

## ABSTRACT

### STUDY PHARMACOKINETICS AND TISSUE DISTRIBUTION OF ENROFLOXACIN FOLLOWING SINGLE DOSE ORAL ADMINISTRATION IN NORTH AFRICAN CATFISH *Clarias gariepinus* (BURCHELL, 1822)

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The pharmacokinetics and tissue distribution of enrofloxacin were determined in north african catfish (*Clarias gariepinus*), after oral administration of a single dose of 10 mg/kg body weight of enrofloxacin. Plasma and fish tissue samples, namely muscle and liver, were taken at 1/2, 1, 2, 4, 8, 12, and 24 hours after drug administration. Determination of enroloxacin concentration using high performance liquid chromatography (HPLC) method. The maximal concentrations ( $C_{max}$ ) in plasma, liver and muscle were 0,529; 2,541; 5,334  $\mu\text{g/mL}$  and the time required to reach these concentrations ( $t_{max}$ ) were 4, 1, and 8 hours. The  $t_{1/2}$  values in some tissues were: 10 hours in plasma, 10 hours in liver, and 11 hours in muscle with a volume of distribution value of 1,875 l/kg, which meant enrofloxacin was widely distributed in tissues. After oral administration, the concentration of enroloxacin in plasma and tissue was far above the minimum inhibitory concentration (MIC) for *A. hydrophila* bacteria that had been isolated from north african catfish which was 0,06 mg/L. The pharmacokinetic/pharmacodynamic index of *floroquinolone* antibiotics from AUC/MIC or  $C_{max}$ /MIC, enrifloxacin dosage regimen of 10 mg/kg body weight had a positive therapeutic effect on *A. hydrophila* infection.

Keywords: enrofloxacin, minimum inhibitory concentration (MIC), pharmacokinetics

## ABSTRAK

### STUDI FARMAKOKINETIK DAN DISTRIBUSI JARINGAN ENROFOXACIN DOSIS TUNGGAL SECARA PER ORAL PADA IKAN LELE DUMBO *Clarias gariepinus* (BURCHELL, 1822)

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Farmakokinetik dan distribusi jaringan enrofloksasin ditentukan pada lele dumbo (*Clarias gariepinus*), setelah pemberian enrofloksasin dosis tunggal 10 mg/kg berat badan secara oral. Sampel plasma dan jaringan ikan yakni otot dan hati diambil pada 1/2, 1, 2, 4, 8, 12, dan 24 jam setelah pemberian obat. Penentuan konsentrasi enrofloksasin menggunakan metode kromatografi cair kinerja tinggi (KCKT). Konsentrasi maksimal ( $C_{maks}$ ) pada plasma, hati dan otot secara berturut-turut 0,529; 2,541; 5,334  $\mu\text{g/mL}$  dan waktu yang diperlukan untuk mencapai konsentrasi tersebut ( $t_{maks}$ ) adalah 4, 1, dan 8 jam. Nilai  $t_{1/2}$  di beberapa jaringan adalah: 10 jam di plasma, 10 jam di hati, dan 11 jam di otot dengan nilai volume distribusi sebesar 1,875 l/kg, yang berarti enrofloksasin didistribusikan secara luas pada jaringan. Setelah pemberian oral, konsentrasi enrofloksasin pada plasma dan jaringan jauh di atas konsentrasi hambat minimum (MIC) untuk bakteri *A. hydrophila* yang telah diisolasi dari ikan lele dumbo yaitu 0,06 mg/L. Indeks farmakokinetik/farmakodinamik antibiotik golongan *floroquinolon* dari  $AUC/MIC$  atau  $C_{maks}/MIC$  rejimen dosis enrofloksasin 10 mg/kg berat badan memiliki efek terapeutik positif pada infeksi *A. hydrophila*.

Kata kunci: enrofloksasin, farmakokinetik, konsentrasi hambat minimum (MIC)