

PRELIMINARY STUDIES ON THE USE OF IMIPRAMINE AND XYLAZINE TO INDUCE EJACULATION IN LLAMAS

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There is a need to develop a method for semen collection in camelids that can be readily used on the farm for the evaluation of sires for breeding soundness as well as for semen cryopreservation. In male horses, a technique was developed for semen collection that pharmacologically induces ejaculation without copulation—*ex copula* [McDonnell SM. *Anim Reprod Sci* 2001;68:153–9; McDonnell et al. *J Reprod Fertil Suppl* 1987;35:45–9]. *Ex copula* ejaculation is induced using a combination of imipramine, a norepinephrine re-uptake inhibitor, and xylazine, an alpha agonist that lowers the ejaculatory threshold centrally and stimulates smooth muscle contractility. Semen collected from this method is highly concentrated and has been used successfully for cryopreservation in horses.

Objective of this study was to perform preliminary studies on the efficacy of intravenous imipramine and xylazine to pharmacologically induce ejaculation in llamas. Our hypothesis was that llamas would ejaculate seminal plasma that was of low volume and high sperm concentration.

Imipramine was administered intravenously at a dosage of 0.0, 0.5 or 1.0 mg/kg to five intact male llamas. A Whirl-Pak[®] bag was then secured over the preputial opening with tape. Within 10, 30 or 60 min of the imipramine administration, xylazine was intravenously administered at a dosage of 0.1, 0.33 or 0.66 mg/kg. Secretions collected were grossly evaluated for pH, color and clarity and microscopically evaluated for the presence of spermatozoa (including determination of progressive motility, sperm concentration and morphology).

In these preliminary studies, we found that males tolerated the application of the collection bag (Whirl-Pak[®]) and had no adverse effects from the imipramine, a drug that had previously not been studied in camelids. However, the semen collection results were mixed. Samples collected following xylazine administration ranged from nothing (no secretions emitted) to 0.1–2.0 ml of opaque secretions containing sperm, to >250 ml urine devoid of sperm. Out of 29 attempts, 30% of samples contained sperm (<1 million/ml). The pharmacologic combination most likely to result in sperm in the sample (80% of the time) was imipramine (1.0 mg/kg) followed in 10 min by xylazine (0.1 mg/kg). It is important to mention that the sperm motility (0–20% motile) and morphology (up to 50% abnormal morphology) from these samples was very poor, which may have been due to cold-shock as no provisions were made to insulate the sample.

Further investigations are needed to determine if this method would be applicable to use in clinical veterinary practice.

Keywords: Llama; Semen; Ejaculation; Imipramine; Xylazine