

Supplementary Information for:

Determination of Selenium-Containing Species, Including Nanoparticles, in Selenium-Enriched *Lingzhi* Mushrooms

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Table S1: Operating conditions of the iCAP™ TQ ICP-MS for single particle measurements

Parameter	Value
Coolant gas flow (Ar) (L/min)	14
Auxiliary gas flow (Ar) (L/min)	0.8
Carrier gas flow (Ar) (L/min)	0.52
Sheath gas flow (Ar) (L/min)	0.48
Sample flow rate (μ L/min)	10
Dwell time (s)	0.005
Measurement time (s)	120
Q1 masses (u)	80 ($^{80}\text{Se}^+$) or 31 ($^{31}\text{P}^+$)
Q3 masses (u)	96 ($^{80}\text{Se}^{16}\text{O}^+$) or 47 ($^{31}\text{P}^{16}\text{O}^+$)

To calculate the transport efficiency, the LGCQC5050 quality control material (AuNPs, LGC Standards Ltd., Teddington, UK) was used, with a numerical concentration specified in 1.47×10^{11} NPs/mL. A dilution was prepared in ultrapure H_2O to a final concentration around 30,000 NPs/mL. This suspension was measured by SP-ICP-MS, recording the signal for an m/z of 197 ($^{197}\text{Au}^+$), and using the same conditions specified in table S1. The final determination of the transport efficiency was carried out following the particle frequency method as described by Pace et al. [1]. Quantitative data on the Se mass present in the individual particles were then obtained by an external calibration of an aqueous Se standard.

