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# Removal of bromate from aqueous solution by corncobs

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**ABSTRACT**

The native and chemically modified corncobs were utilized as low-cost and efficient adsorbent to remove bromate from aqueous solution in this study. The parameters of the adsorbent i.e. adsorption capacity, selectivity, regenerability were investigated. All the experiments were conducted at the same adsorbent dose (0.2 g/200 ml) and the same temperature of 30°C to investigate the effects of initial concentration of bromate, contact time, ionic strength and solution pH, then the optimal experimental conditions were ascertained. The results showed that the optimum conditions for the removal of bromate were at the aqueous solution with low ion concentration, pH of about 9.0 and equilibrium time of 80 min, respectively. Freundlich model fitted the adsorption data quite reasonably ($R^2 > 0.92$) and the maximum adsorption capacity was 101.01 mg/g. The experimental data followed the pseudo-second-order kinetic model very well. In addition, the removal percentages (%) of bromate by corncob modified by 80% isopropyl alcohol were higher than that by 20% isopropyl alcohol, 20% n-butyl alcohol, citric acid and HCl, similarly, were higher than the native corncob, corncob carbon and corncob ash. The removal percentages (%) of bromate by corncob carbon and corncob ash were higher than that by corncob with the bromate concentration of 40 mg/l.

*Keywords:* Bromate; Adsorption kinetics; Modified corncob; Remove; Aqueous solution; Adsorbent

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