

Supporting Information

Adsorption and desorption of steroid hormones on saline soil

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Table S1. Basic characteristics of coastal saline soil used in the experiment.

Soil	Salinity (g/kg)	Organic matter (g/kg)	pH	EC (dS/m)
S1	1.30	9.54	7.98	0.480
S2	2.60	11.0	7.61	3.12
S3	9.40	4.26	7.89	10.71

Table S2. Parameters of adsorption fitted by Langmuir and Freundlich adsorption isotherm models. (Experimental temperature: 288 K, 298 K, and 308 K; the initial concentration: 5 µg/L, 10 µg/L, 20 µg/L, 50 µg/L, and 100 µg/L; shaker speed: 170 rpm; sampling time: 24 h; soil sample concentration: 20 g/L)

EDCs	T (K)	Langmuir			Freundlich		
		Q _m (µg/g)	K _L (µL/µg)	R ²	K _F ((µg ^{1-1/n} L ^{1/n})/g)	1/n	R ²
E2	288	3.90	0.0118	0.999	0.0746	0.752	0.969
	298	3.41	0.00877	0.998	0.0440	0.783	0.991
	308	3.23	0.00731	0.998	0.0358	0.804	0.964
EE2	288	6.01	0.0378	0.989	0.277	0.716	0.991
	298	5.46	0.0171	0.998	0.133	0.762	0.989
	308	4.27	0.0123	0.994	0.0644	0.844	0.993

Table S3. Adsorption thermodynamic parameters for E2/EE2. (Experimental temperature: 288 K, 298 K, and 308 K; the initial concentration: 5 µg/L, 10 µg/L, 20 µg/L, 50 µg/L, and 100 µg/L; shaker speed: 170 rpm; sampling time: 24 h; soil sample concentration: 20 g/L)

T (K)	ΔG ⁰ (KJ/mol)		ΔH ⁰ (KJ/mol)		ΔS ⁰ (J/mol)	
	E2	EE2	E2	EE2	E2	EE2
288 K	-9.04	-12.6				
298 K	-7.96	-11.2	-26.9	-49.9	-62.4	-128
308 K	-7.85	-10.1				

Table S4. Parameters of adsorption and desorption fitted by Pseudo-first-order and Pseudo-second-order kinetic models. (Experimental temperature: 298 K, the initial concentration: 10 $\mu\text{g/L}$, shaker speed: 170 rpm, soil sample concentration: 20 g/L)

EDCs	Experimental q_{ex} ($\mu\text{g/g}$)	Pseudo-first-order model				Pseudo-second-order model				
		q_e ($\mu\text{g/g}$)	k_1 (/h)	R^2	δ (%)	q_e ($\mu\text{g/g}$)	k_2 ($\text{g}/(\mu\text{g h})$)	R^2	δ (%)	
Adsorption	E2	0.149	0.148	0.440	0.986	1.34	0.170	3.37	0.883	13.4
	EE2	0.301	0.289	0.662	0.995	3.33	0.322	2.58	0.888	9.63
Desorption	E2	0.116	0.121	0.303	0.928	4.31	0.148	2.14	0.892	27.6
	EE2	0.131	0.127	0.997	0.994	2.29	0.137	7.40	0.995	4.6

Table S5. Parameters of adsorption fitted by the intraparticle diffusion model. (Experimental temperature: 298 K, the initial concentration: 10 $\mu\text{g/L}$, shaker speed: 170 rpm, soil sample concentration: 20 g/L)

	K_1 ($\mu\text{g}/(\text{g h}^{1/2})$)	C_1	R^2	K_2 ($\mu\text{g}/(\text{g h}^{1/2})$)	C_2	R^2	K_3 ($\mu\text{g}/(\text{g h}^{1/2})$)	C_3	R^2
E2	0.061	0	0.962	0.0230	0.0780	0.922	0.00150	0.140	0.361
EE2	0.150	0	0.990	0.0320	0.202	0.991	0.00610	0.270	0.574