

Thesis Title Morphological Studies on Crocodile
 Spermatozoa (Crocodylus siamensis)

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ABSTRACT

The successful breeding of crocodilians in captivity require thorough knowledge of reproductive biology. Unfortunately, the basic knowledge on spermatogenesis and detailed descriptions of crocodile sperm ultrastructure are lacking. The present studies were, therefore, designed to investigate 1) the feasibility in obtaining crocodile spermatozoa by electroejaculation, 2) the ultrastructure of epididymal and ejaculated crocodile spermatozoa.

These results are the first to demonstrate successful in obtaining crocodile spermatozoa by electroejaculation. Epididymal spermatozoa were obtained from three different regions of epididymis, caput, corpus and cauda, of 6 matured crocodiles, aged 5-6 years old and slaughtered during December 1992-March 1993.

Ultrastructures between epididymal and ejaculated crocodile spermatozoa are similar. Nevertheless, the ultrastructure of crocodile spermatozoa differs in several ways from that of the mammalian spermatozoa. The crocodile spermatozoa is vermiform in shape with a narrow pointed head that is curved. In general, the crocodile spermatozoa contain a typical head, midpiece, principal piece and end piece similar to that observed in other species. However, several structures are unique. These unusual features include (1) a perforatorial cap over the proximal end of the nucleus, (2) acrosomal cap over the perforatorium, (3) the nucleus consisting of 2-3 intranuclear tubules; (4) connecting collar surrounding the base of the nucleus; (5) unusual spherical mitochondria containing 8-9 laminated membranes; (6) cytoplasmic droplets appeared in most of epididymal and ejaculated spermatozoa.

The probable implication of these unique features of crocodile spermatozoa is longterm oviductal sperm storage which is unknown in this species at present. The structure differences between ejaculated and intrauterine spermatozoa as well as sperm maturation process which is suitable for application in artificial insemination of this species are of particularly interesting.