DISPOSITION OF ENROFLOXACIN (BAYTRIL®) IN RED-TAILED HAWKS (*Buteo jamaicensis*) AND GREAT HORNED OWLS (*Bubo virginianus*) FOLLOWING A SINGLE ORAL, INTRAMUSCULAR, OR INTRAVENOUS DOSE

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Abstract

Enrofloxacin was administered as a single dose (dosage of 15 mg/kg) to eight red-tailed hawks (*Buteo jamaicensis*) and five great horned owls (*Bubo virginianus*) by the oral (in prey) or intramuscular route, and was administered to eight red-tailed hawks by the intravenous route. The disposition of enrofloxacin was evaluated in serial plasma samples up to 48 hr after administration (before dosing, 0.25, 0.5, 1, 2, 4, 8, 12, 24, and 48 hr after dosing).

Oral administration was accomplished by force-feeding the raptor with a small mouse that had been injected intraperitoneally with an injectable formulation of enrofloxacin (Baytril^{R}, 22.7 mg/ml, Bayer Corp., Shawnee Mission, KS 66201 USA). Oral administration resulted in plasma concentrations of enrofloxacin that peaked at 4-12 hr after dosing. Enrofloxacin levels remained above typical gram-negative bacterial pathogens' MIC_{90}'s for at least 18 hr after oral administration, although there was an initial lag time of approximately 4 hr for absorption from the gastrointestinal tract.

Intramuscular enrofloxacin was administered into the pectoral musculature, with the dose divided between two sites. Intramuscular administration resulted in plasma concentrations that peaked at 0.5-2 hr after dosing; enrofloxacin levels remained above MIC_{90}'s for at least 12 hr after intramuscular administration.

Enrofloxacin was administered intravenously to eight red-tailed hawks via jugular vein, basilic vein or medial metatarsal vein. In these hawks, enrofloxacin levels remained above MIC_{90}'s for at least 15 hr after intravenous administration.

Two great horned owls were administered enrofloxacin intravenously via basilic vein; these owls showed acute weakness, tachycardia and peripheral vasoconstriction during injection, as an apparent direct effect of enrofloxacin. The owls' clinical signs resolved by 1-3 hr after injection, after they were treated with intravenous and subcutaneous fluids, atropine, and oxygen.

It appears that oral (in-prey) and intramuscular routes are reliable and effective means of administration of injectable enrofloxacin in red-tailed hawks and great horned owls, using a dosage

of 15 mg/kg every 24 hr for most susceptible bacterial pathogens. Intravenous administration can be performed with caution in red-tailed hawks, but should not be attempted in great horned owls. The exact reason for great horned owls' adverse reaction to intravenous enrofloxacin is unknown.

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