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Antioxidants; References; 2. Natural Polyphenol and Flavonoid Polymers; 2.1 Introduction; 2.2 Structural Classification of Polyphenols; 2.2.1 Simple Phenolics; 2.2.2 Stilbenes; 2.2.3 Lignin 2.2.4 Flavonoids 2.2.5 Tannins; 2.3 Polyphenol Biosynthesis and Function in Plants; 2.3.1 Biosynthesis; 2.3.2 Protective Roles; 2.4 Tannins in Human Nutrition; 2.4.1 Dietary Sources and Intake; 2.4.2 Absorption and Metabolism; 2.5 Antioxidant Activity of Tannins; 2.5.1 Mechanisms; 2.5.2 Structure-activity Relationships; 2.6 Protective Effects of Proanthocyanidins in Human Health; 2.7 Conclusion; Acknowledgements; References; 3. Synthesis and Applications of Polymeric Flavonoids; 3.1 Introduction; 3.2 Polycondensates of Catechin with Aldehydes; 3.3 Enzymatically Polymerized Flavonoids 3.4 Biopolymer-flavonoid Conjugates 3.5 Conclusion; References; 4. Antioxidant Polymers: Metal Chelating Agents; 4.1 Introduction; 4.1.1 Antioxidants; 4.1.2 Natural Polymers as Antioxidants; 4.1.3 Chelating Polymers and Heavy Metal Ions; 4.2 Chitin and Chitosan; 4.2.1 Chitin and Chitosan Derivatives; 4.2.2 Chitin and Chitosan as Chelating Agents; 4.3 Alginates; 4.4 Chelation Studies; 4.4.1 Chitosan Derivatives as Chelating Agents; 4.4.2 Alginates as Chelating Agents; 4.5 Conclusions; References; 5. Antioxidant Polymers by Chitosan Modification; 5.1 Introduction; 5.2 Chitosan Characteristics 5.3 Reactive Oxygen Species and Chitosan as Antioxidant 5.4 Structure Modifications; 5.4.1 N-Carboxymethyl Chitosan Derivatives; 5.4.2 Quaternary Salts; 5.4.3 Sulphur Derivatives; 5.4.4 Chitosan Containing Phenolic Compounds; 5.4.5 Schiff Bases of Chitosan; 5.5 Conclusion; References; 6. Cellulose and Dextran Antioxidant Polymers for Biomedical Applications; 6.1 Introduction; 6.2 Antioxidant Polymers Cellulose-based; 6.2.1 Cellulose; 6.2.2 Antioxidant Biomaterials Carboxymethylcellulose-based; 6.2.3 Ferulate Lipolate and Tocopherulate Cellulose 6.2.4 Cellulose Hydrogel Containing Trans-ferulic Acid

Sommario/riassunto

Antioxidant Polymers is an exhaustive overview of the recent developments in the field of polymeric materials showing antioxidant properties. This research area has grown rapidly in the last decade because antioxidant polymers have wide industry applications ranging from materials science to biomedical, pharmaceuticals and cosmetics.
