

Potential removal of Pb, Cu and Zn by *Phylidrum lanuginosum* in aquatic environment.

Abstract

The use of the aquatic plant *Phylidrum lanuginosum* for the removal of lead, zinc and copper was studied. Plants were exposed to various concentrations of Pb, Cu and Zn (1, 5, 15 and 20 mg/L) and harvested at different time intervals (24, 48, 120, 168 and 240 h). Morphological changes (chlorosis) occurred after 10 days of exposure to 1 mg/L mixed heavy metal solutions. With increasing concentrations, chlorosis occurred after 24 hours at 15 mg/L level. Necrosis (death) occurred after 168 hours in 15 mg/L and 120 hours in 20 mg/L solution. Heavy metals were detected in the roots after 24-h exposure. Pb is readily absorbed compared to Cu and Zn, and the maximum amount was 6.545 ± 0.157 mg/g in 20 mg/L solution and 168-h exposure. The maximum amount of Cu was 1.038 ± 0.008 mg/g harvested in 15 mg/L solution at 120 h while the amount of Zn harvested was 0.996 ± 0.018 mg/g in 1 mg/L solution at 120 h. *Phylidrum lanuginosum* showed to be a potential bioaccumulator able to hyperaccumulate Pb, Cu and Zn at different rates of accumulation.

Keyword: Rhizofiltration; *Phylidrum lanuginosum*; Heavy metals; Chlorosis.