

Heavy metals uptake of water mimosa (*Neptunia oleracea*) and its safety for human consumption

ABSTRACT

Background: *Neptunia oleracea* or 'water mimosa' has a phytoremediation ability which is rarely being assessed. This plant also can be eaten as raw or cooked and but brought such concern on its safety for human consumption. The objective of this study was to assess the phytoremediation ability of water mimosa and its safety for human consumption. **Methods:** Water mimosa was treated with Pb, Cu and Cd at concentrations of 0.5 to 20 mg/L and the level of heavy metals uptake was measured. Treated plants were also harvested and soaked in boiled water (100°C) for 2 to 10 minutes to determine the level of heavy metals reduction. Heavy metals were detected by Inductively-Coupled Plasma-Optical Emission Spectrometry (ICP-OES). Experiment was conducted in the Environmental Health laboratory, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia from June to December 2013. **Results:** Water mimosa accumulates up to 93% of Cd (5 mg/L) after 10 days of treatment, the highest as compared to Cu (80%) and Pb (50%). It also has the highest BCF when treated with 10 mg/L of Cd. The heavy metals concentration in plant tissue decreased as the boiling time increased. **Conclusion:** The overall results demonstrated that water mimosa could be used to remediate wastewater polluted with Cd, Cu and Pb. The plant is not recommended for human consumption as its ability to retain heavy metals in edible parts.

Keyword: Phytoremediation; Water mimosa; Heavy metals; Food safety; Green technology