

Comparative Evaluation of Sedative and Hematologic and Biochemical Effects of Intravenous Administration of Xylazine, Detomidine, Medetomidine, and Dexmedetomidine in Caspian Miniature Horses

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Abstract

Pharmaceutical research on α_2 -adrenergic agonists in Caspian miniature horses, a breed native to Iran, is currently limited. So, the objective of the present study was to evaluate sedative and hematobiochemical effects of intravenous administration of xylazine, detomidine, medetomidine, and dexmedetomidine in Caspian miniature horses. The study involved the random assignment of six Caspian miniature horses (by drawing of lots), crossover design into five groups. Each horse received one of four α_2 -adrenoreceptor agonists or saline. The study employed a randomized crossover design with a minimum washout period of seven days. The horses received either intravenous treatments of 1 mg/kg xylazine, 20 μ g/kg detomidine, 10 μ g/kg medetomidine, 5 μ g/kg dexmedetomidine, or 5 mL of 0.9% saline. The sedation scores and physiological responses, including heart rate, respiration rate, digestive motility, and rectal temperature, were assessed immediately prior to drug administration (0 min) and subsequently at intervals of 5, 10, 15, 30, 45, 60, 75, 90, 105, and 120 min post-administration. The results indicated that there were no significant differences in some mean sedation scores and incoordination (impairment of the ability to coordinate muscle movements) among the treatments examined. The findings showed that there were no significant differences in the mean heart rate among the treatments and control assessed at any of the time points; however, significant differences in the mean respiration rate, digestive motility, rectal temperature, and selected hematobiochemical parameters were observed at some measurement time points post-injection. In conclusion, these agents demonstrated potential for effective sedation in healthy Caspian miniature horses, though further studies are recommended.

Key words: Caspian miniature horse, Alpha 2 agonist, Sedation, Hematobiochemical effects

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