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SHORT COMMUNICATION

Disposition of enrofloxacin administered intrauterine in buffaloes with endometritis

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ABSTRACT

The present study was aimed at estimating extent of enrofloxacin absorption across the uterus after its intrauterine administration. Enrofloxacin (3 mg/kg B.wt.) was administered (I/U) to six buffaloes with history of endometritis and blood samples before and 1,2,3,4 and 5 hours after administration were collected. The enrofloxacin levels were detected by employing microbiological assay technique, using Bacillus subtilis ATCC-6633 as test organisms. Disposition studies showed that detectable levels (0.08 mcg/ml) of enrofloxacin in blood were achieved one hour after intrauterine administration and persisted upto 4 hours. Therapeutically effective levels were achieved upto 2 to 3 hrs. It was concluded that therapeutically effective enrofloxacin levels could not be achieved in blood and uterine tissues after intrauterine infusion with enrofloxacin 1500 mg.

Key Words: Enrofloxacin, Buffaloes, Endometritis

An adequate concentration of the drug is essential in every part of genital tract for the effective treatment of its infections. The intrauterine route of administration of drug yields higher concentrations in the endometrial tissue, but the absorption of drug is considerably reduced in postpartum period (Gustafsson, 1980) and in uterine pathological changes (Bretzlaff *et al.*, 1983). Thus, present experiment was designed to study the disposition of enrofloxacin in blood after intrauterine infusion.

The disposition of enrofloxacin from uterus to blood was studied after its intrauterine administration in six buffaloes with endometritis. The uterine discharge was collected and subjected to pH and cultural examination. Each buffalo received 1500 mg enrofloxacin injectable solution by intrauterine route. The blood samples (5 to 7 ml each) were collected before and 1, 2, 3, 4 and 5 hrs. after intrauterine infusion of enrofloxacin. The serum was separated and stored until assayed. The assay was carried out as early as possible after collecting last sample to determine serum levels of enrofloxacin by employing microbiological assay technique described by Bennet *et al.* (1996) using Bacillus subtilis ATCC-6633 as test organisms.

The mean enrofloxacin levels after its intrauterine infusion are presented in the Table. The mean serum enrofloxacin level at one and two hour post intrauterine infusion was 0.08 and 0.24 mcg/ml which declined thereafter and was detected upto four hours only. This indicated that the absorption through the uterine wall has only for a short period.

Table: Serum enrofloxacin concentration (mcg/ml) after intrauterine administration of enrofloxacin (1500 mg) in buffaloes (n=6)

Time	Buffaloes identification						Overall
Interval	1	2	3	4	5	6	average
0	ND	ND	ND	ND	ND	ND	ND
1	0.09	0.09	0.08	0.08	0.08	0.08	0.08 ±0.002
2	0.23	0.1	0.22	0.22	0.4	0.28	0.24 ±0.039
3	0.27	0.19	0.12	0.12	0.28	0.19	0.22 ±0.028
4	0.08	0.08	0.08	0.08	0.08	0.08	0.00
5	ND	ND	ND	ND	ND	ND	ND

ND = Not Detected.

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There are very few reports available regarding absorption of enrofloxacin from uterus. De Luna *et al.* (1991) reported excretion of enrofloxacin through milk up to 12 hours.

In one of the buffaloes absorption was slow and levels were found less (0.1 mcg/ml) than in other (0.22 mcg/ml) at two hours. The assay sensitivity was 0.08 mcg/ml. This may probably be due to acidic pH (5.7) of uterine discharge in that buffalo. Vancutsem *et al.* (1990) found that at acidic pH, enrofloxacin has poor water solubility and it forms crystals.

Systemic administrations of antimicrobials give better distribution in tubular genital tract and ovaries. It thus appear from the present observations that therapeutically effective levels of enrofloxacin can not be achieved for sufficient period in blood after intrauterine infusion with recommended therapeutic dose in buffaloes with endometritis.

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