Heavy metals distribution in sediment and the bioaccumulation factors on three selected bivalve from Mengkabong Lagoon

ABSTRACT

Mengkabong Lagoon is a semi-enclosed mangrove area that is located 36 km away from Kota Kinabalu City. Aquatic resources are fundamental to local livelihood especially for the ethnic group Bajau Sama living in the Mengkabong Lagoon for generations. Bivalves produce in this area has an impact on the socio-economic development of the local community. Assessment on the distribution of heavy metals in surface sediment and the bioaccumulation factor (BCF) for the three selected bivalve grown in this area are Polymesoda expansa, Perna viridis and Crassostrea iredalei were anaylsed by Flame Atomic Absorption Spectometry (FAAS). The result shows in sediment the mean concentrations of Pb, Cu, Cr, Cd and Zn were 30.34±12.12, 12.10±4.86, 33.93±10.98, 0.66±0.35 and 44.20±14.75 mg/kg, respectively. While in P.expansa were 2.26±2.17, 5.31±4.02, 1.91±2.11, 0.66±0.47 and 72.21±41.52 mg/kg (dry weight), for P.viridis were 1.12±1.00, 2.36±1.65, 2.12±2.74, 0.44±0.41, 16.52±10.64 mg/kg (dry weight), and for C. iredalei were 1.84±1.82, 23.92±19.50, 3.30±3.43, 0.71±0.66 and 77.10±64.17mg/kg (dry weight), respectively. Fortunately, the measurement of heavy metals concentration in these three bivalves are within the safety limit based on Malaysia Food Act (1983). The BCF factor shows that there are high accumulation of Cu, Cd and Zn for C. iredalei and P. expansa from sediment when the BCF value was found more than 1 (range 1.07 to 1.98, respectively). The Pearson correlation coefficient also supported significant relationship between element Pb, Cu, Cd and Zn both in sediment and bivalves. It is apparent that P. viridis accumulated less heavy metal from the environment as compared to C. iredalei and P. expansa.