

Heavy metal effects on nematodes: stress responses and uptake characteristics of *Xiphinema vuittenezi*

Preferred Session: Nematodes as bioindicators

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Although soil nematodes are increasingly used as biological indicators, most of their known stress responses at species level have been derived from experiments with an ephemeral bacterial feeder, *Caenorhabditis elegans*. For this reason, it is advisable to involve further species belonging to different feeding types and life history strategies as test organisms in ecotoxicological experiments. Our previous studies revealed that *Xiphinema vuittenezi* (Dorylaimida:Longidoridae), a widely spread plant pest in the Central European region, is quite sensitive to heavy metals as Cr and Cu. Therefore, we aimed to study heavy metal uptake by this nematode. Adult females treated with solutions of chromium and copper salts were exposed to microanalytical techniques to explore the amount and distribution of heavy metals in them. Total X-Ray Fluorescence (TXRF) was used to explore the quantity of heavy metals in single specimens. Other nematodes were studied with focussed ion beam electron microscopy (FIB SEM) in order to explore copper and chromium distribution along a cross section of the body. Finally, synchrotron induced X-ray fluorescence- and X-ray Absorption Near Edge Structure (XANES) measurements were performed. The acquired data and images revealed an increasing heavy metal content in the studied specimens both along a concentration gradient and with the increased exposition time. From our results it appears that the cuticle plays a major role in uptake, but alimentary canal cannot be excluded either and some local hotspots can be identified. The meaning of our findings will be discussed.

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