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Biosorption of Methylene Blue from Aqueous Solution using Banana Leaves Powder: Optimization by RSM

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Abstract : The purpose of this research is to obtain optimal activation conditions for *Banana leaves to powder* using response surface methodology (RSM). Central composite design (CCD) was used to determine the effects of the five process variables such as temperature, pH, bio sorbent dose, initial methylene blue concentration, and percentage of dye removal. Based on the CCD, a quadratic model was developed for the response. The most influential factor on experimental design response was identified from the analysis of variance (ANOVA). The optimum conditions for *Banana leave powder* were the temperature of 44.3^0C, pH of 7.1, bio sorbent dose of 0.3 g, initial methylene blue concentration of 48.4 mg/L, and 84.26 % dye removal. The experimental percentage of biosorption at these optimum conditions was 76.93.

Key-words : *Banana leaves powder*, Central composite design, Optimization, Methylene blue removal.

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