# Evaluation of oxidant and antioxidant status under xenobiotics stress in grey mullet

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## ABSTRACT

Xenobiotics released into the estuaries may pose high toxicities on the aquatic organisms. Fish are more sensitive to toxicants and its response to the pollutants has been used as biomarkers of aquatic pollution. *Mugil cephalus*, a widely distributed freshwater fish that serve as a potential bio-indicator for estuarine contaminants. Kidney, an effector organ of the fish plays a vital role in ionic regulation, excretion of waste materials and active elimination of many bio-transformed derivatives of toxicants. The complex mixture of pollutants present in aquatic environment may mediate the formation of free radicals and cause oxidative damage to kidney. This is counter balanced by intricate antioxidant systems to maintain the redox homeostasis in the cell. Therefore the aim of the present study is to investigate the stress markers such as 4-HNE, Trx, HSP70, and TNFα in the kidney homogenate of *M.cephalus* from unpolluted (Control-Kovalam estuary) and polluted (Test-Ennore estuary) site. There was alteration in the level of 4-HNE, Trx, HSP70 and TNFα in polluted fish when compared to the unpolluted fish. The results suggest that the xenobiotic found in the Ennore estuary induced oxidative stress in fish kidney, however the induction of Trx and HSP70, plays a protective role against pro-oxidants by modulating the pro-inflammatory response via regulating TNFα and thus enhances the adaptability and survivability of fish under xenobiotic stress. The present study suggests that compensatory signaling proteins are triggered in renal system of grey mullets for sustainability in Ennore estuary.



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