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Comparative pharmacokinetics study of three commercial preparation of 10% enrofloxacin in goats

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ABSTRACT : Antimicrobial therapy constitutes a major component of modern medical and veterinary practices. Enrofloxacin has been developed exclusively for veterinary. In the present investigation, five clinically healthy female goats of non-descript were used. Three commercial preparations of enrofloxacin (10%) were used@5mg/kg b.wt .The samples of plasma were collected at different time interval *i.e.* 0.042, 0.083, 0.125, 0.333, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8, 10, 12 and 24 h after IM administration of drugs. Estimation of enrofloxacin were done by HPLC method at the flow rate was 0.6 $ml.min^{-1}$,. Loop size was 200 ml, injection volume was 400 ml, the chart speed was 0.25 $mm.min^{-1}$ and the detector sensitivity was 2.000 A.U.F.S. The mobile phase comprised of acetonitrile : methanol : water (17 : 3 : 80 v/v/v) containing 0.4% phosphoric acid (85% v/v) and 0.4% triethylamine (v/v). The pH of mobile phase was 3 (approx). The drug is present significantly at a lower concentration in brand II (0.07 ± 0.02 $\mu g.ml^{-1}$) as compared to brand I (1.58 ± 0.41$\mu g.ml^{-1}$) at 0.042 h. Similarly, brand II show lower concentrations upto 12 h .The drug maintained its therapeutic concentration (^{3} 0.125 $\mu g.ml^{-1}$) upto 12 h in all the three brands. The value of absorption half-life ($t_{1/2}$ Ka) of brand I, II and III were noted to be non-significant with a mean of 0.31 ± 0.04, 0.66 ± 0.13 and 0.83 ± 0.31 h, respectively. Brand I showed rapid absorption as compared to brand II and III but statistically it is non-significant. Elimination half life ($t_{1/2}$ â) of brand I (3.10 ± 0.34 h) was found to be lower as compared to brand II and brand III (4.25 ± 0.71 and 3.84 ± 0.55 h, respectively), Mean residential time (MRT) of brand I, brand II and brand III were noted to be non-significant with a mean of 5.54 ± 1.13, 7.22 ± 0.86 and 6.52 ± 0.83 h, respectively. The values of mean absorption time (MAT) of brand I, brand II and brand III were noted to be non significant with a mean of 2.61 ± 0.98, 2.70 ± 0.92 and 2.61 ± 1.26 h, respectively. Maximum attainable concentrations (C_{max}) was found to be significantly lower in brand II (1.94 ± 0.16 $\mu g.ml^{-1}$) as compared to brand I (5.35 ± 0.87 $\mu g.ml^{-1}$). However in case of time to reach maximum concentration (T_{max}) there was no significant difference between different brands.In conclusion,all these three brands of enrofloxacin interchangeable and substituted for each other.

KEY WORDS : Pharmacokinetics, Enrofloxacin, Antibacterial, Brands, HPLC, Goats

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