

## **TECHNIQUES FOR COLLECTING BLOOD FROM COLLARED PECCARIES, DICOTYLES TAJACU (L.)**

Authors: Lochmiller, R. L., Hellgren, E. C., Robinson, R. M., and Grant, W. E.

Source: Journal of Wildlife Diseases, 20(1) : 47-50

Published By: Wildlife Disease Association

URL: <https://doi.org/10.7589/0090-3558-20.1.47>

---

The BioOne Digital Library (<https://bioone.org/>) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses the flagship aggregation BioOne Complete (<https://bioone.org/subscribe>), the BioOne Complete Archive (<https://bioone.org/archive>), and the BioOne eBooks program offerings ESA eBook Collection (<https://bioone.org/esa-ebooks>) and CSIRO Publishing BioSelect Collection (<https://bioone.org/csiro-ebooks>).

Your use of this PDF, the BioOne Digital Library, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/terms-of-use](http://www.bioone.org/terms-of-use).

Usage of BioOne Digital Library content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

---

BioOne is an innovative nonprofit that sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

## TECHNIQUES FOR COLLECTING BLOOD FROM COLLARED PECCARIES, *DICOTYLES TAJACU* (L.)

R. L. Lochmiller,<sup>1</sup> E. C. Hellgren,<sup>1</sup> R. M. Robinson,<sup>2</sup> and W. E. Grant<sup>1</sup>

**ABSTRACT:** Four methods are described for obtaining blood samples from the collared peccary. This animal lacks prominent superficial veins which makes the procedure of taking blood difficult for inexperienced persons. Large volumes of blood (>20 ml) can be obtained easily via anterior vena cava venipuncture. Moderate amounts of blood (<20 ml) can be obtained from the orbital sinus. Lesser volumes of blood can be obtained from superficial veins located on the ear and the hind limb. The saphenous vein is distended easily due to its unique location across the cranial face of the tibia.

### INTRODUCTION

Blood collection for hematological or serological analyses allows for the monitoring of many physiological, nutritional, or disease conditions in both wild and captive animals. Anatomical characteristics of the collared peccary make blood sampling difficult. They generally lack prominent superficial blood vessels which are easily accessible for venipuncture. The saphenous vein and ear veins are exceptions. Their short neck makes jugular venipuncture nearly impossible because the jugular furrow cannot be occluded with digital pressure and cephalic veins are small and difficult to locate. This paper describes four methods which have been successfully used under field and captive-experimental conditions for obtaining blood from the peccary.

### METHOD AND MATERIALS

Restraint is mandatory when working with collared peccaries. Chemical restraint is safer and more efficient than manual restraint. We have performed over 500 bleedings of both captive and wild collared peccaries using ketamine hydrochloride at a dosage of 20 mg/kg administered by blowgun-syringe (Lochmiller and Grant, 1983) for chemical restraint. One

person can quickly and safely immobilize and bleed a chemically restrained collared peccary, whereas manual restraint requires several support personnel.

Blood collecting is facilitated further by use of a V-shaped trough, 1 m long by 0.5 m wide, with sides sloping at a 45 degree angle to stabilize peccaries in the dorsal recumbent position.

### RESULTS AND DISCUSSION

#### Anterior vena cava

The anterior vena cava is the best location for taking >20 ml of blood. The technique is similar to the method used to bleed domestic swine (Carle and Dewhirst, 1942; Hoerlein et al., 1951; Mackellar, 1970). The animal is placed in the dorsal recumbent position in the V-shaped trough at a convenient working height (Fig. 1). The region from which the blood is taken lies anterior to the first pair of ribs, ventral to the trachea, and dorsal to the manubrium of the sternum. Extending the animal's head slightly stretches the sternocephalic musculature, which serves as an excellent guide for needle entry. The approximate entry point of the needle can be found by placing the thumb of the free hand against and anterior to the manubrium of the sternum. We routinely enter from the right, but left-handed persons may feel more comfortable with needle entry from the left side of the peccary. The needle then is inserted at a point equal to the width of the thumb anterior and slightly lateral to the edge of

Received for publication 23 May 1983.

<sup>1</sup> Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, Texas 77843, USA.

<sup>2</sup> Texas Veterinary Diagnostic Laboratory, School of Veterinary Medicine, Texas A&M University, College Station, Texas 77843, USA.



FIGURE 1. Bleeding from the anterior vena cava of an adult collared peccary, showing the proper position of the animal and proper needle entry point.



FIGURE 2. Bleeding from the orbital sinus of an adult collared peccary using a 25 mm by 1.65 mm needle and collecting tube containing EDTA.

the sternocephalicus muscle. The needle is guided medially, dorsally, and caudally at a 30 to 40 degree angle to the plane formed by the sternum. Constant aspiration of the syringe is not necessary. Depth of needle penetration required depends on the size of the animal, but will range between 30 and 40 mm in an adult. We found a 38 mm (1½-inch) by 0.81 mm (21-gauge) needle to give best results, with little hemolysis resulting.

Blood sampling from the anterior vena cava is not without risks (Hoerlein et al., 1951). However, over 300 bleedings have been made from the anterior vena cava of collared peccaries ranging in weight from 5 to 32 kg without fatality. The procedure is considerably more difficult on piglets due to the smaller diameter of vessels.

#### Orbital sinus

Bleeding from the orbital sinus of collared peccaries is ideal for relatively inexperienced persons and yields moderate volumes of blood (<20 ml) in a short period of time. Bleeding from the orbital sinus was first described for use on rats and mice (Stone, 1954). The technique was modified using glass pipettes for large (Hunn et al., 1969; Espartza, 1970) and suckling (Friend and Brown, 1971) domestic swine. The technique was modified

for collared peccaries by using a 25 mm (1-inch) by 1.65 mm (16-gauge) disposable needle instead of a glass pipette.

