Acta Alimentaria, Vol. 45 (2), pp. 309–315 (2016)
DOI 10.1556/066.2016.45.2.19

BOOK REVIEWS

Canned citrus processing: Techniques, equipment, and food safety (1st edition)

Y. SHAN (Ed. in chief)

Academic Press is an imprint of Elsevier, The Boulevard, Langford Lane, Kidlington, Oxford, OX5 1GB, UK
China Science Publishing & Media Ltd. Published by Elsevier Inc.
ISBN 978-0-12-804701-9 (print), 190 pages

Citrus are among the most popular fruit around the world, and can be successfully cultivated in more than 140 countries. Accordingly, the canned citrus industry faces a great challenge to process the harvest of more than 100 million tons worldwide. In this recently published book, entitled "Canned Citrus Processing, Techniques, Equipment, and Food Safety", the latest knowledge of the methods and equipments is overviewed presenting the technical and development trends of the canned citrus processing industry.

The book is divided into four chapters, which are grouped around main tasks, namely Overview of the canned citrus industry, Canned citrus processing, Machinery and equipment for canned citrus product processing, and Quality and safety control during citrus processing.

Chapter 1 (Canned citrus industry) summarizes the background and history of the citrus industry, followed by the current industrial situation.

Chapter 2 (Canned citrus processing) provides a guide to the categories and preservation principles of canned foods, procedures used for manufacturing canned citrus products, quality issues and controlling, and to the new sterilization techniques of canned foods.

Chapter 3 (Machinery and equipment for canned citrus product processing) delineates the novel and modern machinery and equipments for material handling, cleaning, processing of raw citrus materials and semifinished products, exhaust and sterilization, as well as packaging. The set-up and operation of typical canned citrus-processing production lines are also presented.

Chapter 4 (Quality and safety control during citrus processing) summarizes limits and requirements the pesticide residues, contaminants, and additives in citrus and canned products according to the national standards, hazard analysis and critical control points, GMP control during the processing of canned citrus products, and also the construction of the traceability management system.

This book presents an overview as a scientific and practical manual of the canned citrus industry for scientists, scholars, and students working with or studying citrus; citrus processing enterprises; dietitians and nutritionists; and farmers from cooperative organizations related to citrus processing.

N. ADÁNYI

Emerging technologies for promoting food security

Overcoming the world food crisis

C. MADRAMOOTOO (Ed.)

Woodhead Publishing, Cambridge, 2016, Series in Food Science, Technology and Nutrition,
ISBN: 978-1-78242-335-5, 172 pages

The editor, Chandra MADRAMOOTOO, is a James McGill Professor in the Department of Bioresource Engineering in Canada. His research areas are agricultural water quality, its assessment framework for a safe food system, application of variable rate irrigation technology for water efficiency and conservation, soil-plant-water dynamics and water productivity benefits of subsurface drip irrigation. He is also working on water management system in Canada, to protect the fresh water.

This book comprises some approaches to promoting global food security, including novel and existing agriculture and husbandry techniques for safe and sustainable food production despite of the rising world population and rising energy prices, increased biofuel use and water scarcity.

The book consists of three parts, beginning with an overview of key drivers of food insecurity. The second part includes four chapters, describes the emerging technologies for plant and animal food security. The first two chapters deal with emerging genetic technologies to increase food security and resistance against diseases and pets in case of food crops with gene-sequencing revolution, molecular and genomic-assisted breeding, and genetic transformation. In the third chapter, animal-food production is mentioned in the aspect of genetic technology, as well. Importance of development of new breed processes is emphasised, so that with cross-breeding the production of quality animal products can be ensured in areas, where there was a need before. The last chapter of this part contains the aquaculture technologies for food security.

The third part of the book deals with environmental and policy issues that affect food security. This part is divided into two chapters. The first chapter, written by the editor, summarizes water management. This includes some methods to raise crop water usage efficiency, such as MaSSCOTe internet-based weather forecasting and irrigation scheduling tool, which system has been successful in improving the performance of irrigation schemes. Other issues are utilization of nutrient-rich wastewater, excess water management, and related environmental issues. The last chapter describes the handling, storage, and distribution methods, which can reduce the postharvest losses in case of fresh fruit, vegetables, grains, and cereals.

In summary, this book provides a comprehensive overview of promoting food security for both practitioners and theoretical experts.

L. SZALÓKI-DORKÓ

Essential oils in food preservation, flavor and safety

V.R. Preedy (Ed.)

