mastitis detected around 6% under different managemental system (Shaikh *et al.*, 2018). It is one of the mostly costly diseases and losses can be Rs.5, 000/- up to Rs.20, 000/- in high-yielding cows due to milk yield losses, treatment cost and culling (Cha *et al.*, 2011).

Recently, researchers tried various methods for treatment and prevention of mastitis including chemicals like tri-sodium citrate (Shaikh *et al.*, 2019) and various herbal preparations containing *Aloe vera*, turmeric powder and lime (Thangadurai *et al.*, 2017). Unfortunately, the success rate for recovery remains low. Hence, in this case study, we tried to treat clinical mastitis using synergistic methods *viz.* herbal preparation along with suitable antibiotics for efficient recovery.

History and clinical observations

An 8-year-old Murrah buffalo, in 4th lactation, weighting around 450 kg, was referred to department of Veterinary Medicine, College of Veterinary and Animal Sciences, MAFSU, Parbhani with anamnesis of swelling of udder from five days with decreased and abnormal milk, inappetance and earlier treated at local veterinary

polyclinic with various therapies but still no improvement has been observed. On clinical examination, the animal was having good body condition, dull and slightly depressed behavior, no abnormality in posture and gait, moist muzzle, slightly congested conjunctival mucous membrane, temperature: 103.4 °F (mild fever), respiration rate: 30 breath per minutes (tachypnoea), pulse rate: 68 beats per minutes, heart rate: 70 per minute (tachycardia), ruminal motility: one per three minutes. On udder examination, the udder was inflamed with swelling and painful on palpation and there were cracks on the swollen quarter and teat; flakes of milk coming out from the three quarter and blood tinged milk coming out from left hind quarter (Figure 1, and 2).

Diagnosis

The case was diagnosed as clinical mastitis based on symptoms like inflammation of udder and abnormality of milk regarding quality and quantity. Diagnostic tests *viz.* Somatic Cell Count (SCC), Modified California Mastitis Test (MCMT), Electrical Conductivity (EC) and pH were also performed using standard methods for comparison between the values before and after therapy (Table 1).

Treatment

Selection of antibiotic

The buffalo was earlier treated with various antibiotics at local dispensary therefore Marbofloxacin 10 mg/kg BW I/M single dose administered as it is broad spectrum antibiotic and having better effect on gram negative bacteria which are common cause of mastitis (Grandemange *et al.*, 2017).

Preparation of herbal paste

The ingredients required for the preparation of herbal paste were *Aloe vera* (3 leaves), turmeric powder (handful quantity) and lime (size of tamarind seed). The pulp of three *Aloe vera* leaves were removed by carefully cutting the leaves into small pieces. Then a handful of turmeric powder along with a pinch of lime was added into the pulp of *Aloe vera* (Figure 3). These ingredients were mixed rigorously in a glass cup to make a uniform paste which developed a pleasant reddish color (Figure 4).

Application of herbal paste

All four affected quarters were washed with clean water and drained completely and using normal saline for complete removal of abnormal milk. A handful of paste was taken into a bowl and diluted with 100 ml of tap water. The paste has now become an herbal solution. This solution was applied over all four affected quarters (Figure 5 and 6). Eight hours later the udders were washed and cleaned and again the solution was applied over the udders. The same procedure was repeated 4 times per day for 5 days. The herbal paste was prepared freshly for application every day and old paste was discarded.

RESULT AND DISCUSSION

In the present incidence of clinical mastitis in the dairy buffalo, the condition of udder was very bad before treatment and marked improvement observed after treatment on both mammary gland and milk as depicted in Table 1. Reduction in swelling of udder, no pain on palpation of udder, color of milk changes to normal white were noticed within two days and complete recovery recorded

on fifth day of herbal paste application.

The values of SSC, pH, MCMT and EC of milk from affected udder were very high before treatment due to inflammation and damage of alveolar tissues of affected glands. The buffalo was treated with herbal paste and antibiotics showed significant reduction of milk pH and electrical conductivity to normal; a marked reduction in SSC leads to negative MCMT score which was suggestive of efficient effect of the treatment. Somatic cell count (SCC) is a useful predictor of intramammary infection (IMI) (Constable *et al.*, 2017) and in present case study, significant decrease in somatic cell count indicated decrease in bacterial count, tissue injury and ultimately stress.

