Biomonitoring of Heavy Metals Using Bottom Fish and Crab as Bioindicator Species, the Arvand River, the Border between Iraq and Iran

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Abstract

The main aim of this study was to biomonitor mercury, arsenic, cadmium, lead and copper concentrations in the Arvand river using *Heteropnestis fossilis* and *Parasesarma persicum*. Comparison of heavy metals among the stations indicated that the concentrations of Hg, As, Cd, Cu and Pb in the sediment samples were apparently different among stations. The results of liner regression analyzes showed that there were significant correlations ($p<0.05$) between Hg, As and Pb elements in sediment and hepatopancreas of *P. persicum* and between As in sediment and liver of *H. fossilis*. These phenomena suggest that *P. persicum* could be a biomonitor of Hg, As and Pb and *H. fossilis* could be a biomonitor of As contamination in sediment of Arvand river.

Introduction

The Arvand river with about 170 Km length is located in Iran and Iraq as part of their border in southeastern side of Iran. This river is a continuation of the Tigris and Euphrates rivers which joint together at Qurna in Iraq, but there is another territory that makes water for the Arvand river, it is the Karoon river that comes from Iranian side (Abdolahpur Monikh et al., 2012a,b). The Arvand river is important in fulfilling social, economic, developmental, and strategic objectives of the region (Abychi et al., 1988). Fisheries industry in this area is one of the major industries and of great social significance. According to the last reports of ROPME (1999), this river is considered one of the most important nursery ground and a target area for seasonal migration of both commercial and noncommercial fish. On the other hand, for decades this river