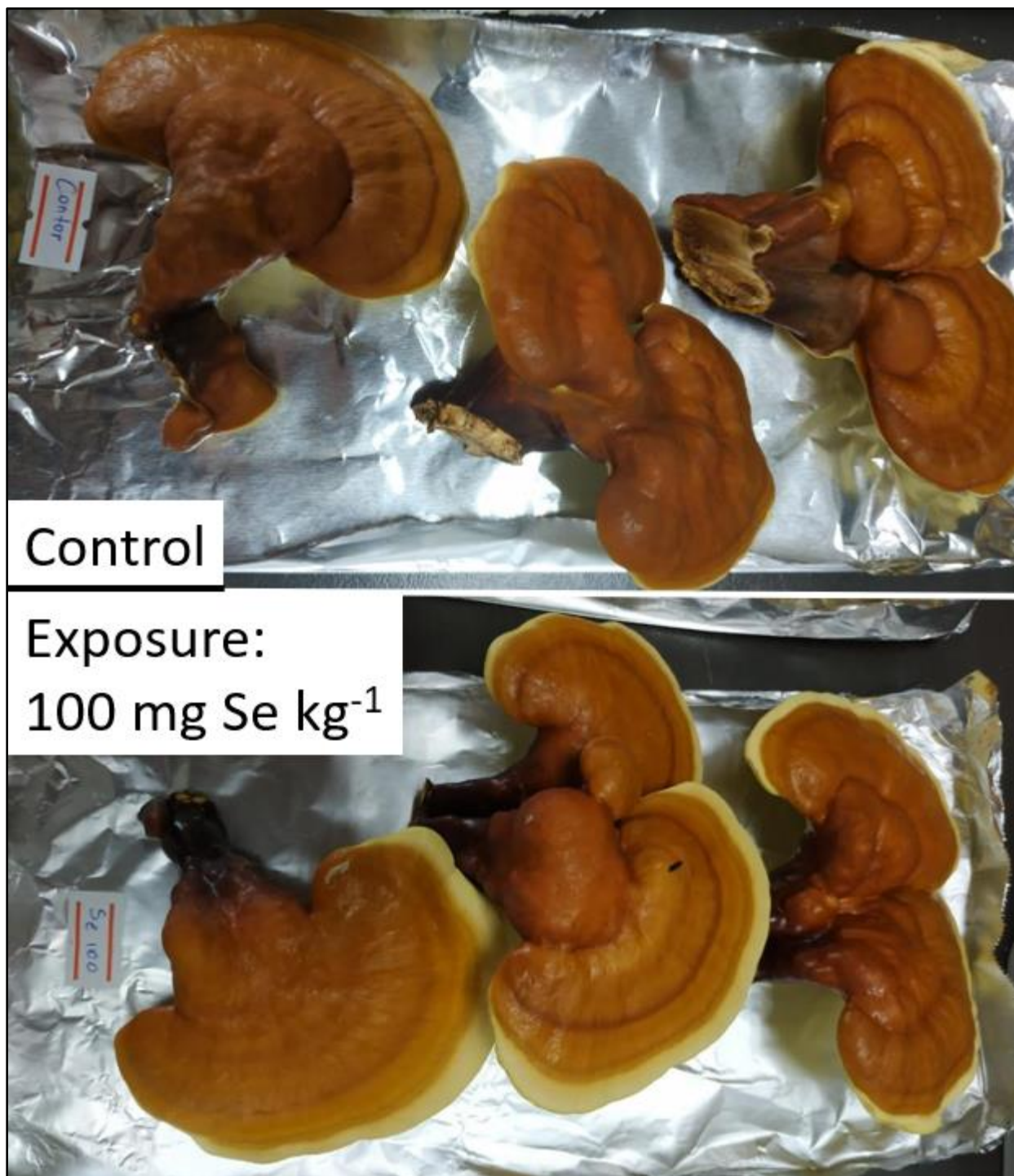


Figure S1: *G. lingzhi* fruiting body of control mushroom (top) and mushroom grown in the presence of 100 mg Se kg⁻¹ substrate (bottom)

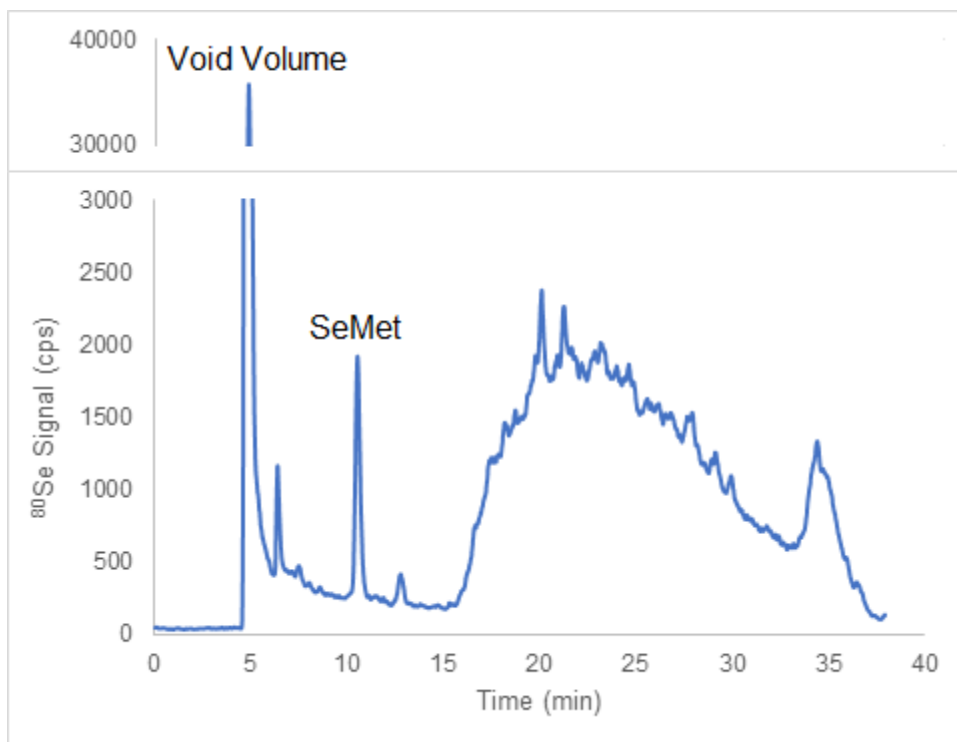


Figure S2: HPLC-ICP-MS chromatogram (C18 column) of a water extract from a sample of *Lingzhi* mycelium exposed to 20 mg Se kg⁻¹ during growth

