The effect of different levels of copper and manganese on sperm morphological structure of *Caspiomyzon wagneri*

Soheil Eagderi[1*]
Maryam Nasrolah Pourmoghadam[2]
Bagher Mojazi Amiri[3]
Hadi Poorbagher[4]
Nima Nemati Mobin[5]

1, 2, 3, 4 ,5. Department of Fisheries, Faculty of Natural Resources, University of Tehran, Karaj, Iran

***Corresponding author:**
soheil.eagderi@ut.ac.ir

Received date: 2019.03.02
Reception date: 2019.08.22

Abstract

The present study was performed to investigate the effect of heavy metals viz. copper and manganese on the sperm morphological indices of *Caspimyzon wagneri*, including head length, width, and area, the index of head elongation, the head ellipticity index, the flagellum length, and the percentages of the head, flagellum and total destructions. For this purpose, sperms were exposed to 0.01, 0.1, 1, 10, 100 and 1000 mg/l concentrations of heavy metals at 3 minutes, and 3 and 36 hours at in vitro conditions. The results indicated that the structure destruction of sperm exposed to Cu and Mn include increasing the length, width and surface of sperm's head, flagella degradation and somewhat flagella cutting, and damages were amplified by increasing the concentration or exposure time of heavy metals. When exposure time exceeds a certain period of time for simulation of heavy metals i.e. Cu and Mn accumulation in gonad's tissue, damages were caused changing the sperm's structure as reduction of the head length, increasing head width, reducing sperm's head surface, complete cutting of flagella at all samples and deformation of the sperm's head from oval to circular shape ($P<0.05$). The result also showed adverse effects of Cu in causing morphological deformities that those of Mn. Therefore, based on the results entering copper and manganese to the natural spawning grounds of this species can induce harmful effects on sperm morphological factors and consequently leading adverse effects on their fertilization ability hatching rate, and this issue can be considered as a serious threat to the survival of this endemic species.

Keywords: Reproduction, Lamprey, Morphological indices, Pollution.