

Heavy metal uptake and translocation by *Justicia gendarussa* Burm F. from textile sludge contaminated soil

ABSTRACT

Heavy metals are dangerous environmental pollutants that can be transferred and accumulated in human and animal bodies causing deoxyribonucleic acid (DNA) damage and carcinogenic effects. A glass house experiment was conducted to evaluate the potential of *Justicia gendarussa* Burm F. to absorb heavy metals from textile industry sludge. *Justicia gendarussa* seedlings were planted on six different growth media (soil+sludge) comprising: 100% soil, 100% sludge, 80% sludge+20% soil, 60% sludge+40% soil, 40% sludge+60% soil and 20% sludge+80% soil. The maximum height increment and number of leaves were found in 20% sludge+80% soil while the highest basal diameter increment was recorded in the 100% sludge. Copper and iron were highly concentrated in the roots, zinc in the leaves, while aluminium was concentrated in both leaves and stems. *Justicia gendarussa* seems to have a high potential to absorb high amounts of Al and Fe in the leaves and roots. This species showed high translocation (TF) and low bioconcentration factor (BCF) in the contaminated soil. *Justicia gendarussa* was able to tolerate and accumulate a high concentration of heavy metals. Therefore, this species can be considered as a potential phytoremediator.

Keyword: Heavy metal accumulation; *Justicia gendarussa*; Phytoremediation; Textile sludge waste