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Immobilization of Collared Peccaries (*Tayassu tajacu*) and Feral Hogs (*Sus scrofa*) with Telazol® and Xylazine

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ABSTRACT: A 1:1 mg mixture of Telazol® and xylazine hydrochloride (100 mg of Telazol® and 100 mg of xylazine per ml) was used to immobilize wild collared peccaries (*Tayassu tajacu*) and feral hogs (*Sus scrofa*); mean (±SD) intramuscular dosage rate was 4.73 ± 0.86 mg/kg and 4.35 ± 0.68 mg/kg for peccaries (n = 107) and hogs (n = 49), respectively. Mean (±SD) induction time (time from injection until complete immobilization) was 4.6 ± 2.5 minutes for collared peccaries and 4.4 ± 1.9 for hogs. Peccaries became conscious at 64 ± 29 minutes and first stood at 92 ± 33 minutes after initial injection. Hogs became conscious at 54 ± 26 minutes and first stood at 78 ± 38 minutes after initial injection. A 1:1 mg mixture of Telazol® and xylazine provided an effective and safe method to immobilize both species and provided adequate analgesia and anesthesia for short surgical procedures.

Key words: Collared peccary, feral hog, immobilization, *Sus scrofa*, *Tayassu tajacu*, Telazol®, xylazine.

Collared peccaries (*Tayassu tajacu*) and feral hogs (*Sus scrofa*) have been successfully immobilized with ketamine hydrochloride (HCl), xylazine HCl, or a combination of these drugs (Baber and Coblentz, 1982; Lochmiller et al., 1984; Gallagher et al., 1985; Ilse and Hellgren, 1995). Ilse and Hellgren (1995) reported hyperthermia of hogs while using a mixture of ketamine and xylazine. These authors used a 1:1 mg mixture of Telazol®, a combination of tiletamine HCl and zolazepam HCl, and xylazine to immobilize feral hogs, but provided few details on its efficacy. Peccaries have been immobilized with Telazol® (Gray et al., 1974; Allen 1992; Ilse and Hellgren, 1995). Allen (1992) reported poor cutaneous analgesia of Chacoan peccaries (*Catagonus wagneri*) with Telazol® given alone. Xylazine possesses sedative, analgesic, and muscle relaxant properties, and Telazol® is a fast-acting dissociative anesthetic and analgesic that does not interfere with thermoregulation (Haigh et al., 1985; Stirling et al., 1985; Millspaugh et al., 1995). We believed a mixture of these drugs would safely immobilize collared peccaries and feral hogs without the disadvantages of either drug used alone. We also evaluated this drug combination for surgical implantation of intraperitoneal radio transmitters into collared peccaries.

Our study was conducted from June 1993 to July 1995 on the Chaparral Wildlife Management Area, Dimmit and La-Salle Counties, Texas, USA. (28°20′N, 99°25′W). Wild peccaries and hogs were captured using box traps baited with corn. Telazol® (500 mg powder; Fort Dodge Laboratories, Inc., Fort Dodge, Iowa, USA) was reconstituted with 5 ml of xylazine HCl (100 mg/ml; Vedco, Inc., St. Joseph, Missouri, USA), resulting in a 200 mg/ml (100 mg of Telazol® plus 100 mg of xylazine per ml) injectable solution of Telazol®/xylazine HCl at a 1:1 mg ratio. Body weights of trapped animals were estimated, and animals were injected intramuscularly into the hindquarter by hand, pole syringe, or projectile dart (Telinject USA, Inc., Saugus, California, USA) at a dose of 4.4 mg/kg (2.2 mg/kg of Telazol® plus 2.2 mg/kg of xylazine). In preliminary trials with captive collared peccaries, we found this dosage and mixture to be optimal. Within 30 min of immobilization, weight, sex, age (based on tooth wear and replacement; Kirkpatrick and Sowls, 1962; Matschke, 1967), and rectal temperature were recorded and blood samples were obtained. Animals were ear-tagged, and certain individuals were fitted with a radio

TABLE 1. Body weights, dosages, induction and recovery times, and vital signs of wild collared peccaries and feral hogs immobilized with a 1:1 ratio of Telazol® (tiletamine hydrochloride and zolazepam hydrochloride) and xylazine hydrochloride on the Chaparral Wildlife Management Area in southern Texas from June 1993 through July 1995 (* = species different at $P < 0.05$).

