Oxidative Stress in Applied Basic Research and Clinical Practice

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Donald Armstrong

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Note from the Editor-in-Chief

All books in this series illustrate point-of-care testing and critically evaluate the potential of antioxidant supplementation in various medical disorders associated with oxidative stress. Future volumes will be updated as warranted by emerging new technology, or from studies reporting clinical trials.

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Preface

Oxygen species constitute an important vehicle of damage in disease pathogenesis including several respiratory diseases. Although the information has been available for more than four decades, it had been difficult to attribute a specific role to oxidative stress in a cause-and-effect relationship. In respiratory medicine, some of the earlier studies had focused on pulmonary infections, including tuberculosis. Advances in the study of volatile organic components in the expired air have made it possible to examine some of the hitherto not understood mechanisms in different pulmonary diseases, particularly the airway disorders. We now recognize the wide spread involvement of oxygen species as well as of nitrogen-free radicals in airway diseases, such as asthma and chronic obstructive pulmonary disease. Numerous reports have appeared in the last two decades which demonstrate an imbalance of oxidant–antioxidant mechanisms in many other respiratory disorders such as the interstitial lung diseases, granulomatous disorders (e.g. sarcoidosis), asbestosis, muscle dysfunction, pulmonary hypertension, and thoracic cancers.

It is the therapeutic potential of antioxidant drugs in the management of diseases which has made the subject as particularly interesting to the clinicians. Unfortunately, we do not yet have a drug known for its proven therapeutic efficacy for almost any disorder. Numerous drugs are under investigation for possible supplemental roles in therapy of different disorders. One hopes for rapid development of drugs which, in addition to the primary therapy, will be able to act on specific target species for disease arrest and/or reversal.

We have written this monograph with a dual purpose—first to review the existing and up-to-date knowledge on oxidative stress in different respiratory diseases, and secondly to sensitize the clinicians to continue to look to a broader scene of pathogenetic spectrum of diseases for expansion of the therapeutic armamentarium. We do hope that this monograph shall help not only the specialist pulmonologists but all others who are interested and engaged in the subject of oxidative damage.

Chandigarh, India — Surinder K. Jindal
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