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Impact of Early-Life Exposure to Bisphenol A on Survival and Histopathology of Liver and Kidney of Zebrafish (*Danio rerio*)**Pathiraja K., Rajapaksa G.****Department of Zoology and Environmental Management, University of Kelaniya, Sri Lanka***gayani@kln.ac.lk***Abstract**

Bisphenol A (BPA) is a highly used chemical and an ubiquitous environmental contaminant in urban aquatic ecosystems. BPA disrupts hormonal and metabolic pathways of living organisms through its endocrine disrupting activity. Early-life BPA exposure could perturb key developmental processes, thus affecting the survival of living organisms. BPA is known to accumulate in water bodies, therefore it is important to understand the impact of BPA on aquatic organisms and ecosystem health. The objective of this study was to investigate the impact of early-life BPA exposure on survival and histology of kidney and liver of zebrafish. Zebrafish model is widely used in environmental monitoring and BPA-related studies. During the study zebrafish were treated for 60 days with two environmentally prevalent concentrations of BPA (1 µg/L and 10 µg/L) and with a treatment control. Twenty wild-type juvenile zebrafish of age 35 dpf (days post fertilisation) were assigned to triplicate tanks and were treated until maturity in 95 dpf. Water of the tanks were changed once per three days. Survival percentage of the fish were calculated weekly. The kidney and liver of a sample of five fish from control treatment and 10 µg/L of BPA were obtained at 95 dpf for histopathological study. Kidney and liver sections were stained using hematoxylin/eosin and examined under light microscope for structural pathology. The highest mean survival of 90% was observed in the control group at the end of the treatment period while, 56.57% and 41.67 % of survival were observed at 1 µg/L and 10 µg/L of BPA treatments respectively. This observation led to the conclusion that BPA has a significant impact on fish survival where high BPA concentrations resulted in significantly low survival. Histopathological analysis of the kidneys of fish treated with 10 µg/L of BPA revealed damaged renal tubules, shrinkage of tubules or tubule lumen, degeneration of tubules and hematopoietic tissue when compared with the control group. The liver histopathology of BPA-treated fish revealed lipid accumulation in hepatocytes. The reduced survival and structural distortion of liver and kidney of zebrafish in BPA-treated tanks could be due to chronic early-life BPA exposure as the quality of water significantly affects the fish survival, growth and development. It can be concluded that early-life exposure to environmentally prevalent doses of BPA can result in increased mortality in zebrafish model. This study calls for more comprehensive studies to understand the physiological impact of early-life BPA exposure on aquatic organisms.

Keywords: Bisphenol A, Zebrafish, Survival, Histology, Liver, Kidney