



## Biomimetic Studies with Synthetic Organoselenium Compounds for Heavy Metal Detoxification

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Methylmercury (MeHg<sup>+</sup>) is a ubiquitous environmental pollutant and a potent neurotoxin. It accumulates at high levels in food chains, mainly in fish and seafood, and therefore, consumption of these contaminated foods poses a significant risk to human health.<sup>1</sup> On the other hand, exposure to ethylmercury (EtHg<sup>+</sup>) is another serious concern where EtHg<sup>+</sup>-containing antimicrobial agent “Thimerosal” is commonly used as a preservative in multiuse vials of vaccines and in other medicines.<sup>2</sup> Unlike mercury, copper (Cu), an essential trace element to humans, is involved in a numerous biological processes in our body. However, copper is highly toxic to cells if present as free ion (Cu<sup>2+</sup> or Cu<sup>+</sup>) even at low concentration as they produce hydroxyl radical (\*OH) from H<sub>2</sub>O<sub>2</sub> via Fenton-type reactions, thereby leading to oxidative damage to proteins, lipids, and nucleic acids.<sup>3</sup> In this talk, I will focus on the development of different types of synthetic organoselenium compounds in our laboratory, inspired by mother nature, for the detoxification of various heavy metals in the biological system.<sup>4</sup>

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