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Preparation of SBA-16/g-C_3N_4/Fe_3O_4magnetic nanocomposite and kinetic investigation of absorption of cefazolin and cefixime antibiotics on it

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In this research, the absorption kinetics of cefazolin and cefixime antibiotics on SBA-16/g-C_3N_4/Fe_3O_4 magnetic nanocomposite as adsorbent was studied. For this purpose, SBA-16/g-C_3N_4/Fe_3O_4magnetic nanocomposite was synthesized in the first step. XRD, SEM and FT-IR analyzes were prepared from the synthesis sample. Then, the absorption kinetics of cefazolin and cefximber antibiotics on the synthesized nanocomposite was investigated. In the second step, the effect of effective parameters on the drug absorption process, including pH, contact time, temperature, drug concentration and adsorbent dose, was studied by using the design of experiments (DOE) software using the response surface method (RSM) and the central composite model (CCD). and the optimal value for each parameter was obtained. Finally, to find the best kinetic model, four kinetic models of zero order, pseudo first order, pseudo second order and Higuchi model were studied under optimal conditions and the obtained results showed that the process of cefazolin and cefixime antibiotics on SBA-16/g-C_3N_4/Fe_3O_4 magnetic nanocomposite corresponds to the pseudo-second-order kinetic model.

***Keywords*:** Adsorption; Response Surface Methodology; Cefixime; cefazolin; SBA-16/g-C_3N_4/Fe_3O_4.

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