

# ZOLETIL® IMMOBILIZATION OF WILD BOAR (*Sus scrofa* L.)

Fournier P. \*, Fournier-Chambrillon Ch. \*, Maillard D. \*, Klein F. \*\*

Office National de la Chasse, C.N.E.R.A. Cervidés-Sanglier

\*165, rue Paul Rimbaud, B.P. 6074, 34030 Montpellier Cedex 1, France.

\*\*Rue Rhin, 67150 Gerstheim, France.

**Abstract:** Many Wild boar (*Sus scrofa* L.) experiments carried out over the last 15 years required capturing and handling of the animals. Since Zoletil® N.D. has been used successfully to immobilize many wildlife species, we tested it on 46 free-ranging wild boars, captured in box traps and on 17 hand-reared wild boars. They were anesthetized in the box trap with the help of a hypodermic pistol. The freeze dried form of Zoletil® N.D. allowed us to administer strong dosages despite the very small volumes required by our method of teleanesthesia.

Mean induction time (loss of equilibrium, collapse and effective lying down) was 3' 41" and did not depend on the administered dosage ( $r = 0.14$ ). With a dosage rate between 6.8 and 9.2 mg/kg of body weight, all animals slept between 15 minutes and one hour. Sleep was deeper and longer when more than 9.2 mg/kg were administered. The maximum dosage tested without lethal effect was 15 mg/kg. Therefore we recommend a mean dosage of 8 mg/kg, which allows for a 15% estimation error of body weight. The very agitated recovery phase is a critical period during which the animal must be kept under constant surveillance to prevent any heart or respiratory failure due to added stress. The use of an immobilizing agent for Wild boar allows people to manipulate it safely, without much risk for the animal.

**Keywords:** Wild boar, *Sus scrofa*, Suidae, Anesthesia, Immobilization, Handling, Zoletil® N.D..

IBEX J.M.E. 3:134-136

## 1. Introduction

Handling live Wild boar (*Sus scrofa* L.) is a very delicate and sometimes dangerous procedure for the researcher as well as for the animal. Many authors have therefore adopted the use of an immobilizing drug. The results of recent experiments, however, have been disappointing (Wood *et al.*, 1977; Duchamps, 1985; Janeau *et al.*, 1993).

The successful use of Zoletil® N.D. on several wildlife species, as well as the preliminary results obtained by Klein *et al.* (1993) on the Wild boar persuaded us to continue dose-effect experiments on this species.

## 2. Material and methods

Zoletil® N.D. is a combination of two substances: tiletamine, a potent dissociative anesthetic, and zolazepam, a benzodiazepine derivative. The latter attenuates the undesirable effects of dissociative anesthesia, owing to its important anticonvulsive and muscle-relaxant properties. The form of the freeze dried product allows reconstitution with sterile water at concentrations of 100 to 400 mg/ml, which are compatible with the very small volumes required by our method of teleanesthesia.

Experiments were carried out in France with 46 free-ranging wild boars captured in box traps

(Jullien *et al.*, 1988) and on 17 pen-reared boars forced into restraining cages.

After an estimation of body weight, the animals were injected intramuscularly while in the box trap or in the restraining cage with a syringe dart containing the pressurized solution, shot from an air pistol. The various stages of anesthesia were recorded to the nearest second, starting at time  $T_0$ , the time of successful injection:

*Induction time*  $T_0 \rightarrow T_i$ : animal has completely collapsed and does not respond to external stimuli.

*Anesthesia time*  $T_i \rightarrow T_r$ : first signs of recovery.

*Immobilization time*  $T_i \rightarrow T_1$ : first time animal is standing up.

*Recovery time*  $T_r \rightarrow T_d$ : animal will stand up for a long time and flee.

*Flight of animal*  $T_0 \rightarrow T_d$ .

All wild boars were weighed (Fig.1).

## 3. Results

48 out of 63 wild boars were completely anesthetized with doses ranging from 2.96 to 15 mg/kg of body weight. The 15 remaining animals were only partially immobilized with doses varying from 1.4 to 6.79 mg/kg (Fig. 2).

