Comparative acute toxicity of two herbicides, Paraquat and 2, 4-Dichlorophenoxy acetic acid on *Barbus xanthopterus*

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Abstract

One of the most widely used toxins in agriculture is herbicides. The most important echo-pollutant effects of these toxins related to their effects target aquatic organisms. Evaluation of herbicides pollution in aquatic environments needs the great concern. Aquatic animal health is the proper bio-indicator for evaluating of pollution in aquatic ecosystems. Then in this study acute toxicity of two herbicide, 2, 4-D and Paraquat as an aquatic ecosystems pollutant on *Barbus xanthopterus* were investigated. The acute toxicity test was conducted following the Organization for Economic Cooperation and Development (OECD) under static-renewal test. Fish 4/5 ± 0/2 g mean weight exposed to serial dilution of each herbicide in triplicate for 96 hours, Mortality after 24, 48, 72 and 96h were recorded and analysed using Probit software. Maximum Acceptable Concentration (MAC) measured for each herbicide. Results showed that acute toxicity of these herbicides are different in *B. xanthopterus*. The 96h LC50 of 2, 4-D and Paraquat in *B. xanthopterus* were 37.8 and 8.7 mg/L respectively. Paraquat was more toxic than 2, 4-D. The mortality rate enhanced along with increasing herbicids concentration and exposure duration. Mortalities pattern during 96 hours were similar in both herbicids. According to the results of this study, the replacement of 2, 4-D with Paraquat in agricultural fields is recommended as a herbicide.

Keywords: Herbicides, *Barbus xanthopterus*, LC50, Acute poisoning.

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