Heavy metal concentrations in the different tissues of horseshoe crabs collected from intertidal sites of the polluted Juru River and the relatively unpolluted Sepang Besar River, Peninsular Malaysia

ABSTRACT

Horseshoe crabs (Tachypleus gigas) were collected from intertidal sites of the polluted Juru River (Penang) and the relatively unpolluted Sepang Besar River (Selangor) in September and December 2007. They were dissected into six parts namely carapace, muscle, telson, leg, operculum and gills. For each site, different tissues from the horseshoe crabs were determined for the concentrations of Cd, Cu, Ni, Fe, Pb and Zn in them. Gills accumulated the highest concentrations of Cu, Cd, Fe, Ni and Pb. Muscles were found to have the highest concentrations of Zn. Most distinctively, the concentrations of Cu, Ni and Zn in the muscles of the Juru River population were significantly ($P < 0.05$) higher than those from the Sepang Besar River, indicating that the Juru River had higher contaminations and bioavailabilities of these metals than the Sepang Besar River. This conclusion was also well supported by the sediment data. These results suggest that T. gigas (especially the muscle) is a potential biomonitor of Cu, Ni and Zn contaminations and bioavailabilities in tropical intertidal areas.

Keyword: Horseshoe crab; Tachypleus gigas; Heavy metals; Peninsular Malaysia