

# Organoselenium and Organotellurium Compounds: Toxicology and Pharmacology

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The organoselenium and organotellurium compounds have been described as promising pharmacological agents in view of their unique biological properties. Glutathione peroxidase mimic, antioxidant activity and thioredoxin reductase inhibition are some of the properties reviewed here. On the other hand, little is known about the molecular toxicological effects of organoselenium and organotellurium compounds. Most of our knowledge arose from research on inorganic selenium and tellurium. However, the ability to oxidize sulfhydryl groups from biological molecules can be involved both in their pharmacological properties and in their toxicological effects. In fact, exposition to high doses of organoselenium or to low doses of organotellurium causes the depletion of endogenous reduced glutathione in a variety of tissues. Thus, the design of compounds that cause low depletion of glutathione and react with specific targeted proteins, controlling specific metabolic pathways, will represent an important progress in understanding the field of organochalcogen compounds. Furthermore, the development of new organochalcogens with higher thiol-peroxidase activity that can use other non-toxic thiol reducing agents, such as N-acetylcysteine instead of glutathione, will permit the investigation of the co-administration of organochalcogens and thiols as a formulation for antioxidant therapy.

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