Cairo University
Faculty of Veterinary Medicine
Pharmacology Department

PHARMACOKINETIC PHARMACODYNAMIC MODELING OF CEFQUINOME IN SUCKLING CALVES NORMAL AND WITH RESPIRATORY SIGNS

Thesis Presented

By

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(B.V.Sc, Assuit University, 2005)

For M.V.Sc. Degree
(Veterinary Pharmacology)

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2016

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Title of thesis: Pharmacokinetic pharmacodynamic modeling of cefquinome in suckling calves (normal and with respiratory signs).

Abstract

Pharmacokinetics and pharmacodynamics of cefquinome were studied in calves after intramuscular injection of cefquinome (2mg/kg B.WT) healthy and diseased calve alone and in combination with flunixin (1mg/ kg BW). Cefquinome was detected in plasma of calves from 5.0 minutes to 24 h. following IM injection. Cefquinome peak concentration C_{max} in healthy calves was (0.783 ± 0.088 µg/ml), and with co-administration with flunixin 0.906 ± 0.102 and 0.916 ± 0.037µg/ml, respectively. The T_{max} in healthy calves (0.66 ± 0.09 h.) and 0.90 ± 0.10 h. in diseased calves treated with cefquinome alone and 1.05 ± 0.20h diseased calves treated with cefquinome and flunixin. Pharmacokinetic/ Pharmacodynamic modeling after intramuscular administration of cefquinome in diseased calves treated with cefquinome (2 mg/kg B.WT) and with flunixin for 5 days, the clinical parameters showed rapid recovery in all treated groups. From the obtained data it could be concluded that cefquinome act effectively in treatment of bacterial respiratory disease in calves as well as the co-administartion of flunixin with cefquinome showed highly synergistic activity in treatment of bacterial respiratory disease (Pasterella infctions) in suckling cow calves.

Dedication

I wish to introduce my deep gratitude and utmost Thanks to:

My parents

&

Special thanks to

My wife

For her continuous encouragement to

Complete this work.

Acknowledgment

First and foremost, I greatly indebted in all my work and success to our gracious Allah.

I owe a great debt of gratitude and very special thanks to ***Prof.Dr. Aziza Mahrous Mohamed Amer****, Professor of Pharmacology and dean of Faculty of Veterinary Medicine- Cairo University, for her supervision, positive criticism, understanding, endless tolerance, sincere guidance and continous encouragement that helped me to produce this work.*

Sincere thanks are extended to ***Prof.Dr. Monir Mohammed Abdelhalim*** *,Professor of infectious diseases, Cairo University for his supervision, and advice throughout the experimental work*

Grateful thanks are to ***Prof.Dr. Kamal Mamon Eldeib,*** *Professor of Biochemistry and molecular Biology, National Organization For Drug & Control Research for his supervision and great help.*

Special thanks are to ***Dr Shymaa Ahmed El-badawey El-Sherbiniy,*** *lecture of Pharmacology Faculty of Veterinary Medicine Cairo University for her great help throughout the practical part and pharmacokinetic calculation of the results allover the thesis.*

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A: The intercept of the elimination phase with the vertical axis after parentral administration.

Alfa: rate constant for drug absorption (h^{-1})

Beta: rate constant for drug elimination (h^{-1})

$AUC_{0\text{-}inf.}$: Total area under the serum drug concentration versus time curve from t=0 to t=infinity after administration of a single dose (µg.ml/h).

AUMC : Total area under the plasma drug concentration multiplied by time versus time curve from t=0 to t=time of last taken sample after administration of a single dose (µg.ml/h).

C_{max}: Maximaum serum concentration of drug in blood after parentral administration (µg/ml).

T_{max}: The time at which the drug reached the maximum concentration after parentral administration

K10: Rate constant for central compartment distribution (h^{-1})

K_{alfa}: Rate constant for absorption (h^{-1})

K_{beta}: First order elimination rate constant for disappearance of drug from central compartment (h).