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PHARMACOKINETICS OF SINGLE DOSE INTRAVENOUS AND ORAL FLUNIXIN MEGLUMINE IN THE BLACK RHINOCEROS (*DICEROS BICORNIS*)

FLANDERS J[1], GEHRING R[2], DELASKI K[1], WULF L[3], COETZEE J[2], GAMBLE K[1]

[1]Lincoln Park Zoo, Dept. of Animal Care, 2001 North Clark Street, Chicago, IL, 60614, USA; jflanders@lpzoo.org, kgamble@lpzoo.org
[2]Kansas State University, Institute of Computational Comparative Medicine, P217 Mosier Hall, Manhattan, KS, 66506, USA; rgehring@ksu.edu
[3]Iowa State University, 2448 Lloyd Vet Med Center, Ames, IA, 50011, USA; hcoetzee@iastate.edu

Zoological medicine requires clinicians to trust that drug doses and routes, which have been proven safe and effective in model domestic species, will function equivalently in their exotic patients. This approach often occurs with minimal to no research for validation in the target species. Ideally, definitive pharmacokinetic analysis of medications would be available prior to the treatment of exotic species to diminish potential side-effects and maximise desired results.

In captive black rhinoceros (*Diceros bicornis*), a variety of medical conditions are treated using anti-inflammatories with doses based on domestic equine models or anecdotal reports. To establish species specific pharmacokinetics, flunixin meglumine was administered once at 1 mg/kg intravenously (FlunixiJect™, Butler Schein Animal Health, Dublin, Ohio, USA) and orally (Banamine® Paste, Merck Animal Health, Whitehouse Station, New Jersey, USA) to two male black rhinoceroses with doses separated by a minimum of two weeks. Serial blood samples were collected at predetermined time points to create a plasma concentration versus time curve which was analysed by non-compartmental methods to describe pharmacokinetics for this drug. Intravenously, flunixin meglumine had an elimination half-life of 27.6 h for one animal but only 4.8 h for the second. Orally, it reached mean C_{max} (362.5 ng/ml) at 2.9 h, and had elimination half-life of 4.4 h and 6.2 h. Mean oral bioavailability was 58.3 %. Compared to similar pharmacokinetic studies in horses, oral flunixin meglumine had lower bioavailability and C_{max}, and a slightly longer elimination half-life.