Supporting Information

Synthesis of chitosan/diatomite composite as an advanced delivery system for ibuprofen drug; equilibrium studies and the release profile

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Table S1. The representative equations of the studied kinetic and isotherm models in their linear and nonlinear forms

Kinetic models		
Model	**Linear equation**	**Parameters**
Pseudo-first-order	$q_t = q_e\,(1 - e^{-k_1.t})$	q_t (mg/g) is the adsorbed ions at time (t), and K_1 is the rate constant of the first-order adsorption (min^{-1})
Pseudo-second-order	$q_t = \frac{q_e^2 k_2 t}{1 + q_e k_2 t}$	qe is the quantity of adsorbed ions after equilibration (mg/g), and K_2 is the model rate constant (g/mg min).
Intra-particle diffusion	$q_t = kt^{0.5} + C$	k_p (mg g^{-1} $min^{-0.5}$) is the intraparticle diffusion rate constant and C is the intercept of the line
Isotherm models		
Model	**Equation**	**Parameters**
Langmuir	$q_e = \frac{q_{max}\, bC_e}{(1 + bC_e)}$	C_e is the rest ions concentrations (mg/L), q_{max} is the theoritical maximum adsorption capacity (mg/g), and b is the Langmuir constant (L/mg)
Freundlich	$q_e = K_f C_e^{1/n}$	K_F is the constant of Freundlich model related to the adsorption capacity and n is the constant of Freundlich model related to the adsorption intensities
Dubinin–Radushkevich	$q_e = q_m e^{-\beta\varepsilon^2}$	β (mol^2/KJ^2) is the D-R constant, ε (KJ^2/mol^2) is the polanyil potential, and q_m is the adsorption capacity