The animal is placed in the dorsal recumbent position with its head extending slightly beyond the end of the trough (Fig. 2). The head of the animal is steadied by the researcher by gripping the snout with the free hand (left hand if bleeding right eye). The needle is placed at the medial canthus of the eye just medial to the nictitating membrane. The needle is inserted at a slightly ventral, posterior slant through the conjunctiva. The needle is advanced approximately 2 cm until the venous sinus adjacent to the bony orbit is entered. A slight rotating motion of the needle will facilitate its entry. Once the sinus is penetrated, blood will flow from the needle and fill a 10-ml collecting tube held beneath the needle within 5–10 seconds. If blood flow becomes slowed, a slight retraction or rotation of the needle often enhances flow.

When the desired volume of blood is obtained, the needle is retracted. The eyelid can be closed and digital pressure applied to the medial canthus to stop the flow of blood from the sinus. Repeated bleedings from the orbital sinus have not been attempted with the collared peccary. However, Pond and Houpt (1978) stated that bleedings can be repeated at 10-day



FIGURE 3. Right cranial aspect of hindlimb of an adult collared peccary showing proper method of occluding and distending the lateral saphenous vein.



FIGURE 4. Bleeding from the ear vein of an adult collared peccary. The small diameter of this vessel makes closed methods of bleeding difficult.

intervals for up to eight samplings without any problems in swine. We have observed both adult and 3-wk-old piglets for several days after orbital sinus bleedings with no adverse results.

#### Saphenous vein

Bleeding from the saphenous vein of collared peccaries has the advantage of allowing frequent collections of moderate amounts of blood (<10 ml) from an easily accessible location. The animal is placed in either the dorsal or lateral recumbent position (Fig. 3).

The collared peccary has a prominent saphenous vein which traverses the cranial aspect of the tibia. Hair should be removed with scissors along the cranial aspect of the tibia. Digital pressure applied to the proximal end of the tibia just below the medial condyle causes the vein to distend prominently. Blood is drawn in a 10-cc syringe with a 25 mm by 1.24 to 1.65 mm (16 to 18-gauge) needle attached. Following removal of the needle, digital pressure should be applied to stop bleeding and minimize hematoma formation.

#### Ear vein

The ear vein can be used to obtain small volumes of blood (<10 ml) as in domestic swine (Shearer and Neal, 1972; Imlah and McTaggart, 1977). Bleeding can be by

free-flow or closed methods. Occlusion and subsequent dilation of the ear vein can be accomplished by digital pressure (Fig. 4) or by placement of a rubber band around the base of the ear. Free flow is best achieved by puncturing the ear vein with a lancet and allowing the blood to flow into a collecting tube. Closed methods can be employed using a 25 mm by 1.65 mm needle attached to a syringe.

Disadvantages of using the ear vein for bleeding the collared peccary include blood contamination from free flow across the surface of the ear, difficulty in inserting a needle into the small vein, and limitations on the volume of blood (1 to 5 ml) that can be obtained easily.

The method of blood collection selected for bleeding collared peccaries should depend upon the volume of blood needed, the age and size of the animal, the method of restraint, and whether or not sterile blood samples are required. Largest volumes can be obtained from anterior vena cava and orbital sinus bleeding. Orbital sinus bleeding is recommended for pre-weaned piglets. The anterior vena cava is recommended for sterile samples.

#### ACKNOWLEDGMENTS

Financial support for this research was provided by the Caesar Kleberg Research Program in Wildlife Ecology, the Texas A&M University

Minigrant Program, and the National Rifle Association of America Grants-In-Aid Program. We appreciate the assistance provided by Dr. Pat Reardon and other personnel at the Chaparrosa Ranch, La Pryor, Texas, and their generous donation of many captive collared pecaries.

#### LITERATURE CITED

- CARLE, B. N., AND W. H. DEWHIRST. 1942. A method of bleeding swine. *J. Am. Vet. Med. Assoc.* 101: 495-496.
- ESPARTZA, M. 1970. Collection of blood samples. *Vet. Rec.* 86: 758.
- FRIEND, D. W., AND R. G. BROWN. 1971. Blood sampling from suckling piglets. *Can. J. Anim. Sci.* 51: 547.
- HOERLEIN, A. B., E. D. HUBBARD, AND R. GETTY. 1951. The procurement and handling of swine blood samples on the farm. *J. Am. Vet. Med. Assoc.* 119: 357-362.
- HUHN, R. G., G. D. OSWEILER, AND W. P. SWITZER. 1969. Application of the orbital sinus bleeding technique to swine. *Lab. Anim. Care* 19: 403-405.
- IMLAH, P., AND H. S. MCTAGGART. 1977. Blood sampling from pigs. In *Comparative Clinical Hematology*, R. K. Archer and L. B. Jeffcott (eds.). Blackwell Scientific Publications, London, England, pp. 546-549.
- LOCHMILLER, R. L., AND W. E. GRANT. 1983. A sodium bicarbonate-acid powdered blow-gun syringe for remote injection of wildlife. *J. Wildl. Dis.* 19: 48-51.
- MACKELLAR, J. C. 1970. Collection of blood samples and smears for diagnosis. *Vet. Rec.* 86: 302-306.
- POND, W. G., AND K. A. HOUP. 1978. *The Biology of the Pig*. Cornell Univ. Press, Ithaca, New York, 371 pp.
- SHEARER, I. J., AND G. D. NEAL. 1972. The establishment and maintenance of indwelling venous catheters in adult female pigs. *N.Z. Vet. J.* 20: 73-75.
- STONE, S. H. 1954. Method for obtaining venous blood from the orbital sinus of the rat or mouse. *Science* 119: 1000.