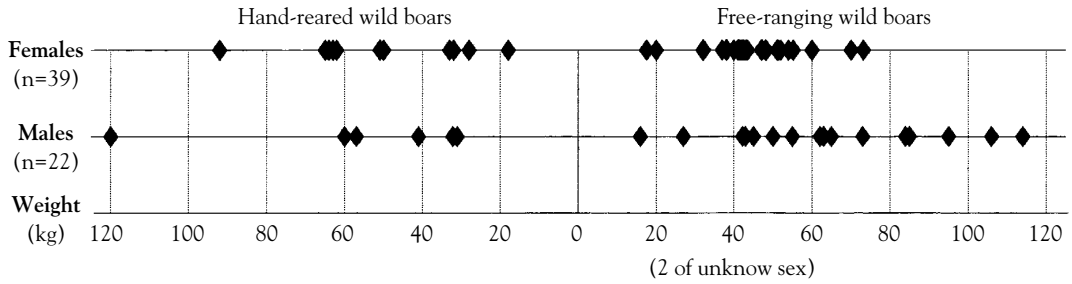


Figure 1 - Weight distribution.

They had to be kept in restraining cages. Table 1 shows the mean time period of sleep throughout the different phases of anesthesia for all animals that had slept.

Table 1 - Mean time period of the different phases of anesthesia.

	MEAN TIME	SD	RANGE
Induction	3'41"	1'24"	1'30"-8'
Anesthesia	37'37"	16'41"	13'-87'
Immobilization	57'45"	21'49"	21'-107'
Flight	86'44"	27'40"	32'-155'

**4. Discussion and conclusion**

The state of stress of the Wild boar at the moment of injection will affect the response to anesthesia. However, our data did not allow us to show any differences in susceptibility to the drug between boars living in the wild and those in captivity.

Induction time is short (3'41") and does not depend on the administered dose ( $r = 0.14$ ). The mean period of anesthesia of 37'37" is sufficient to carry out time-consuming data collection. With dosages of 6.8 to 9.2 mg/kg, all animals (n = 25) slept between 15 and 65

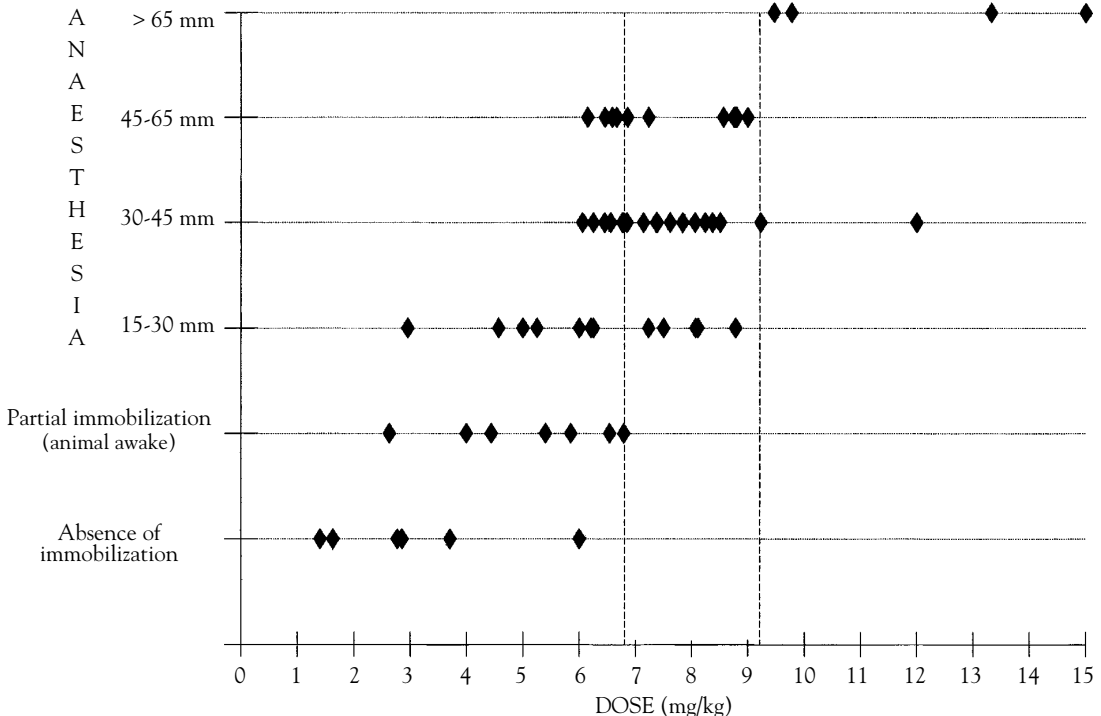


Figure 2 - Effect of drug as a function of dosage.

