

Table S4. Fitting model parameters and the calculated parameters for ions released from the citrate coated CoFe₂O₄ NPs in artificial root exudates according to different dissolution kinetic models.

Fitting parameters	Fe	Co
	Zero-order	
R ²	0.864	0.745
R ² adjusted	0.859	0.736
Intercept	0.009*	0.022*
Slope	6.345x10 ⁻⁴ *	1.607x10 ⁻⁴ *
k (mM h ⁻¹)	6.345 x 10 ⁻⁴	1.607x10 ⁻⁴
Ms (mM)	0.009	0.022
	First-order	
R ²	0.630	0.685
R ² adjusted	0.617	0.674
Intercept	-4.942*	-3.844*
Slope	0.029*	5.985x10 ⁻³ *
k (h ⁻¹)	2.861 x10 ⁻²	-5.985x10 ⁻³
Ms (mM)	0.007	0.021
	Second-order	
R ²	0.640	0.596
R ² adjusted	0.625	0.581
Intercept	-3.744*	47.053*
Slope	0.030*	-0.231*
k (mM ⁻¹ h ⁻¹)	2.977x 10 ⁻²	-0.231
Ms (mM)	-0.267	0.021
	Pseudo-first-order	
R ²	0.845	0.613
R ² adjusted	0.839	0.599
Intercept	-0.607*	-1.185*
Slope	-1.182x10 ⁻³ *	-5.000x10 ⁻⁴ *
k (h ⁻¹)	1.182 x 10 ⁻³	5.000 x 10 ⁻⁴
Ms (mM)	0.545	0.306
	Pseudo-second-order	
R ²	0.835	0.981
R ² adjusted	0.829	0.981
Intercept	307.498*	82.462*
Slope	13.996*	28.801*
k (L mol ⁻¹ h)	0.637	10.059
Ms (mM)	0.071	0.035
	One-half-order	
R ²	0.794	0.719
R ² adjusted	0.786	0.709
Intercept	0.091*	0.147*
Slope	1.987x10 ⁻³ *	4.884x10 ⁻⁴ *
k (mM ^{1/2} h)	3.974 x 10 ⁻³	9.768x10 ⁻⁴
Ms (mM)	0.008	0.021
	Three-half-order	
R ²	0.508	0.666
R ² adjusted	0.490	0.654
Intercept	3.521*	2.615*
Slope	-0.021*	3.715x10 ⁻³ *
k (mM ^{-1/2} h)	-0.041	-7.431 x 10 ⁻³
Ms (mM)	0.081	0.146
	Evolich	
R ²	0.797	0.691
R ² adjusted	0.790	0.680
Intercept	0.007*	0.021*
Slope	9.742x10 ⁻³ *	2.474x10 ⁻³ *
α (mM h ⁻¹)	0.020	12.007

β (L mmol ⁻¹)	102.652	404.204
	Higuchi	
R ²	0.921	0.783
R ² adjusted	0.918	0.775
Intercept	-8.613x10 ⁻⁴ *	0.019*
Slope	6.605x10 ⁻³ *	1.661x10 ⁻³ *
k (mM h ^{1/2})	0.007	0.002
Ms (mM)	-0.001	0.019
	Hixon-Crowell	
R ²	0.838	0.611
R ² adjusted	0.832	0.597
Intercept	0.182*	0.102*
Slope	-2.055 x 10 ⁻⁴ *	-5.004 x 10 ⁻⁵ *
k (mM ^{1/3} h ⁻¹)	-2.055 x 10 ⁻⁴	-5.004 x 10 ⁻⁵
	Korsmeyer-Peppas	
n	0.538	0.097
R ²	0.922	0.726
R ² adjusted	0.919	0.712
Intercept	0.010*	-0.003
Slope	9.879x 10 ⁻³ *	0.067*
k (h ⁻ⁿ)	0.010	0.067
	Baker-Lonsdale	
R ²	0.865	0.744
R ² adjusted	0.860	0.735
Intercept	0.016*	0.066*
Slope	1.141x10 ⁻³ *	4.875x10 ⁻⁴ *
k (h)	1.141 x 10 ⁻³	4.875x10 ⁻⁴
	Weibull	
R ²	0.873	0.703
R ² adjusted	0.868	0.692
Intercept	-2.270*	-1.681*
Slope	0.538*	0.097*
a	0.005	0.020
b	0.538	0.097

[M]_s; theoretical saturation concentration, *Symbol indicates significance with an $\alpha=0.05$