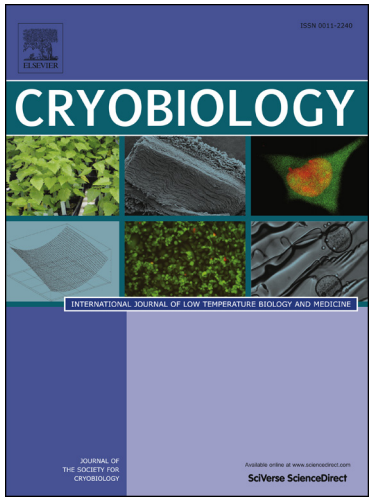

Protective effects of propolis on cryopreservation of common carp (*Cyprinus-carpio*) sperm

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Protective effects of propolis on cryopreservation of common carp (*Cyprinuscarpio*) sperm

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ABSRACT

Cryopreservation of sperm is common procedures in aquaculture, particularly used for routine inartificial insemination. However, these application cause damagesand adverselly affected spermmotility, viabilityand consequently lower hatching rates. The objective of this study is to determine whether propolis has an effect on cryopreservation and fertilization ability and to investigate the potential protective effect of propolis on spermatozoa of *CyprinusCarpio*. Many studies have been done in cryopreservation offish spermatozoa, but none of them contain propolis in extender composition. The extenders were prepared by using modified Kurokura Solution to which 10% Me_2SO added with different levels of propolis (0.2, 0.4, 0.6, 0.8 and 1 mg ml^{-1}) and 10% egg yolk (as a control without propolis). The pooled semen samples diluted at the ratio of 1:9 by the extenders were subjected to cryopreservation. The percentage and duration of motility and fertlization tests of cryopreserved sperm samples have been done immediately after thawing and compared with control and fresh semen. The extenders containing propolis exhibited higher percentage motility andmotility duration than control group ($P<0.05$). Especially the group IV (0.8 mg ml^{-1} propolis) and the group V (1 mg ml^{-1} propolis) showed significant positive effects on both post thaw motility and hatching ability. The propolis maintained the integrity of the spermatozoa during the cryopreservation process. Evaluating with its contents, it has been shown that propolis is an appropriate cryoprotective agent in fish semen.

Keywords: Propolis, Sperm Cryopreservation,*CyprinusCarpio*, Spermatozoa