
Contents

<i>Preface</i>	<i>v</i>
<i>Contributors</i>	<i>xi</i>

PART I REACTIVE OXYGEN AND NITROGEN TECHNIQUES

1	Current Status of Measuring Oxidative Stress	3
	<i>Beniamino Palmieri and Valeriana Sblendorio</i>	
2	pO ₂ and ROS/RNS Measurements in the Microcirculation in Hypoxia.	19
	<i>Silvia Bertuglia and Marcos Intaglietta</i>	
3	Nitrate Reductase Activity of Mitochondrial Aldehyde Dehydrogenase (ALDH-2) as a Redox Sensor for Cardiovascular Oxidative Stress	43
	<i>Andreas Daiber and Thomas Münzel</i>	
4	Identification of ROS Using Oxidized DCFDA and Flow-Cytometry	57
	<i>Evgeniy Eruslanov and Sergei Kusmartsev</i>	
5	Measurement of 8-Isoprostane in Exhaled Breath Condensate	73
	<i>Paolo Montuschi, Peter J. Barnes, and Giovanni Ciabattoni</i>	
6	Electron Paramagnetic Resonance Oximetry and Redoximetry	85
	<i>Guanglong He</i>	
7	Measurement of Mitochondrial Membrane Potential and Proton Leak	107
	<i>Gaetano Serviddio and Juan Sastre</i>	
8	Determination of Erythrocyte Fragility as a Marker of Pesticide-Induced Membrane Oxidative Damage.	123
	<i>Bechan Sharma, Devendra K. Rai, Prashant Kumar Rai, S.I. Rizvi, and Geeta Watal</i>	
9	Using N,N,N',N'-tetramethyl- <i>p</i> -phenylenediamine (TMPD) to Assay Cyclooxygenase Activity In Vitro	129
	<i>Nenad Petrovic and Michael Murray</i>	
10	Structural and Functional Changes in the Insulin Molecule Produced by Oxidative Stress	141
	<i>Rafael Medina-Navarro, Alberto M. Guzmán-Grenfell, Ivonne Olivares-Corichi, and Juan J. Hicks</i>	
11	Multiphoton Redox Ratio Imaging for Metabolic Monitoring In Vivo	155
	<i>Melissa Skala and Nirmala Ramanujam</i>	
12	Using Fluorescence-Activated Flow Cytometry to Determine Reactive Oxygen Species Formation and Membrane Lipid Peroxidation in Viable Boar Spermatozoa	163
	<i>H. David Guthrie and Glenn R. Welch</i>	
13	Lipofuscin: Detection and Quantification by Microscopic Techniques.	173
	<i>Tobias Jung, Annika Höhn, and Tilman Grune</i>	

PART II ANTIOXIDANT TECHNOLOGY AND APPLICATION

- 14 OXY-SCORE: A Global Index to Improve Evaluation of Oxidative Stress by Combining Pro- and Antioxidant Markers 197
Fabrizio Veglia, Viviana Cavalca, and Elena Tremoli
- 15 Cupric Ion Reducing Antioxidant Capacity Assay for Antioxidants in Human Serum and for Hydroxyl Radical Scavengers 215
Reşat Apak, Kubilay Güçlü, Mustafa Özyürek, Burcu Bektaşoğlu, and Mustafa Bener
- 16 Analysis of Antioxidant Activities in Vegetable Oils and Fat Soluble Vitamins and Biofactors by the PAO-SO Method 241
Kazuo Sakai, Satoko Kino, Masao Takeuchi, Tairin Ochi, Giuseppe Da Cruz, and Isao Tomita
- 17 Measuring Antioxidant Capacity Using the ORAC and TOSC Assays 251
Andrew R. Garrett, Byron K. Murray, Richard A. Robison, and Kim L. O'Neill
- 18 Assessing the Neuroprotective Effect of Antioxidant Food Factors by Application of Lipid-Derived Dopamine Modification Adducts. 263
Xuebo Liu, Naruomi Yamada, and Toshihiko Osawa
- 19 LIBS-Based Detection of Antioxidant Elements: A New Strategy 275
Geeta Watal, Bechan Sharma, Prashant Kumar Rai, Dolly Jaiswal, Devendra K. Rai, Nilesh K. Rai, and A.K. Rai
- 20 A Method for Evaluation of Antioxidant Activity Based on Inhibition of Free Radical-Induced Erythrocyte Hemolysis 287
Jun Takebayashi, Jianbin Chen, and Akihiro Tai
- 21 Design and Synthesis of Antioxidant α -Lipoic Acid Hybrids 297
Maria Koufaki and Anastasia Detsi
- 22 Characterization of the Antioxidant Properties of Pentaerithrityl Tetranitrate (PETN)-Induction of the Intrinsic Antioxidative System Heme Oxygenase-1 (HO-1) 311
Andreas Daiber and Thomas Münzel
- 23 Direct Determination of Tissue Amino-thiol, Disulfide, and Thioether Levels Using HPLC-ECD with a Novel Stable Boron-Doped Diamond Working Electrode 327
Bruce Bailey, John Waraska, and Ian Acworth
- 24 Activation of Erythrocyte Plasma Membrane Redox System Provides a Useful Method to Evaluate Antioxidant Potential of Plant Polyphenols. 341
Syed Ibrahim Rizvi, Rashmi Jha, and Kanti Bhooshan Pandey
- 25 Antioxidant Activity of Biotransformed Sex Hormones Facilitated by *Bacillus Stearothermophilus*. 349
Mohammad Afzal, Sameera Al-Awadi, and Sosamma Oommen
- 26 Separation of Phenylpropanoids and Evaluation of Their Antioxidant Activity 357
Sammer Yousuf, M. Iqbal Choudhary, and Atta Ur Rahman

PART III GENE EXPRESSION

27 Generation of Antioxidant Adenovirus Gene Transfer Vectors
Encoding CuZnSOD, MnSOD, and Catalase 381
Aoife M. Duffy, Timothy O'Brien, and Jillian M. McMahon

28 HPLC Purification of Adenoviral Vectors 395
Marc Eglon, Barry McGrath, and Timothy O'Brien

29 Mapping of Oxidative Stress Response Elements of the Caveolin-1
Promoter 409
Janine N. Bartholomew and Ferruccio Galbiati

PART IV BIOSTATISTICS

30 Meta-Analysis: Drawing Conclusions When Study Results Vary 427
Leslie Rosenthal and Enrique Schisterman

Index. 435



<http://www.springer.com/978-1-60761-410-4>

Advanced Protocols in Oxidative Stress II

Armstrong, D. (Ed.)

2010, XIV, 444 p., Hardcover

ISBN: 978-1-60761-410-4

A product of Humana Press