Oxidative Medicine and Cellular Longevity

Hindawi

Special Issue on

Biochemistry and Biology of Endogenous and Exogenous Sulfur Compounds in the Modulation of Reactive Oxygen Species Metabolism

CALL FOR PAPERS

Sulfur is the seventh most abundant mineral in the body and is known as one of the most fundamental elements for living organisms. Sulfur is consumed by food which contains sulfur-containing amino acids or vitamins including methionine, cysteine, homocysteine, cystine, taurine, lipoic acid, thiamine, and biotin as well as the glucosinolates and allylic sulfur compounds found in cruciferous vegetables such as cabbage and cauliflower.

Among chemical elements essential for life, sulfur presents an unexpected complexity of bioactive derivatives that makes it difficult to fully define its tissue distribution, metabolic fate, and requirements for humans. In the past few decades, a major input to deepen sulfur biology and its impact on human health comes from research showing the relevance of S-containing biomolecules in a variety of pathophysiological processes in the body. Indeed, sulfur biomolecules exert important functions in all living organisms and their transformations are involved in free radicals scavenging, tissue protection, modulation of enzyme activity, and regulation of gene expression in plants and animals. Recently, it has become evident that molecules with sulfur-containing functional groups are not just the passive "victims" of oxidative stress or plain carriers of signals in cells but can also be stressors on their own, with pivotal roles in cellular function and homeostasis. Many "exotic" sulfur-based compounds often of natural origin take part in the context of nutrition, ageing, chemoprevention, and therapy.

In addition to biomolecules with well-defined sulfur oxidation states, sulfur can also occur in different and unusual oxidation states. Indeed, the versatility of sulfur biochemistry and biology lies in the ability of sulfur to cycle through a variety of biologically relevant oxidation states ranging from −2, as in hydrogen sulfide (H_2S), to +6, as in sulfate. Similar to reactive oxygen and nitrogen species, the term "reactive sulfur species" (RSS) is used to refer collectively to reactive sulfur chemotypes (both organic and inorganic) that when under physiological conditions can react with, oxidize, or reduce other molecules. However, the complex labyrinth of interacting signaling and control pathways which involve various sulfur oxidation states, sulfur species, and reactions has not yet been conclusively identified in mammalian biology.

In this special issue, we invite researchers to submit original research, review articles, or clinical data focused on the metabolism of endogenous sulfur compounds, as well as those devoted to the study of sulfur compounds present in plants, vegetables, and fungi which may have an impact on human health. Particularly, we welcome those research topics focusing on the modulation of oxidative stress and inflammation exerted by sulfur compounds.

Potential topics include but are not limited to the following:

- Redox metabolism of endogenous sulfur compounds
- Natural sources of antioxidant sulfur bioactive compounds
- Functional foods and nutraceuticals containing sulfur compounds
- Endogenous sulfur antioxidants (glutathione, taurine, thiotaurine, hypotaurine, cysteamine, lanthionines, and thioredoxins) and their role in the modulation of oxidative stress processes
- Role of sulfur compounds in chronic and degenerative diseases

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/omcl/bbeess/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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