



The Pharmacokinetics of Fluconazole in Alpacas Grant #D19LA-005

Background

Alpacas are susceptible to wide spread, often fatal, illness from the systemic fungal disease coccidioidomycosis (Valley Fever), which is commonly treated with oral fluconazole in humans and animals. Though fluconazole is ~100% bioavailable in monogastric species, South American camelids absorb oral medications less effectively. Determining fluconazole doses needed to reach therapeutic plasma concentrations will improve treatment of coccidioidomycosis and other systemic fungal infections in alpacas.

Study Objective

Determine steady state plasma concentrations of fluconazole in alpacas to determine a fluconazole dose that should be efficacious to treat coccidioidomycosis (Valley Fever).

Results and Discussion

Alpacas and llamas absorb oral medication unpredictably and often very poorly. Our goal was to determine an oral dose of fluconazole that would result in effective levels for treating Valley Fever, an often fatal fungal disease, in alpacas. We enrolled client-owned alpacas and the owners treated them orally with different doses of fluconazole for 2 weeks. We measured the fluconazole levels in their plasma for 24 hours on the 14th day of treatment to determine how they absorb and metabolize it and to calculate a therapeutic dose for treating Valley Fever.

Major findings included:

- Owners were able to administer fluconazole orally
- While the absorption of fluconazole from the gastrointestinal tract was proportional to the dose given in some animals, almost half of the participating alpacas had fluconazole blood levels lower than anticipated
- Fluconazole doses should start at 10-15 mg/kg/day. Because absorption is unpredictable, fluconazole concentration should be tested after several weeks of therapy to confirm each animal is absorbing the medication appropriately. Dosage may need to be changed.

We are grateful to the owners and alpacas for participating in this study and to the Morris Animal Foundation funding that made this research possible. In the future, we hope to do more studies to evaluate the impact and outcome of Valley Fever in alpacas.