Cadmium Accumulation and Translocation in *Jatropha curcas* Grown in Contaminated Soils

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Abstract

Cadmium (Cd) is a metal with high toxicity and solubility in water, which is a serious environmental threat to human health. Phytoremediation is an environment-friendly method and a promising new and cost effective technology that uses plants to clean organic and inorganic contaminated media. This study was conducted to evaluate the potential of *Jatropha curcas* for remediation of soils contaminated with Cd. Seedlings were planted in the soil spiked with Cd in amounts of 0, 25, 50, 75, 100 and 150 mg kg^{-1} (Cd_0, Cd_{25}, Cd_{50}, Cd_{75}, Cd_{100} and Cd_{150}) for a period of five months. Biocentration factor (BCF, metal concentration ratio of plant roots to soil), translocation factor (TF, metal concentration ratio of plant shoots to soil) and removal efficiency (RE, total metal removed by plant biomass to total metal loaded in soil) were determined. Cd concentrations among plant parts were in the following trend: roots>stems>leaves. The highest total Cd concentration (up to 1100 mg kg^{-1}) and the highest RE were found in Cd_{150} and Cd_{25}, respectively. BCF and TF of the plant were more and less than 1, respectively. Hence, although this species has a potential to be used in phytostabilization of Cd-contaminated soil, more researches in the field condition are needed.

Keywords: Phytoremediation, *Jatropha curcas*, Heavy metals, Soil pollution.

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