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Certain biochemical studies on the uterine flushings of normal and endometritis cows*

B.P. RAVIKUMAR[1], M .DEVARAJ[2] AND K.JAYAKUMAR[3]

Department of Animal Reproduction, Gynaecology and Obstetrics,
Veterinary College, Hebbal, Bangalore – 560 024
devarajvet@rediffmail.com

ABSTRACT

The biochemical parameters viz. pH, alkaline phosphatase (ALP) and total protein in the uterine flushings of estrus cows with endometritis (n=72) and normal cows (n=12) were studied. The pH, ALP and total protein in the uterine flushings were higher (P<0.01) in cows with endometritis. These findings can be used to predict subclinical endometritis.

Key Words: Crossbred cows, Uterine flushing, pH, Alkaline Phosphatase, Total Protein, Endometritis.

Endometritis due to uterine infection (Agarwal *et. al.*, 2002) and secondary inflammation following coitus, unhygienic artificial insemination and parturition (Roberts, *et. al.*, 1970) causes infertility in cows. Higher pH (Boitor *et. al.*, 1980), increased enzymatic activity (Denisenko *et al.*, 1981) and total protein (Williamson *et al.*, 1983) in the secretion of cow having endometritis are reported. The present investigation was aimed to evaluate the pH, alkaline phosphatase activity and total protein concentration in uterine flushings of healthy and endometritis cows.

Uterine flushings from 12 healthy and 72 endometritis crossbred cows were collected aseptically during estrus by infusing 20 ml of sterile normal saline using ultraviolet sterilized artificial insemination sheath. The uterine flushing were collected after gentle massaging of the uterus and transferred into sterile test tubes. To remove the tissue debris, the uterine flushings were centrifuged at 5000 rpm for 15 minutes and the supernatant fluid was used for estimations. The pH of uterine flushing was recorded using a digital pH meter (Systromic, Model -335). The alkaline phosphatase and total protein were estimated by an auto analyzer (Merck's Selector-2) using standard kit. The data was analyzed according to Snedecor and Cochran (1980) and the group means were compared by least square significance difference test (LSDT) as per Steel and Torrie (1981).The mean Hydrogen ion concentration of uterine flushings was significantly (P<0.01) higher in endometritis cows (7.88±0.11) than in healthy cows (7.18±0.08; Table 1), which agrees with the report of Boitor *et al.* (1980). In repeat breeding cows with endometritis due to infection the metabolites of bacteria and inflammatory exudates may alter the pH of uterine fluid to alkaline side resulting in failure of conception due to death of spermatozoa (Raghavan *et al.*, 1971; Singla *et al.*, 1991).The mean activity of alkaline phosphatase was significantly (P<0.05) higher in the uterine flushings of endometritis cows (343.20±66.90 U/L) as compared to healthy cows (236.33±15.00 U/L; Table 1). This is in conformity with the reports of Ahmed and Shalaby (1993), Rao

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[1]Veterinary Officer, Konanur, Hassan District, [2]Professor and Head, [3] Associate Professor, Department of Pharmacology and Toxicology

(1995) and Boos *et al.* (1988). Increased enzymatic activity in tissues, body fluids and secretions have been reported in many pathological conditions including inflammation (Denisenko *et al.*, 1981; Ismail *et al.*, 1985).The mean total protein concentration in uterine flushings was significantly (P<0.01) higher in cows with endometritis (0.679 = 0.06 g/dl) than in healthy cows (0.395±0.03 g/dl; Table 1). It confirms the report of Rao (1995). The increased total protein concentration in uterine flushings of endometritis affected cows might be due to increased levels of secretory proteins, cellular debris and tissue damage (Williamson *et al.*, 1983). Thus, based on the results of the study it can be deduced that endometritis due to infection is characterized by increased pH, alkaline phosphatase activity and total protein content in the uterine secretions/ flushings. These changes, in particular, the increased pH of the uterine secretions can be used as an easy tool to diagnose subclinical endometritis.

Table 1. Certain biochemical attributes of uterine flushing from healthy and endometritis crossbred cows

Parameter	Healthy cows (n=12)	Endometritis cows (n=72)
pH	7.185 ± 0.08	7.88 ±0.01**
Alkaline phosphatase (U/L)	236.33±15.00	373.20 ± 66.90*
Total protein (g/dl)	0.395±0.03	0.679±0.06**

**P<0.01 * P<0.05

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