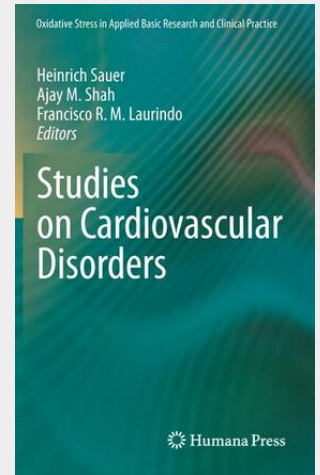


Studies on Cardiovascular Disorders

The role of reactive oxygen species (ROS) in the cardiovascular system is Jan- faced. Whereas low concentrations of ROS are involved in variety of physiological signalling events, oxidative stress resulting from deregulated overproduction of ROS and/or impaired antioxidant defences contributes to cardiovascular disease. The actions of ROS in the cardiovascular system are a fascinating topic, not only for the basic science researcher but also for the clinician who is interested in seeking new therapies for his patients suffering from cardiovascular disease. The current book provides a comprehensive overview of the molecular mechanisms and pathoph- iological settings in which chronic and detrimental oxidative stress arises within the heart and vasculature. The book also considers currently discussed strategies in avoiding chronic redox stress resulting from exposure to risk factors or various cardiovascular interventions. The series starts with an overview by Denise de Castro Fernandes, Diego Bonatto and Francisco Laurindo of redox signaling models that could underlie the dev- opment of redox-associated cardiovascular disorders. The interactions of proteins within signalling cascades with ROS and the regulation of such interactions by the anti-oxidative capacity of the cell are discussed. Rebecca Charles, Joseph Burgoyne and Philip Eaton report on redox-mediated modi cations of proteins under ph- iological and pathophysiological conditions and the variety of post-translational oxidative modi cations that explain redox sensing and signal transduction by proteins at the molecular level. ROS are generated during embryogenesis and may be involved in the proper development of the cardiovascular system.

This collection of articles on oxidative stress in clinical practice surveys essential current research in what is a rapidly evolving field. As well as giving the reader a mechanistic overview of how oxidative stress affects cardiovascular disease, it analyzes the potential of a number of therapeutic options that target these pathways. Understanding the complexity of the cellular redox system could lead to the development of better targeted interventions that facilitate patient recovery. Even as large-scale clinical trials of so-called 'simple' antioxidant approaches such as vitamins C and E show that significant benefits for cardiovascular patients remain elusive, Studies on Cardiovascular Disorders demonstrates that such approaches are too simplistic. Beginning with a summary of redox signaling models that could induce the progression of redox-associated cardiovascular disorders, the volume moves on to examine redox-mediated protein modification under physiological and pathophysiological conditions. It provides an outline of the signaling pathways in cardiovascular development during embryogenesis, and what impact these might have in the differentiation process of resident cardiac and blastocyst derived stem cells. Further chapters detail our current knowledge of the influence the sensory nervous system exerts on the cardiovascular system, and the paradoxical role of mitochondria-derived ROS in cardiac protection. In all, almost 30 contributions cover issues as diverse as the antioxidant properties of statins in the heart and the oxidative risk factors for cardiovascular disease in women. A range of medical practitioners will find the contents of Studies on Cardiovascular Disorders provides illuminating insight into the Janus-faced role of ROS in the cardiovascular system.



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