Marbofloxacin is a third-generation fluoroquinolone antibiotic and acts by inhibition of bacterial DNA-gyrase. The proposed dosage of Marbofloxacin corresponds to single dose 10 mg/kg body weight IM. It is well absorbed through parenteral administration and widely distributed to tissues, specially secretary tissues. Grandmange *et al.* (2017) concluded that a single injection of marbofloxacin is safe and efficacious for the treatment of acute *E. coli* mastitis. This is in support to the results of present study.

The herbal paste containing *Aloe vera*, turmeric powder and lime applied topically as adjuvant to the antibiotic which showed speedy healing of superficial cracks on udders and teats resulted in synergistic effect for early recovery from clinical mastitis in the buffalo. The results of application of herbal paste for the management of clinical mastitis in buffalo is in accordance with Thangadurai *et al.* (2017) where it has been documented the indigenous practices and its procedure for the management of clinical mastitis in dairy cattle. Hence, topical herbal paste adjuvant



Figure 1. Affected udder.

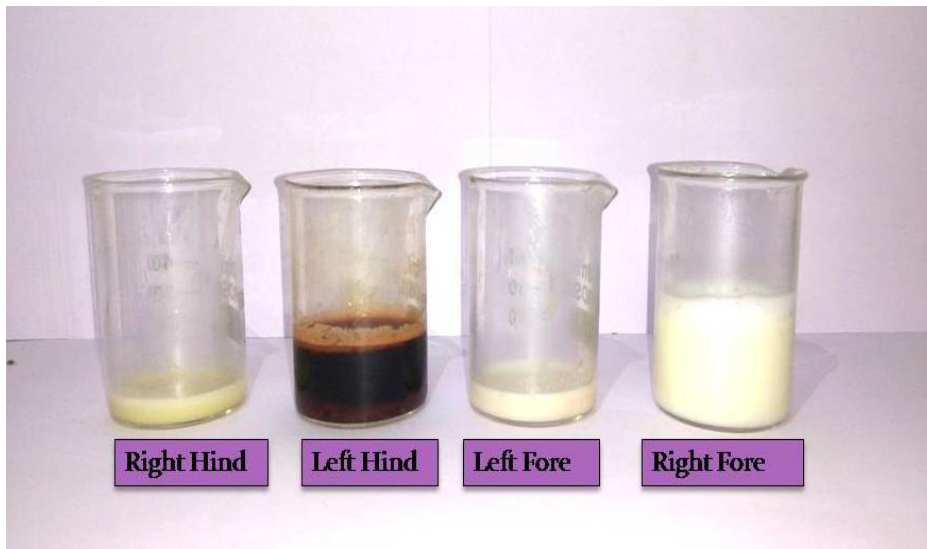


Figure 2. Milk Samples from affected udders.



Figure 3. Herbal paste mixture.



Figure 4. Herbal paste.



Figure 5. Application of paste - wet.



Figure 6. Application of paste - dry.

Table. 1. Results of milk samples of the mastitis buffalo before and after treatment.

Parameters	Pre-treatment				Post-treatment			
	RH	LH	LF	RF	RH	LH	LF	RF
SCC (cells/ml) in lakhs	7.62	8.71	6.11	5.45	2.17	2.83	1.96	1.74
MCMT	3+	3+	3+	2+	Trace	+1	Trace	Trace
pH	7.7	7.8	7.5	7.4	6.8	7.2	6.6	6.6
EC (mS/cm)	6.5	6.6	5.8	5.7	2.6	2.8	2.4	2.5
Physical changes	- Swelling of udder- Swelling of udder - Painful on palpation of udder - Flaked milk coming out from the three				- No swelling of udder - No pain on palpation of udder - Normal milk coming out of udder			

in combination with antibiotic has given excellent results with successful early recovery.

CONCLUSION

A single dose inj. marbofloxacin along with topical herbal paste as adjuvant is safe and efficacious for the treatment of mastitis in buffalo.

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