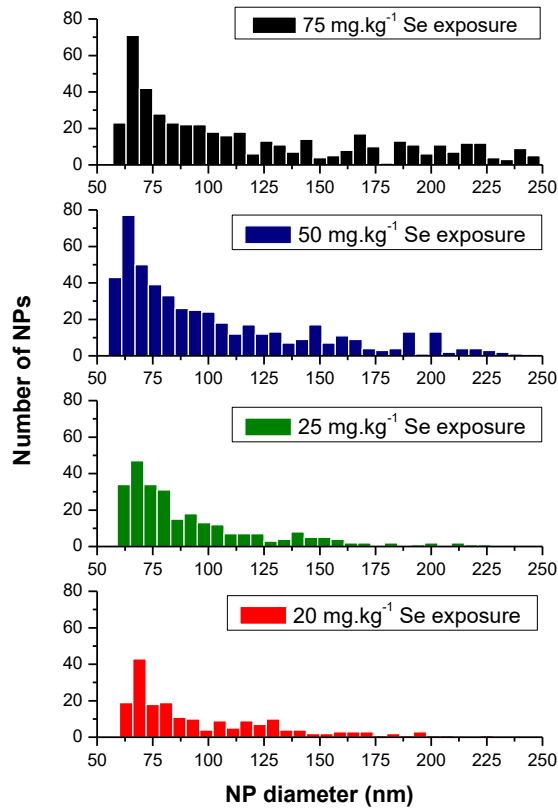


Figure S3: Histograms of the size distribution obtained by single particle ICP-MS in function of the concentration of selenite used for exposure (bin size: 6 nm)

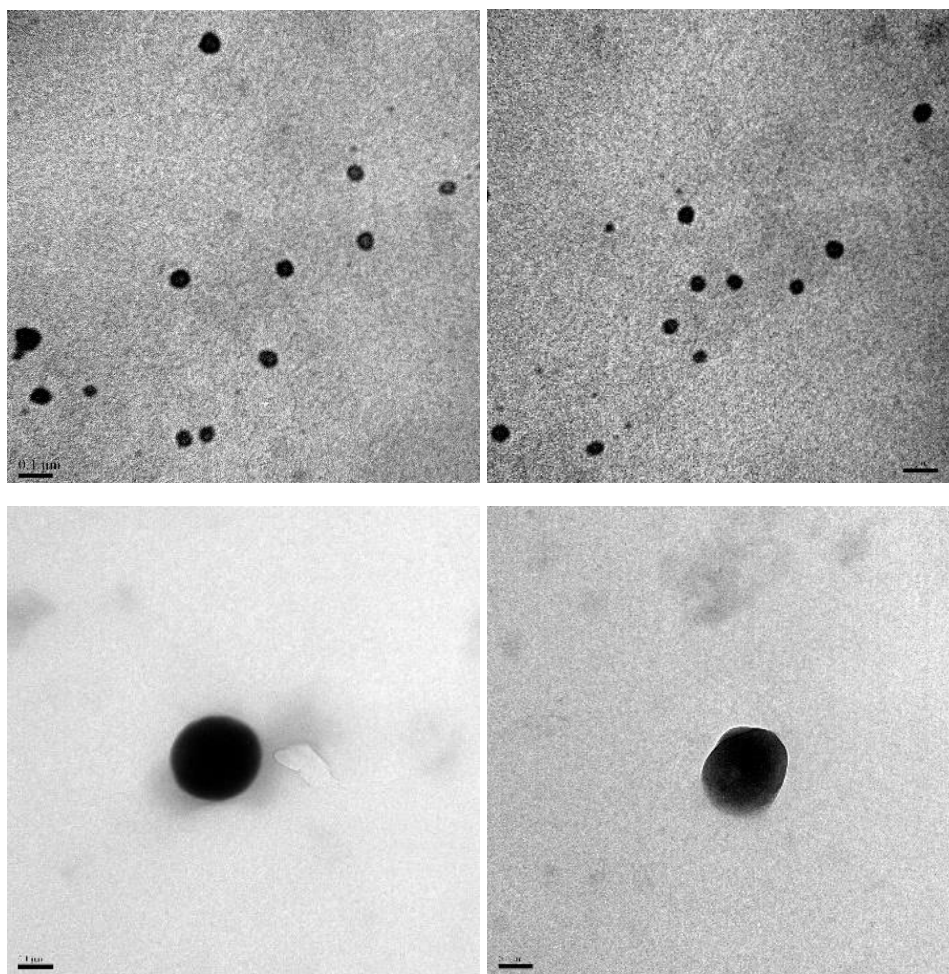


Figure S4: TEM images of a mycelium extract after exposure to 50 mg Se kg^{-1} as selenite (scale bar: $0.1 \mu\text{m}$)

References for SI:

- [1] H.E. Pace, N.J. Rogers, C. Larolimek, V.A. Coleman, C.P. Higgins, J.F. Ranville. Determining Transport Efficiency for the Purpose of Counting and Sizing Nanoparticles via Single Particle Inductively Coupled Plasma Mass Spectrometry. *Anal Chem* 2011, 83(24), 9361–9369. DOI: 10.1021/ac201952t