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## USE OF MEDETOMIDINE IN CHEMICAL RESTRAINT PROTOCOLS FOR CAPTIVE AFRICAN RHINOCEROSSES

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### Abstract

A wide variety of drugs or drug combinations have been used for anesthesia or chemical restraint of captive and free-ranging black (*Diceros bicornis*) and white rhinoceroses (*Ceratotherium simum*).<sup>2,3,8-10</sup> Most of these anesthetic protocols utilize a potent opioid, such as etorphine, along with an alpha-2-adrenoreceptor agonist, such as xylazine or detomidine, or a neuroleptic such as azaperone or acetylpromazine.<sup>3,8,10</sup> Recently, chemical restraint protocols utilizing the mixed opioid agonist-antagonist, butorphanol, have become useful and advantageous, particularly in the white rhinoceros.<sup>2,9,10</sup> The potent, selective, and highly specific alpha-2-adrenoreceptor agonist, medetomidine, has been a useful drug to incorporate into anesthetic protocols for many wildlife species.<sup>1,4-7,11</sup> Medetomidine is a potent sedative and analgesic with anxiolytic properties and has been shown to provide good muscle relaxation with minor physiologic changes in several species.<sup>7,11</sup>

Etorphine ( $1.71 \pm 0.35 \mu\text{g/kg}$ ) was used with medetomidine ( $2.48 \pm 0.38 \mu\text{g/kg}$ ; 21 procedures) or medetomidine-midazolam ( $3.16 \pm 0.60 \mu\text{g/kg}$  -  $20.9 \pm 2.0 \mu\text{g/kg}$ ; 13 procedures) in eight black rhinoceros for in-facility transport, electroejaculation, dental extraction, endoscopy, and other clinical procedures. Supplemental drugs used to maintain chemical restraint included ketamine, medetomidine, etorphine, and guaifenesin 5% in dextrose. Chemical restraint was reversed with naltrexone ( $119 \pm 28 \mu\text{g/kg}$ ) and atipamezole ( $14.7 \pm 3.8 \mu\text{g/kg}$ ).

Butorphanol ( $63.7 \pm 1.2 \mu\text{g/kg}$ ) was used with medetomidine ( $2.64 \pm 0.17 \mu\text{g/kg}$ ; eight procedures) in six white rhinoceros for electroejaculation, endoscopy, ophthalmic surgery, and other clinical procedures. Supplemental drugs used to maintain chemical restraint included ketamine, butorphanol, medetomidine, and guaifenesin 5% in dextrose. Chemical restraint was reversed with naltrexone ( $233 \pm 29 \mu\text{g/kg}$ ) and atipamezole ( $28.3 \pm 2.9 \mu\text{g/kg}$ ).

The addition of medetomidine to chemical restraint protocols for captive African rhinoceroses appears to improve muscle relaxation and analgesia and reduce the need for supplementation during long procedures, while maintaining clinically acceptable cardiopulmonary physiology.

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