

EVALUATION OF POLYCYCLIC AROMATIC HYDROCARBONS AND TRACE METALS CONCENTRATIONS IN WATER AND SELECTED FISH FROM TWO RIVERS CONNECTED TO AB- BATOIR WASTEWATER IN PORT HARCOURT, NIGERIA

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The health risks associated with consuming fish from natural aquatic habitats keep increasing steadily as a result of the increase in anthropogenic activities and untreated effluents released from abattoirs into rivers introducing carcinogenic compounds into the rivers. This study evaluated the levels of trace metals and polycyclic aromatic hydrocarbons (PAHs) in three commonly eaten fish (*Oreochromis niloticus* (ON), *Clarias gariepinus* (CG), and *Mugil cephalus* (MC)) in Rivers State, Nigeria, polluted by slaughterhouse wastewater. Samples were collected from two coastal water bodies (Transamadi and Mgboshimini rivers) located near abattoirs, and Iwofe river, which served as the control had no abattoir around it. The trace metals (zinc, lead, iron, magnesium, chromium, and cadmium) and fifteen PAHs (naphthalene, 2-methylnaphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz-a-anthracene, benz-b-fluoranthene, benzo-k-fluoranthene, benzo-a-pyrene, indeno-1, 2, 3-c,d-pyrene, and dibenz-a,h-anthracene) was determined using atomic absorption spectrophotometer and gas chromatography coupled to a flame ionization detector (GC/FID) respectively. Overall, the concentration of PAHs ranged from BDL to 3.60 ± 0.00 $\mu\text{g}/\text{kg}$ in *O. niloticus*, BDL to 3.10 ± 0.00 $\mu\text{g}/\text{kg}$ for *M. cephalus*, BDL to 0.07 $\mu\text{g}/\text{kg}$ in *C. gariepinus*, and BDL to 2.90 ± 0.00 $\mu\text{g}/\text{kg}$ in water. The Highest Zn and Pb in CG was 0.7 and $0.5\text{mg}/\text{kg}$ mgboshimini, Fe and Mg in ON and CG were 0.28 and $71\text{mg}/\text{kg}$, and Cr and Cd in CG and MC 0.08 and $0.4\text{mg}/\text{kg}$ respectively. Overall, CG accumulated the highest total trace metals at 72.18 mg/kg in mgboshimini. The results of the study indicates that water and fish collected from rivers that serve as discharge points for abattoirs may contain mutagenic PAHs and toxic trace metals that can predispose humans to cancer.

Keywords: Trace metals; Polycyclic Aromatic Hydrocarbons; Abattoir waste water; Fish

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