



Utilization of oxalic acid-modified spent mushroom substrate for removal of methylene blue from aqueous solution

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ABSTRACT

Spent mushroom substrate (SMS), an agricultural biowaste, was modified by oxalic acid and used as an adsorbent for adsorption of methylene blue (MB) in aqueous solution. The equilibrium data fitted with Freundlich and Temkin isotherm models. The kinetic experiment data followed the pseudo-second-order model. The experimental data corresponded well to Boyd's film-diffusion model and the rate-determining step was the external mass transfer. Thermodynamic parameters suggested that the adsorption process was exothermic and spontaneous. The results imply that OASMS is an economical and feasible adsorbent for removal of MB from aqueous solution.

Keywords: Adsorption; Methylene blue; Oxalic acid-modified spent mushroom substrate; Isotherm; Kinetics

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