

REVIEW ON BOOK "RADICAL FORMS OF OXYGEN AND NITRIC OXIDE IN TUMOUROGENESIS"

BY A.P. BURLAKA AND E.P. SIDORIK, "SCIENTIFIC BOOK" PROJECT,
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This monograph is one among not numerous publications in subdiscipline of molecular oncology. It includes materials of Ukrainian and foreign investigators from the leading scientific centers. Substantial place in this book is occupied by information about the role of superoxide radical-anions and nitric oxide in the processes of proliferation, differentiation and apoptosis. The sources of oxygen radical generation in cell compartments of mitochondrial respiratory chain and endoplasmic reticulum are characterized in details, and mechanisms of nitric oxide synthesis initiation in cells of different organs and tissues are analyzed. Authors have summarized a fundamental volume of long-term studies of the roles of reactive oxygen species and nitric oxide in mechanisms of carcinogenesis and anticarcinogenesis, and as a result of this work they established the program of oncologic disease prevention, based on oxidative damage management in mitochondria and other cell organelles. For the first time a number of molecular markers of cell structure oxidation such as nitric oxide radicals, NO-Hb, oxygen radicals, 8-oxodGu and others, that can be useful in oncologic clinics for neoplasia prognosis, estimation of individual sensitivity, monitoring of treatment efficiency using regulatory approaches for reactive oxygen species and nitric oxide levels in cells was determined. Reviewed monograph is of general character introduction and analysis of sophisticated interaction between superoxide radical-anions and nitric oxide radicals in regulatory signaling network of the cells that open consequent ways for solving problems of clinical oncology, particularly the increase of treatment

efficacy and prognosis. Signaling cascades regulating reactive oxygen species and nitric oxide content in different cells and initiating programs of cell response on damage were analyzed. It was proved that during interaction between superoxide radical-anions, hydroxyl radical, nitric oxide and components of electron transfer chains on cell membranes and regulatory network their functions are modified. Molecular mechanisms of participation of reactive oxygen species and reactive form of nitric oxide in induction of genome instability through damage of guanine in DNA structure during chemical and radiation induced carcinogenesis were determined. The goal of this work is that in clinical and experimental studies authors employed a wide range of modern biophysical, biochemical and oncological methods, particularly Electron Spin Resonance and Spin Traps technique. It should be emphasized, that authors are pioneers in application of this advanced method for solving problems of oncology and radiobiology. There is no necessity to announce all chapters of the monograph, but the conception of stated material and significance of reactive oxygen species and nitric oxide for oncology should be underlined. Book is illustrated with up-dated schemes of synthesis and generation of nitric oxide, superoxide radical-anions in electron transferring chains on mitochondrial membranes and microsomes and their interaction with cell components.

This book raises a lot of questions, which may stimulate scientific activity among professionals of different profiles: oncologists, biophysics, biochemists, pathophysiologists, and pharmacologists.