

## **Toxicities and tolerances of Cd, Cu, Pb and Zn in a primary producer (*Isochrysis galbana*) and in a primary consumer (*Perna viridis*)**

### **Abstract**

Studies on toxicities and tolerances of cadmium (Cd), copper (Cu), lead (Pb) and zinc (Zn) in the brown alga *Isochrysis galbana* and in the green-lipped mussel *Perna viridis* were conducted by short-term bioassays using endpoints growth production and mortality, respectively. The 5-day EC50 and 24-h LC50 of these heavy metals were determined in the brown alga and mussel, respectively. The EC50 values calculated for the alga were 0.74 mg/l for Cd, 0.91 mg/l for Cu, 1.40 mg/l for Pb and 0.60 mg/l for Zn. The LC50 values for the mussels were 1.53 mg/l for Cd, 0.25 mg/l for Cu, 4.12 mg/l for Pb and 3.20 mg/l for Zn. These LC50 values were within the concentration ranges as reported by other authors who used *P. viridis* as the test organism. Based on these EC50 and LC50 values, the alga was most sensitive to Zn, followed by Cd, Cu and Pb while the mussel was most sensitive to Cu, followed by Cd, Zn and Pb. Differences in the trophic levels, metal handling strategies, biology and ecology of the primary producer (brown alga) and the primary consumer (mussel) are believed to be the plausible causes for the different toxicities and tolerances of the metals studied.

**Keyword:** Toxicities and tolerances of heavy metals, *Isochrysis galbana*, *Perna viridis*