Record Nr. UNINA9910819078703321 **Titolo** Applications in food sciences / / edited by Atta-ur-Rahman, M. Iqbal Choudhary Pubbl/distr/stampa Sharjah, United Arab Emirates:,: Bentham Science Publishers,, [2016] ©2016 **ISBN** 1-68108-143-1 Descrizione fisica 1 online resource (304 pages) Collana Applications of NMR Spectroscopy 543.66 Disciplina Soggetti Magnetic Resonance Spectroscopy Nuclear magnetic resonance spectroscopy Lingua di pubblicazione Inglese **Formato** Materiale a stampa Monografia Livello bibliografico Nota di bibliografia Includes bibliographical references and index. Intro -- CONTENTS -- PREFACE -- List of Contributors -- Application Nota di contenuto of NMR to Resolve Food Structure, Composition and Quality -- FOOD DIMENSIONS -- Composition -- Nutrients -- Bio-availability -- Food Matrix -- Texture -- Structure -- The Macrostructure Level: -- The Microstructure Level: -- Stability and Processing -- Water Diffusion --Thermal Conductivity -- NMR AS A MULTIPURPOSE TECHNIQUE FOR FOOD ASSAY -- Spectroscopy -- 1. Food Authentication -- 2. Food Origin -- 3. Food Traceability -- Relaxometry -- Magnetic Resonance Imaging -- Hybrid Methods -- Chemical Shift Imaging -- Relaxometry Mapping -- Spectral-Relaxation Deconvolution -- DATA ANALYSIS, INFORMATION EXTRACTION AND KNOWLEDGE GENERATION -- Analytic Approach -- Holistic View -- PROSPECTS -- CONCLUDING REMARKS --CONFLICT OF INTEREST -- ACKNOWLEDGEMENTS -- REFERENCES --NMR Spectroscopy for Evaluation of Lipid Oxidation -- INTRODUCTION -- Challenges in Assessing Lipid Oxidation -- 1H NMR Spectroscopy

CONFLICT OF INTEREST -- ACKNOWLEDGEMENTS -- REFERENCES --

for Assessment of Lipid Oxidation -- Assessment of Lipid Oxidation by Monitoring 1H NMR Signal Intensities -- 1H NMR Spectroscopy for Identification of Oxidation Products -- 13C NMR spectroscopy for Assessment of Lipid Oxidation -- 31P NMR -- CONCLUSION --

