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Oral presentation

Determination of the pharmacokinetics of marbofloxacin in endotoxemic sheep

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Abstract

Endotoxemia causes many pathophysiological changes in the body. These changes may alter the pharmacokinetics of antibacterial agents used in the treatment. Purpose of this research; a) to determine the effect of the pharmacokinetics of marbofloxacin in the healthy sheep, b) to determine the effect of endotoxemia treatment (ET) on the pharmacokinetics of marbofloxacin in the healthy sheep, c) to determine the pharmacokinetics of marbofloxacin in the experimentally induced endotoxemic (LPS, E. coli O55:B5) sheep treated with ET. Seven clinically healthy Merino sheep were used. The study was carried out according to a 3-cycle cross-pharmacokinetic design and a 15-day wash-out period was performed between the stages. In the study, respectively, marbofloxacin (MB) 10 mg/kg (IV), MB + ET (lactated ringer + Dextrose 5% + sodium chloride 0.45% 20 mL/kg, IV, 20 ml/kg/h, dexamethasone 0.5 mg/kg, SC) and LPS (10 µg/kg IV infusion for 30 minutes) followed by MB + ET were administered. In all phases of the study, blood samples were collected before (0 hours, control) and after MB administration at 0.083, 0.167, 0.25, 0.333, 0.417, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8, 10, 12, 18, 24, 36, 48, 72 and 96 h. Plasma MB concentration was measured using high performance liquid chromatography-UV and non-compartmental pharmacokinetic parameters were calculated. When the MB + ET group was compared with the MB group, no difference was found ($P>0.05$) in the basic pharmacokinetic parameters ($t1/2\lambda z$, MRT, $AUC0-\infty$, ClT and Vdss). When the LPS +MB + ET group was compared with the other two groups, it was found that $t1/2\lambda z$ and MRT were prolonged, $AUC0-\infty$ increased and ClT decreased ($P<0.05$). In conclusion, it may be stated that endotoxemia may change pharmacokinetic values of marbofloxacin.

Keywords: Endotoxemia, sheep, marbofloxacin, pharmacokinetics

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