Contents

1 Introduction ................................................................. 1
   Claus Jacob, Torsten Burkholz, Gilbert Kirsch, Alan Slusarenko
   and Paul G. Winyard

Part I Connecting Section Between Chapters 1 and 2

2 Antioxidants: A Premature Scientific Hypothesis that Reshuffled
   the Traditional Food Pyramid ......................................... 15
   Agnieszka Bartoszek

Part II Connecting Section Between Chapters 2 and 3

3 The Modern Art of Identification of Natural Substances
   in Whole Plants .......................................................... 31
   Patrick Chaimbault

Part III Connecting Section Between Chapters 3 and 4

4 A Word on Redox ............................................................. 97
   Torsten Burkholz and Claus Jacob

Part IV Connecting Section Between Chapters 4 and 5

5 Oxidative Stress, Antioxidants, and Chemoprevention:
   On the Role of Oxidant-Induced Signaling in Cellular Adaptation . . 119
   Lars-Oliver Klotz
Part V Connecting Section Between Chapters 5 and 6

6 The French Paradox at Tea Time: From Antioxidant Flavonoids and Stilbenes Toward Bio-inspired Synthetic Derivatives ............. 149
Oualid Talhi, Diana C. G. A. Pinto and Artur M. S. Silva

Part VI Connecting Section Between Chapters 6 and 7

7 Bioreactivity of Resveratrol Toward Inflammation Processes ........ 193
Norbert Latruffe, Allan Laçon, Emeric Limagne and Jean-Jacques Michaille

Part VII Connecting Section Between Chapters 7 and 8

8 Flavanols and Proanthocyanidins ........................................ 211
Hadi Ebrahimnejad, Torsten Burkholz and Claus Jacob

Part VIII Connecting Section Between Chapters 8 and 9

9 The Cellular ‘Thiolstat’ as an Emerging Potential Target of Some Plant Secondary Metabolites ................................. 235
Martin C. Gruhlke and Alan J. Slusarenko

Part IX Connecting Section Between Chapters 9 and 10

10 Thiosulfinates, Organic Polysulfanes and Related Compounds: From an Unusual Chemistry Toward a Wealth of Potential Applications .................................................. 265
Ifeanyi D. Nwachukwu and Alan J. Slusarenko

Part X Connecting Section Between Chapters 10 and 11

11 Beyond Glutathione: Different Low Molecular Weight Thiols as Mediators of Redox Regulation and Other Metabolic Functions in Lower Organisms ........................................... 291
Chris J. Hamilton, Miriam Arbach and Murree Groom
Part XI Connecting Section Between Chapters 11 and 12

12 How to Turn the Chemistry of Garlic into a ‘Botanical’ Pesticide . . . 323
   Awais Anwar, Murree Groom, Miriam Arbach and Chris J. Hamilton

Part XII Connecting Section Between Chapters 12 and 13

13 Phytol: A Chlorophyll Component with Anti-Inflammatory and Metabolic Properties . . . 345
   Peter Olofsson, Malin Hultqvist, Lars I. Hellgren and Rikard Holmdahl

Part XIII Connecting Section Between Chapters 13 and 14

14 Recent Advances in Molecular Genetics of Furanocoumarin Synthesis in Higher Plants 363
   Frédéric Bourgaud, Alexandre Olry and Alain Hehn

Part XIV Connecting Section Between Chapters 14 and 15

15 Natural Products Molten Together: Toward Multifunctional Hybrid Molecules with Specific Activities and Applications 379
   Gilbert Kirsch and Sergio Valente

Part XV Connecting Section Between Chapters 15 and 16

16 Nanotaxis for Antioxidants 401
   Cornelia M. Keck, Rainer H. Mueller and Karl-Herbert Schaefer

Part XVI Connecting Section Between Chapters 16 and 17

17 Haloperoxidase Enzymes as ‘Redox Catalysts’ Important for Industrial Biocatalysis 425
   Jennifer Littlechild and Michail Isupov
Part XVII  Connecting Section Between Chapters 17 and 18

18 Systemic Enzyme Therapy: Fact or Fiction? A Review with Focus on Bromelains, Proteolytic Enzymes from the Pineapple Plant .................................................. 449
   Peter Meiser, Zhanjie Xu, Gilbert Kirsch and Claus Jacob

Part XVIII  Connecting Section Between Chapters 18 and 19

19 Some Personal Conclusions .................................................. 471
   Claus Jacob, Torsten Burkholz, Gilbert Kirsch, Alan Slusarenko and Paul G. Winyard

Editors Biography ................................................................. 477

Index ................................................................. 481
Recent Advances in Redox Active Plant and Microbial Products
From Basic Chemistry to Widespread Applications in Medicine and Agriculture
Jacob, C.; Kirsch, G.; Slusarenko, A.J.; Winyard, P.G.; Burkholz, T. (Eds.)
2014, XIV, 482 p. 173 illus., 68 illus. in color., Hardcover
ISBN: 978-94-017-8952-3