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Rice husk as a Biosorbent for Antibiotic Metronidazole Removal: Isotherm Studies and Model validation

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Abstract : The present study is on adsorption of Metronidazole (MNZ) by Rice husk. It uses batch adsorption techniques. The influence of contact time, initial concentration, dosage of adsorbent and temperature were investigated. The equilibrium time was found to be 90 minutes at all concentration. The percent removal of the MNZ was increased with increase in temperature and indicated that MNZ adsorption process was endothermic and spontaneous.. Adsorption performance of benign adsorbents was applied to Langmuir, Freundlich, Dubinin-Radushkevich and Temkin isotherm which afford important information on the surface properties of the adsorbent and its affinity for adsorbate. Data correctly fits Langmuir isotherm than Freundlich, Temkin and Dubinin-Radushkevich isotherm proving monolayer and homogenous surface of adsorption with R^2 equal to 0.998. The results indicate that the modified Rice husk is a promising low cost technology adsorbent for the removal of antibiotics.
Keywords: Adsorption, Metronidazole, Isotherm, Rice husk.

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