	Collared peccary			Feral hog		
	Mean (SD)	Range	Number sampled	Mean (SD)	Range	Number sampled
Body weight (kg)	16.1 (6.3)	1.2–27.3	107	47.8 (28.9)	6.8–125	49
Drug dosage[a] (mg/kg)	4.73 (0.86)	2.86–7.34	107	4.35 (0.68)	2.82–5.86	49
Induction time[b] (min)	4.6 (2.5)[c]	1.0–15.4	102	4.4 (1.9)[d]	2.1–11.3	48
Conscious time[e] (min)	64.2 (29.4)	27.9–149.8	21	54.7 (26.9)	8.3–107.9	19
Standing time[f] (min)	92.1 (33.6)	37.3–139.5	15	78.2 (38.9)	10.3–192	19
Rectal temperature[a] (C)	37.6 (1.6)	33.8–40.1	42	38.7 (2.0)	34.1–42.4	29

[a] Values differ between species ($P < 0.05$).
[b] Induction time = time from injection until completely immobilized.
[c] Induction time related to body weight; induction (sec) = 104.5 ± 10.59*weight (kg); $F(1,46) = 24.5$, $r^2 = 0.20$, $P < 0.0001$.
[d] Induction time related to body weight; induction (sec) = 163.9 ± 2.14*weight (kg); $F(1,46) = 19.0$, $r^2 = 0.29$, $P < 0.0001$.
[e] Conscious time = time from injection until animal responded to outside stimuli.
[f] Standing time = time from injection until animal stood without assistance for ≥10 seconds.

collar (hogs) or intraperitoneal transmitter (peccaries), following the surgical procedures of Ilse and Hellgren (1995). All animals were returned to the trap and monitored until recovery. Induction time (min) was defined as time of injection to complete immobilization. Animals were considered immobilized when they did not respond to sound or prodding. Time to consciousness (min) was defined as time from injection to time the animal responded to external stimuli such as sound or touch. Standing time (min) was defined as the time from injection until the animal stood without assistance for ≥10 sec. Linear regression was used to determine relationships between body weight and dosage to induction, consciousness, and standing time. Analysis of variance was used to test for sex and species differences (SAS Institute Inc., 1990).

We immobilized 207 peccaries and 59 hogs 249 and 105 times, respectively. Only animals immobilized with the first injection were included in analyses. Sufficient data for analysis was recorded from 100 peccaries captured 107 times (seven were captured twice) and 36 hogs captured 50 times (three were captured three times and eight were captured twice). Time constraints did not allow for all data to be recorded from every animal. Inductions, vital signs, and recoveries were consistent with previous findings (Table 1; Schilling and Stone, 1969; Zervanos, 1975). Ambient temperatures ranged from 2 to 37 C. Analgesia, muscle relaxation, and anesthesia were adequate for venipuncture and short surgical procedures for implanting an intraperitoneal transmitter. Collared peccaries implanted with transmitters (n = 23) were given an additional 2.2 mg/kg prior to the procedure, generally 30 to 40 min after the initial injection. Standing and conscious times of these animals were not included in the analyses because of lengthened recovery times (4 to 8 hr).

No differences by sex for either species were found for induction, conscious, or standing times ($P > 0.37$). Dose did not affect induction, conscious, or standing time ($P > 0.10$). Because of weight estimation error, peccaries received a higher dose than hogs ($P = 0.0048$; Table 1). Induction time was positively correlated with body weight for both species (Table 1). Variability of induction time decreased with increasing dose and increased with body weight for peccaries. Full recovery (when the animal showed no signs of drowsiness or lack of coordination) was 2 to 4 hr after initial injection, at which time

the animals were released from the traps. No species differences were observed for induction, conscious, and standing times ($P > 0.05$). Peccaries had lower rectal temperatures than hogs ($P = 0.018$; Table 1). At least 35 peccaries and 10 hogs were pregnant when immobilized, but no complications occurred during immobilization, and many animals were later sighted with offspring.

Fifty animals (25 peccaries and 25 hogs) were not immobilized with the first injection, mainly due to underestimation of body weight (19 peccaries and 22 hogs). These animals were not used in analyses because they were given an additional injection after >10 min. One peccary, not used in analyses, died from an overdose (9.78 mg/kg) due to overestimation of body weight, and accidentally given two injections for its estimated body weight; no other animals died as a result of immobilization. Several animals of both species became re-sedated after becoming conscious or standing. These individuals seemed to have a lengthened recovery times. There was only one case of hyperthermia with a hog (>41 C). Rectal temperature decreased before this animal became conscious; thus its body temperature probably was elevated from trap-related stress before drug injection.

