

Mercury modulates selenium activity via altering its accumulation and speciation in garlic (*Allium sativum*)

(Supplementary Information)

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Table S1

The operating conditions of ICP-MS for Se analysis

ICP-MS Conditions	
Spray chamber	Quartz impact bead
Nebulizer	Glass concentric
RF power/ W	1200
Plasma gas flow/ L min ⁻¹	13.0
Auxiliary gas flow/ L min ⁻¹	0.70
Nebulizer gas flow/ L min ⁻¹	0.72
Collision gas	7.28% (v/v) H ₂ in He
Collision gas flow/ ml min ⁻¹	5.6
Dwell time/ms	100
Monitored ion/ m/z	⁸⁰ Se

Table S2

Evaluation of combined toxicity of Se and Hg on the garlic growth[§]

Se concentration (mg/L)	Hg Concentration (mg/L)	expected value (E1)	experimental value (E2)	q value	A/S/-
0.01	0.01	-0.09278	-0.15481	1.6686	S
	0.1	-0.06442	-0.14226	2.2083	S
	1	0.031945	-0.02623	-0.8211	A
	10	0.381519	0.30544	0.8006	A
	50	0.771432	0.75314	0.9763	-
0.1	0.01	-0.08424	-0.21339	2.5331	S
	0.1	-0.05611	-0.20921	3.7286	S
	1	0.039509	-0.03573	-0.9044	A
	10	0.386352	0.22176	0.5740	A
	50	0.773218	0.7113	0.9199	-
1	0.01	-0.00971	0.02092	-2.1545	A
	0.1	0.016486	0.0251	1.5225	S
	1	0.10553	0.01255	0.1189	A

	10	0.428532	0.19665	0.4589	A
	50	0.788806	0.55649	0.7055	A
10	0.01	0.142003	0.12552	0.8839	-
	0.1	0.164265	0.12971	0.7896	A
	1	0.239929	0.11297	0.4708	A
	10	0.514398	0.17155	0.3335	A
	50	0.820539	0.46096	0.5618	A
50	0.01	0.445506	0.44393	0.9965	-
	0.1	0.459892	0.43138	0.9380	-
	1	0.508792	0.46904	0.9219	-
	10	0.686172	0.56927	0.8296	A
	50	0.88402	0.89121	1.0081	-

[§] $E_1(\text{expected value}) = E_{\text{Se}} + E_{\text{Hg}} - E_{\text{Se}} \cdot E_{\text{Hg}}$, (E_{Se} , the growth inhibition rate of Se alone in the end of the garlic culture; E_{Hg} , the growth inhibition rate of Hg alone in the end of the garlic culture); E_2 , experimental value; $q = E_2 / E_1$. A, antagonism ($q < 0.85$); S, synergism ($q > 1.15$); -, insignificant effect ($0.85 < q < 1.15$)^{1,2}.

Table S3

The transfer factors of Se in garlic shoots (bulbs and leaves) and roots of the plants affected by Hg under Se and Hg associative action conditions.

Hg concentration in medium (mg/L)	TF (Transfer factors = element concentration in shoot / element concentration in root) ³				
	Se 0.01	Se 0.1	Se 1	Se 10	Se 50
0	1.15	0.81	0.46	0.54	0.32
0.01	1.24	0.88	0.46	0.53	0.32
0.1	1.33	0.78	0.52	0.53	0.30
1	1.01	0.72	0.54	0.51	0.31
10	0.87	0.57	0.59	0.46	0.34
50	0.69	0.61	0.35	0.49	0.41

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