IMPACT: International Journal of Research in Applied, Natural and Social Sciences (IMPACT: IJRANSS)
ISSN(E): 2321-8851; ISSN(P): 2347-4580
Vol. 3, Issue 3, Mar 2015, 33-44

FACTORS AFFECTING MOTILITY, VIABILITY, SHORT AND LONG TERM PRESERVATION OF SPERMATOZOA OF FOUR SPECIES OF INDIGENOUS ORNAMENTAL FISHES

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ABSTRACT

The ornamental fishes are important not only because of their aesthetic value but also due to their immense commercial value in export trade. Biologists all over the world fear that the genetic strains and variability of wild fish stocks are being depleted at a rapid pace. So they are trying to preserve germplasm of various fishes through gene banks. Various parameters that play major roles in the viability of spermatozoa such as, duration of sperm motility in different media, at different temperatures, in different salinities and at various pH levels were evaluated along with the influence of various factors on the duration of motility and viability of spermatozoa when preserved for short and long terms. The fishes used for the study were *Rasbora daniconius*, *Puntius filamentosus*, *Parambassis dayi* and *Hyporhamphus xanthopterus*, collected from Vellayani Lake in Trivandrum district of Kerala, India. High percentage of spermatozoan viability and sperm cell concentration was observed in four species of fishes. Longest duration of spermatozoan motility was observed in fertilizing solution. The spermatozoa showed longer duration of motility at lower temperature in the four species. Longer duration of spermatozoon motility can be found in alkaline pH. Motility of spermatozoa in dilute salt solutions maintained longer than in freshwater. In the short term preservation, spermatozoa of oxygenated samples were motile up to 72 hours. In the unoxygenated samples the spermatozoa were motile only up to 24 hours. Three different extenders (Extender I - Fish Ringer solution, Extender II - 7% Glucose solution, Extender III – 7% Sucrose solution) with different concentrations of two cryoprotectants, DMSO and Glycerol were used for the cryopreservation of spermatozoa. In the cryopreserved milt of *P. dayi*, the highest motility was recorded in extender I and 7.5% DMSO combination. In *H. xanthopterus*, the maximum duration of motility was exhibited by 7.5% DMSO in combination with extender III.

KEYWORDS: Extender, Motility, Preservation, Spermatozoa, Viability