

Nathavut Kanatiyanont 2012: Semen Collection by Electro-ejaculation in Great Hornbill (*Buceros bicornis*) and Oriental Pied Hornbill (*Anthracoceros albirostris*). Master of Science (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Anuchai Pinyopummin, D.Vet.Med.Sc. 68 pages.

The abdominal massage (AM) is a common method for semen collection in avian, but with limit success in some species. The purpose of this study was to determine the efficacy of semen collection method by electro-ejaculation (EE) in hornbills (Bucerotidae family), which were difficult to restrain or practiced for AM. Great hornbill (*Buceros bicornis*) (GH; n = 8) and oriental pied hornbill (*Anthracoceros albirostris*) (OP; n = 4) rearing at Khao Kheow Open Zoo, Thailand were attempted for EE during the breeding period. EE was done under general anesthesia by isoflurane vaporizer. Semen could be collected from 6 GH and 4 OP with the success rates of 32.2 % (10/31 attempts) and 61.5 % (16/26 attempts), respectively. Both species had sauropsid type sperm. Only morphologically abnormal sperm (macrocephalic and round head) were found in 4 GH. Good quality GH semen had volume 5 – 8 μ l, concentration 6.3 – 7.6 x 10⁹ sperm/ml, motile sperm 70% dead sperm 3 – 9 %, normal sperm 85.5 – 89.0 % and detached acrosome 3.5 – 9.5 %. While all OP had similar fair to good semen quality ($p>0.05$). Their semen characteristics (mean \pm SD) were volume 68.7 \pm 61.2 μ l, concentration 2.2 \pm 2.3 x 10⁹ sperm/ml, motile sperm 57.4 \pm 14.4%, dead sperm 18.6 \pm 12.7 %, normal sperm 90.7 \pm 2.9 % and detached acrosome 3.6 \pm 1.9 %. OP sperm sizes were similar between individual except the mid piece length ($p<0.05$). The present study demonstrated that semen collection by EE could be safely accomplished in captive great and oriental pied hornbills with acceptable success rates. Their semen data could be useful for breeding management and as an important part for application of artificial insemination to these species.

Student's signature

Thesis Advisor's signature