

1. Record Nr.	UNINA9910556878803321
Autore	Manickavasagan A.
Titolo	Plant protein foods // Annamalai Manickavasagan, Loong-Tak Lim, and Amanat Ali
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2022] ©2022
ISBN	3-030-91206-X
Descrizione fisica	1 online resource (522 pages)
Disciplina	572.62
Soggetti	Plant proteins Plant proteins as food
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Preface -- Contents -- About the Editors -- Contributors -- Chapter 1: High Protein Foods: A Comparison of Animal Origin vs Plant Origin -- 1 Introduction -- 2 Protein Quality -- 3 Protein Sources -- 3.1 Proteins from Animal Sources -- 3.2 Proteins from Plant Sources -- 4 Protein and Human Health -- 4.1 Animal Proteins and Health -- 4.2 Plant Proteins and Health -- 5 Summary -- References -- Chapter 2: An Overview of Plant-Based Protein Rich Products -- 1 Introduction -- 2 Plant-Based Protein Rich Products -- 2.1 Grains Protein-Based Products -- 2.1.1 Wheat Protein -- Texturized Wheat Protein -- 2.1.2 Rice Protein -- 2.1.3 Sorghum and Millets Protein -- Kafirin Protein and Its Intended Uses -- 2.1.4 Quinoa Proteins -- 2.2 Legume's Protein -- 2.2.1 Soy Protein -- Textured Soy Protein -- Soy Protein Isolate -- 2.2.2 Pulse Proteins -- Pulse Protein Concentrates and Isolates -- Pulse Proteins Based Imitation Milk Products -- Pulses Proteins-Based Comminuted Meat and Meat Analogs -- 2.2.3 Peanut Protein -- 2.3 Nuts Protein-Based Products -- 2.3.1 Almond Protein -- 2.3.2 Walnut Protein -- 2.3.3 Pistachio Protein -- 2.4 Edible Seeds Protein-Based Products -- 3 Conclusion -- References -- Chapter 3: Processing Technologies to Produce Plant Protein Concentrates and Isolates -- 1 Introduction -- 2 Processing for Protein Extraction and Separation -- 2.1 Milling -- 2.2 Dry Fractionation -- 2.2.1 Air Classification -- 2.2.2 Electrostatic Separation -- 2.3 Wet Extraction Processes -- 2.3.1

Alkaline Extraction-Isoelectric Precipitation (AE-IP) -- 2.3.2 Membrane Technologies -- 2.3.3 Salt Extraction-Dialysis (SED) -- 2.3.4 Micellar Precipitation (MP) -- 2.4 Technologies to Improve Cell Disruption and Protein Extraction -- 2.4.1 Enzyme-Assisted Extraction -- 2.4.2 Ultrasound-Assisted Extraction -- 2.4.3 Microwave-Assisted Extraction.

