

XAS and XFM Studies of Selenium and Copper Speciation and Distribution in the Kidneys of Selenite-Supplemented Rats

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Supplementary Information

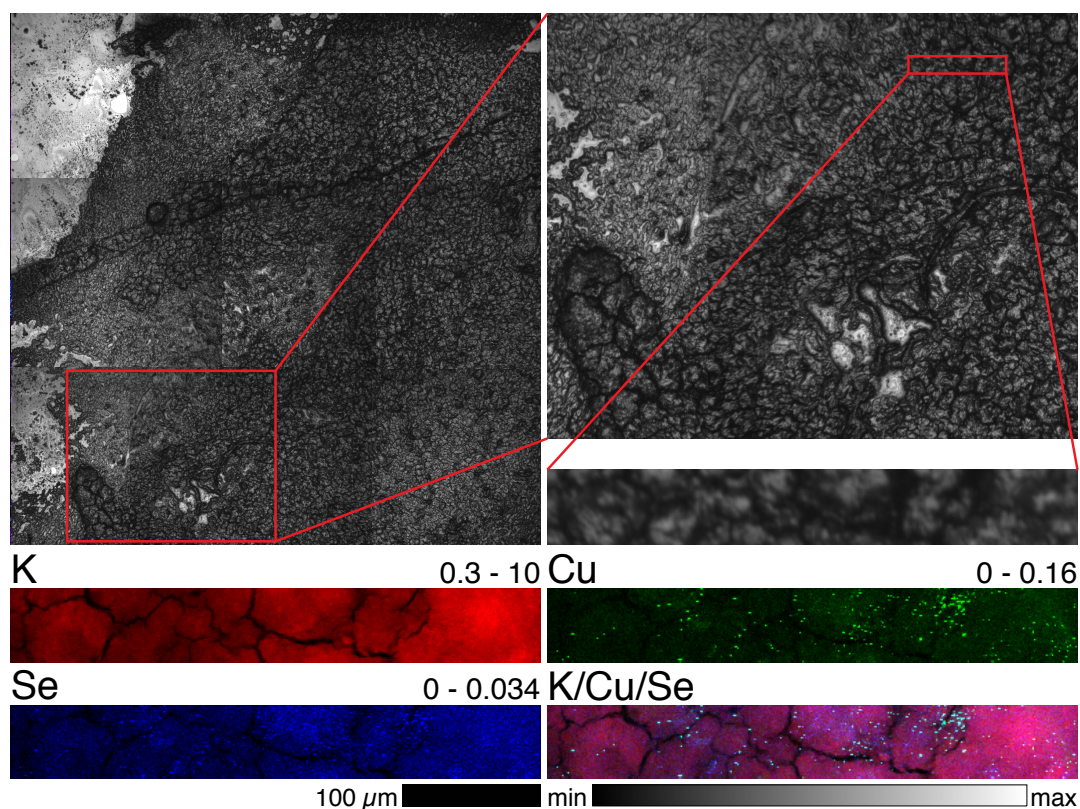


Figure S1. Colocalisation of Cu and Se in a small region of a kidney section from a rat fed a 5 ppm Se diet. The visual light microscope images are shown (top). The K, Cu and Se images are overlaid to show the coincidence of Se and Cu, which appears light blue. The range of the elemental area density ($\mu\text{g cm}^{-2}$) is given in the top right of the small maps.

