ABSTRACT

The Effect of Lead (Pb) and Copper (Cu) on Mortality, Osmoregulation, Metal Concentration and Gills Structures of Freshwater Prawn *Macrobrachium rosenbergii* (de Man) at Defferent Development Stages.

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The obyectives of this research were to find out the effect of the toxicity of lead (Pb) and copper (Cu) on mortality of freshwater prawn, *Macrobrachium rosenbergii (*de Man) at different life stages, osmoregulation, metal concentration, and the impairment of gills structure. The research was conducted in two steps. The first step was to find out the median lethal concentration (LC_{50}) of lead (Pb) and copper (Cu) to defferent life stages the prawn. The second step was to find out the effect of sub-lethal concentration of lead (Pb) and copper (Cu) on osmoregulation of the adult prawn at 0‰ and 12‰ within 7 days. The prawns were exposed to lethal concentration of lead 0 mgPb/L, 2.00 mgPb/L, 4.00 mgPb/L and 6.00 mgPb/L, at 0‰, to 0 mgPb/L, 0.50 mgPb/L, 1.00 mgPb/L and 2.00 mgPb/L, at 12‰. Mean while, sub-lethal concentration of copper used during experimentation were 0 mgCu/L, 0.50 mgCu/L, 0.75 mgCu/L and 1.00 mgCu/L, at 0‰ and 0 mgCu/L, 0.25 mgCu/L, 0.50 mgCu/L, 0.75 mgCu/L, at 12‰.

Mortality data were analysed by Trimmed Spearman Karber Method. Data of metals concentration in gills, osmotic pressure and gills structure were analysed by Anova. The result of the first step showed that the mortality of zoea-1, zoea-4, zoea-7, zoea-11, juvenile, and adult increased with increasing the exposure time and Pb and Cu concentrations both at 0‰ and 12‰ respectively. The LC_{50} values of Pb and Cu increased with increasing the development stages of prawn. Cu was more toxic than Pb. The result of second step showed that acumulation of Pb and Cu in gills occurred after prawns exposed to Pb and Cu. Exposure to Pb and Cu affected osmotic pressure changes and impairment of the gills structure. Concentration of Pb and Cu in gills increased with increasing the salinity of media.

Key words: Lead; Copper; Life-stages; Mortality; Osmotic Pressures ; Concentration; Gills structure.

DAFTAR SINGKATAN

ANOVA	:*Analysis of variance*
CO_2	:Carbon dioxide
mOsm/Kg	:Miliosmol perkilogram
NA	:Nomor Atom
Na	:Natrium
µg/L	:Mikrogram/liter
WIB	:Waktu Indonesia Barat