2.4.4 Other Technologies for Cell Disruption and/or Protein Extraction -- 3 Drying Processes -- 4 Conclusion -- References -- Chapter 4: Food Processing Industrial Byproducts as Raw Material for the Production of Plant Protein Foods -- 1 Introduction -- 2 Plant-Based Industrial Food Waste as Sources of High-Quality Proteins -- 2.1 Press Cakes/Oil Meals -- 2.2 Cereals Processing By-products -- 2.3 Legumes Processing By-products -- 3 Recent Technological Developments -- 3.1 Technological Hurdles to Overcome Scale-Up Issues of Plant Proteins Globally -- 4 Development of Plant-Based Protein Hydrolysates -- 4.1 Challenges for the Hydrolyzed Protein Production and Utilization -- 4.2 Plant Proteins as Replacer of Fish Meal in Aqua Feeds -- 4.2.1 Structure/Function Relationship -- 4.2.2 Functionalization Strategies for Innovating Plant-Based Proteins Formulations -- 4.2.3 Taste and Flavor Challenges Posed by Plant-Based Proteins -- Contemporary Technological Advancements for Alternative Protein Products -- 4.2.4 Alternative Plant-Based Proteins Meat Production through Extrusion -- 4.2.5 Shear Cell Technology for Thermo-Mechanical Structuring of Plant-Based Proteins -- 4.2.6 Three-Dimensional (3D) Printing for Developing Plant-Based Cultured Meat Products -- 4.2.7 Delivery of Protein Bioactive Ingredients by Micro- and Nano Particles -- 4.2.8 Zein from Corn Gluten Meal -- 4.2.9 Soy Proteins from Soy Oil Processing -- 4.2.10 Barley and Wheat Gliadins Proteins -- 5 Conclusion and Future Perspective -- References -- Chapter 5: Enrichment and Fortification of Traditional Foods with Plant Protein Isolates -- 1 Importance of Plant Proteins -- 2 Potential Sources of Plant Proteins and Isolates -- 2.1 Legumes -- 2.1.1 Soy -- 2.1.2 Lupins -- 2.1.3 Pea -- 2.1.4 Chickpea -- 2.2 Cereal Grains -- 2.2.1 Wheat -- 2.2.2 Rice -- 2.2.3 Maize. 2.3 Other Oilseeds: Canola and Sunflower -- 2.3.1 Canola/Rapeseed -- 2.3.2 Sunflower Seeds -- 2.4 Proteins from Tubers and Nuts -- 3 Preparation of Plant Protein Concentrates and Isolates -- 3.1 Air Classification -- 3.2 Water Extraction -- 3.3 Salt Extraction -- 3.4 Alkaline Extraction -- 3.5 Acid Extraction -- 3.6 Ultrafiltration -- 4 Enrichment and Fortification of Traditional Foods -- 4.1 Bakery Products -- 4.2 Meat and Meat Analogs -- 4.3 Pasta -- 4.4 Extruded Snacks -- 4.5 Breakfast Cereals -- 4.6 Beverages -- 4.7 Fat Replacers -- 4.8 Infant Formulas and Baby Foods -- 4.9 Flavor Enhancers -- 4.10 Miscellaneous Applications -- 5 Conclusion -- References -- Chapter 6: Plant-Based Protein Meat Analogues -- 1 Introduction -- 2 Processing Technologies -- 2.1 Principle of Plant Protein Texturization -- 2.2 Extrusion -- 2.3 Shear Cell Technology -- 2.4 Freeze Structuring -- 3 Protein Sources -- 3.1 Soy Protein -- 3.2 Pea Protein -- 3.3 Wheat Protein -- 3.4 Algae -- 4 Product Forms -- 5 Quality Parameters -- 5.1 Microstructure -- 5.2 Textural Properties -- 5.3 Sensory Evaluation -- 6 Nutritional Values -- 7 Commercial Products -- 8 Conclusion -- References -- Chapter 7: Fermented Plant Protein Products -- 1 Introduction -- 2 Fermented Cereals and Cereal-Based Products -- 2.1 Cereals-Based Fermented Foods and Beverages -- 2.1.1 Traditional Fermented Cereals-Based Beverages -- Rabadi -- Boza -- 2.1.2 Traditional Fermented Cereals-Based Other Foods -- Ogi -- Pozol -- Injera -- 3 Fermented Legumes and Pulses -- 3.1 Pulses Yogurt -- 3.1.1 Non-dairy Soy Yogurt -- 3.2 Legumes-Based Fermented

