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### Pharmacodynamics and pharmacokinetics of nalbuphine in Xylazine-Sedated horse

#### Abstract:

This study describes the selected pharmacodynamics and pharmacokinetics of nalbuphine (NAL) in xylazine (XYL)-sedated horses. Five adult healthy horses were randomly received 2 treatments at a 1-week interval; XYL treatment (0.55 mg/kg IV) and XYL/NAL treatment (XYL, 0.55 mg/kg IV; NAL, 0.3 mg/kg IV). The measured pharmacodynamic variables were sedative and analgesic effects and the effect on ataxia and some physiological parameters. For the pharmacokinetics of NAL, its plasma concentrations were measured using HPLC and a 2-compartment analysis was performed. Greater and prolonged sedation was evident after XYL/NAL treatment compared with XYL treatment. Slightly improved and prolonged analgesia was demonstrated after XYL/NAL treatment. Significant changes in blood pressure and respiratory rate lasted for a shorter duration with XYL/NAL treatment than with XYL treatment. After XYL treatment, rectal temperature was significantly different from baseline and XYL/NAL treatment. Elimination half-life of NAL was  $3.47 \pm 1.39$  hours and total body clearance was  $2.88 \pm 0.73$  L/kg/hour. In conclusion, addition of NAL to XYL resulted in remarkable advantages on the measured parameters. The obtained pharmacokinetics of NAL could be useful in determining the effective NAL infusion rate, which could be further evaluated as an adjunctive agent to XYL for prolonged sedation in horses.

#### Biography

**Amal Hammad** is a lecturer at department of Surgery, Anesthesiology and Radiology, Faculty of Veterinary Medicine, University of Sadat city, Egypt. She was a visiting scholar at University of Tennessee at age of 30 years. She got her PhD at age of 32 years from Faculty of Veterinary Medicine, University of Sadat city where she is also performing postdoctoral studies. She was a knowledge ambassador at University of Sadat City. General anesthesia and pain management in small animals and standing sedation in horses are the main areas of research and expertise. She published 11 research papers and one book chapter.