

Heavy Metal Pollution Depiction Through Sediment and Crab (*Scopimera Crabricauda*) from Sonmiani Bay, Baluchistan

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ABSTRACT

Introduction: Heavy metal pollution is a global obstacle these days due to the recent advancements in the industrial sector and urbanization. The highest risky zones include intertidal and coastal areas for their vulnerable environment as well as dumping sites of urban and industrial runoff. This pollution history is easily determined through the sediments and biota evaluation. Sedentary crabs directly contact substrates and therefore depict the footprints of pollution (Saher and Siddiqui, 2019).

Objective: This study is designed to reveal the current scenario of metal pollution with the help of sediment and crab evaluation from intertidal areas of Sonmiani Bay, Baluchistan.

Methodology: The sediment samples were collected through a PVC core (20 cm). After oven drying, sediments were sieved through a 0.063 mm sieve and then digested by aqua regia. The crabs were collected through excavation of their burrows and placed in bottles. Before digestion, crabs were sorted and oven dried at constant weight. The mixture of HCl, HNO₃, and H₂O₂ was utilized in the acid digestion of crab (Saher and Siddiqui 2019). Both crab and sediment samples were analyzed for Cu, Fe, Zn, Cr, Ni, Co, Cd, and Pb through the Atomic Absorption Spectrometer AAnalyst 700 (Perkin Elmer USA). Contamination factor (CF) and contamination degree (CD) were calculated to determine the pollution level in sediments (Hakanson, 1980). Although sediment biota accumulation factor (SBAF) was used to evaluate the rate of metal transfer in crabs through the environment (Saher and Siddiqui, 2019).

Result: The heavy metal concentrations in the sediment were estimated as Fe>Cr>Ni>Zn>Pb>Cu>Co>Cd. According to the contamination factor, Cd posed the highest risk to the marine environment. The moderate level of contamination was detected in the sediments of Sonmiani Bay. In crabs, the levels of metals followed as Fe>Pb>Cu>Zn>Ni>Cr>Co>Cd. The highest bioaccumulation factor was evaluated for Pb and the lowest for Cr in crabs.

Conclusion: This baseline study revealed the moderate pollution risk in the Sonmiani Bay, which ultimately transferred to the resident crabs. The analyzed crab species were detected as bioindicators of Pb pollution. The detailed study should be recommended to understand the current status of pollution for better conservation and management purposes.

Keywords: Bioindicator, Crabs, Heavy Metals, Pollution, Sonmiani Bay.

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