

## Handling of female pacas (*Agouti paca*, Linnaeus, 1766) for ultrasound pregnancy detection

### Manejo de pacas fêmeas (*Agouti paca*, Linnaeus, 1766) para detecção ultra-sonográfica de prenhez

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#### Summary

The paca is a South American rodent whose handling, tranquilization or anesthesia offers a large field of research due to rare existing issues. Twelve adult female pacas were used, separated in 6 pens, and were caught with a net made of polypropylene attached to a wire loop and then sent to a room where the abdominal hair clipping was done. Afterwards, the female was placed in an iron bar squeeze cage. The ultrasonography session was made in B mode with a two-frequency sectorial electronic transducer of 5.0 and 7.5 MHz. Intending to reduce the stress caused by the procedures, the tranquilization of females was made with oral taking of diazepam and midazolam maleate. Both presented effectiveness in tranquilization of pacas previously and during sessions, being the midazolam maleate the one that better facilitated the animal handling.

**Key-words**  
Paca.  
Handling.  
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#### Introduction

Because of specific behavioral and biological characteristics, the completion of medical and handling procedures of pacas in zoos and raising coops are very difficult because even when they become used to keepers and captivity conditions, they are very susceptible to stress, responding aggressively and not permitting any kind of handling<sup>1,2</sup>. Nets attached to a wire loop and squeeze cages are necessary to the physical restraint and examination of small rodents<sup>3</sup>.

Literature lacks concerning tranquilizations or anesthesia of South American rodents, as pacas, existing only one previous study referring to the use of anesthetic drugs in this species<sup>4</sup>.

#### Material and Method

Twelve female adult pacas weighting from 8 to 10 kilograms and identified by microchip applied in the cervicodorsal region were used. These animals belong to the Wild Animal Sector of the College of Agricultural and Veterinarian Sciences, São Paulo



**Figure 1**  
Method used for hair clipping of the abdominal region of paca previous to the ultrasound sessions, in which the pelvic members were kept lifted. Jaboticabal, SP, 2002.



**Figure 2**  
Paca on standing position, left in a restraint cage covered with a black cloth in its anterior part during the abdominal ultrasound session. Jaboticabal, SP, 2002.

State University, Jaboticabal, São Paulo, Brazil. Aiming the breeding, the animals were kept in groups of one male and two females per pen of 15 m<sup>2</sup> area, with a water flow of one meter in width, 1.5 m of length and 0.5 m of depth. There was also a brick burrow, subdivided in three inside portions.

The feeding of the animals was done with rodent food (Labina<sup>TM</sup>, Agribands do Brasil Ltda®, Brazil), in the quantity of 1.00% of its body weight a day, and fresh fruits (10.00 to 20.00% of its body weight a day).

To make each ultrasound session, the females were captured using a polypropylene net attached to a wire loop and then taken to a room next to the pens where the hair clipping was performed with stainless steel blades, and for that, only the hind limb

members were kept lifted in the abdominal region exteriorized of the net, since the maintenance of the female on dorsal recumbency was inappropriate because the animal is aggressive (Figure 1).

After the hair clipping, the female was kept in an iron bar squeeze cage and after the paca immobilization, which was kept in standing position, an ultrasound sessions was initiated. The cage was covered in its anterior part with a black cloth, and fresh fruits were furnished during these sessions, aiming to lessen the animal stress (Figure 2).

The B mode ultrasound exams were performed with a two-frequency sectorial electronic transducer of 5.0 and 7.5 MHz (LC 100 Vet<sup>TM</sup>, Pie Medical®, The Netherlands) and each session took from 10 to 15 minutes.

## Results

The ultrasound sessions were done once a week but due to a miscarriage and the lack of new pregnancies in two successive months, this interval was changed to every two weeks for two months. During the ultrasound sessions in this period a great stress was observed in the pacas due to capture and hair clipping and no other pregnancy happening was observed.

It was decided to enlarge the time interval between consecutive sessions, changing to one session a month. In the first session after this period three pregnant pacas were observed, which were followed-up with ultrasound until parturition.

Trying to lessen even more the stress due to the used procedures, besides preserving the normal development of the three occurred pregnancies, the tranquilization of the females was adopted with the use of

diazepam (Diazepam *cazi*<sup>TM</sup>, Cazi Química Farmacêutica, Indústria e Comércio Ltda<sup>®</sup>, Brazil); one tranquilizer tablet, containing 10 g of the active ingredient, was placed inside a piece of fruit (mostly bananas) which was offered the animal half hour before the capture for ultrasound. Therefore some animals were reluctant to ingest the food with the tablet, being necessary to remove the fruits from the animals diet one day before the ultrasound session, causing them to be eager to eat these fruits and consequently the tablet on the expected day.

After about 4 months, some animals started to present a non-satisfactory tranquilization with the use of diazepam and it was opted for the use of another tranquilizer, the midazolam maleate (Dormonid<sup>TM</sup>, Roche Produtos Químicos e Farmacêuticos S.A.<sup>®</sup>, Brazil) in tablets containing 15 mg of the active ingredient each. Half tablet (7.5 mg) was given the animal the same way before.

After one year of experiment, due to constant contact with these animal, the aggressiveness due to the capture, hair clipping and ultrasound sessions lessen until the females became conditioned to freely get into the iron bar cage after being free from the net, and staying relatively calm during sessions. So the interval between two consecutive sessions were slowly reduced to 10 days.

## Resumo

A paca é um roedor sul-americano cujo manejo, tranquilização ou anestesia oferece um grande campo de pesquisa devido aos poucos artigos existentes. Doze pacas fêmeas adultas foram utilizadas, mantidas separadas em seis baias, sendo capturadas com um puçá de polipropileno e levadas a uma sala na qual se realizava a tricotomia abdominal. Após, os animais eram colocados em uma gaiola de ferro de compressão lateral. A sessão de ultra-sonografia era realizada em modo B com um transdutor setorial eletrônico de 5,0 e 7,5 MHz. Para a diminuição do estresse causado pelos procedimentos, a tranquilização das fêmeas era realizada com diazepam e maleato de midazolam por via oral. Ambos demonstraram-se efetivos na tranquilização das pacas previamente e durante as sessões, sendo que o maleato de midazolam proporcionou um melhor manejo dos animais.

## Discussion

The restraint was the most important factor to execute this experiment and required the use of different techniques so the work could be developed without accident risk<sup>5</sup>. As in other small rodents, the physical restraint was necessary and achieved by using a net attached to a wire loop and a squeeze cage<sup>3</sup>. Chemicals were also essential for a better handling<sup>3,4,6,7</sup>.

General anesthesia was not necessary in the pacas for the employed handling, differently from the general recommendation for chemical restraint of South American rodents involving the taking of sedative and an  $\alpha_2$  agonist combined with an anticholinergic agent and a dissociate anesthetic<sup>3,4</sup> and differently from the employed handling in the short-tailed gray opossum to perform abdominal ultrasound exam aiming pregnancy detection, in which an inhalatory anesthesia was adopted<sup>8</sup>.

Both tranquilizers, diazepam and midazolam maleate, presented themselves effective in tranquilizing the pacas previously and during the ultrasound sessions, being the latter the one that facilitated a better handling, resulting a faster abdominal hair clipping, besides less vocalizations and less moving of the animals during sessions.

## Palavras-chave

Pacas.  
Manejo animal.  
Prenhez.

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