

ABSTRACT

The present study was conducted to determine residual concentrations of heavy metal ions, such as zinc (Zn II), lead (Pb II), manganese (Mn II), copper (Cu II) and cadmium (Cd II) in muscle tissues of local freshwater fish, *Labeo rohita* (Rohu). Additionally, the same was studied in water samples as well. Specimens were collected from river Ravi; government operated fish farms and private fish farms located in district Lahore, Punjab, Pakistan. Along river Ravi, 2 sites were selected, Siphon (upstream) and Balloki headworks (downstream). It was found that there was significant variation in the concentration of heavy metal ions in muscle tissues of specimens from various sources, viz: wild versus Government (Zn, P=0.036) (Pb, P=0.029) (Mn, P=0.004) (Cu, P=0.023) (Cd, P=0.045); wild versus private farms (Zn, P=0.13) (Pb, P=0.004) (Mn, P=0.008) (Cu, P=0.011) (Cd, P=0.022) whereas non-significant variation was found in Government versus private fish farms. Additionally, significantly low values of selected toxic metal ion contents were found in all fish samples collected from fish farms of Lahore city as compared to wild fish samples. The order of accumulation of various species of heavy metals was Zn > Pb > Mn > Cu > Cd in fish as well as water samples, in wild, government and private fish farm samples. Maximum concentration of various metal ions was found at Head Balloki as Zn=10.7 ± 1.268, Pb=0.61 ± 0.082 Mn=0.44 ± 0.045, Cu=0.31 ± 0.081 and Cd=0.24 ± 0.057 mg/Kg. Overall, wild samples were found relatively more overloaded as compared to Government and Private fish farm samples; it was also observed that concentrations of Zn (II), Pb (II), Mn (II), Cu (II) and Cd (II) were below the permissible limits as prescribed by WHO and FAO. These studies suggest that the aquatic habitat of study area is overburdened with the studied toxic metal ions.

Key words: Heavy metals, *Labeo rohita*, river Ravi, pollutant, bio-concentrations.