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## COMPARISON OF A GUAIFENESIN, KETAMINE, AND MEDETOMIDINE CONSTANT-RATE INFUSION WITH ISOFLURANE GAS FOR ANESTHESIA MAINTENANCE IN AMERICAN BLACK BEARS (*Ursus americanus*)

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### Abstract

Seven American black bears (*Ursus americanus*) were anesthetized in a cross-over design with two different anesthetic maintenance protocols. The control protocol consisted of isoflurane gas started at 2%, and the experimental protocol consisted of a guaifenesin, medetomidine, ketamine (GMK) constant-rate infusion (CRI) started at a rate yielding 50 mg/kg/hr guaifenesin, 0.01 mg/kg/hr medetomidine, and 1 mg/kg/hr ketamine. A consistent induction protocol of 2 mg/kg ketamine and 0.04 mg/kg medetomidine was used in both protocols. Induction and recovery times including times of first effect, recumbency, and hands on; length of maintenance protocol; time from reversals administered to head up, to standing on all four feet, to no ataxia, and to fully recovered were recorded and compared between protocols. Heart rate, respiratory rate, rectal temperature, blood pressure, end tidal carbon dioxide, and hemoglobin oxygen saturation were recorded at 5-min intervals and compared between protocols. Venous blood gases taken at the beginning, end, and midway through the maintenance protocol were also collected and compared between protocols. All bears were mildly hypertensive with a mild respiratory acidosis. There were no statistically significant differences between the isoflurane and the GMK CRI maintenance protocols when comparing all other parameters measured with the exception of extubation times and endpoint pCO<sub>2</sub> measurements. There were no adverse events recorded with either protocol, and adequate depth of anesthesia was maintained. A GMK CRI provides a safe and more portable alternative to inhalant anesthetics for maintenance anesthesia in bears in captivity or in the field.

**Key words:** American black bear, anesthesia, constant-rate infusion, guaifenesin, *Ursus americanus*

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