JOURNAL OF AVIAN MEDICINE AND SURGERY

Pharmacokinetics of Cannabidiol in the Hispaniolan Amazon Parrot (*Amazona ventralis*)

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Abstract: The purpose of this study was to determine the pharmacokinetics of cannabidiol (CBD), a potential treatment option that may alleviate pain in companion animals and humans, in the Hispaniolan Amazon parrot (*Amazona ventralis*). A pilot study administered a single oral dose of CBD in hemp oil at 10 mg/kg to 2 birds and 20 mg/kg to 2 birds. Because the maximum serum concentrations (C_{max}) for these doses were 5.5 ng/mL and 13 ng/mL, respectively, and the serum half-life ($t_{1/2}$) was 2 hr for both groups, the doses were considered too low for clinical use in this species. Therefore, a study was designed in which 14 healthy 12-14-year-old parrots of both sexes and weighing 0.24-0.35 kg (mean, 0.28 kg) were enrolled. Seven birds were administered 60 mg/kg CBD per os (PO) and 7 birds were administered 120 mg/kg CBD PO. Blood samples were obtained at time 0, and at 0.5, 1, 2, 3, 4, 6, and 10 hours post-treatment in a balanced incomplete block design. Quantification of plasma CBD concentrations was determined by use of a validated liquid chromatography-mass spectrometry assay. Pharmacokinetic parameters were determined using non-compartmental analysis. The areas under the curve (h*ng/mL) were 518 and 1863, C_{max} (ng/mL) were 213 and 562, and times to achieve C_{max} (h) were 0.5 and 4 for the 60 mg/kg and 120 mg/kg doses, respectively. The $t_{1/2}$ could not be determined in the 60 mg/kg treatment, but was 1.28 h at 120 mg/kg. Adverse effects were not observed in any bird. The highly variable results and short half-life of the drug in Hispaniolan Amazon parrots, even at high doses, suggests that this drug formulation was inconsistent in achieving targeted concentrations as reported in other animal species.