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Pharmacokinetics of cefquinome in normal and diseased camels

A thesis presented

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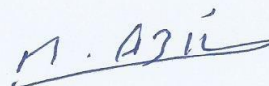
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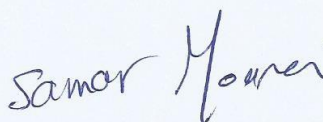
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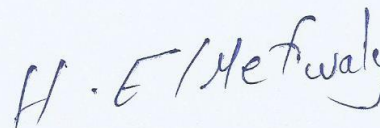
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ABSTRACT

The aim of this work is to evaluate the pharmacokinetics of cefquinome in camels and to compare its pharmacokinetics in apparently healthy and *Trypanosoma evansi* infected camels. A single dose of cefquinome was administered intravenously and intramuscularly at 1 mg/kg to two groups of camels with a 30 days washout period in-between. Group (1) included five normal she-camels and Group (2): included five *Trypanosoma evansi* naturally infected she-camels. Plasma concentrations of cefquinome were determined by HPLC-MS/MS assay. Cefquinome concentration vs. time data after IV and IM was best fitted to a two-compartment open model in normal and infected camels. Cefquinome mean values of area under concentration–time curve (AUC) were $15.37 \pm 1.06 \mu\text{g/ml.h}$ for IV dose and $12.85 \pm 2.15 \mu\text{g/ml.h}$ for IM dose. Distribution half-lives and elimination half-lives after IV dose were $0.14 \pm 0.04 \text{ h}$ and $3.15 \pm 0.22 \text{ h}$ and $1.42 \pm 0.11 \text{ h}$ and $6.68 \pm 0.87 \text{ h}$ for IM dose. The values of total body clearance (Cl_{tot}) and volume of distribution at steady state (V_{ss}) were $0.07 \pm 0 \text{ L/kg/h}$ and $0.27 \pm 0.02 \text{ l/kg}$, respectively following intravenous injection. Following a single intramuscular injection of 1 mg cefquinome /kg.b.wt. in normal camels, The pharmacokinetics parameter revealed that the maximum serum concentration (C_{max}) was $3.2 \pm 0.39 \mu\text{g/ml}$ reached at maximum time (T_{max}) at about $0.82 \pm 0.06 \text{ h}$, the absorption half-life [$t_{1/2\text{ab}}$] was $0.26 \pm 0.03 \text{ hours}$, the elimination half-life $t_{1/2\beta}$ was $6.68 \pm 0.87 \text{ hours}$ and bioavailability of $85.52 \pm 11.09 \%$. The present study recommended that the intravenous and intramuscular injection of cefquinome is effective against, *Streptococcus* spp., *staphylococci*, *Klebsiella* spp., *Pasteurella* spp., *Salmonella* spp., enteric and systemic *Escherichia coli*. at a dose rate of 1mg/kg twice daily for the normal and the naturally infected camels with *Trypanosoma evansi*, which did not suffer from fever or parasitaemia.

Keywords: Cefquinome – Pharmacokinetics – *Trypanosoma* - LC-MS/MS – camels

Dedicated to

My parents

My wife

My daughters & My sons

Who

Shared the responsibility of bringing me

up to be grateful

And

To all those who taught me

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