

An histological study on mercury-induced gonadal impairment in Javanese medaka (*Oryzias javanicus*)

ABSTRACT

Mercury (Hg) is highly toxic and potent neurotoxin. Bioaccumulation of mercury in a new model fish species, Javanese medaka (*Oryzias javanicus*) under sublethal levels and effects of mercury exposure on gonads via histological studies were investigated in this study. A total of 150 adults of *O. javanicus* were exposed to mercury at five different concentrations; 0, 10, 20, 30, 40 ppb for 14 days. High accumulation of mercury were observed at the Mercury exposures of 30 ppb (3.17 mg/kg) and 40 ppb (2.92 mg/kg). Meanwhile, no significant difference was detected with 0 ppb (0.72 mg/kg) and 10 ppb (0.74 mg/kg) exposure. The accumulation increased by the increment of the concentrations of mercury exposure. Histological study revealed the increasing amount of oocyte atresia and decrease in vitellogenesis with high mercury exposure. Severity grading and degrading of ovaries were depicted at 30 and 40 ppb exposure, respectively. Testicular tissues showed severe effects, which resulted from exposure to various mercury concentrations. Complete disorganisation in cyst arrangement and decrease of progressive stages of spermatogenesis were observed in the morphology of exposed *O. javanicus* testis. The present study's finding suggested mercury potential for bioaccumulation and its effects on the morphology of gonad in *O. javanicus*.

Keyword: Mercury; *O. javanicus*; Bioaccumulation; Gonad; Histology