Beverages and Milk Analogues -- 3.2.1 Non-dairy Soy Milk -- 3.2.2 Traditional Pulses-Based Fermented Products -- Miso -- Tempeh -- Dawadawa -- Dhokla and Idli -- Soy Sauce -- Sufu -- 4 Fermented Nuts & -- Their Products -- 4.1 Fermented Almond Milk. 4.2 Fermented Seeds and Their Products -- 4.2.1 Ogiri Egusi -- 4.2.2 Seeds Protein Concentrate -- 5 Conclusion -- References -- Chapter 8: Pulse-Based Yogurt: Physicochemical, Microbial and Sensory Characteristics -- 1 Introduction -- 2 Search Criteria -- 2.1 Analyzed Pulses -- 2.2 Comparison Criteria -- 2.3 Utilized Feedstocks -- 3 Yogurt Production and Processing Using Pulses -- 3.1 Heat Treatment and Fermentation -- 3.2 Novel Processing Methods -- 3.2.1 Pulse Electric Field Processing -- 3.2.2 High Intensity Ultrasonication -- 3.2.3 Microwave Processing -- 3.2.4 High Pressure Processing -- 4 Nutritional Properties of Pulse-Based Milks -- 4.1 Adzuki Bean Milk -- 4.2 Bambara Groundnut Milk -- 4.3 Chickpea Milk -- 4.4 Cowpea Milk -- 4.5 Lima Bean Milk -- 4.6 Lupin Milk -- 4.7 Pigeon Pea Milk -- 4.8 Broad Bean Milk -- 4.9 Other Pulse Milks -- 5 Nutritional Content of Pulse-Based Yogurt -- 5.1 Adzuki Bean Yogurt -- 5.2 Bambara Groundnut Yogurt -- 5.3 Common Bean Yogurt -- 5.4 Lupin Yogurt -- 5.5 Pigeon Pea Yogurt -- 5.6 Other Pulse Yogurts -- 6 Microbial Properties -- 7 Rheological Properties -- 8 Sensory Properties -- 8.1 Bambara Groundnut -- 8.2 Chickpea -- 8.3 Cowpea -- 8.4 Lima Bean -- 8.5 Lupin -- 9 Conclusion -- References -- Chapter 9: Plant Protein Based Beverages -- 1 Plant Based Proteins -- 2 Plant Protein Based Beverages -- 2.1 Nut and Legume Protein Based Beverage -- 2.1.1 Beverages Derived from Nut Protein -- 2.1.2 Stability of Protein -- 2.1.3 Health Benefits -- 2.1.4 Commercial Products -- 2.2 Legume Protein Based Beverage -- 2.2.1 Stability of Protein -- 2.2.2 Health Benefits Related to Legume-Based Protein Products -- 2.3 Seeds Protein-Based Beverages -- 2.3.1 Types and Nutritional Benefits of Seed Protein Beverages -- 2.3.2 Health Benefits of Seed Protein Beverages -- 2.3.3 Commercial Beverages -- 2.3.4 Cereal Protein-Based Beverages. 2.3.5 Health Benefits of Cereal Proteins Beverages -- 2.4 Commercial Products -- 3 Plant Protein Blend Beverage Innovations -- 4 Consumer Perception of Plant Protein Drinks -- 5 Sources and Nutritional Benefits of Plant Based Proteins -- 6 Conclusion -- References -- Chapter 10: Plant-Based Protein Films and Coatings -- 1 Introduction -- 2 Wet Processing of Protein Film -- 2.1 Solvent Casting -- 2.2 Selected Examples of Solvent Cast Films -- 3 Dry Processing of Protein Film -- 3.1 Extrusion -- 3.2 Compression Molding -- 3.3 Selected Examples of Dry-Processed Protein Films -- 3.3.1 Extrusion -- 3.3.2 Compression Molding -- 4 Protein Coatings -- 4.1 Selected Protein Coating Examples -- 4.2 Electrospun Protein-Based Nonwovens -- 5 Modification of Protein Film/Coating -- 5.1 Polymer Blending -- 5.2 Multilayer Films -- 5.3 Filler-Based Composites -- 5.4 Irradiation Induced Cross-Linking -- 5.5 Chemical and Enzymatic Crosslinking -- 6 Conclusion -- References -- Chapter 11: Sensory Qualities of Plant Protein Foods -- 1 Introduction -- 2 Instrumental Methods -- 2.1 Appearance -- 2.2 Mouthfeel Characteristics -- 2.2.1 Texture -- 2.2.2 Rheological Properties -- 2.2.3 Water and Oil Holding Capacity -- 2.2.4 Emulsifying Properties -- 2.3 Aroma -- 2.4 Challenges and Factors Impacting in the Instrumental Characterization in Plant-Based Systems -- 3 Sensory Evaluation -- 3.1 Appearance -- 3.2 Mouthfeel Characteristics -- 3.3 Taste, Aroma and Flavor -- 3.4 Challenges and Factors Impacting Sensory Design of Plant-Based Systems -- 4 Sensory and Other Quality Attributes of Various Plant Protein Foods -- 4.1 Meat Analogues -- 4.2 Meat Hybrids/Extenders -- 4.3 Yogurt

Analogues -- 4.4 Plant-Based Cheese -- 4.5 Non-vegan/Hybrid  
Cheese -- 4.6 Fluid Plant-Based Milk -- 4.7 Plant-Based Ice Cream --  
4.8 Plant-Based Egg Replacers -- 4.9 Seafood Analogs.  
4.10 Traditional Plant-Based Foods.

---