

## Monitoring contaminations of Aryl hydrocarbon Receptor (AhR) agonists in two selected water bodies in Sri Lanka

C. K. Hemachandra<sup>1</sup>, Asoka Pathiratne\*<sup>1</sup> and K. A. S. Pathiratne<sup>2</sup>

<sup>1</sup> Department of Zoology, University of Kelaniya, Kelaniya 11600, Sri Lanka

<sup>2</sup> Department of Chemistry, University of Kelaniya, Kelaniya 11600, Sri Lanka

\* Corresponding author (E-mail: asoka@kln.ac.lk)

Aquatic environments are being subjected to pollution with various categories of organic compounds including Polycyclic Aromatic Hydrocarbons (PAH), Poly Chlorinated Biphenyls (PCB), dioxins and furans, discharged from anthropogenic sources. These organic compounds can lead to ill health conditions in humans and aquatic fauna especially fish. The biological effects of these compounds are initiated through their binding with the intracellular Aryl hydrocarbon Receptor (AhR). This study was carried out to monitor contaminations of AhR agonists in two selected water bodies in Sri Lanka, viz. Bolgoda North Lake and Bathalegoda reservoir using molecular biomarkers, CYP1A dependant 7-Ethoxyresorufin-O-Deethylase (EROD) activity and biliary fluorescent metabolites in feral Nile Tilapia during the period of September 2007 to April 2008. The results showed that EROD activity and the profile of bile metabolites of feral fish collected from Bathalegoda reservoir were not significantly different from Nile Tilapia maintained in the laboratory (Controls). However, hepatic EROD activities in fish collected from three sites of Bolgoda North Lake including Weras Ganga viz. Aththidiya, Katubadda and Diggala were induced (2-19 folds) compared with the control fish and the fish collected from Bathalegoda reservoir. Analysis of bile in the Bolgoda Lake fish revealed recent uptake of PAHs especially Naphthalene type, Phenanthrene and Pyrene type PAHs. EROD induction in fish collected from Diggala site was not correlated with the biliary PAH metabolites indicating the presence of AhR agonists other than PAH in the area. The present study revealed that the presence of AhR agonists including PAHs in Bolgoda North Lake.