THE EVOLUTION OF STALLION SPERMATOZOA CHARACTERISTICS AFTER CRYOPRESERVATION

Cătană, R., I. Groza, I. Morar

University of Agricultural Sciences and Veterinary Medicine, Faculty of Veterinary Medicine, 3-5, Mănăștur Street, Cluj- Napoca, Romania, vikingligrveldivet@yahoo.com

Key words: cryopreservation, cytomorphometry, semen, sperm cell(s), stallion

SUMMARY

The purpose of the study was to reach the following objectives: assessment of sperm cells motility and viability variations during cryopreservation and to establish whether the spermatozoa dimensions are modified during the cooling and freezing procedures involved in the cryopreservation process.

The samples were collected from ten clinically healthy stallions 3 to 8 years of age, of different breeds, using the artificial vagina. In order to preserve the semen by freezing, the samples were centrifuged and diluted with MI® stallion semen extender, provided by MiniTüb™, which, in addition, contained egg yolk, glycerol and antibiotics. In total, there were evaluated 14 semen samples, seven from each stallion. The assessments of both motility and viability values were carried out by microscopic evaluations. The assessments of the spermatozoal dimensions were done by computerized cytomorphometry, applied to Spermac® stained sperm smears. In order to compare the investigated parameters values, all of the three evaluation methods mentioned above were performed before as well as after cryopreservation.

The following conclusions can be drawn:

While for fresh semen the motility values varied between 50% and 90%, after thawing, the motility (1%-60%) significantly decreased for seven samples, the other seven (three samples from stallion 1 and four from stallion 2) being considered proper for insemination;

The thawed spermatozoa viability, which, immediately after thawing, varied between 1% and 67%, was maintained, for certain samples, for over 240 minutes, depending on the stallion and on the ejaculate;

The head length before freezing varied between 4.96 μm (sample 11) and 5.33 μm (sample 3), with an average of 5.247 μm for stallion 1 and 5.14 μm for stallion 2. The length of the head was, practically, not modified in case of stallion 1, while its values slightly decreased by cryopreservation in the case of stallion 2 (5.08 μm).

The head width had the lowest limit of 2.4 μm (stallion 2) and the upper limit of 2.82 μm (stallion 1), with averages of 2.75 μm for stallion 1 and 2.55 μm for stallion no. 2. After thawing, the average length was 2.69 μm for stallion 1 and 2.1 μm for stallion 2. Observing the results, we may affirm that dimensions of the spermatozoal heads decrease during cryopreservation, with no negative consequences.