

Comparative plasma pharmacokinetics of ceftiofur sodium and ceftiofur crystalline free acid in neonatal calves

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Introduction

The objective of this study was to compare the plasma pharmacokinetic profile of ceftiofur crystalline free acid (CCFA) and ceftiofur sodium in neonatal calves.

Materials and Methods

In 1 group (n=7), a single dose of CCFA was administered subcutaneously (SQ) at the base of the ear at a dose of 3 mg/lb (6.6 mg/kg) of body weight. In a second group (n=7), a single dose of ceftiofur sodium was administered SQ in the neck at a dose of 1 mg/lb (2.2 mg/kg) of body weight. Concentrations of desfuroylceftiofur acetamide (DCA) in plasma were determined by HPLC. Comparison of DCA concentrations and pharmacokinetic parameters between treatment groups was done using the Mann-Whitney U test. A value of P<0.05 was considered significant

Results

Median time to maximum DCA concentration was 12 h (range 12 to 48 h) for CCFA and 1 h (range 1 to 2 h) for

ceftiofur sodium. Median maximum plasma DCA concentration was significantly higher for calves given ceftiofur sodium (5.62 µg/mL; range 4.10 to 6.91 µg/mL) than for calves given CCFA (3.23 µg/mL; range 2.15 to 4.13 µg/mL). **AUC_{0-∞}** and **V_d/F** were significantly greater for calves given CCFA than for calves given ceftiofur sodium. The median terminal half-life of DCA in plasma was significantly longer for calves given CCFA (60.6 h; range 43.5 to 83.4 h) than calves for calves given ceftiofur sodium (18.1 h; range 16.7 to 39.7 h). **Cl/F** was not significantly different between groups. The duration of time median plasma DCA concentrations remained above 2.0 µg/mL was significantly longer in calves that received CCFA (84.6 h; range 48 to 103 h) as compared to calves that received ceftiofur sodium (21.7 h; range 12.6 to 33.6 h).

Significance

Based on the results of this study, CCFA administered SQ at a dose of 3 mg/lb (6.6 mg/kg) in neonatal calves provided plasma concentrations above the therapeutic target of 2 µg/ml for at least 3 days following a single dose.

Profiles of serum amino acids to screen for catabolic and inflammation status in calves with mycoplasma bronchopneumonia

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Introduction

Amino acid metabolism in cancer cells is significantly altered compared with that of normal cells. These changes are also reflected in the plasma amino acid profiles of patients with various types of inflammatory disease in human. Our hypothesis is that serum amino acid profiles of calves with

mycoplasma Effect bronchopneumonia will be similar to those in human disease due to the inflammation and generalized catabolic state of these animals. The aim of this study was to investigate the relationships with serum amino acid profiles, total amino acids (TAA), branched amino acid:aromatic amino acid (BCAA/AAA) ratio, branched chain amino acid to tyrosine ratio (BTR) and serine to phosphoserine ratio (SPR) in