Adsorption of Methylene Blue Dye from Aqueous Solutions Using Eichhornia crassipes

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Abstract:

Adsorption of methylene blue (MB) from aqueous solution using dried roots, stems, and leaves of Eichhornia crassipes biomass obtained from Lake Victoria was studied. Batch experimental results revealed that the adsorption process was highly dependent on adsorbent dosage, initial MB concentration, E. crassipes particle size and aqueous solution temperature. The isotherm data fitted Freundlich mathematical models with maximum dye adsorption of 35.37 mg g−1. Roots adsorbed over 99 % of the MB in <5 min. Sorption kinetics followed a pseudo-second-order model. Results provide evidence that E. crassipes is an effective and inexpensive biomaterial for dye removal from aqueous dye solutions and industrial effluents.