Academic Press is an imprint of Elsevier, The Boulevard, Langford Lane, Kidlington, Oxford, OX5 1GB, UK
ISBN: 978-0-12-416641-7 (print), 930 pages

The book "Essential oils in food preservation, flavor and safety" is a supplementary work, which summarizes the complex features of the essential oils on scientific base, including not only the benefits, applications, processing, and analytical aspects, but toxicity, as well. It provides a complex scientific approach to the essential oils ranging from production and harvesting to the anti-spoilage properties of individual components.

The book is divided into two main parts, with 99 chapters.

Part I (General aspects) introduces the reader to the most important terms and definitions regarding essential oils; methods for characterization, authentication, and adulteration; cultivation of selected essential oil-bearing plants; and methods of extraction. Their overall biologically activities are also delineated, as effects against stored product and arthropod pests; microencapsulated essential oil pesticides for food plant production, usage in food, preservation against food spoilage microorganisms in meat and poultry; their antimicrobial mechanisms and antioxidant properties. The special properties are also detailed, e.g. their use as flavourings in carbonated cola and citrus soft drinks, usage in food packaging, or addition to edible films.

In Part II (Named essential oils) more than 80 different frequently used and exotic essential oils are reviewed, with special regard to the botanical aspects; species and geographical distribution, cultivation, and harvesting; chemical composition and applications in food; control of foodborne pathogens, synergistic activities; antibrowning effects, etc. Beside the chemical composition, the impact of flavour and aroma is also discussed in each case.

This book is an outstanding resource of a wide range of information, from general to specific use and application tips of more than 80 different plants and their essential oils. It is a very useful assemblage not only for flavour and sensory scientists, food scientists, and nutritionists, but also for those who are involved in new product or packaging development and food safety.

N. Adányi

Functional foods, nutraceuticals and natural products

Concepts and applications

D.A. Vattem and V. Maitim (Eds)

DEStech Publications, Inc., 439 North Duke Street, Lancaster, PA 17602-4967, USA
ISBN: 978-1-60595-101-0, 836 pages

The term "functional foods" was first introduced in Japan in the middle of the 1980s for the processed foods containing ingredients with some specific bioactivity and health benefits in addition to being nutritious. But the concept is originating from Hippocrates: "We are what we eat" – and it is really true. Nowadays, the importance of producing foods and food components with beneficial physiological effects over and above the basic nutrients is increasing. Nutrition science and food biochemistry has moved from the original goal of avoiding nutrient deficiencies or antinutritives to the concept of positive and optimal nutrition. Researchers are focusing on the identification of bioactive molecules in foods, which have preventive effect and decrease the risk of different diseases or help maintaining the optimal physical and mental health.

Many foods contain bioactive components, which typically occur in small quantities, like vitamins, polyphenols, or carotenoids, and play important roles in prevention and health promotion. This book, by combining scientific access with practical usefulness, contains a wide range of information on the effect of bioactive compounds and their presence in different foods.

"Functional Foods, Nutraceuticals and Natural Products" focuses on these food components, which have bioactive effect in the human body. There are 28 chapters that could be divided into three main sections. The first chapter descript the history, the scientific perspectives, political and legal states of functional foods. The next chapters introduce the main biological and physiological effects of functional foods: probiotic, prebiotic, pleiotropic, insulin signalling, neuroprotective effects, etc. There are some chapters dedicated to analytical methods, extraction, purification, and identification of these bioactive ingredients from natural products; and the last chapters focus on special herbs, spices, fruit, and other foods with beneficial influences on the consumer.

The book serves as a tool for food scientists, food chemists, nutritionists, dietitians, and students as well, also inspires scientists to produce and design healthier foods by optimizing their composition.

R. Tömösközi-Farkas

Innovation and future trends in food manufacturing and supply chain technologies

C. Leadley (Ed.)

Woodhead Publishing, Cambridge, 2016, Series in Food Science, Technology and Nutrition No 293,
ISBN: 978-1-78242-447-5, 308 pages

The editor, Craig Leadley is a novel food processing specialist at Campden BRI, UK. His main research interests are in the field of emerging preservation technologies for the food industry, including power ultrasound, high-pressure homogenisation, pulsed light processing and ultra-high pressure food processing. He also works on the application of emerging technologies to seafood processing.

This book contains three parts, focuses on emerging and future trends in food manufacturing and supply chain technologies, examining the drivers of change and innovation in the food industry and the current and future ways of addressing issues such as energy reduction and rising costs in food manufacture.

Part One, consists two chapters, contains innovations in the food supply chain, including emerging issues and future trends, development of information technology in food supply chain integration and monitoring.

Part Two is divided into four chapters, describes emerging technologies in food processing and packaging. The first chapter deals with emerging trends and methods in food factory design and operation, while the second one is about the hygiene concepts. The third chapter gives factory-friendly approaches to applying multivariate analytics for productivity and yield grains. The last one contains emerging methods and principles in food contact surface decontamination and prevention.