Use of Telazol® and xylazine provided safe and predictable immobilization of both feral hogs and collared peccaries. Peccaries immobilized with this combination had lower body temperatures, and possibly better analgesia than Chacoan peccaries anesthetized with Telazol® alone (Allen, 1992). Although Baber and Coblentz (1982) reported faster induction times for hogs with a mixture of ketamine and xylazine, Ilse and Hellgren (1995) described hyperthermia in hogs while using this mixture. Gallagher et al. (1985) reported high incidences of mortality and heat stress in collared peccaries immobilized with ketamine alone. Additionally, the high potency (per ml basis) of the Telazol®/xylazine combination makes it more practical for immobilizing free-ranging animals. Analgesia and anaesthesia were adequate for short surgical procedures and field measurements, tagging, and blood collection. This drug combination provided safe immobilization over a wide range of ambient temperatures with no long term effects noted. Although not attempted in this study, reversal of xylazine could be accomplished using yohimbine HCl (Millspaugh et al., 1995), but clinical study is needed.

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LITERATURE CITED

ALLEN, J. L. 1992. Immobilization of giant Chacoan peccaries (*Catagonus wagneri*) with tiletamine hydrochloride/zolazepam hydrochloride combination. Journal of Wildlife Diseases 28: 499–501.

BABER, D. W., AND B. E. COBLENTZ. 1982. Immobilization of feral pigs with a combination of ketamine and xylazine. The Journal of Wildlife Management 46: 557–559.

GALLAGHER, J. F., R. L. LOCHMILLER, AND W. E. GRANT. 1985. Immobilization of collared peccaries with ketamine hydrochloride. The Journal of Wildlife Management 49: 356–357.

GRAY, C. W., M. BUSH, AND C. C. BECK. 1974. Clinical experience using CI-744 in chemical restraint and anesthesia of exotic specimens. Journal of Zoo Animal Medicine 5: 12–21.

HAIGH, J. C., I. STIRLING, AND E. BROUGHTON. 1985. Immobilization of polar bears (*Ursus maritimus* Phipps) with a mixture of tiletamine hydrochloride and zolazepam hydrochloride. Journal of Wildlife Diseases 21: 43–47.

ILSE, L. M., AND E. C. HELLGREN. 1995. Resource partitioning in sympatric populations of collared peccaries and feral hogs in southern Texas. Journal of Mammalogy 76: 784–799.

KIRKPATRICK, R. D., AND L. K. SOWLS. 1962. Age determination of the collared peccary by the tooth replacement patterns. The Journal of Wildlife Management 26: 214–217.

LOCHMILLER, R. L., E. C. HELLGREN, R. M. ROBINSON, AND W. E. GRANT. 1984. Techniques for collecting blood from collared peccaries, *Dicotyles tajacu* (L.). Journal of Wildlife Diseases 20: 47–50.

MATSCHKE, G. H. 1967. Aging European wild hogs by dentition. The Journal of Wildlife Management 31: 109–113.

MILLSPAUGH, J. J., G. C. BRUNDIGE, J. A. JENKS, C. L. TYNER, AND D. R. HUNSTEAD. 1995. Immobilization of Rocky Mountain elk with Telazol® and xylazine hydrochloride, and antagonism with yohimbine hydrochloride. Journal of Wildlife Diseases 31: 259–262.

SAS INSTITUTE INC. 1990. SAS procedures guide, version 6, 3rd ed. SAS Institute Inc., Cary, North Carolina, 705 pp.

SCHILLING, P. W., AND H. L. STONE. 1969. Comparative cardiovascular measurements in the javelina (*Tayassu tajacu*). Laboratory Animal Care 19: 331–335.

STIRLING, I., E. BROUGHTON, L. O. KNUTSEN, M. A. RAMSAY, AND D. S. ANDRIASHEK. 1985. Immobilization of polar bears with Telazol® on the western coast of Hudson Bay during summer 1984. Canadian Wildlife Services Progress Notes 157: 1–7.

ZERVANOS, S. M. 1975. Seasonal effects of temperature on the respiratory metabolism of the collared peccary (*Tayassu tajacu*). Comparative Biochemistry and Physiology 50A: 365–371.

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