Cryopreservation of rainbow trout (Oncorhynchus mykiss) spermatozoa using programmable freezing

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In an attempt to establish a protocol for the cryopreservation of the spermatozoa of the rainbow trout (Oncorhynchus mykiss), we studied the effect of various cryoprotective agents (CA) in spermatozoa motility and viability, before, during, and after freezing. Freezing was performed by using a controlled rate freezing system, which allows the accurate setting of different cooling rates, as well as a proper recording of intra-sample temperatures throughout the procedure. Results obtained indicate that before the initiation of freezing, spermatozoa motility is affected more by the length of time of exposure to CA than by the chemical nature of the agents. Exposure periods longer than 10 min affected motility irreversibly, which seems to be related to the high osmolarity of the extender solutions. To study the changes in spermatozoa motility and viability during and after cryopreservation, cells in the cryoprotective solution (glycerol, DMSO or DMSO-sucrose) were processed in a programmab