

Preface

This book is based on selected papers presented at the 6th Central European Congress on Food (CEFood), held in 2012 in Novi Sad, Serbia. CEFood is a biennial event, the first one being at Ljubljana, Slovenia, in 2002, gathering scientists from universities, research institutes, food industry, as well as food producers and distributors. The 6th CEFood was among the most successful ones with close to 600 participants from 36 countries from all around the world. This 6th Congress emphasized novel and traditional technologies to enhance food safety and competitiveness in European and global markets. It is worth mentioning all the authors upgraded and updated their respective contributions which later on were peer-reviewed by highly qualified colleagues.

This reference book will be very useful to food scientists/engineers from academia, research institutions, and the food industry and, at the same time, to practitioners from the food sector. The aim of this book is to present fundamentals and recent developments in food science and technology that will help advance research, development, innovation, and education. It is divided into four well-intertwined parts as follows: Safe and Healthy Foods, Food Quality, Food Biotechnology, and Food Engineering. Topics addressed in this book include, among others, novel technologies to process foods, food safety and quality, food ingredients, trends in nutrition and health, functional foods, bioactive compounds, and regional and global food markets.

The first part is a thorough and vast updating on how to have healthy foods while being very safe, in other words, how to find a sound balance to advance food science and nutrition at the same time. Chapter 1 presents the bird's-eye view of the link between safe food and healthy diets, elaborating on challenges in food safety and food security, food safety and quality control, safe food vs. healthy nutrition, and rights and responsibilities of the consumer. Chapter 2 elaborates on the advantages of supplying foods via networks rather than chains. Traditional foods and their safety are extensively addressed in Chap. 3 including legislation, the hazards coming from raw materials, as well as hazards from processing. Chapter 4 is dedicated to analyze the role of selected chemical contaminants promoting the formation of carcinogenic compounds, i.e., polycyclic aromatic hydrocarbons (PAHs) in smoked meat products, liquid smoke flavors and vegetable oils, as well as their elimination.

The mechanism of acrylamide formation and factors affecting its concentration in thermally processed foods are discussed in detail in Chap. 5, as well as methods for its mitigation by means of recipe and process modifications. Chapter 6 presents contemporary methods for the analysis of bioactive compounds, i.e., polyphenols, tocopherols, and carotenoids in food products. The beneficial aspects of beer as an integral part of healthy diets are discussed in Chap. 7 followed by the significance of beer vs. other alcoholic beverages, potential harmful components, and the development of new beer types with new sensory and functional properties. Chapter 8 deals with the screening of antioxidant peptides in protein hydrolysates using the structural descriptors of antioxidant peptides following a knowledge-based strategy.

The second part of the book, “Food Quality,” starts with Chap. 9 which presents current findings about heat-induced casein-whey protein interactions in caprine milk, as well as means to better control the quality of caprine dairy by identifying similarities and differences to bovine milk. Chapter 10 also deals with whey proteins but in this case with an update on their use on edible films. Chapter 11 analyzes the impact of process parameters and material characteristics on structural, textural, and sensory attributes of rice extrudates, whereas Chap. 12 addresses the standardization of traditional dry fermented sausages in terms of safety and quality.

The part “Food Biotechnology” includes four chapters where Chap. 13 explores the possibility to utilize autochthonous strains of lactic acid bacteria, isolated from traditional Serbian cheeses and prepared by traditional and emerging technologies, in cheese production. Chapter 14 reviews the effect of cell immobilization on the properties of presumptive probiotics with emphasis on tolerance to simulated GI tract conditions, adhesion attributes, and modulation of microbial intestinal flora. The following two chapters are focused on foodborne pathogens, the first one, Chap. 15, on the resistance of *Campylobacter jejuni* and *Campylobacter coli* from food, animal, human, and environmental water sources to some biocides and antibiotics. Chapter 16 discusses recent developments, specificity, and application of microbial polysaccharides as promising and versatile materials for future use in food systems.

Chapter 17 initiates the “Food Engineering” part covering several aspects dealing with the cold chain including shelf life monitoring, the use of time-temperature integrators, and other advanced strategies to properly manage the handling and storage of frozen foods. Chapter 18 reviews benefits of microencapsulated ingredients in the food industry, materials used for encapsulation, and encapsulation technologies which are scalable and acceptable by the food industry. Chapter 19 presents the main types of barrier packaging materials for food application, special functions of new packaging materials, and innovative designs including eco-design aspects. Chapter 20 explores extraction by supercritical fluids from solids or liquids of specific ingredients and their incorporation into the formulation of certain products with desired properties. Chapter 21, the last one, evaluates the capability of a wet germ processing method to increase the purity of dry-milled corn germ to make it suitable for food applications.

The editors of this book are very grateful to all authors for the high quality of their contributions, as well as to all reviewers for their time and thorough criticism of the chapters. We consider that by selecting outstanding authors and reviewers, in addition to our own work, we managed to develop a quality book.

We hope the body of knowledge of all disciplines covered in this book will be expanded in a meaningful way. We also hope readers will find this book interesting, challenging, informative, and appealing, as well as encouraging to closely follow future Central European Congresses on Food.

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