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Kinetic and Thermodynamic Studies of Crystal Violet Biosorption from Aqueous Solution using *Spathodea campanulata* leaves

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Abstract : The aim of the present work is to remove Crystal violet (CV) dye from their aqueous solution using *Spathodea campanulata* leaves powder as low cost biosorbent in a batch study. The effect of parameters in a batch study were contact time, solution pH, initial CV dye concentration, biosorbent dosage, average particle size of the biosorbent and temperature. The kinetic and isotherm studies of biosorption of CV dye onto *Spathodea campanulata* biosorbent was investigated. The maximum biosorption capacities of 12.65 mg/g of Crystal violet dye onto the *Spathodea campanulata* biosorbent fitted well with the Langmuir isotherm model. Thermodynamic parameters such as Gibbs free energy, enthalpy change and entropy change were also estimated for the biosorption of CV dye. The thermodynamic studies indicated that the biosorption of Crystal violet dye onto *Spathodea campanulata* biosorbent was spontaneous, feasible and endothermic.

Keywords : Crystal violet, *Spathodea campanulata*, pollution control, aqueous solution, Biosorption.

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