

Determination the Lethal Concentration (LC₅₀) of Potassium Dichromate and Behavioral Responses in Epaulet Grouper (*Epinephelus stoliczkae*)

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Abstract

The LC₅₀-96h test paradigm is used to measure the susceptibility and survival potential of organisms exposed to particular toxic substances, such as heavy metals. In this study, the Median Lethal Concentration (LC₅₀) of potassium dichromate (K₂Cr₂O₇) during 96 h was determined in *Epinephelus stoliczkae*. Six groups of experimental fish (7 fish in each group) with 218±0.5 g weight average and 29.6 cm total length were exposed to different concentration of dichromate potassium (0, 62, 66, 70, 74 and 78 mg/L) for 96 h. The experiments were performed in triplicate (21 fish per each treatment). The temperature, salinity and pH were continuously measured throughout the experiments that were 27.5±0.5⁰C, 37 ppt and 8.1, respectively. The LC₅₀-96h was determined to be 73.09 mg/L in a static bioassay test system. Mortality percentage increased with increasing duration of exposure and increasing chromium concentrations. The behavioral changes observed in *Epinephelus stoliczkae* in the experiment period included breathing difficulty, slow down motility, loss of balance, capsizing, swimming on water surface, gathering around the ventilation filter, increased mucus secretion, bloodshed of gills, mouth and fish fins and change of body coloration. Acute toxicity effect of potassium dichromate increased with increasing its concentrations.

Keywords: Chromium, LC₅₀, Heavy metal, *Epinephelus stoliczkae*, Behavior.
