INTISARI

PROFIL FARMAKOKINETIK KOMBINASI ANTIBIOTIK NORFLOKSASIN - TILOSIN PERORAL PADA PLASMA BROILER

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Penggunaan antibiotik untuk mengatasi permasalahan infeksi bakteri pada industri peternakan harus memperhatikan bagaimana perjalanan obat di dalam tubuh untuk menghindari resistensi ataupun toksisitas. Salah satu antibiotik yang berspektrum luas adalah norfloksasin dan tilosin. Penelitian mengenai profil farmakokinetik menggunakan kombinasi norfloksasin-tilosin pada plasma hingga saat ini belum pernah dilaporkan. Tujuan dari pengujian ini untuk mengetahui profil farmakokinetik norfloksasin-tilosin pada plasma broiler setelah pemberian secara oral dengan dosis 0,3 ml/kg BB yang mengandung norfloksasin 63 mg/kg dan tilosin 36 mg/kg. Broiler sejumlah empat puluh lima (45) ekor dipelihara di dalam kandang postal hewan percobaan mulai dari *Day Old Chick* (DOC) dan diberikan pakan bebas antibiotik dan minum *ad libitum*. Setelah mencapai berat badan rerata 1 – 1,5 kg, seluruh broiler diberikan norfloksasin-tilosin secara oral sebanyak 0,3 mL/kg BB. Tiga (3) ekor diambil sampel darah terlebih dahulu sebelum diberikan perlakuan dan menjadi kelompok menit ke-0. Pengambilan sampel darah dilakukan melalui vena chepalica pada menit ke 0, 7, 15, 30, 45, jam ke 1, 2, 4, 8, 16, hari ke 1, 2, 3, 4, 5 setelah pemberian obat (diambil 3 ekor broiler tiap titik waktu). Analisis kadar dilakukan menggunakan metode *Ultra-High Performance Liquid Chromatography* (UHPLC) untuk mendapatkan nilai parameter farmakokinetik C_{maks} (kadar maksimal obat dalam plasma), T_{maks} (waktu maksimal pencapaian kadar), $T_{1/2}$ eliminasi (waktu paruh eliminasi obat), dan AUC (*area under curve* / daerah dibawah kurva) dengan metode non-kompartemen. Berdasarkan hasil penelitian diketahui nilai-nilai parameter farmakokinetik kombinasi norfloksasin-tilosin yaitu norfloksasin pada plasma Tmaks/Cmaks 72 jam/ 6,672 µg/mL. AUC 364,066 µg/mL.jam, T1/2 eliminasi 187,12 jam. Nilai untuk tilosin Tmaks/Cmaks 0,5 jam/ 6,922 µg/mL. AUC 329,26 µg/mL.jam dan T1/2 eliminasi 7,67 jam. Kombinasi norfloksasin-tilosin memiliki efektifitas terapi yang baik dilihat dari rasio PK/PD kedua obat, dengan nilai rasio AUC/MIC beberapa bakteri pathogen sebesar ≥ 125 (norfloksasin) dan > 43 (tilosin).

Kata kunci : profil farmakokinetik, norfloksasin, tilosin, plasma, broiler

ABSTRACT

PHARMACOKINETICS PROFILE OF COMBINATION OF NORFLOXACIN - TYLOSIN PERORAL IN BROILER PLASMA

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The use of antibiotics to treat bacterial infections in the livestock management industry must take into consideration the route of the drug in the body to avoid resistance or toxicity. One of the broad-spectrum antibiotics is norfloxacin and tylosin. Research on the pharmacokinetic profile using a combination of norfloxacin-tylosin in plasma has not yet been reported. The purpose of this test was to determine the pharmacokinetic profile of norfloxacin-tylosin in broiler plasma after oral administration at a dose of 0.3 ml/kg BW containing 63 mg/kg norfloxacin and 36 mg/kg tylosin. Forty-five (45) broilers were kept in experimental animal cages starting from Day Old Chick (DOC) and were given antibiotic-free feed and ad libitum drinking. After reaching an average body weight of 1–1.5 kg, all broilers were administered norfloxacin-tylosin orally at a dose of 0.3 mL/kg BW. Three (3) birds had blood samples taken before treatment and became the 0-minute group. Blood samples were taken from the cephalic vein at 0, 7, 15, 30, 45 minutes, 1, 2, 4, 8, 16 hours, and 1, 2, 3, 4, 5 days after drug administration (3 broilers were sampled at each time point). The analysis of drug concentrations was performed using Ultra-High Performance Liquid Chromatography (UHPLC) to obtain pharmacokinetic parameters, Cmax (maximum drug concentration in plasma), Tmax (time to maximum concentration), elimination half-life (T1/2), and AUC (area under the curve) using a non-compartmental method. Based on the results of the study, the pharmacokinetic parameters of the norfloxacin-tylosin combination were found to be norfloxacin in plasma Tmax/Cmax 72 hours/6.672 µg/mL. AUC 364.066 µg/mL.hour, elimination T1/2 187.12 hours. The values for tylosin were Tmax/Cmax 0.5 hours/6.922 µg/mL, AUC 329.26 µg/mL.hour, and elimination T1/2 7.67 hours. The combination of norfloxacin-tylosin has good therapeutic efficacy as seen from the PK/PD ratio of both drugs, with an AUC/MIC ratio of several pathogenic bacteria of ≥ 125 (norfloxacin) and > 43 (tylosin).

Keywords : pharmacokinetics profile, norfloxacin, tylosin, plasma, broiler