

Preface

The possible role of free radicals and oxidative stress in neurological disorders was not recognized until recently and thus is relatively unknown to practicing as well as academically minded clinical neurologists. This fact can be appreciated as one goes through the major textbooks recommended and used by residents in neurology looking, in vain, for information on this topic. One may find only short reminders of the possible association of superoxidase dismutase with familial amyotrophic lateral sclerosis and nitrous oxide with migraine. We may also find bits of information regarding the possible role of free radicals in the pathogenesis of traumatic brain injury.

This limitation is not at all surprising, because the biological role of free radicals was discovered and scientifically accepted only recently. Denham Harman proposed the free radical theory of aging more than 50 years ago, but acceptance of this theory was slow until only a few years ago. During the late 1940s to early 1950s, retrolental fibroplasia in premature newborns was recognized as being caused by oxygen toxicity. The presence of free radicals in biological systems was not generally considered likely until the discovery of superoxide dismutase in 1969 by Irwin Fridovich, although in the 1950s, the basis of oxygen toxicity and X-irradiation was proposed to be a common free radical mechanism.

Thus, the goal of introducing this topic to neurology for teaching and practice led us to compile this volume with the help of a number of colleagues, who agreed to cover several aspects of clinical and research issues regarding free radicals and the nervous system. Familiarity with the various antioxidants and their possible therapeutic role in some neurological disorders, which is described in the relevant chapters throughout this volume, is an additional important and unique contribution of this volume.

We hope that clinicians as well as basic researchers in neuroscience will find this volume of help in expanding their understanding, not only of the widespread involvement of free radicals in the central nervous system, but also of some ambiguous issues related to answering the question of the primary or secondary role of free radical damage in neurology.

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Oxidative Stress and Free Radical Damage in Neurology

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2011, VIII, 323 p., Hardcover

ISBN: 978-1-60327-513-2

A product of Humana Press