

عنوان مقاله:

Research Article: Accumulation of heavy metals and detection of resistant-associated genes in *Pseudomonas aeruginosa* in an edible catfish (*Wallago attu*) from Pat Feeder Canal, Pakistan

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خلاصه مقاله:

Seafoods are the main source of animal protein in our daily diet and their consumption has been increased due to its high health benefits over red meats. This study aimed to evaluate the heavy metals accumulation in a freshwater catfish muscle (*Wallago attu*) and the detection of heavy metal resistance genes (HMRGs) in *Pseudomonas aeruginosa* isolated from the fish intestine. *W. attu* (n = ۶۰) was collected from four different sites (Qabula Shakh, Magsi Shakh, Umrani Shakh, and Jamali Shakh) of Pat Feeder Canal, Balochistan. The heavy metals and HMRGs were detected using atomic absorption spectrophotometer and polymerase chain reaction. The concentrations of Cd (0.27 ± 0.001 mg/L), Fe (1.23 ± 0.001 mg/L), and Pb (1.23 ± 0.0005 mg/L) were found to be above the permissible limits of WHO in the samples from Jamali Shakh. Moreover, a strong Pearson's correlation of the metal Cd was observed with Zn, Fe, Cr, Cu, Pb, and Ni. However, Zn has a strong correlation with Fe and Cr; Fe with Cu, Ni, and Cu. Cr with Pb and Cu; Cu with Ni and Pb; while Ni has a strong correlation with Pb and Mn. *P. aeruginosa* was also identified from ۴۱ species out of all fish intestine specimens (۶۸%). Similarly, different heavy metal resistance genes (MRGs) including *czcA* ۴ (۳۶.۳%), *ncc* ۴ (۳۶.۳%), *chrR* ۲ (۱۸.۱%), and *copA* ۱ (۹%) were confirmed using PCR. In conclusion, Cd, Fe, and Pb concentrations were higher than the WHO permissible limits. However, other heavy metals (Ni, Zn, Cr, Cu, and Mn) were permissible limits in the fish muscle. The results of this study have shown a correlation between the buildup of heavy metals and the presence of MRGs.

کلمات کلیدی:

Food Safety, Atomic Absorption Spectrometer, Metal Resistance, PCR, Bioaccumulation

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