minutes ( $x = 37'17''$ ). At a dose rate of more than 9.2 mg/kg sleep will be more profound and longer (Fig. 2).

Mean immobilization time is 57'45'', whereas the time period obtained by Baber and Coblenz (1982) with a combination of ketamine and xylazine (1:1) was only 43'48''. Other drugs like succinylcholine chloride (Zurowski & Sakowicz, 1965; Matschke & Henry, 1969; Wood *et al.*, *op. cit.*), sernylan (Henry & Matschke, 1972) and azapérone (Janeau *et al.*, *op. cit.*) gave immobilization periods that were too short and highly variable.

The recovery period is very agitated (intensive leg movements, animals frequently fall down). Its variation in time (45'26'' on average;  $sd = 26'38''$ ) does not depend on dose rate ( $r = 0.14$ ). Environmental conditions should be optimal during recovery of the animals, including a quiet place, with shade if the weather is hot. In fact, the only case of mortality was a sow near parturition. When the animal woke up, it squeezed under a vehicle and died of stress.

All our data show the qualities of Zoletil® N.D. and the advantage of using it on Wild boar. We recommend a mean dosage rate of 8 mg/kg. This will permit a 15% error estimation of body weight while staying within the range of 6.8-9.2 mg/kg for which we obtained 100% anesthesia lasting for 15 to 65 minutes.

### 5. Acknowledgements

We would like to thank Dr. Marchand (lecturer of parasitology at the National School of Veterinary Sciences in Nantes), who kindly provided Zoletil® N.D. used in the experiments.

### REFERENCES

- BABER D.W. & COBLENTZ B.E., (1982) - Immobilization of feral pigs with a combination of ketamine and xylazine. *J. Wildl. Manage.*, 46(2): 557-559.
- DUCHAMPS A., (1985) - Immobilisation d'animaux sauvages en pratique. Bilan et perspectives. *Proceedings of the 17th International Union Game Biologists*, September 1985, 17: 795-802.
- HENRY V.G. & MATSCHKE G.H., (1972) - Immobilizing European wild hogs with sernylan. *J. Tenn. Acad. Sci.*, 47: 81-84.
- JANEAU G., GLEIZE J.C. & DUNCAN P., (1993) - Immobilisation du Sanglier (*Sus scrofa*) par voie chimique. In: *Techniques de capture et de marquage des ongulés sauvages*. D. Dubray & F.D.C. Hérault (eds), Montpellier: 33-36.
- JULLIEN J.M., VASSANT J., DELORME D. & BRANDT S., (1988) - Techniques de capture de sangliers. *Bull. Mens. Off. Natl. Chasse*, 122: 28-35.

- KLEIN F., MAGAR A., JULLIEN J.M., COURTHIAL J.J., DELORME D. & HAMANN J.L., (1993) - L'utilisation de l'anesthésie pour manipuler le Cerf, le Sanglier et le Chevreuil préalablement capturés par moyens mécaniques. *Techniques de capture et de marquage des ongulés sauvages*. D. Dubray & F.D.C. Hérault (eds), Montpellier: 27-32.
- MATSCHKE G.H. & HENRY V.G., (1969). Immobilizing European wild hogs with succinylcholine chloride. *J. Wildl. Manage.*, 33: 1039-1041.
- WOOD G.W., JOHNSON E.E. & BRENNEMAN R.E., (1977) - Observations on the use of succinylcholine chloride to immobilize feral hogs. *J. Wildl. Manage.*, 41: 798-800.
- ZUROWSKI W. & SAKOWICZ M., (1965) - Effects of succinylcholine chloride on wild boars. *J. Wildl. Manage.*, 29: 626-629.