Correlations between speciation of Cd, Cu, Pb and Zn in sediment and their concentrations in total soft tissue of green-lipped mussel Perna viridis from the west coast of Peninsular Malaysia

ABSTRACT

Total concentrations and speciation of cadmium (Cd), copper (Cu), lead (Pb) and zinc (Zn) in surface sediment samples were correlated with the respective metal measured in the total soft tissue of the green-lipped mussel Perna viridis, collected from water off the west coast of Peninsular Malaysia. The aim of this study is to relate the possible differences in the accumulation patterns of the heavy metals in P. viridis to those in the surface sediment. The sequential extraction technique was employed to fractionate the sediment into ófreely leachable and exchangeableô (EFLE), óacid-reducible,ô óoxidisableï organicô and óresistantô fractions. The results showed that significant (P<.05) correlations were observed between Cd in P. viridis and Cd in the sediment (EFLE fraction and total Cd), Cu in P. viridis and Cu in the sediment (EFLE and óacid-reducibleô fractions and total Cu) and Pb in P. viridis and Pb in the sediment (óoxidisableï organicô fraction and total Pb). No significant correlation (P>.05) was found between Zn in P. viridis and all the sediment geochemical fractions of Zn and total Zn in the sediment. This indicated that Zn was possibly regulated from the soft tissue of P. viridis. The present results supported the use of P. viridis as a suitable biomonitoring agent for Cd, Cu and Pb.

Keyword: Heavy metals; Correlations; Sediment; Geochemical speciation; Perna viridis