Biliary Fluorescence Aromatic Compounds In Nile Tilapia (*Oreochromis niloticus*) As Biomarkers Of Exposure To Polycyclic Aromatic Hydrocarbons

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Polycyclic aromatic hydrocarbons (PAHs) are ubiquitous and potentially harmful contaminants of the aquatic ecosystems. Studies on bioavailability of PAHs and their metabolism in aquatic organisms such as fish are needed for environmental risk assessment and monitoring purposes. Nile tilapia which is a widely distributed food fish can be considered as a good bioindicator species for biomonitoring pollution in inland water bodies in Sri Lanka. In the present study, Nile tilapia was exposed intraperitonealy to select PAH compounds viz. Naphthalene, Phenanthrene, Pyrene and Fluoranthrene in the laboratory and bile samples were analyzed by direct fluorimetry using both fixed wavelength fluorescence (FF) and Synchronous fluorescence spectroscopy (SFS) methods. In addition the bile samples of Nile tilapia collected from Beira Lake, Bolgoda North Lake, Bathalagoda reservoir and Rambadagalle fish breeding station were also analyzed for fluorescence aromatic compounds.

Analysis of bile from fish exposed to different PAH in the laboratory revealed information about the presence and patterns of their metabolites. Fluorescent metabolites of fish exposed to Phenanthrene or Pyrene were dependant on the administered dose of the compound. Analysis of bile of feral fish from Bolgoda North Lake and Beira Lake revealed the presence of Naphthalene type, Pyrene type and Benzopyrene type metabolites indicating the availability of the different PAHs in the water bodies. The results show that FF and SFS measurements in bile of Nile tilapia is a rapid and simple screening method for monitoring exposure to PAH contaminations in the aquatic ecosystems.