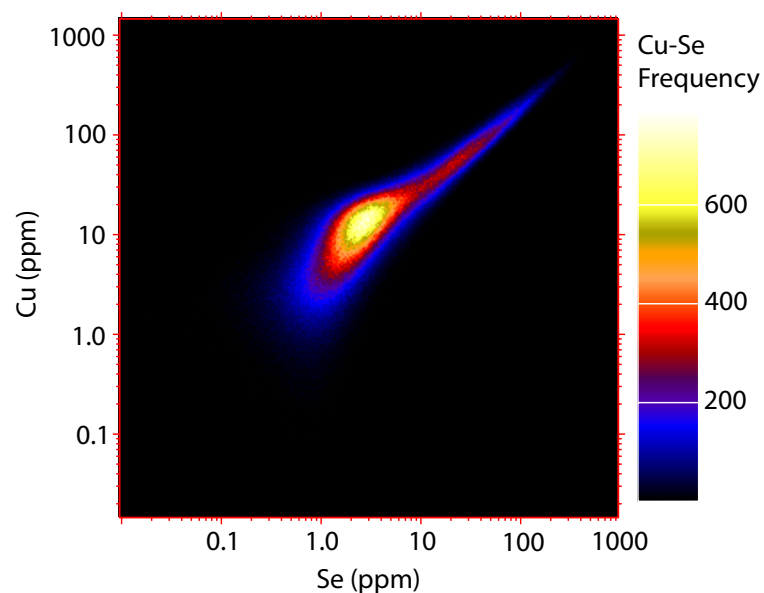


Figure S2. The concentrations of Se and Cu at each pixel in the image presented in Figure 2. The colour map indicates the frequency with which each combination of Se and Cu frequencies occurs.

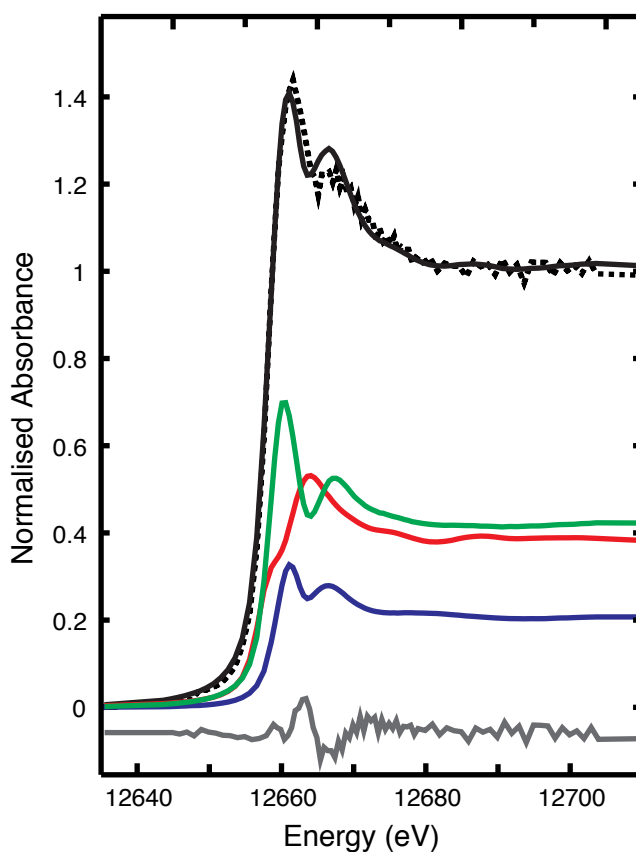


Figure S3. Se K-edge μ -XANES spectrum of high Se regions in a 5 ppm Se rat kidney section (dotted black), fitted with a linear combination of Se XANES spectra of CuSe (red), CysSeH (blue) and CysSeSeCys (green) to give the calculated fit (solid black). The residual between the experimental and calculated spectra is shown offset (grey). Fit parameters are shown in Table S1.

Table S1. Percent Se species fitted to Se μ -XANES spectrum of high Se regions in 5 ppm Se rat kidney section (Figure S3), as estimated by a linear combination of model compound spectra.

Percentage of component fitted ^a			N_{tot}	Residual ($\times 10^{-3}$)
CuSe	CysSeH	CysSeSeCys		
38(3)	21(4)	42(3)	101	0.73

^aValues in parentheses are the estimated standard deviations derived from the diagonal elements of the covariance matrix and are a measure of precision. ^b N_{tot} is the sum of the fractions.