Effect of natural photoperiod on epididymal spermatozoa quality in domestic cat
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The aim of this study was to assess epididymal sperm characteristics in cats under natural photoperiod. The working hypothesis was that natural photoperiod would produce seasonal changes in spermatozoa quality. Epididymides recovered from a program for control of urban feline reproduction at a pet public shelter were used. Toms (n=33) aged between one and five years, were orchiectomized and assigned to one of four groups. Toms were castrated in the two last weeks of spring (SPR, group I, n=10), in the two last weeks of summer (SUM, group II, n=9), in the two last weeks of fall (FAL, group III, n=5), and in the last weeks of winter (WIN, group IV, n=9).

Before surgery, all animals were anesthetized with a combination of a ketamine (25 mg/kg i.m.; Vetanarcol®, Laboratorios Koning SA, Argentina), xylazine (1mg/kg i.m.; Sedomin®, Laboratorios Koning SA, Argentina) and atropine (0.04 mg/kg i.m.; Atropina®, Proagro SA, Argentina). All surgical procedures were performed by a licensed veterinarian and followed approved guidelines for ethical treatment of animals. After bilateral orchiectomy, each testis with adjacent epididymis were transported to the laboratory in saline solution. Sperm samples were obtained by cutting the cauda epididymides and the following tests were performed on them: motility (MOT, % motile), velocity (VEL, 0-5), total sperm cells (TS, 10⁶), vital stain (VS, % alive), acrosome morphology (ACR, % intact; FITC-PSA), plasma membrane integrity (MI, % intact; CFDA-PI) and sperm morphology (SM, % normal). Data were analyzed by ANOVA and two sets of mean comparisons were performed. The first set compared toms castrated in different seasons and the second set compared toms castrated in days with increasing light (IL, 9h 51’ to 14h 27’ daylight; Group I and Group IV) versus days with declining light (DL, 14h 27’ to 9h 51’ daylight; Group II and Group III). There were significant differences between season in sperm MOT, VEL, TS, MI, ACR and VS (P<0.05). Furthermore, toms castrated during IL had higher sperm MOT, TS and VS (54.53±3.15 vs. 44.35±4.16, P<0.05; 14.87±1.59 vs. 8.53±2.04, P<0.01; 61.29±2.14 vs. 54.54±2.70, P<0.05; respectively) and tended to have higher VEL and SM (3.7±0.10 vs. 3.39±0.14, P<0.08; 43.57±3.13 vs. 34.15±4.15, P<0.07) compared to toms castrated in DL. No differences were found in sperm ACR and MI (51.59±3.27 vs. 46.26±3.86, P>0.29; 60.39±2.81 vs. 65.14±3.69, P>0.31) between both groups. In conclusion, our results show changes in epididymal sperm quality with light changes suggesting that photoperiod may be related to seasonal sperm production.

Keywords: Epididymal sperm, tom cat, seasonal reproduction, increasing light.