Eichhornia crassipes: Phytoremediation Viability for Heavy Metals in Hostile Water

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Heavy metal spills are amongst the most perilous threats to current and future populations. Once an environment is over polluted with heavy metals, there is no natural intercession for its remediation. The independent investigation brought forth determined the viability of using Eichhornia crassipes, water hyacinth, as a phytoremediation agent for heavy metals in fresh and slightly salinized water. Water hyacinth were collected from a single source of hostile water, rinsed, and transferred to individual buckets. A portion were housed in five gallons of hostile water and another portion slightly salinized hostile water and exposed to 10 mg/L of Cu, Cd, and Zn over a period of 42 days. The experiment shows: significant quantities of metals are absorbed within the roots during the first two days of growth. Consequentially, as roots meet their temporary capacity, considerable amounts of metals are shifted to the counter, above water component. This allows for greater capacities of metals to be stored in the roots. A polynomial trend was found from the data and supported by R^2 values ranging from 0.8-0.96. The predicted days of maximum absorption occur between the 28th-40th day with heavy metal concentrations up to 75,200 mg/L. Implementation of the water hyacinth would involve approximately one plant per 18.9 L of water with a plastic buoy barrier enclosing the area of water hyacinth to prevent eutrophication.

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