

SINGLE ORAL ADMINISTRATION OF CEPHALEXIN IN MARES AND FOALS:
PHARMACOKINETIC ANALYSIS.

Ana Maria Barboni¹, Federico Pont Lezica², Guillermo Juan B. Ladaga³, Gabriel A. de Erasquin⁴ and Jorge A. Picos¹. Cátedra de Enfermedades Infecciosas, Facultad de Ciencias Veterinarias, Universidad de Buenos Aires¹; Haras Vacación, Buenos Aires²; Department of Clinical Research, Laboratorio Fundación³; and Washington University School of Medicine⁴, USA.

OBJETIVE: Oral pharmacokinetics of cephalexin in horses are not characterized. Since several infections in foals and horses are sensitive to this antibiotic, we carried out single oral dose kinetic studies to facilitate its rational use in the clinical setting.

METHODS: We compared the pharmacokinetics of cephalexin (Cefoxidin[®], Laboratorio Fundación, Argentina) in four infertile mares and four lactating foals. All animals received single-dose cephalexin by oral administration (30 mg/kg/bw) and were sampled by jugular vein sampling every 60 min for a total of 8 h. Drug concentration was estimated using microbiological standards (inhibition halos after 24 h at 37° against *Micrococcus* sp. Strains). Pharmacokinetic parameters were estimated using a single compartment model with arithmetic fit and linear regression, and confirmed with a best fit equation software.

RESULTS: Analysis of raw data suggested a greater bioavailability of cephalexin in foals. Kinetic analysis showed foals have faster absorption ($k_{a\text{foals}}=3.041 \text{ h}^{-1}$; $k_{a\text{mares}}=4.103 \text{ h}^{-1}$), and slower elimination ($k_{e\text{foals}}=0.898 \text{ h}^{-1}$; $k_{e\text{mares}}=1.163 \text{ h}^{-1}$) constants. Foals also showed a 50% larger Cmax, and nearly twofold larger AUC when compared to mares.

	Foals (µg/ml)		Mares (µg/ml)	
	Mean	SD	Mean	SD
0 hs	0		0.0	
1 hs	138.88	13.22	85.49	19.00
2 hs	75.49	8.89	39.07	7.93
3 hs	36.79	6.71	14.31	3.18
4 hs	11.56	2.99	3.74	0.83
5 hs	4.05	1.40	1.40	0.47
6 hs	1.84	0.52	0.00	0.00
7 hs	1.04	0.26		

Table 1. Serum Concentrations after single administration of a 30 mg/kg oral dose of cephalexin to mares and foals. Values represent averages of four samples.

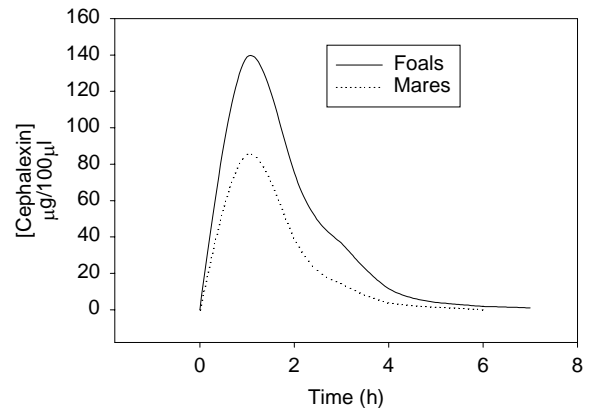


Figure 1. Plasma levels of Cephalexin in Mares and Foals following a Single Oral administration. Values shown represent fitted averages of 4 animals. Samples were taken every hour, and fitted to a single compartment model. The Area Under the Curve for foals is increased nearly twofold (AUCmares: 87, AUCfoals: 151, calculated in arbitrary units after integration of the averaged curves), and this difference is statistically significant ($p<0.01$, Student t test).

CONCLUSION: Oral cephalexin has excellent bioavailability in foals and mares and it should be considered in clinical settings where a susceptible organism is found.