



A024 Male Reproductive Physiology and Semen Technology

Effect of broiler chicken lines on sperm quality

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In the last decade an increase in the intensity of selection in broiler lines for faster growth rate and meat yield was observed. Recent studies have shown that the intensification of genetic selection has not just influenced production traits but also embryo development and their metabolic characteristics (DRUYAN, Poult Sci. v. 89, p.1457-67, 2010). Therefore it was hypothesized that this intense selection has also affected reproductive traits as well as semen quality. The objective of this study was to compare the semen quality of two broiler chicken lines developed by the Embrapa Swine and Poultry National Research Center (TT and KK) that are under multi-trait selection. The TT is a broiler male line selected mainly for performance and carcass traits, and the KK is a broiler female line selected also for egg production. For this study, semen samples from 36 males with similar age from each line, housed in the same environmental conditions were collected using dorsum-abdominal massage. The semen was evaluated for: motility, plasma membrane integrity (Eosin/Nigrosin staining), acrosomal integrity (Pope staining) and mitochondrial activity, which was evaluated according to Hrudka (1987, Int J Androl 10, 809-28), modified for 3 degrees (high, medium or absent, DAB1-3). Data was presented as percentage and it was evaluated using One-way Anova and Tukey test. Significance was considered if a $p < 0.05$. Plasma membrane integrity was the only evaluated trait with significant difference between both lines (TT 89.30 ± 1.02 and KK 93.25 ± 0.76 ; $p = 0.0029$). Even knowing that this two lines share similar genetic background and are imposed to different selection strategies, both lines presented high values for sperm membrane integrity, suggesting no influence on fertility. The average sperm motility was 48.88 ± 3.21 and 55.13 ± 3.8 (respectively for TT and KK; $p = 0.2139$); the average acrosomal integrity was 90.86 ± 1.1 and 92.94 ± 0.66 (respectively for TT and KK; $p = 0.1099$). Mitochondrial activity index was observed with high prevalence of active sperms in class 1 and 2, DAB1 52.7 ± 3.53 and 49.03 ± 3.81 (respectively for TT and KK; $p = 0.4823$) and for DAB2 41.32 ± 3.05 and 39.74 ± 2.72 (respectively for TT and KK; $p = 0.702$). These results suggest no significant differences in semen quality between female and male broiler lines, indicating that the selection imposed for different production traits in those lines will probably not interfere with loss of sperm fertility.