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Special Issue Reprint

Reactive Sulfur Species in Biology and Medicine

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Hydrogen sulfide (H_2S) is a naturally occurring signaling molecule produced *in vivo* and plays a pivotal role in regulating a wide array of physiological processes. Additionally, emerging findings have illuminated that many of the biological effects initially attributed to H_2S may actually stem from other reactive sulfur species (RSS), including hydropersulfides (RSSH) and various higher-order polysulfur species (RSS_nH , RSS_nR , and HS_nH , where $n > 1$). These studies have underscored the contributions of these species to essential cellular processes, such as the efficient scavenging of reactive oxygen species and electrophiles, and their influence on mitochondrial function. Nonetheless, the chemistry of RSS remains challenging due to their inherently reactive nature, and their precise measurement within biological systems continues to pose a formidable challenge. This compilation of reprints focuses on recent advancements in the field of H_2S /RSS chemical biology. It encompasses original research studies and comprehensive reviews, all geared towards exploring the therapeutic potential of H_2S /RSS donors in the treatment of various conditions, including cancer, neurological disorders, and cardiovascular disease. Furthermore, it delves into the molecular mechanisms and physiological roles played by RSS along with the development of methodologies for quantifying and measuring the distribution of RSS within biological systems.



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