

**Phytoextraction potential of *Rhizophora apiculata*: a case study in Matang Mangrove Forest Reserve, Malaysia**

ABSTRACT

Disposal of industrial wastewater has resulted in increased concentration of heavy metals (HMs) along the coastline of Malaysia. However, little is known about the accumulation capacity of HMs by *Rhizophora apiculata* in Matang Mangrove Forest Reserve (MMFR) Malaysia. The aim of this study is to measure the concentration of HMs in different ages of mangrove forests. In this study, 15 and 80-year old trees of *Rhizophora apiculata* were selected for experimentation. Thirty samples of leaves, roots and sediments were analyzed to measure the concentration of HMs in 15 and 80-year-old trees. The measured concentrations of copper (Cu), iron (Fe), manganese (Mn) and zinc (Zn) in leaves, roots and sediments were used to compare bio-concentration and translocation factor between the abovementioned two age groups. Concentration of Mn came out to be significantly higher in leaves than in sediment. This suggested that *Rhizophora apiculata* was an efficient Mn-extractor. On the other hand, it was found less efficient in extracting heavier metals (Fe, Cu and Zn) from the sediment, as their concentration was lower in leaves and roots as compared to sediments. The translocation factor was highest for Mn, indicating high mobility of Mn from roots towards the leaves. Bio-concentration factor was also found highest for Mn (3.52) followed by Zn (1.88), Cu (1.33) and Fe (0.26). Therefore, it can be concluded that *Rhizophora apiculata* is more efficient in extracting Mn as compared to Zn, Cu and Fe.

**Keyword:** Phytoremediation; Heavy metals; *Rhizophora apiculata*; Translocation factor; Bio-concentration