

## ELECTROEJACULATION AND SEMINAL CHARACTERISTICS IN CHINCHILLA (*Chinchilla laniger*)\*

### ELETROEJACULAÇÃO E CARACTERÍSTICAS SEMINAIS EM CHINCHILLA (*Chinchilla laniger*)

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#### SUMMARY

Semen collection in Chinchilla was attained through electroejaculation with an electrode inserted 3cm deep in the rectum, utilizing a series of 9 shocks of 12.5 mA, 6 shocks of 25.0 mA and 19 shocks of 50.0 mA. Material obtained was considered of good quality, both for freezing and thawing.

**UNITERMS:** Electroejaculation; Semen; Chinchillas

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#### INTRODUCTION AND LITERATURE

Chinchilla (*Chinchilla laniger*) is a rodent from Andes Cordillera, actually raised in captivity in specialized conditions. Its commercial exploitation is highly valuable due to beautiful colour and softness.

Electroejaculation in chinchilla is a safe, practical and suitable tool to collect semen in this species since some careful measures are taken (WEIR<sup>7</sup>, 1966).

DALZIEL; PHILLIPS<sup>2</sup> (1948) presented improvements in the technique of electric ejaculation with emphasis given to safety and effectiveness. Concern was given to the safety of both the operator and animal and secondary concern to effectiveness and discomfort of the animal.

HILLEMANN et al.<sup>5</sup> (1963) described an electroejaculation method in chinchilla however, no details on electrode or volts utilized were given.

HEALEY; SADLEIR<sup>3</sup> (1966) and HEALEY; WEIR<sup>4</sup> (1967) have utilized a multiring type electrode 12cm long x 6.5mm in diameter with 2.5mm brass rings separated by 4.5mm wide with brass collars coated with araldite.

PEREZ Y PEREZ; PEREZ GUTIERREZ<sup>6</sup> (1985) referred to weekly stimuli of 22V, 85 to 100 mA, application of 4 seconds and 10 to 12 seconds of interval.

The objectives of this study were: a) to evaluate a practical and safe method to collect semen through electroejaculation and b) to analyse some components of semen picture aiming at its utilization in artificial insemination, either in fresh or frozen condition.

#### MATERIAL AND METHODS

Nine adult males were electroejaculated, once a week, by means of a bipolar rectal probe (14cm in length, 4mm in diameter and 1mm between 2 poles of the probe) and alternating current.

Electrode is connected to a command box of 12 volts giving 10 to 250 mA shocks. The rectal pole was lubricated with carboxi-methyl-cellulose and inserted into the rectum to a depth of 3cm. The current was applied for 3 to 4 seconds out of each similar period.

Semen was directly collected in 0.5ml of saline solution 0.9% plus chemiotrypsin 0.2% at 37°C (HILLEMANN et al.<sup>5</sup> 1963).

Sperm motility was evaluated in optical microscope (200X) taking into consideration only spermatozoa with progressive movements.

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Sperm concentration was measured through haematimetric technology in Neubauer chamber.

Sperm pathology was analysed in wet preparations of formal saline in phase differential microscopy (1250X). Sperm defects were classified according to BLOM<sup>1</sup> (1972).

Semen extenders comprised fraction A and B, as follows:

	Fraction A (100 ml)	Fraction B (100 ml)
Sodium citrate	1,47 g	2,53 g
Distilled water	75 ml	68 ml
Egg-yolk	25 ml	25 ml
Glycerol	-	7 ml
Streptomycin	0,2 g	0,2 g
Penicillin	100.000 I.U.	100.000 I.U.

After an equilibration period of approximately 3 hours, the semen straws were frozen horizontally at 4 cm from vapours of nitrogen for 15 minutes and then stored in liquid nitrogen at - 196°C.

## RESULTS AND DISCUSSION

From 146 semen collections it was observed a high variation in the number of shocks, as well as on its intensity (from 12.5 mA to 50 mA) to obtain ejaculations. On the other hand, in 25.4% collections did not succeed.

