

LIGHT AND ULTRASTRUCTURAL STUDY OF SEMINIFEROUS EPITHELIUM CHARACTERISTICS OF DOMESTIC CATS DURING QUEEN BREEDING SEASON.

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Several species have a variable length breeding season (1,2). This breeding season is in relationship with the photoperiod especially in place with major changes in diary hours light during the year (3). Our previous reports showed a higher sperm concentration and best sperm quality in samples recovered from cat's epididymides in spring and summer (4). These findings might show a relationship between cat sperm production and queen breeding season. The aims of this study was to describe light and ultrastructural seminiferous epithelium characteristics in domestic cats during queen breeding season (spring and summer) and compared optical findings whit the seminiferous epithelium characteristics in autumn and winter. Testis coming from cats aged between 1 and 3 years were used. These animals participated in a voluntary program for control of urban canine reproduction in a pet public shelter. For light microscopy 140 rights testis were divides into three groups: group I testis coming from animals castrated in March, April and May; group II testis coming from animals castrated in June, July and August ; group III testis coming from animals castrated in September and October. Testes were fixed in Bouin's fluid, and embedded in paraffin. Sections (4 µm) were made and stained with Toluidin Blue and Eosin. Twenty seminiferous tubules from each testis were obliquely cut and studied under 1000 magnifications. Seminiferous tubules were classifying in four groups in relationship the spermatids maturation stage. Simultaneously Sertoli cells were scored in the tubules and Leydig cells were scored in 20 microscopic fields. For TEM testes coming from cats castrated in summer were fixed with 2% glutaraldehyde in PBS buffer, postfixed in 1% osmium tetroxide and embedded in Araldite. Ultrathin sections were stained with uranyl acetate and lead citrate, and examined in JEM 1200 EX II transmission electron microscopy. The optical study showed more percentage of matures spermatids, less Sertoli cells percentage and more Leydig cells percentage in the samples coming from cats castrated in spring and summer. The differences between groups were significant ($p > 0,001$). The ultrastructural study showed several seminiferous tubules with many mature spermatids that resemble a tube in late cycle. In some tubules in early or middle cycle, immature and elongated spermatids also were identifies (Figs. 1, 2). Immature spermatids were round and showed an oval nucleus with a loose chromatin network, small mitochondria and vesicular profiles of the agranular endoplasmic reticulum. The acrosomal cap covering about half of the nucleus was detected. Spermatocytes showing different phases of meiotic division were recognized. Elongated spermatids showed an oval nucleus with dense chromatin, the radio of the length to the wide of the nucleus was greater than 1.3 to 1 (Figs. 3, 4). Acrosome and one of centrioles at the implantation fossa also was observed. The Sertoli cells were columnar in shape, lying on the tubule basal lamina. These cells were extended toward the tubular lumen and were in tight contact with spermatogenic cells. On the other hand Leydig cells occupied the intertubular space and were numerous. Their cytoplasm contained an abundance amount of lipid droplets, some mitochondria and a fairly Golgi area. We conclude that ours light and ultrastructural results might indicates a larger spermatid and testosterone production in spring and summer in relationship with the queen breeding season.

References

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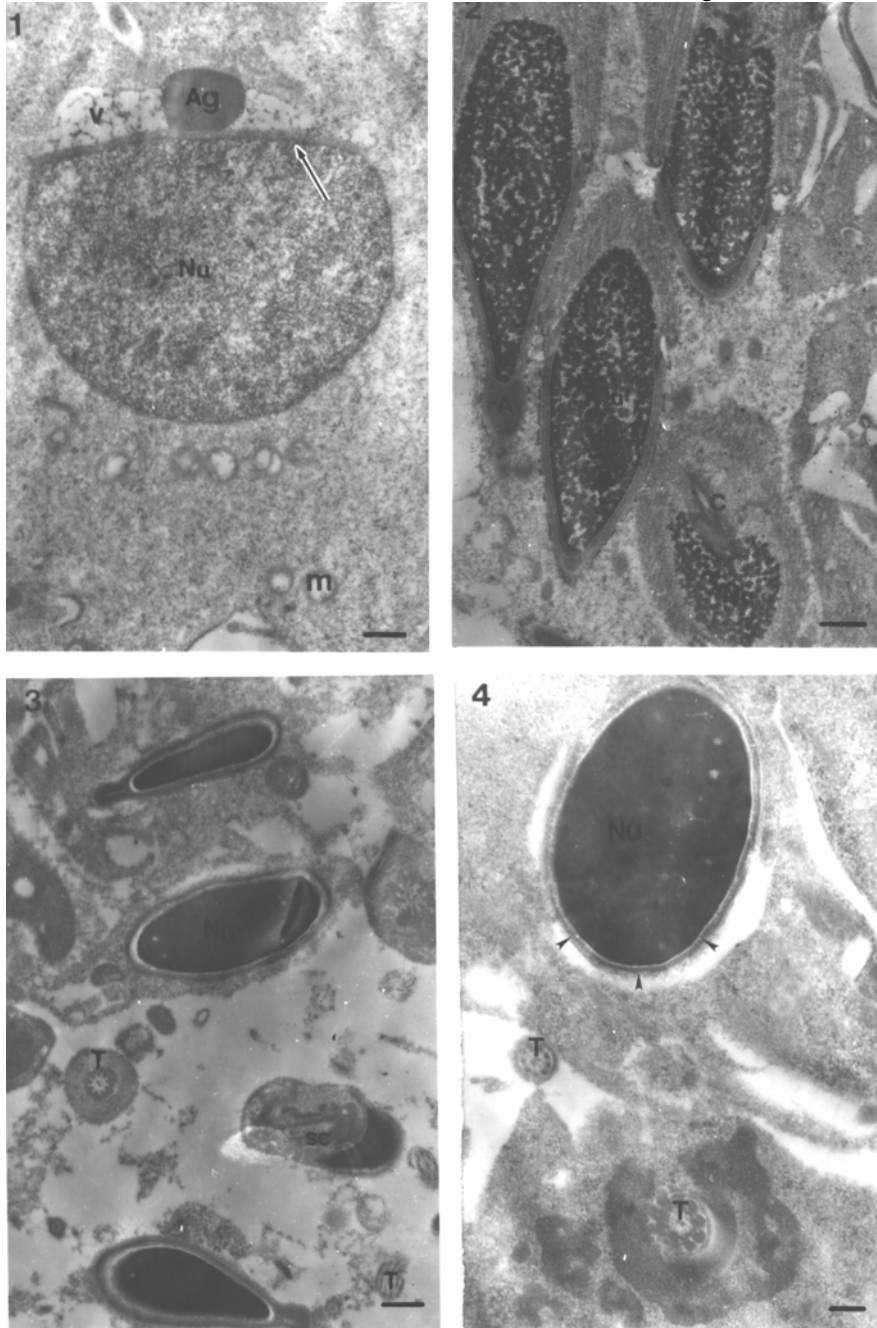


Fig. 1- Early-stage (round) spermatid. Nu= nucleus, AG= acrosomal granule, V= acrosomal vesicle, m= mitochondria. Arrow: Thin electron dense layer of perinuclear theca. Bar= 500 nm.

Fig. 2- Early-stage (elongated) spermatids. Bar= 500 nm.

Fig. 3- Elongated spermatids. Nu= nucleus, T= tail, sc= segmented columns. Bar= 500 nm.

Fig. 4- Elongated spermatid. The acrosomal matrix is present covering almost all the sperm head (arrows). Nu= nucleus, T= tail. Bar= 200 nm.