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Spent mushroom: a new low-cost adsorbent for removal of Congo Red from aqueous solutions

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ABSTRACT

In this study, spent mushroom (SM) (*Tricholoma lobayense*) was used as a new low-cost adsorbent for removing Congo Red (CR) from aqueous solutions in a batch process at 25 °C. By varying the adsorbent dose, initial concentration, contact time, initial pH and particle size, the respective effects of these factors on the adsorption performance were explored. The sorption equilibrium data fitted Langmuir isotherm and the maximum adsorption capacity was 147.1 mg/g at 25 °C. The kinetic data obtained at different initial concentrations were analyzed using pseudo-first-order, pseudo-second-order and intraparticle diffusion equations. The pseudo-second-order described the adsorption of Congo Red on spent mushroom very well.

Keywords: Spent mushroom; Congo Red; Adsorption; Isotherm; Kinetics

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