

### Supporting information

Table S1 As and Se concentrations determined by using four modes

Cell condition	<sup>75</sup> As	<sup>77</sup> Se	<sup>78</sup> Se	<sup>80</sup> Se	<sup>82</sup> Se
No gas	14.9±0.1	179.7±0.7	51.6±0.1	-	111.7±1.9
He	31.1±0.7	1896.7±104.3	315.0±15.1	133.8±11.6	1037.5±69.3
H <sub>2</sub>	34.4±0.1	82.8±3.0	6.1±0.2	3.9±0.0	41.0±1.1
O <sub>2</sub>	1.1±0.1	1.4±0.2	0.9±0.0	0.9±0.0	1.0±0.1

A solution containing 100 mg·L<sup>-1</sup> Ca and K, 1 mg·L<sup>-1</sup> REEs as well as 1 µg·L<sup>-1</sup> As and Se was applied.

Table S2 Salt matrix (K and Ca) and REEs (Nd, Sm, Eu, Gd, Dy, Tb, Er and Ho) contents in the standard reference materials

	Ca (10 <sup>-2</sup> )	K (10 <sup>-2</sup> )	Nd (10 <sup>-6</sup> )	Sm (10 <sup>-9</sup> )	Eu (10 <sup>-9</sup> )	Gd (10 <sup>-9</sup> )	Dy (10 <sup>-9</sup> )	Tb (10 <sup>-9</sup> )	Er (10 <sup>-9</sup> )	Ho (10 <sup>-9</sup> )
Rice	67.3±8.7	0.106±0.007								
Wheat	0.034±0.002	0.140±0.006	0.0046±0.0014	0.96±0.28	~0.8	~0.91	~0.8	~0.10	~0.31	~0.12
Spinach	0.66±0.03	2.49±0.11	0.28±0.03	56±5	11.1±1. 4	54±7	41±8	7.2±0.7	17±3	8.7±1.7
Citrus leaves	4.2±0.4	0.77±0.04	0.42±0.05	80±7	~33	81±10	57±5	11±1	26±6	11±1
Celery	1.66±0.06	2.7±0.	0.47±0.08	87±9	20±2	81±13	64±1 1	12.6±2.6	30±4	12.4±1.3

Table S3 Comparison of As and Se content between determined by using “no gas” mode, O<sub>2</sub> mass-shift mode and certified values after 1ppm REEs were added into sample solutions

	Cell condition	As		Se				Certified value (mg·kg <sup>-1</sup> )
		<sup>75</sup> As (mg·kg <sup>-1</sup> )	Certified value (mg·kg <sup>-1</sup> )	<sup>77</sup> Se (mg·kg <sup>-1</sup> )	<sup>78</sup> Se (mg·kg <sup>-1</sup> )	<sup>80</sup> Se (mg·kg <sup>-1</sup> )	<sup>82</sup> Se (mg·kg <sup>-1</sup> )	
Rice	no gas	2.872±0.362	0.110±0.020	43.825±5.078	11.229±1.551	-	29.277±3.395	0.045±0.015
	O <sub>2</sub>	0.098±0.002		0.137±0.020	0.046±0.003	0.042±0.001	0.051±0.007	
Wheat	no gas	2.760±0.319	0.031±0.005	43.976±2.256	10.831±1.490	-	29.276±3.298	0.053±0.007
	O <sub>2</sub>	0.029±0.001		0.147±0.017	0.053±0.001	0.053±0.004	0.060±0.005	
Spinach	no gas	2.891±0.118	0.230±0.030	44.243±1.770	78.651±15.004	-	31.018±1.726	0.092±0.024
	O <sub>2</sub>	0.260±0.003		0.179±0.018	0.069±0.003	0.067±0.003	0.088±0.006	
Citrus leaves	no gas	3.796±0.150	1.100±0.200	42.544±1.466	22.427±1.481	-	28.839±8.48	0.170±0.080
	O <sub>2</sub>	1.147±0.012		0.267±0.021	0.162±0.001	0.161±0.004	0.172±0.008	
Celery	no gas	2.837±0.168	0.390±0.080	40.755±2.753	21.615±10.498	-	27.788±1.983	0.118±0.017
	O <sub>2</sub>	0.374±0.008		0.174±0.019	0.104±0.008	0.102±0.003	0.120±0.014	

