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Role of cryopreservation of fish gametes for the sustainable aquaculture development - A field study

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Abstract

Improvement of genetic resources, gene banking and production of improved varieties of high yielding farm animals are the net results of cryopreservation of gametes from farm animals. The same technique has been applied for rectifying genetic depression in aquaculture species, especially Indian major carps. Studies were conducted in cryopreservation of milt of *Catla catla* with modified Cortland medium as extender and glycerol and DMSO as cryoprotectants at 4 concentrations, viz., 5, 10, 15 & 20%. Different equilibration periods were also analyzed to find out the possibility of extending cryopreservation period. The quality of the spermatozoa was studied before and after cryopreservation and the efficiency of the cryopreserved spermatozoa was tested through artificial insemination in field condition. The spermatozoa of *C. catla* could be well preserved with modified Cortland medium (90%) with Glycerol or DMSO (10%) for over a period of 6 months. Twenty minutes of equilibration period was found yielding high percentage of motile sperms. Periodical observation of sperm motility revealed that the sperms were viable after a rapid thawing at 40⁰C for 5 minutes. Recrystallization and devitrification were least in this process of thawing thereby the sperms were viable with 90% motility after thawing. Fertilization studies revealed that cryopreserved sperms of *C. catla* can fertilize upto 80% of the matured eggs from female *C.catla* and the hatchability was normal compared to the control after artificial insemination. This study confirmed the application of this technique for the development of sustainable aquaculture through genetic improvement in *Catla catla*. Different protocols in the cryopreservation of carp spermatozoa and its role in the genetic resources conservation and gene banking are discussed in detail.

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