

EFFECT of Pb, Cd dan Hg to DEVELOPMENT, SWIMMING PERFORMANCE and INTESTINUM HISTOLOGY of FISH EMBRYO and LARVA of WADER PARI (*Rasbora lateristriata* Bleeker, 1854)

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17/417031/PBI/01468

ABSTRACT

The early life stages of fish are crucial for the dynamics of fish population because of the highest mortality during embryonic and larval stages. At this stage, fish embryos and larvae are sensitive to environmental stressors such as Pb, Cd and Hg that come from anthropogenic waste. This study aims to investigate the effect of exposure Pb, Cd, Hg and mixture for the period of 36 hours on the development, swimming performance and intestine histological structure on fish embryo and larvae (*Rasbora lateristriata*). This research was conducted from March to August 2019 at the Laboratory of Animal Structures and Development, Faculty of Biology, Gadjah Mada University. The research used embryo of wader pari aged ≤ 4 hpf who were treated with control and exposure to Pb, Cd, Hg and mix for 36 hours. The study design used a completely randomized design (RAL) method with 11 treatments and 3 replications as follows: control, concentration of Pb 5, 10 and 15 ppm, concentration of Cd 5, 10 and 15 ppm, concentration of Hg 0.01, 0.05 and 0.1 ppm, and mix (Pb 1 ppm + Cd 1 ppm + Hg 0.1 ppm). The parameters of the study were period of hatching, hatching rate, heart rate, survival rate, pigmentation, morphometry, vertebrae segment, swimming performance, villi length and Goblet cells number. The experimental data were tested by one way ANOVA statistical analysis using IBM SPSS Statistics 22 software and Duncan as a post hoc test. The results showed that exposure to Pb, Cd, Hg and mixture affected to hatching period, hatching rate, cardiac and yolk appearance, pigmentation, survival rate, standard length, swimming performance, villi length and Goblet cells number, respectively but did not affect to heart rate and vertebrae segment.

Keywords: *Rasbora lateristriata*, embryo development, intestinum structure, swimming performance