

1. Record Nr.	UNINA9910809343703321
Titolo	Foodomics [[electronic resource] ] : advanced mass spectrometry in modern food science and nutrition // edited by Alejandro Cifuentes
Pubbl/distr/stampa	Hoboken, N.J., : John Wiley & Sons, Inc., 2013
ISBN	1-118-53728-9 1-299-24216-2 1-118-53731-9 1-118-53735-1
Edizione	[1st ed.]
Descrizione fisica	1 online resource (582 p.)
Collana	Wiley series on mass spectrometry
Altri autori (Persone)	CifuentesAlejandro
Disciplina	664/.07
Soggetti	Food - Analysis Mass spectrometry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	FOODOMICS; CONTENTS; PREFACE; CONTRIBUTORS; 1 FOODOMICS: PRINCIPLES AND APPLICATIONS; 1.1 INTRODUCTION TO FOODOMICS; 1.1.1 Definition of Foodomics; 1.1.2 Foodomics Tools; 1.2 FOODOMICS APPLICATIONS: CHALLENGES, ADVANTAGES, AND DRAWBACKS; 1.2.1 Food Safety, Quality, and Traceability; 1.2.2 Transgenic Foods; 1.2.3 Foodomics in Nutrition and Health Research; 1.3 FOODOMICS, SYSTEMS BIOLOGY, AND FUTURE TRENDS; ACKNOWLEDGMENTS; REFERENCES; 2 NEXT GENERATION INSTRUMENTS AND METHODS FOR PROTEOMICS; 2.1 INTRODUCTION; 2.1.1 History of Mass Spectrometry-Based Proteomics 2.1.2 Overview of Classical Proteomics Techniques 2.1.3 Sample Preparation Methods; 2.2 EMERGING METHODS IN PROTEOMICS; 2.2.1 Bottom-up and Top-down Proteomics; 2.2.2 Methods for Quantitative Proteomics; 2.2.3 Post-Translational Protein Modifications Identification Methods; 2.3 THE MOVE FROM SHOTGUN TO TARGETED PROTEOMICS APPROACHES; 2.3.1 Shotgun Proteomics; 2.3.2 Targeted Proteomics; 2.3.3 Tandem Mass Spectrometry versus Selected/Multiple Reaction Monitoring; 2.3.4 Tandem Mass Spectrometry with Alternative Acquisition Methods; 2.3.5 Applications of Targeted Approaches in

Food Science

2.4 NEW INSTRUMENTAL METHODS FOR PROTEOMICS 2.4.1

Fragmentation Methods; 2.4.2 High Mass Accuracy and Fast Scanning Instrumentation; 2.4.3 New Hybrid Instruments; 2.5 BIOINFORMATICS

TOOLS; 2.5.1 Algorithms for Protein Identification; 2.5.2 Post-

Translational Modifications Identification by Computational Methods;

2.5.3 Processing and Analyzing Proteomics Data; 2.5.4 Proteomics Data

Repositories; REFERENCES; 3 PROTEOMIC-BASED TECHNIQUES FOR THE

CHARACTERIZATION OF FOOD ALLERGENS; 3.1 INTRODUCTION: WHAT IS FOOD ALLERGY?; 3.2 FOOD ALLERGY: FEATURES AND BOUNDARIES

OF THE DISEASE

3.3 IMMUNOPATHOLOGY OF FOOD ALLERGY AND ROLE OF

PROTEOMICS 3.4 IDENTIFICATION OF FOOD ALLERGY EPITOPES; 3.4.1

The Epitopes of Food Allergy; 3.4.2 Proteomic Strategies for Allergen

Identification, Detection, and Quantification; 3.4.3 Identification of

Linear and Conformational Epitopes; 3.5 EXPRESSION PROTEOMICS AND

FUNCTIONAL PROTEOMICS IN FOOD ALLERGY; 3.6 IDENTIFICATION OF

ALLERGENS IN TRANSFORMED PRODUCTS; 3.7 CONCLUDING REMARKS;

REFERENCES; 4 EXAMINATION OF THE EFFICACY OF ANTIOXIDANT

FOOD SUPPLEMENTS USING ADVANCED PROTEOMICS METHODS; 4.1

INTRODUCTION

4.1.1 Oxidative Stress in Aging and Disease 4.1.2 Dietary Antioxidants;

4.2 METHODS FOR STUDYING THE EFFICACY OF ANTIOXIDANTS; 4.2.1

Carbonylation as a Universal Indicator of Oxidative Stress; 4.2.2

Methods for Purifying Carbonylated Proteins from Complex Mixtures,

Mechanistic Studies of Diseases, and the Impact of Antioxidants; 4.3

STRATEGIES USED FOR PROTEOMIC ANALYSIS OF CARBOXYLATED

PROTEINS AND THE IMPACT OF ANTIOXIDANTS; 4.3.1 Isolating

Carbonylated Peptides; 4.3.2 Targeting Carbonylated Proteins as a

Group; 4.3.3 Multidimensional Separation; 4.4 STUDYING OXIDATION

MECHANISMS

4.4.1 Direct Oxidation with ROS

---

## Sommario/riassunto

Provides the latest "-omics" tools to advance the study of food and nutrition. The rapidly emerging field of foodomics examines food and nutrition by applying advanced "-omics" technologies in order to improve people's health, well-being, and knowledge. Using tools from genomics, transcriptomics, epigenomics, proteomics, and metabolomics, foodomics offers researchers new analytical approaches to solve a myriad of current challenges in food and nutrition science. This book presents the fundamentals of foodomics, exploring the use of advanced mass spectrometry techniques.

---