

## Molecular aspects of hydrogen sulfide (H<sub>2</sub>S) in cardiovascular pathology

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### Abstract

Cardiovascular diseases are the most leading reasons for mortality worldwide. In the past few years, hydrogen sulfide (H<sub>2</sub>S) and its donors have been strongly emerged and suggested as promising therapeutic agents in cardiovascular disease, due to their ability to reverse a wide spectrum of pathophysiological processes. Since, H<sub>2</sub>S and its donors have established their role as vasodilatory, neuromodulatory, anti-inflammatory and antioxidant agents. However, the interference of H<sub>2</sub>S with the other biological molecules during the pathophysiological conditions, particularly in cardiac failure represents an enigma and still unclear. For instance, it is beyond debate that the interaction of H<sub>2</sub>S and NO is controversial. We discuss the cardiovascular protective properties of H<sub>2</sub>S, the interference and cross-talk between H<sub>2</sub>S and NO, along with its interference with the other mediators under normal and pathological conditions. In this review, we demonstrate the rational and underlying mechanisms for its cardiovascular protective role against the development of cardiovascular diseases, including

systemic and pulmonary hypertension; hypoxia in carotid bodies; periadventitial vasorelaxation; cardiac injury induced by ischemia, oxidative stress, and CaMKII. Furthermore, the molecular and possible mechanisms for the progression of atherosclerosis, and the anti- atherosclerotic role of H<sub>2</sub>S were discussed.

### Biography

Professor Karoline is a former Dean of the faculty of Science (2014-2017) at Damanhour University. Currently, she worked as the Head of Zoology Department. Since 2012 she worked as a professor of Physiology in her institute. She has a wide experience in the applied and translational research in physiology and immunology. In 1995 she had earned the PhD at Zoology Department, Faculty of Science, Alexandria University, Alexandria, Egypt, and Harvard University, U.S.A. (Channel System Program). In 2016 she had selected as one of expertise in the field by the Scientific and practical expertise in the science necessary measurements for science and engineering projects Albeira Governorate.