The Application of NMR Spectroscopy to the Study of

Pyranoanthocyanins: Structural Elucidation, Solution Equilibria and

AN INTERESTING CLASS OF PIGMENTS DERIVED FROM ANTHOCYANINS -- 1.1. Introduction -- 1.2. Chemical Structure of Anthocyanins -- 1.3. Influence of Aqueous Solution Equilibria on Anthocyanin Chemical Structure -- 1.4. Reactivity of Anthocyanins. Formation of Anthocyanin-Derived Pigments -- 1.4.1. Thermal Degradation -- 1.4.2. Oxidation -- 1.4.3. Copigmentation. 1.4.4. Formation of Anthocyanin-Derived Pigments -- 2. PYRANOANTHOCYANINS: STRUCTURES, PROPERTIES AND DISTRIBUTION AMONG FOODSTUFFS -- 2.1. Structures of Pyranoanthocyanins --2.1.1. Vitisin-Type Pyranoanthocyanins -- 2.1.2. Hydroxyphenyl-Pyranoanthocyanins -- 2.1.3. Flavanyl-Pyranoanthocyanins -- 2.1.4. Portisins -- 2.2. Properties of Pyranoanthocyanins -- 2.2.1. Color Features -- 2.2.2. Reactivity -- 2.3. Occurrence of Pyranoanthocyanins in Foodstuffs -- 2.3.1. Red Wine, Port Wine, Grape Pomace and Lees --2.3.2. Fruit and Vegetable Juices/Wines -- 2.3.3. Fruits and Vegetables -- 3. NUCLEAR MAGNETIC RESONANCE (NMR) SPECTROSCOPY APPLIED TO THE STRUCTURE ELUCIDATION OF ANTHOCYANINS. PYRANOANTHOCYANINS AND OTHER DERIVATIVES -- 3.1. Fundamentals of NMR Spectroscopy Applied to the Analysis of Anthocyanins and Pyranoanthocyanins -- 3.2. Application of NMR Spectroscopy in the Structural Identification of New Anthocyanins Derivatives in the Flavylium Form, and their Different Equilibrium Forms -- 3.2.1. Analysis of the Flavylium Cation Form -- 3.2.2. Analysis of the Different Forms in Equilibrium -- 3.3. Application of NMR Spectroscopy in the Structural Identification of New Pyranoanthocyanin Derivatives -- 3.3.1. Structural Identification of New Pigments of Pyranoanthocyanins, Chemical Behavior and Structural Identification of Equilibrium Forms -- 3.3.2. Structural Identification of New Pigments of Pyranoanthocyanins Linked to a Flavanyl Moiety or Hydroxyphenyl (Portisins) -- 3.3.3. Structural Identification of Pyranoanthocyanins Dimers and Other Rare Pyranoanthocyanins -- CONCLUDING REMARKS -- CONFLICT OF INTEREST -- ACKNOWLEDGEMENTS -- REFERENCES --NMR Spectroscopy: A Powerful Tool to Investigate the Role of Tannins in the Taste of Wine and their Health Protective Effect --INTRODUCTION -- INTERACTIONS BETWEEN TANNINS AND SALIVA PROTEINS. Mechanism of Binding -- Stoichiometry and Strength of Binding --INTERACTIONS BETWEEN TANNINS AND BUCCAL MEMBRANE LIPIDS --PROTECTIVE EFFECT OF TANNINS ON MEMBRANE OXIDATION --CONCLUSION -- CONFLICT OF INTEREST -- ACKNOWLEDGEMENTS --ABBREVIATIONS -- REFERENCES -- Applications of Quantitative 1H NMR in Food-Related Analysis -- INTRODUCTION -- QUANTITATIVE NMR (QNMR) -- Principles of qNMR -- Characteristics of qNMR -- qNMR Methods: Internal and External Standards Methods -- APPLICATIONS OF QNMR -- Purity Determination of Reference substances for Pesticide and Natural Toxins -- Determining Purity of a Pesticide Reference substance with qNMR [24] -- Purity Determination of Reference Substances for Natural Toxins [27] -- Application of qNMR to Natural Organic Compounds -- Quantification of Carminic Acid --Quantification of Rutin, Isoquercitrin, and Quercetin -- Quantification of Steviol Glycosides -- Quantification of Carthamin -- Determination of Food Additives in Processed Foods by gNMR -- gNMR of Sorbic Acid, Dehydroacetic Acid, and Acesulfame Potassium -- Pre-treatment and Recovery Test -- Comparison of Methods using Commercially Available Food Products -- CONCLUSION -- CONFLICT OF INTEREST --ACKNOWLEDGEMENTS -- ABBREVIATIONS -- REFERENCES -- Cell-Free

Protein Synthesis for NMR Structural Analysis of Large Proteins and

Exhibited Color in Foods and Beverages -- 1. PYRANOANTHOCYANINS:

Complexes -- INTRODUCTION -- CELL-FREE EXPRESSION SYSTEMS AND TOOLS TO OPTIMISE PRODUCTION OF TARGET PROTEINS -- CELL-FREE SELECTIVE LABELING APPROACHES TO AID NMR ANALYSIS -- CELL-FREE COMBINATORIAL LABELING APPROACHES TO AID NMR ANALYSIS -- SEGMENTAL LABELLING STRATEGIES TO REDUCE SPECTRAL COMPLEXITY -- CELL-FREE DEUTERATION TO REDUCE LINE BROADENING -- CELL-FREE STEREO-ARRAY ISOTOPE LABELING (SAIL) TO ACQUIRE DISTANCE CONSTRAINTS -- CELL-FREE INCORPORATION OF UNNATURAL AMINO ACIDS TO PROVIDE LONG DISTANCE CONSTRAINTS.

CONCLUSION -- CONFLICT OF INTEREST -- ACKNOWLEDGEMENTS -- REFERENCES -- SUBJECT INDEX.