Byssus of the green-lipped mussel Perna viridis (Linnaeus) as a biomonitoring material for Zn

Abstract

Recently, Yap et al. (2003) suggested that the byssus of the green-lipped mussel Perna viridis can be a biomonitoring material for Zn although further validation is required. In this work, we did a simple correlation study between Zn concentrations in the byssus (and soft tissue) and in different geochemical fractions of the sediment. A significant ($P<0.01$) Pearson's correlation coefficient ($R=0.84$) between the Zn concentrations in the byssus and soft tissue indicated that the Zn level in the byssus is highly correlated to its level in the soft tissue and that the byssus could act as an excretion route for Zn. Higher R-values were found between the byssus–easily or freely, leachable and exchangeable, byssus–acid-reducible, byssus–oxidizable-organic and byssus–nonresistant fractions of the sediment, and the byssus–Zn concentration in the total sediment when compared to those found between the soft tissue and the same geochemical fractions. This indicated that the byssus was more reflective of Zn contamination in the field environment than the soft tissue. Therefore, the data further support the use of the byssus as a biomonitoring material for Zn as was originally suggested by Yap et al.

Keyword: Biomonitoring material, Perna viridis, byssus, Zn