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Pharmacokinetics, Dosage Regimen and in Vitro Plasma Protein Binding of Danofloxacin following Intravenous Administration in Adult Buffaloes

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Abstract : The present study was aimed to investigate the pharmacokinetics behavior and optimal dosage regimen of danofloxacin in 8 adult healthy buffaloes of local breed (Nili Ravi) following single intravenous administration at the dose of 2.5 mg/kg body weight. Plasma drug concentrations at various time intervals were measured by HPLC method. In vitro plasma protein binding was determined employing the ultrafiltration technique. The distribution and elimination of danofloxacin was rapid, as indicated by the values (Mean±SD) of distribution half-life ($t_{1/2\alpha}$ = 0.25±0.09 hours) and elimination half life ($t_{1/2\beta}$ = 3.26±0.43 hours), respectively. Volume of distribution at steady state (Vss) was 1.14±0.12 L/kg, displaying its extensive distribution into various body fluids and tissues. The high value of AUC (9.80±2.14 µg/ml.hr) reflected the vast area of the body covered by drug concentration. The mean residence time was noted to be 4.78±0.52 hours. On the basis of pharmacokinetic parameters, a suitable intravenous regimen for danofloxacin in adult buffaloes would be 6.5 mg/kg to be repeated after 12 hours intervals. The present study is the foremost pharmacokinetic study of danofloxacin in the local species which would provide the valueable contribution in the local manufacturing of danofloxacin in Pakistan in future.

Keywords : danofloxacin, pharmacokinetics, plasma protein binding, buffaloes, dosage regimen
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