

BOOK REVIEWS

Advances in food and nutrition research, Vol. 81.

F. TOLDRÁ (Ed.)

ISBN: 978-0-12-811916-7 (318 pages)

The “Advances in food and nutrition research” is a scientifically significant series of Elsevier. Since the 1940s, it is one of the main sources of the latest information in food and nutritional sciences.

Volume 81 provides up-to-date knowledge on novel, nanotechnology-based methods in bioavailability research, latest analytical methods for emerging bioactive compounds, pays special attention on “omics” and nutrients that could influence the risk of different diseases and optimize health.

This book is divided into eight chapters: the first describes the nanotechnological approaches for increasing nutrient bioavailability. The second part introduces processing of food antioxidants, reactions and benefits of these components. The third chapter emphasizes the chemical, regulatory, and analytical aspects of nitrite and nitrate in foods. The next two chapters bring into focus biopeptide production, their activity and health benefits. Foodomics, metabolomics, and nutrimentabonomics are the main topics in chapters six to eight.

The volume is highly recommended for students, instructors, researchers, and professionals alike. Chapters are clearly illustrated; contain diagrams and tables, a high number of references giving us a more global view.

R. TÖMÖSKÖZI-FARKAS

Proteomics in food science: From farm to fork

M.L. COLGRAVE (Ed.)

Academic Press, 125 London Wall, London EC2Y 5AS, UK
ISBN No. 978-0-12-804007-2, 515 pages

Proteomics is a relatively recent field; the term was coined in 1994, and the science itself has its origins in electrophoretic separation techniques of the 1970s and 1980s. Proteomics typically refers to large-scale comprehensive studies of a specific proteome. Proteomics combine many complicated methods to identify and quantify proteins. Two-dimensional electrophoresis (2-DE) is still the cornerstone of most proteome analysis. Most proteomics data describe the use of electrospray ionization (ESI) and matrix-assisted laser desorption/ionisation time of flight mass spectrometry (MALDI-TOF) to identify the proteins separated on a gel.

Proteomics has been widely used in medical and pharmaceutical research but is rapidly being adopted in the food sciences to answer questions relating to quality, safety, allergenicity, bioactivity. Various practical applications of proteomics have emerged in the past related to their application in food science from production to the point of consumption. *Proteomics in food science: From farm to fork* introduces a number of methods for determining the identity or composition of specific proteins in foods or cells related to food science: from edible components to spoilage organisms.

The book comprises 29 chapters and is divided into five sections: (1) Application to plants – cereals, nuts, pulses, and fruit (8 chapters); (2) Application to farm animals – meats, dairy, and eggs (8 chapters); (3) Application to aquaculture (5 chapters); (4) Processed foods (3 chapters); (5) Food spoilage, pathogenic organisms, and allergens (5 chapters). In the individual chapters the determination of quality traits for a wide variety of foods including cereals, nuts, pulses, fruits, meats, dairy, egg, fish, beer, and wine are addressed. The identification and characterization of bioactive peptides and proteins, which are important from a nutritional perspective, is also introduced. The application of proteomics offers a new approach to understand the factors, which influence the food quality and the mechanism of gene expression during different environmental conditions, such as drought, flood, salinity, and response to abiotic stress, pests, and pathogens. Consumers show an increasing interest in food safety aspects, especially regarding biological and microbial safety, the utility of proteomics in this area is also addressed. Proteomics combines technologies and approaches, including protein (and peptide) separation science, tandem mass spectrometry, and bioinformatic analysis to identify and quantify proteins, in this book a variety of analytical platforms are described, ranging from usage of simple electrophoresis to more sophisticated mass spectrometry and bioinformatic platforms.

Dr. Michelle Colgrave is the molecular analysis team leader and proteomics research scientist in the CSIRO Agriculture Flagship, based at the Queensland Bioscience Precinct in Brisbane, Australia. Dr Michelle Colgrave is using mass spectrometry (MS) and proteomics to help identify key proteins that will benefit Australia's livestock and plant industries and improve human health. This book has 74 contributors with international reputation, resulting widespread knowledge in the current and future applications of proteomics in the food science.

The book is designed for food scientists, technologists, food industry workers, microbiologists, and public health workers, and can also be a valuable reference book for students.

E. HORVÁTH-SZANICS