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New stimulation protocol of electroejaculation for semen collection in cheetahs
M.I.M. Martins1,2,3*, X. Levy1, N. Nudelman1,2, JY Routier1, JM Elbaz1, A. Fontbonne1,2
1CRESAM (Conservation and Reproduction of Wild Carnivores Endangered Species).
www.cresam.fr, 2Centre d’Etude en Reproduction des Carnivores (CERCA) – Alfort Veterinary
College, Paris, France. 3Department of Veterinary Clinics, University of Londrina State - UEL,
Londrina, PR, Brazil.
*imartins@uel.br

Genome banks were established aiming to store biological material for species conservation. Frozen semen is a type of biological material that has increased potential for conservation of species. semen collection limitations are anesthetic restraint, electroejaculation, and retrograde ejaculation. To perform semen collection in wild cats, the first-choice method, for many researchers, is electroejaculation, which can be performed on any safely anesthetized male. Different stimulation protocols have been reported in literature but many are using the one proposed by Howard in 1993 (1) which consists of three sets of stimuli (30, 30 and 20) from 2 to 5 V. Each stimulus spends 1 second from 0 V to desired voltage, keeps constant for 2 seconds and than abrupt returns to 0 V where it stays for 2 seconds before a new stimulus start. The first set consists of 10 stimuli at 2 V, 10 at 3V and 10 at 4 V. The second set consists of 10 stimuli at 3 V, 10 at 4V and 10 at 5 V. The third set consists of 10 stimuli at 4 V and 10 at 5V. The cat is rest for 2-3 minutes after each set. The objective of this study was to test the efficacy of lower electric stimuli on semen collection protocol used in domestic cats and to obtain good quality of semen in Cheetahs. Seven adult cheetahs, average aged 5 years and average weight 45 kg were used in the study. The felids were from one wildlife reserve in South Africa. The semen was collected by electroejaculation by stimulation protocol used in domestic cats which consist in 80 stimuli (30, 30 and 20) from 2 to 3 V. Each stimulus spends 10 second from 0 V to desired voltage, and abruptly returns to 0 V and immediately a new stimulus start. The first set consists of 10 stimuli at 2 V, 10 at 2V and 10 at 3V. The second set consists of 10 stimuli at 2 V, 10 at 2V and 10 at 3 V. The third set consists of 10 stimuli at 2 V and 10 at 3V. The male is rest for 5 minutes after each set (unpublished). The anaesthetic protocol used was a combination of Medetomidine (0.04mg/kg IM, Medetor®, Virbac, France) and Ketamine (2.5mg/kg IM, Imalgene1000®, Merial, France). Immediately after the collection atipamezole (0.5mL IM and 0.5 mL IV, Vetoquinol, France) was administered. Spermatic progressive motility, progressive velocity, ejaculate concentration, spermatic abnormalities of the acrosomes, midpieces, sperm tails, and head defects (2) were evaluated. Seminal characteristics (median±SD) were compared by ANOVA followed by a Kruskal-Wallis test. semen collection using the protocol with lower electrical stimulus was effective to obtain ejaculation in all animals, and in only two collections the semen was contaminated with urine. Median values of semen characteristics were: volume 2.7mL, sperm motility 75%, sperm velocity 4.0, total concentration 257x10^6 spermatozoa, and normal sperm 32%. The most frequent spermatic alterations were intermediary piece 27%, acrosome defects 19%, head defects 5%, and tail defects 8%. Urine contamination resulted in an important decrease in the sperm motility 22% and increase in the acrosomal defects 30% and intermediary piece 32%. Based on the results it may be concluded that electroejaculation with lower electrical stimulus is effective in Cheetahs to collect semen.