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STSM Report

Tench (*Tinca tinca*) was the model organism during my research work at the Department of Aquaculture, Szent István University, Gödöllő, Hungary. Experiments were conducted on tench sperm testing influence of different mixtures of cryoprotectants and extenders on the parameters of sperm motility, viability and success of fertilization.

All fish were anesthetized in the solution of 2-phenoxyethanol before handling. Hormonal treatment was conducted with carp pituitary extract (6 mg/kg bw).

Viability test was performed by applying fluorescent staining (Syber green and propidium iodide) to investigate the effects of two cryoprotectants (methanol and DMSO) on sperm viability. There were no significant differences between two testing groups. Viability of spermatozoa was approximately 70% for the sperm cryopreserved with methanol and 68% for the sperm cryopreserved with DMSO.

Parameters of tench sperm motility was determined by CASA software immediately after sampling (fresh) and after thawing. Good progressive motility was observed in fresh sperm (90%). Samples for cryopreservation were prepared with Grayling extender and methanol as a cryoprotectant in the first test group, and DMSO as a cryoprotectant in the second test group. Significant differences were observed between the two test groups. Sperm cryopreserved with methanol had significantly higher progressive motility when compared to the DMSO group.

Fertilisation tests included testing of the effects of two extenders (Grayling extender and modified Kurokura) and two cryoprotectants (Methanol and DMSO) on the fertilisation and hatching success of tench sperm. Results indicate that Grayling extender was successful in combination with both methanol and DMSO as cryoprotectants. Statistical analysis displayed that the effect of extenders was significant, but the effects of cryoprotectants and the interaction between extenders and cryoprotectants were non-significant.

These results demonstrate that both methanol and DMSO can be used in cryopreservation of tench sperm and that the Grayling extender is the most favourable. When taking into account the progressive motility, the most preferred combination is the Grayling extender with methanol as the cryoprotectant.