Part Three consists three chapters, explore innovative food preservation technologies: refrigeration, freezing technologies, advanced heating technologies and emerging non-thermal technologies.

In summary, this book assesses current supply chain technologies and the emerging advancements in the field, including key chapters on food processing technologies. Covers the complete food manufacturing scale, compiling significant research from academics and important industrial figures

L. Szalóki-Dorkó

Probiotics, prebiotics and synbiotics

Bioactive foods in health promotion

R.R. Watson and V.R. Preedy (Eds)

Academic Press is an imprint of Elsevier, 125 London Wall, London, EC2Y 5AS, UK, 525 B Street, Suite 1800, San Diego, CA 92101-4495, USA, 225 Wyman Street, Waltham, MA 02451, USA, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK
ISBN: 978-0-12-802189-7, 938 pages

"Probiotic, prebiotics and synbiotics – Bioactive foods in health promotion" focuses on the varied effects of probiotics, prebiotics, and synbiotics. One of the two Editors, Ronald Ross Watson, is currently professor of health promotion sciences in the Mel and Enid Zuckerman Arizona College of Public Health. His main research interests are in the field of disease prevention, health promotion, and diet and nutrition. The second Editor, Victor R. Preedy, is professor of Nutritional Biochemistry Diabetes and Nutritional Sciences Division King's College London. His interests pertain to matters concerning Public Health and how this is influenced by nutrition, addictions, and other lifestyle factors.

An immediately identified strength of the book is the logical flow of the order of parts, which results in a highly readable book. The book is divided into 5 parts with 67 chapters.

In the first part of the book, detailed information is given on prebiotics in health promotion. These 13 chapters deal with prebiotics in human milk and in infant formulas, the use of them in children, and the source of prebiotics as well.

Part Two focuses upon the probiotics, which are live microorganisms that when administered in adequate amounts provides a health benefit to the host. This part comprises information about probiotic content of special food, such as Iranian cheeses, kimchi (Korean fermented vegetables), and about the effects of stressors and food environment on probiotic flora.

Part Three describes the effects of prebiotics and probiotics used together in different situations, for instance, effects of synbiotic supplementation on breast milk immune factors, synbiotic rich diet in diverticular disease, their benefits on the intestinal microbiota of the elderly.

The last two parts (4–5) provide information on the effects of probiotics on the healthy body (physical strength, childhood, elderly) and in diseases. Part 5 summarizes some of the most relevant studies performed in the last 5 years regarding probiotics in the prevention and/or treatment of inflammatory bowel disease (IBD) and certain types of cancer, with emphasis being placed on the possible mechanisms involved.

In summary, this book presents new hypotheses and conclusions on the effects of different bioactive components of prebiotics, probiotics, and synbiotics to prevent diseases and improve the health of various groups of the population. Today's consumers look for foods that, in addition to their intrinsic nutritional values, can offer some additional benefits to their health.

A. Nagy

Statistics for food scientists

Making sense of the numbers

F. Rossi and V. Mirtchev

Academic Press is an imprint of Elsevier, U.S.A., 2016
ISBN 978-0-12-417179-4, 184 pages

This book helps food scientists and producers to understand the world of statistics. For all food researchers and producers it is essential to use statistical methods to evaluate their results obtained in raw material analysis, in research projects, or in the production line to ensure good materials, determine the critical points, solve problems, or improve the production. The authors, Frank Rossi and Victor Mirtchev, are working at Kraft Foods Group, where Rossi is associate director of Statistics and Mirtchev is an analytics manager in the Consumer Insights and Strategy. In 2009, they created the course "Statistics for Food Scientists" for product and process developers to acquire the statistical thinking in their everyday work. This course has given the basis of this book.

The book is easy to understand as it shows the different statistical problems through a BBQ sauce production line. The book reveals that not only single data evaluation is needed to solve a problem or to increase productivity, but knowing the whole production line, the raw material and its properties, and the analytical and control methods, as well.

After a short Introduction, the book is divided into thirteen chapters (Descriptive statistics and graphical analysis, Hypotesis testing, Analysis of variance, Measurement system analysis, Regression and correlation, Statistical process control, Sampling, Process capability, Design of experiments foundation, Screening experiment designs, Response surface (optimization) experiment designs, Mixture experimental design, Wrapping it all up!). This book and each chapter see through the reader step by step from the realization of the problem to the evaluation of the data with different statistical methods through sampling and experimental methods to process control and problem solution.

This book is a useful guide for food researchers in R&D area, for food producers and quality managers, and for all those who work with statistics and data analysis even at the production line to meet consumers' demands.

É. Kónya