

Title: Co-administration of phenylbutazone with methocarbamol decreases methocarbamol clearance

Mary A. Robinson^{1,2}, Carisa Dixon Tate¹, Dan Taylor², Ray Boston¹, Cornelius Uboh², Lawrence R. Soma¹

¹ University of Pennsylvania, School of Veterinary Medicine, Department of Clinical Studies – New Bolton Center
382 West Street Road, Kennett Square, PA 19348, USA

² PA Equine Toxicology & Research Laboratory 220 East Rosedale Avenue, West Chester, PA 19382, USA

Methocarbamol is a centrally acting skeletal muscle relaxant that is commonly co-administered to horses with the non-steroidal anti-inflammatory, phenylbutazone. Both drugs must be below designated threshold concentrations in post-race blood samples collected from horses competing in the pari-mutuel racing industry. Veterinarians prescribing methocarbamol reported that withdrawal times based on published studies of the intravenous administration of methocarbamol were inadequate. The presence of a drug-drug interaction with phenylbutazone was hypothesized to explain the discrepancy. To test this hypothesis, nine horses were administered two protocols using a randomized cross-over design. Protocol 1 consisted of the administration of 2.2 mg/kg methocarbamol as a single intravenous bolus. Protocol 2 consisted of the administration of 2.2 mg/kg oral phenylbutazone for 5 days followed by the co-administration of 2.2 mg/kg methocarbamol and phenylbutazone (2.2 mg/kg) on day 6 as single intravenous boluses delivered 30 minutes apart. Methocarbamol and phenylbutazone plasma concentrations were measured using validated LC-MS-MS methods. The decline in methocarbamol plasma concentration following either protocol fit a three compartment mathematical model best. Clearance of methocarbamol was significantly decreased when phenylbutazone was co-administered with methocarbamol (408.5 ± 85.7 mL/h/kg versus 301.2 ± 65.3 mL/h/kg). A longer withdrawal time is needed when methocarbamol is co-administered with phenylbutazone.

Corresponding Author:

Mary A. Robinson VMD, PhD

Co-Director PennVet Equine Pharmacology Laboratory

New Bolton Center

[382 West Street Road](#)

[Kennett Square, PA 19348](#)

Phone: [610-925-6610](tel:610-925-6610)

Fax: [610-925-6820](tel:610-925-6820)

Email: marobins@vet.upenn.edu

Acting Director, Pennsylvania Equine Toxicology and Research Laboratory

220 E. Rosedale Ave

West Chester, PA 19382

Phone: 610-436-3501