Best series of shocks to obtain ejaculations were as follows:

- 9 shocks of 12.5 mA
- 6 shocks of 25.0 mA
- 19 shocks of 50.0 mA

The length of the electrode was 2 cm longer with 2.5 mm diameter and 1 mm less in spacing in relation to that used by HEALEY; SADLEIR<sup>3</sup> (1966) and HEALEY; WEIR<sup>4</sup> (1967). On the other hand, the electric current to get good results in ejaculation was higher to that indicated by these same authors and DALZIEL; PHILLIPS<sup>2</sup> (1948), but lower than to that referred by PEREZ Y PEREZ; PEREZ GUTIERREZ<sup>6</sup> (1985).

Seminal characteristics obtained are shown in Tab. 1.

Semen volume ranged from 0.03 to 0.48 ml, with an average of 0.14 +- 0.06. These low values probably are due to electroejaculation according to PEREZ Y PEREZ; PEREZ GUTIERREZ<sup>6</sup> (1985).

Sperm concentration also showed a wide range, 49,500 to 5,197,500 spz/mm<sup>3</sup> (average = 2,306,333 ± 1,520,000 spz/mm<sup>3</sup>). Mean values agree with 750,000 to 2,599,923 spz/mm<sup>3</sup> obtained by PEREZ Y PEREZ; PEREZ GUTIERREZ<sup>6</sup> (1985).

Sperm motility ranged since no motility at all up to 90% (average = 72.88 ± 15.75%), taking into consideration only spermatozoa showing progressive motility. There is a lack in the literature concerning sperm motility in chinchilla.

Sperm morphology was studied in 50 wet slides through differential interference contrast microscopy. Due to the lack of parameters for comparisons, BLOM's classification (1972) for bull spermogram was adopted. So, major defects ranged from 0.0 to 1.5% and minor defects from 0.0 to 2.0%. These values are not significant under the practical point of view, according to PEREZ Y PEREZ; PEREZ GUTIERREZ<sup>6</sup> (1985).

TABLE 1

Seminal characteristics of *Chinchilla laniger* submitted to electroejaculation. São Paulo, Brazil, 1990.

CHARACTERISTICS	RANGE	AVERAGE
Volume	0.03 to 0.48 ml	0.15 ml
Sperm concentration	4,185,000 to 710,400,000	181,125,533
Motility	0.0 to 90.0%	71.0%
Major defects	0.0 to 1.5%	0.75%
Minor defects	0.0 to 20.0%	10.0%

In freezing process, there was an increase in motility from 90% to 100% after colding extender be added, while a drop to 48% was observed after thawing.

## CONCLUSIONS

1. Results obtained show high viability to apply artificial insemination in chinchilla.
2. Electroejaculation is a practical and safe method, but one must pay attention to the following:
  - a) a proper restraint technique;
  - b) a bipolar rectal probe with 14 cm in length, 4cm in diameter and 1mm between 2 poles, inserted into the rectum to a depth of 3 cm;
  - c) alternating current on periods about 3 to 4 seconds and equal interval between shocks;
  - d) series of 9 shocks of 12.5 mA, 6 shocks of 25.0 mA and 19 shocks of 50.0 mA.
3. Samples evaluated as good in relation to volume, sperm concentration, progressive motility and low percentage of defects freeze well and show satisfactory recovery at thawing.

## SUMÁRIO

O método da eletroejaculação foi utilizado em chinchila através de eletrodo introduzido a 3 cm no reto do animal, obtendo-se os melhores resultados com uma série de 9 choques de 12,5 mA, 6 choques de 25,0 mA e 19 choques de 50,0 mA. O sêmen obtido nestas condições foi considerado de boa qualidade, comportando-se satisfatoriamente tanto no processo de congelamento, quanto no descongelamento.

**UNITERMOS:** Eletroejaculação; Sêmen; Chinchilas

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