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Nota di contenuto	Recent Advances in PolyphenolResearch; Contents; Contributors; Preface; 1 Plant Phenolics: A Biochemical and Physiological Perspective; 1.1 The general phenolic metabolism in plants; 1.2 Effect of non-freezing low temperature stress on phenolic metabolism in crop plants; 1.3 Plant phenolics as defence compounds; 1.3.1 Phenolic-mediated induced resistance of apples against fungal pathogens; 1.3.2 Contribution of vigna phenolics to plant protection against insects; 1.4 Diversion of carbon skeletons from primary to phenolic-related secondary metabolism 1.4.1 Metabolic costs of adaptive responses to adverse environmental conditions1.4.2 Transduction pathway between nutrient depletion and enhanced polyphenol content; References; 2 Polyphenols: From Plant

Adaptation to Useful Chemical Resources; 2.1 The emergence of phenolic metabolism and the adaptation of plants to a terrestrial environment; 2.2 The shikimate pathway: a complex and subtle interface between primary metabolism and phenolic metabolism; 2.2.1 Quinic acid, a specific component of higher plants
2.2.2 The postchorismate branch of the shikimate pathway leading to phenylalanine: one or two metabolic routes in plants?2.2.2.1 Intracellular location of enzymes; 2.2.2.2 Complex and new regulatory mechanisms in the shikimate pathway; 2.3 Plant (poly)phenols: a diversified reservoir of useful chemicals; 2.3.1 The health-promoting properties of polyphenols; 2.3.2 A new time for lignocellulosics utilization through biotechnology; 2.3.2.1 Biomass pretreatment and enzymatic conversion of polysaccharides; 2.3.2.2 Lignins: degradation, bioconversion
2.3.2.3 The fermentation step towards the production of bioalcohols2. 3.2.4 Biorefinery pilot plants; 2.3.2.5 Quality and availability of the upstream resource; 2.3.2.6 Future prospects; 2.3.3 Chemical and catalytic valorization of polyphenols; 2.4 Concluding remarks; Acknowledgments; References; 3 Fifty Years of Polyphenol-Protein Complexes; 3.1 Introduction; 3.2 Precipitable complexes; 3.3 Soluble complexes; 3.4 Proline-rich proteins; 3.5 Mechanisms of binding; 3.6 Stoichiometry of binding; 3.7 Protein conformation; 3.8 Covalent tannin-protein complexes; 3.9 Conclusions; Acknowledgments References4 Chemistry of Flavonoids in Color Development; 4.1 Introduction; 4.2 Synthetic studies on anthocyanins toward polyacylated pigments; 4.2.1 Previously reported syntheses of anthocyanins; 4.2.2 Synthesis of anthocyanin using biomimetic oxidation; 4.2.3 Transformation of flavonol derivatives to anthocyanins via a flavenol glycoside; 4.3 Synthesis of copigments for studying blue color development; 4.3.1 Copigmentation in metalloanthocyanins; 4.3.2 Synthesis of glycosylated flavones; 4.3.3 Chiral recognition in metalloanthocyanin formation
4.3.4 Synthesis of acylquinic acid derivatives for studies on hydrangea coloration

Sommario/riassunto

Plant polyphenols are secondary metabolites that constitute one of the most common and widespread groups of natural products. They express a large and diverse panel of biological activities including beneficial effects on both plants and humans. Many polyphenols, from their structurally simplest representatives to their oligo/polymeric versions (also referred to as vegetable tannins) are notably known as phytoestrogens, plant pigments, potent antioxidants, and protein interacting agents. Sponsored by Groupe Polyphenols, this publication, which is the third volume in this highly regarded R