**Crystalline style and tissue redistribution in Perna viridis as indicators of Cu and Pb bioavailabilities and contamination in coastal waters**


## Abstract

The concentrations of Cu, Pb, and Zn in the crystalline style (CS) and in the remaining soft tissues (ST) of the green-lipped mussel Perna viridis from 10 geographical sites along the coastal waters off peninsular Malaysia were determined. The CS, compared with the remaining ST, accumulated higher levels of Cu in both contaminated and uncontaminated samples, indicating that the style has a higher affinity for the essential Cu to bind with metallothioneins. The similar pattern of Cu accumulation in the different ST of mussels collected from clean and Cu-contaminated sites indicated that the detoxification capacity of the metallothioneins had not been overloaded. For Pb, higher levels of the metal in the CS than in the remaining ST were found only in mussels collected from a contaminated site at Kg. Pasir Puteh. This indicated a tissue redistribution of Pb due to its binding to metallothioneins for Pb detoxification and the potential of the CS as an indicator organ of Pb bioavailability and contamination. For Zn, the above two phenomena were not found since no obvious patterns were observed (lower levels of Zn in the CS than in the remaining ST) in contaminated and uncontaminated samples due to the mechanism of partial regulation. Generally, all the different STs studied (foot, mantle, gonad, CS, gill, muscle, and byssus) are good biomonitoring tissues for Cu and Pb bioavailabilities and contamination. Among these organs, the CS was found to be the best organ for biomonitoring Cu. The present data also suggest the use of the tissue redistribution of Pb in P. viridis as an indicator of Pb bioavailability and contamination in coastal waters.



**Keyword:** Crystalline style, Cu and Pb, Perna viridis, Tissue redistribution