

Use of different tissues of *Perna viridis* as biomonitors of polycyclic aromatic hydrocarbons (PAHs) in the coastal waters of Peninsular Malaysia

ABSTRACT

For the first time, in May 2007, the distributions of polycyclic aromatic hydrocarbons (PAHs) were studied in the soft tissues (STs) (mantle, gills, foot, gonad, muscle, byssus, and remaining soft tissues) of the green-lipped mussel *Perna viridis*, collected from eight geographic locations along the coastal waters of peninsular Malaysia. The STs of the mussels collected from the eastern part of the Johore Straits indicated higher bioavailability of and contamination by PAHs than from other areas. The results also indicated a significantly higher concentration of the lower molecular weight (LMW) PAHs in tissues compared to that of the higher molecular weight (HMW) PAHs, perhaps due to the greater bioavailability of the more water-soluble LMW PAHs or related to a partial biotransformation of the higher molecular weight PAHs. The results also suggest that the differences found in the contents of PAHs in various STs of *P. viridis* were mainly due to differences between individual PAHs volatility and solubility in water, as well as the mechanism of PAH accumulation by mussels. Of the STs in general, the gonad was shown to contain the highest levels of PAHs, but it is not a potential biomonitoring organ because it is highly influenced by spawning conditions. Isomeric PAH ratios were used to differentiate pollution sources. The findings of the study suggest that STs of *P. viridis* are good biomonitors of the bioavailability and contamination with PAHs in tropical coastal waters.

Keyword: Biomonitor; Distribution; *Perna viridis*; Polycyclic aromatic hydrocarbons (PAHs); Soft tissues