



# Bioaccumulation and Biotransformations of Organic Material-Borne Selenium in Mosquitofish

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*Organic selenium (Se) species in drainage water and organic material extract cannot be speciated by HPLC-HGAAS.*

Seleniferous organic materials deposited in the sediment and suspended in the water column may be a dietary food source subject to bioaccumulation by wetland organisms. We proposed to develop a method to determine organic selenium (Se) species in wetland organic materials, and then to use this method to investigate the bioaccumulation and biotransformations of organic material-borne Se in mosquitofish.

We conducted a series of tests to speciate organic Se species (selenomethionine, selenocystine, Se-methylselenocysteine, dimethylselenoxide, and dimethylselenoniopropionate) using high performance liquid chromatography (HPLC) connected with hydride generation atomic absorption spectrometry (HGAAS). Results have shown that several organic Se species can only be separated in deionized water. When drainage water and organic material extracts containing spiked organic Se species were used, organic Se species could not be separated by HPLC-HGAAS; indicating that salts in the drainage water and organic compounds in the organic material extract affect separation and determination of organic Se species by HPLC-HGAAS.

## Publications

Zhang, Yiqiang, and William Frankenberger, Jr., Removal of selenate in river and drainage waters by *Citerobacter braakii* enhanced with zero-valent iron, *Journal of Agricultural and Food Chemistry*, 2006, 54:152-156.

Zhang, Yiqiang, and William Frankenberger, Jr., Removal of selenium from river water by *Enterobacter taylorae* in an organic carbon coated sand column, *The Sciences of Total Environment*, 2005, 346: 280-285.

Zhang, Yiqiang, Juanfang Wang, Chris Amrhein, and William Frankenberger, Jr., Removal of selenate from water by zero-valent iron, *Journal of Environmental Quality*, 2005, 34: 487-495.

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