



Comparative Acute Toxicity of Mercury to Air Breathing Fish, *Channa gachua* (Ham.) and Non-Air Breathing Fish *Cyprinus carpio* (Linn.): Ethological and Haematological Consideration

K. Dhara, S. Saha^{1*}, D. Mukherjee² and N.C. Saha³

Office of the Deputy Director of Fisheries, Government of West Bengal, Kolkata-700 069, India

^{1*} Department of Zoology, Sundarban Hazi Desarat College, South 24 Parganas-743 611, India

² Department of Zoology, S.B.S. Government College, Dakshin Dinajpur-733 126, India

³ Fisheries Ecotoxicology Research Laboratory, Department of Zoology, University of Burdwan- 713 104, India

*E-mail: s.saha.bgc.wbsu@gmail.com

Abstract: In the present investigation, a comparative study on acute toxicity of mercury to air breathing fish, *Channa gachua* (Ham.) and non-air breathing fish, *Cyprinus carpio* (Linn.) was undertaken. The 96h median lethal concentration (LC50) for *C. gachua* (0.188 mg l⁻¹) was higher than that of *C. carpio* (0.105 mg l⁻¹). From the result, the non-air breathing fish, *C. carpio* was 1.79 times more susceptible than *C. gachua* to mercury toxicity. Both the fishes showed changes in their ethological responses with the progress of time of exposure and increasing concentration of the toxicant. An alteration in the haematological parameters also recorded when the fishes exposed to mercury stress. The haemoglobin content (Hb), total erythrocyte count (TEC) and haematocrit (Hct) for both fishes significantly reduced) during their acute exposure. The level of total protein and serum globulin significantly decreased) at 96h in both fishes compared to the initial exposure at 0h, whereas, total glucose, triglyceride, cholesterol and albumin increased significantly in both fishes at 96h. The degree of change for each parameter was similar in both the fishes. This comparative study may help to determine the degree of toxicity of mercury as well as to understand its mode of action in the light of ethological and haematological responses to the fishes belong to different physiological nature.

Keywords: *Channa gachua*, *Cyprinus carpio*, Mercury, Acute toxicity, Ethological responses, Haematological changes
