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Nota di contenuto	Contributors; Preface; Chapter 1 Plant Phenolics - Secondary Metabolites with Diverse Functions; 1.1 Secondary metabolism in the interactions between plants and their environment; 1.2 Function and use of plant phenolics; 1.2.1 UV sunscreens; 1.2.2 Phenolics as signal compounds; 1.2.3 Phenolics as pigments; 1.2.4 Phenolics and plant growth; 1.2.5 Phenolics and plant defense; 1.2.5.1 Fungal pathogens; 1.2.5.2 Phenolics and plant-insect interactions; 1.2.6 Plant phenolics and health; 1.3 Note; 1.4 References Chapter 2 Lignification: are Lignins Biosynthesized via simple Combinatorial Chemistry or via Proteinaceous Control and Template Replication?2.1 Introduction; 2.2 The current theory; 2.3 Is there a need for a new theory?; 2.3.1 The challenge hypothesis (proteinaceous control and template replication); 2.3.2 Has the challenge hypothesis become a theory?; 2.4 Are criticisms of the current theory valid?; 2.4.1 Lignification as a biochemical anomaly; 2.4.2 The -ether frequency anomaly; 2.4.3 'Obligatory' linkages?; 2.5 Is there anything wrong with the dirigent hypothesis? 2.5.1 Monomer substitution2.5.1.1 Has monomer substitution been

disproven?; 2.5.1.2 Malleability of lignification: what makes a good monolignol substitute?; 2.5.2 'Well-defined primary structure'; 2.5.2.1 Sequencing of lignin oligomers; 2.5.2.2 Monomer-independent sequences; 2.5.2.3 The 'urgent need to sequence lignin primary structure'; 2.5.3 Lignins' racemic nature; 2.5.3.1 The 'number of isomers' problem; 2.5.4 Comments on template replication; 2.5.5 Polymer branching; 2.6 Why the new hypothesis is not in contention; 2.7 Is lignification a biochemical anomaly?
2.7.1 Ferulate dehydrodimerization is combinatorial2.7.2 Polysaccharide primary structure is NOT absolutely dictated; 2.8 Summary comments on the dirigent/replication hypothesis; 2.9 Conclusions; 2.10 Notes; 2.11 References; Chapter 3 Flavonoid-Protein Binding Processes and their Potential Impact on Human Health; 3.1 Introduction; 3.2 Biologically relevant chemical properties of flavonoids; 3.3 Binding processes prior to absorption; 3.4 Binding processes involved in flavonoid bioavailability; 3.4.1 Absorption and conjugation; 3.4.2 Transport in plasma
3.4.3 Tissue distribution and cellular metabolism3.5 Binding processes involved in the potential health effects of flavonoids; 3.5.1 Inhibition of enzymes involved in ROS production; 3.5.2 Modulation of the redox properties of flavonoids by binding to proteins; 3.5.3 Inhibition of protein kinases; 3.5.4 Inhibition of cytochrome P450 enzymes; 3.5.5 Regulation of gene expression; 3.6 Conclusion; 3.7 References; Chapter 4 Methods for Synthesizing the Cocoa-Derived Oligomeric Epi-Catechins - Observations on the Anticancer Activity of the Cocoa Polyphenols; 4.1 Introduction
4.2 Synthesis of procyanidins

Sommario/riassunto

Polyphenols are the second most abundant class of substances in nature, and include tannins and flavonoids, many of which have extremely important antioxidant properties which have now been shown to have a key role in the prevention of cancer in humans. This important book covers polyphenol chemistry, biosynthesis and genetic manipulation, ecology and plant physiology, food and nutritional aspects and the effects of polyphenols on health. Included within the contents are cutting edge chapters on biotic and abiotic stress in plants, safety and toxicity in foods, functionality and nutraceutica