

Abstract

Concentrations of trace elements (Cd, Cu, Ni, Pb, V and Zn) were determined in the soft tissues (muscular foot and gills) of two pearl oyster species (*Pinctada radiata* and *P. margaritifera*) as well as water and surficial sediments from two sampling sites located in the northern part of the Persian Gulf by Graphite Furnace Atomic Absorption Spectrophotometer (GFAAS). Moreover, the levels of Li, Mg, Al, Mn, Fe, Cu, Sr, Ba, Pb and Zn were measured in two shell layers (outer calcite prismatic layer and the inner aragonite nacreous layer) of *P. radiata* specimens were using Laser Ablation Inductively Coupled Plasma Mass Spectrometer (LA-ICP-MS).

Among the biometric parameters measured in this study, only in the case of hinge length a significant relationship with accumulation of the elements in the soft tissues could be found. There were significant differences between the elements in their bioaccumulation in the soft tissues.

The pattern of metal occurrence in the selected tissues, shell layers, water and sediments exhibited the following descending order: Zn, Ni, Cd, Cu > Pb, V and Zn, Ni, Cu, Cd > V, Pb for gills and foot of *P. margaritifera*, respectively; Zn, Ni, Cd > Cu, V, Pb and Zn, Ni > Cd, Cu > V, Pb for gills and foot of *P. radiata*, respectively; Mg > Sr > Mn, Li, Al, Ba, Cu, Pb, Zn, Fe for the shell layers of *P. radiata* and Zn > Cu, Ni, Pb, Cd for water and sediments.

Comparison of the gained data from this study concerning water and sediments with the relevant standards and guidelines shows that nearly in all the cases our results were markedly below them. In most cases the metal contents in the soft tissues of both species as well as the shells of *P. radiata* are comparable to other world areas.

With regards to the results of the present study, the capability of *P. radiata* for using as a sensitive biomonitoring tool for heavy metals (especially Cu) in the Persian Gulf can be verified. However, further researches in this regard need to be carried out.