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A biodynamic understanding of dietborne metal uptake by a freshwater invertebrate

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4 pages (3 Tables, 1 Figure)

TABLE S1. Nominal dissolved tracer concentrations (µg l^{-1}) used to label the lettuce offered as food to *L. stagnalis*

Experiment	^{53}Cr	^{65}Cu	^{106}Cd	^{62}Ni
1	100	0	0	0
1	100	50	5	0
1	100	500	50	0
1	100	2500	250	0
2	100	0	0	0
2	100	100	30	40
2	100	400	100	125
2	100	1000	200	600
3	200	0	0	0
3	200	450	50	200
3	200	600	125	400
3	200	700	150	600
3	200	800	175	800
4	200	500	0	0
4	200	0	100	0
4	200	0	0	200

Table S2. Relative abundance of the natural isotopes of Cr, Ni, Cu and Cd

Isotope	Relative abundance (%)
^{50}Cr	4.35
^{52}Cr	83.8
^{53}Cr	9.50
^{54}Cr	2.37
^{58}Ni	68.1
^{60}Ni	26.2
^{61}Ni	1.14
^{62}Ni	3.63
^{64}Ni	0.93
^{63}Cu	69.2
^{65}Cu	30.8
^{106}Cd	1.25
^{108}Cd	0.89
^{110}Cd	12.5
^{111}Cd	12.8
^{112}Cd	24.1
^{113}Cd	12.2
^{114}Cd	28.7
^{116}Cd	7.49

TABLE S3. Biodynamic parameters used to predict Cd and Cu bioaccumulation

Parameter	Symbol	Unit	Metal	Value	Reference
Rate constant of dietary metal uptake	k_{uf}	g g^{-1} d^{-1}	Cu	0.162 ± 0.039[§]	This study
			Cd	0.125 ± 0.023[§]	This study
Rate constant of dissolved metal uptake[1]	k_{uw}	l g^{-1} d^{-1}	Cu	0.55 ± 0.12[*]	*16*
			Cd	0.98 ± 0.23[*]	*16*
Rate constant of metal loss	k_e	d^{-1}	Cu	0.026 ± 0.014[*]	unpubl. results
			Cd	0.021 ± 0.006[*]	unpubl. results
Epiphytic-algae metal concentration	$[M]_{food}$	nmol g^{-1}	Cu	189 ± 16[§]	*20*
		nmol g^{-1}	Cd	0.62 ± 0.09[§]	*20*
Metal concentrations at steady-state[2]	$[M]_{ss}$	nmol g^{-1}	Cu	1178	This study
			Cd	3.69	This study

[1]in moderately hard water
[*]±S.E.
[§]±95% C.I.
[2]Predicted from equation 7

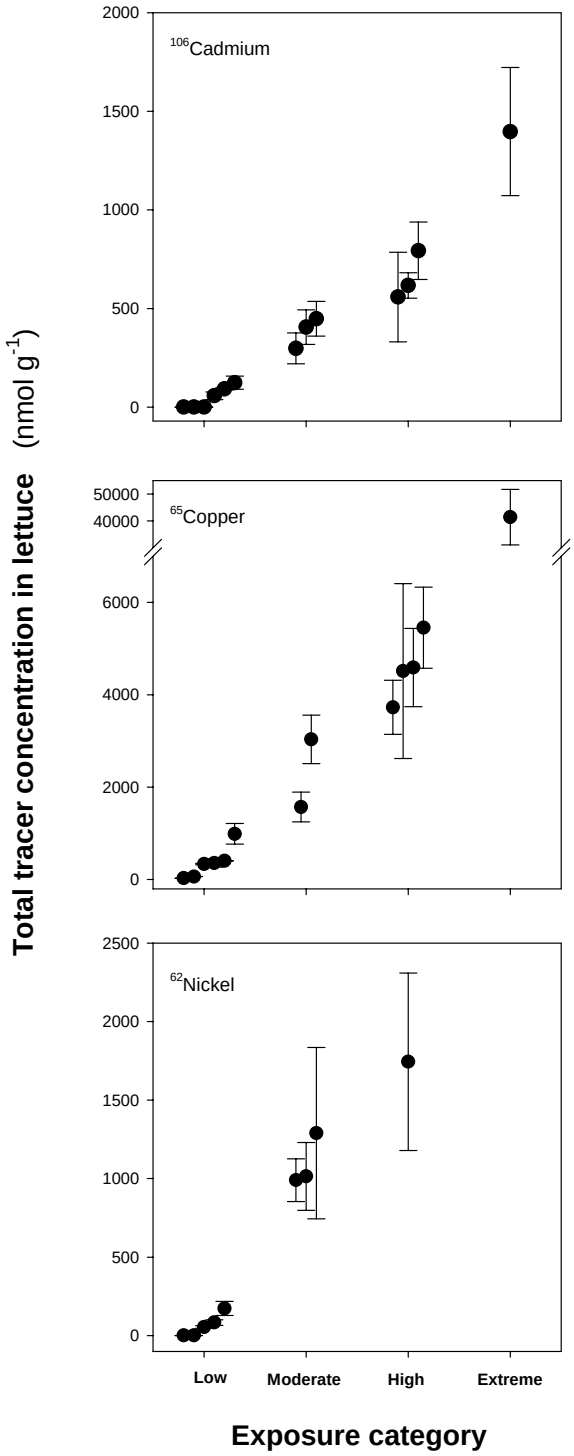

FIGURE S1. Tracer concentrations in the lettuce offered as food to in *L. stagnalis* (nmoles g^{-1}) for each exposure category. Each symbol represents mean metal concentrations of 5 subsamples of lettuce (± 95% confidence interval).