Heavy metal distribution in the different parts of Cerithidea obtusa by using multivariate analysis

ABSTRACT

The intertidal gastropod, Cerithidea obtusa were obtained from Bako and Sematan (Sarawak) and Deralik (Perak) in February and December 2006. Besides the shells, the snails were dissected into six different soft tissues. The soft tissues and the shell were used for detection of heavy metals. It was found that the highest concentrations of Cu (112 - 178 ?g/g dw) and Zn (117 – 161 ?g/g dw) were found in the tentacle; the highest concentrations of Cd (4.41 - 5.37 µg/g dw), Pb (53.2 – 63.8 µg/g dw) and Ni (26.1 - 27.9 µg/g dw) were found in the shell. On the other hand, the highest Fe concentrations (910 - 2921 µg/g dw) were found in the operculum. The cluster analysis revealed that the accumulation of heavy metals were clustered into a few groups, where metals were found in the shell are significantly different from the other soft tissues. The multivariate statistical analyses revealed that the accumulation by the different parts were inter-related with one another. Based on the multiple linear stepwise regression analysis, it was also found that the caecum was the most influential organ in accumulation of the studied heavy metals in the total soft tissues. The results indicate the ability of C. obtusa to accumulate heavy metals in the different tissues, hence fulfilling the important criteria as a good biomonitor.

Keyword: Cerithidea obtusa; Gastropod; Heavy metal; Different parts; Multivariate analysis