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Volume 299

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*Oxidants and Antioxidants*  
*Part A*

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Part A



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## Preface

The importance of reactive oxygen and nitrogen species (ROS and RNS) and antioxidants in health and disease has now been recognized in all of the biological sciences and has assumed special importance in the biomedical sciences. Overwhelming evidence indicates that ROS play a role in most major health problems, that antioxidants play a critical role in wellness and health maintenance, and that by inhibiting oxidative damage to molecules, cells, and tissues prevent chronic and degenerative diseases.

We now know that ROS are essential for many enzyme-catalyzed reactions. Low levels of reactive oxygen and reactive nitrogen species are signaling molecules. At high concentration, these ROS are essential in the antitumor, antimicrobial, antiparasitic action, etc., of neutrophils and macrophages and contribute to oxidative damage to molecules, cells, and tissues.

In this volume all of the major natural antioxidants with respect to assays for evaluating their antioxidant activity have been included. There has been wide usage of methods to access total antioxidant activity, and some of the new methods in this area have also been included.

Many antioxidant substances have biological activities which may or may not depend on their antioxidant actions. Although this is of course relevant to understanding their actions in biological systems, we have chosen not to include such methods. Antioxidant activity can be defined as the protection against oxidative damage; however, it is becoming eminently clear that it is difficult to define an antioxidant. Antioxidants have so many different biological activities, in addition to their direct quenching of radicals or acting as redox molecules in reducing reactions, that their definition must surely be very broad.

In bringing this volume to fruition, credit must be given to experts in various specialized fields of oxidant and antioxidant research. Our appreciation is to the contributors who, with those who helped select them, have produced this state-of-the-art volume on oxidant and antioxidant methodology. The topics included were chosen on the excellent advice of Bruce N. Ames, Enrique Cadenas, Balz Frei, Matthew Grisham, Barry Halliwell, William Pryor, Catherine Rice-Evans, and Helmut Sies. To these colleagues, I extend my sincere thanks and most grateful appreciation.

LESTER PACKER

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