

Title:

Improved cadmium uptake and accumulation in the hyperaccumulator *Sedum alfredii*: the impacts of citric acid and tartaric acid

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Table S1 Cd speciation in the uptake solution with addition of different Cd and organic acid levels as calculated by Visual-Minteq 3.0

Cd ($\mu\text{mol/L}$)	10			100		
Organic acid	0	10	100	0	10	100
	Citric acid ($\mu\text{mol/L}$)					
Cd²⁺	9.242	9.060	7.523	91.353	89.846	76.843
CdCl⁺	0.755	0.740	0.617	8.603	8.466	7.277
CdCl₂ (aq)	0.003	0.003	0.002	0.039	0.038	0.033
Cd-Citrate⁻		0.188	1.779		1.576	15.174
CdH-Citrate (aq)		0.008	0.078		0.069	0.662
CdH₂-Citrate⁺		0.000	0.000		0.000	0.003
	Tartaric acid ($\mu\text{mol/L}$)					
Cd₂⁺	9.242	9.217	8.997	91.353	91.118	89.054
CdCl⁺	0.755	0.752	0.730	8.603	8.576	8.339
CdCl₂ (aq)	0.003	0.003	0.003	0.039	0.039	0.038
CdH-Tartrate⁺		0.000	0.001		0.000	0.005
Cd-Tartrate (aq)		0.028	0.269		0.262	2.551
Cd-(Tartrate)₂²⁻		0.000	0.000		0.000	0.004

Table S2 Cd speciation in the nutrient solution with addition of 100 $\mu\text{mol/L}$ Cd and different citric acid or tartaric acid levels as calculated by Visual-Minteq 3.0

Cd Speciation	Citric acid ($\mu\text{mol/L}$)					Tartaric acid ($\mu\text{mol/L}$)			
	0	10	50	100	500	50	100	250	500
$\text{Cd}(\text{SO}_4)_2^{2-}$	0.011	0.011	0.011	0.010	0.007	0.011	0.011	0.011	0.011
Cd^{2+}	8.670	8.559	8.137	7.653	5.025	8.585	8.501	8.259	7.881
CdCl^+	0.109	0.108	0.103	0.097	0.064	0.108	0.107	0.104	0.099
CdEDTA^{2-}	89.953	90.042	90.384	90.765	92.668	89.987	90.017	90.115	90.260
CdHEDTA^-	0.224	0.224	0.225	0.226	0.232	0.224	0.224	0.224	0.224
CdHPO_4 (aq)	0.092	0.091	0.086	0.082	0.055	0.091	0.090	0.087	0.083
CdNO_3^+	0.072	0.072	0.068	0.064	0.042	0.072	0.071	0.069	0.065
CdSO_4 (aq)	0.867	0.857	0.818	0.773	0.528	0.859	0.851	0.827	0.790
Cd-Citrate^-		0.033	0.160	0.314	1.323				
CdH-Citrate (aq)		0.001	0.007	0.013	0.055				
Cd-Tartrate (aq)						0.062	0.123	0.302	0.581
CdH-Tartrate^+						0.000	0.000	0.001	0.001