

## Therapeutic efficacy of certain treatment protocols for endometritis in crossbred cows

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### ABSTRACT

The efficacy of five different protocols of intrauterine treatment for endometritis was investigated in crossbred dairy cows. The protocols followed were EDTA + Tris, EDTA + Tris + antibiotic, lysozyme, lysozyme + antibiotic and antibiotic. The antibiotic used alone or in combination was based on the results of sensitivity test. As indicated by the recovery from endometritis and subsequent conception, the intrauterine administration of lysozyme + antibiotic gave best results among the protocols followed. The intrauterine therapy using EDTA + Tris + antibiotic also resulted in good recovery from endometritis and subsequent conception. The results of the study have indicated the possibility of using lysozyme, Tris and EDTA alone or in combination with antibiotic for successful treatment of uterine infections without the possibility of development of resistant bacterial strains.

**Key words:** Cows, EDTA, endometritis, tris, lysozyme, antibiotic

More than one third of the total infertility problems in crossbred dairy cattle are attributed to endometritis (Agarwal *et al.*, 2002). Its incidence in dairy cattle ranges from 7.5 to 61.6% (Gilbert, 2003). Prevention and treatment of endometritis has been basically carried out with intrauterine infusion of antibiotics. However, indiscriminate use of antimicrobials in treatment of uterine infections has resulted in emergence of resistant bacterial strains (Arora *et al.*, 2000). The success of treatment of uterine infections with empirical use of antibiotics was reported to be varied from beneficial (Watson 1979) to not beneficial (Vandeplassche and Bouters, 1976). The intrauterine treatment with antibiotics based on antibiotic sensitivity test (ABST) has resulted in reduced duration of treatment, rapid recovery and increased conception rate. The recovery rate was rapid when specific antibiotic was used for specific type of organism *in vivo* (Koleff *et al.*, 1973) and hence antibiogram against mixed bacterial cultures of the uterine flushings becomes mandatory.

Farca *et al.* (1997) and Selvaraju *et al.* (2003) have suggested EDTA + Tris as useful adjuvant for antibiotics. Success with the lysozyme alone or in combination with antibiotics in treatment of endometritis in cattle (Dembinski *et al.*, 1994), buffalo (Reddy, 2003) and mares (Wisniewski *et al.*, 2003) has been reported. The present investigation was undertaken to evaluate the relative efficacy of different therapeutic protocols for endometritis in crossbred cows by assessing post-treatment recovery and conception.

### MATERIALS AND METHODS

This study was conducted utilizing the crossbred cows presented for artificial insemination at the Veterinary Clinical Service Complex (VCSC), Yelahanka, Bangalore and an organized dairy farm near Veterinary College, Bangalore. The cows were screened for endometritis by detailed gynaecological examination and estrual discharges. Further, the uterine flushings were subjected to White side test and the positive samples developed yellow colour. The intensity of colour development as light yellow, yellow and deep yellow was

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indicative of mild, moderate and severe endometritis, respectively and the negative samples for endometritis showed no change in colour and continued to be turbid.

Out of 72 animals diagnosed for endometritis, 12 animals were kept as positive control without treatment and received 20 ml of PBS for three consecutive days (gr VI). The remaining 60 cows were randomly subjected to five different intrauterine treatment for three consecutive days with 12 animals under each regimen. In gr I, 35 mM EDTA (Merck-E-merck India Ltd., Worli, Bombay) + 0.5 mM Tris (SISCO Research Lab. Pvt. Ltd., Bombay) in 20 ml phosphate buffer solution (pH 7.0), gr II: 3.5 mM EDTA + 0.5 mM Tris in 20 ml PBS (pH 7.0) along with antibiotic, gr III: 2 mg of lysozyme (Himedia Laboratories Ltd., Bombay) in 20 ml of PBS (pH 7.0), gr IV: two mg of lysozyme in 20 ml of PBS (pH 7.0) along with the antibiotic and gr V: antibiotic in 20 ml of PBS (pH 7.0) were given. The antibiotic used alone or in combination was based on ABST of uterine flushings and the quantity of different antibiotics used was based on previous reports.

The recovery from endometritis after intrauterine treatment was assessed during next estrus by gynaecological examination, nature of discharge and white side test of the uterine flushing. The recovered animals were inseminated using frozen semen (French mini-straw) in the same heat and confirmed for pregnancy by per-rectal examination around 60 to 70 days after insemination.

## RESULTS AND DISCUSSION

The mean duration of estrous cycle following

intrauterine treatment was 21.33, 18.00, 19.91, 19.95, 21.41 and 21.80 days in gr I, II, III, IV, V and VI, respectively. The post-treatment estrous cycle length (ECL) of the cows under all treatment regimens and in untreated cows was within the normal range. However, Rao (1995) has reported ECL of 28.33 days in endometritis cows. In contrast Roberts (1971) has stated that the duration of estrus and estrous cycle are usually normal, but in occasional cases the cycle length may be shortened to 8 to 12 days due to acute endometrial inflammation preventing the development of corpus luteum.

The recovery of crossbred cows from endometritis after intrauterine treatment was highest (100%) in cows of gr IV followed by 91.64% in gr II, 83.34% in gr I, 75.00% in gr III and 66.67% in gr V. The highest conception rate (83.34%) was also in gr IV followed closely by 81.82% in gr II, 77.78% in gr III, 75.00% in gr V and 70.00% in gr I (Table 1). The best recovery and conception rate obtained in gr IV might be due to synergistic action of lysozyme and antibiotic (Hisham *et al.* 2002; Wisneiwski *et al.*, 2003). The recovery from endometritis and subsequent conception was also high in gr II which might be due to synergistic effect of EDTA + Tris + antibiotic (Farca *et al.* 1997; Selvaraju *et al.*, 2003) and was better than EDTA + Tris alone (Selvaraju *et al.*, 2003).

The recovery of cows from endometritis (66.67%) in gr V which were treated with antibiotic alone based on sensitivity test was lower than the earlier reports (Sinha *et al.*, 1977; Sudhakar *et al.*, 1986; Rao, 1995). However, the conception rate (75.00%) among the

Table 1: Efficacy of various treatment regimens for endometritis in crossbred cows (n=12)

Groups	Treatment	No of cows recovered	% recovery	Conceived among the recovered	Conception rate (%)
I	EDTA + Tris	10	83.34	7	70.00
II	EDTA + Tris + antibiotic	11	91.64	9	81.82
III	Lysozyme	9	75.00	7	77.78
IV	Lysozyme + antibiotic	12	100.00	10	83.34
V	Antibiotic	8	66.67	6	75.00
VI	Control (untreated)	5	41.66	3	60.00

Recovered animals in this gr was higher than those reported by Rao (1995) and on par with reports of Sudhakar *et al.* (1986) and Chandrakar *et al.* (2002), but lower than those reported by Maurya *et al.* (1992) in crossbred cows.

The recovery from endometritis in untreated cows (gr VI) was 41.66% which is far less than the recovery rate recorded in treatment grs. The conception rate among the recovered cows in this gr was also less than those recorded in treatment grs. However, both recovery and subsequent conception in this gr were higher than the earlier reports by Selvaraju *et al.* (2003), Chandrakar *et al.* (2002) and Purohit *et al.* (2003) in untreated endometritis cows.

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