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BOOK REVIEWS

Foods, nutrients and food ingredients with authorised EU health claims

M.J. SADLER (Ed.)

Woodhead Publishing is an imprint of Elsevier, Cambridge, UK, Waltham, US, Kidlington, UK, Series in Food Science, Technology and Nutrition: Number 263, 2014

ISBN 978-0-85709-842-9 (print), ISBN 978-0-85709-848-1 (e-book), 397 pages

Health claims are short and easily intelligible messages to communicate a specific beneficial effect of food and beverages to public. Messages referring to growth, development, and functions of the body, psychological and behavioral functions, slimming or weight control, and as a new area, reduction of risk of disease. Proposed health claims supported by scientific evidence are authorised by European Food Safety Authority (EFSA) and registered in EU Regulation 1924/2006.

The Volume brings together technical, nutritional, and regulatory information available on the recently authorised materials in four chapters.

Part I. “Regulatory background” is an overview of the Regulation, of development of the lists of claims, and of the procedure to approve new claims.

Part II. “Authorised disease risk reduction claims, children’s development health claims, and proprietary claims” is a summary of the chemical composition, physiological effect, and regulatory aspects of barley and oat beta-glucans, xylitol and sugar-free chewing gum, docosahexaenoic acid (DHA), nutrients essential for bone growing of children, and water soluble tomato concentrate.

Part III. It is an overview of ingredients with permitted ‘general function’ claims, including cholin – proved to develop liver function, lipid metabolism, and to be synergent with vitamins; creatine – increasing exercise performance; intense sweeteners and sugar replacers; foods and food ingredients for the lactose intolerant people; polyphenols in olive oil and resistant starches.

In Part IV. “Foods and nutrients with permitted health claims” (betaine, water, vitamins and minerals, saturated fat replacers, meat and fish, walnuts, etc.) are introduced in detail regarding dietary demand of such nutrients and a good explanation of their role in the human body, also including a list of permitted claims.

The volume *Foods, nutrients and food ingredients with authorised EU health claims* is an interesting and very useful reading for health professionals, students of the nutrition and food science, and operators of food industry, providing up-to-date information on food materials with health claims, thus stimulating and facilitating product development.

R. JUHÁSZ

Postharvest handling

A systems approach

W.J. FLORKOWSKI, R.L. SHEWFELT, B. BRUECKNER and S.E. PRUSSIA (Eds)

Academic Press is an imprint of Elsevier, Amsterdam, Boston, Heidelberg, London, New York, Oxford, Paris, San Diego, San Francisco, Singapore, Sydney, Tokyo, 2014, ISBN 978-0-12-408137-6, 564 pages

The book gives a comprehensive overview of the whole field known as postharvest handling of fresh fruit and vegetables. This book is the 3rd revised edition of the book titled “Postharvest Handling: A Systems Approach” published originally in 1993. The application of systems thinking and systems approach to postharvest handling of fresh fruit and vegetables generated a continued interest and stimulates interdisciplinary research on the topic. The systems approach offers a technique needed to address the increasing complexities of modern world problems, and is a tacit admission of inadequate solutions of real world problems through the application of a strictly disciplinary approach. The disciplinary approach will remain important, but the practical use of such solutions calls for placing them in the context of the actual situation and accounting for direct and increasingly important indirect effects on other players in the fresh fruit and vegetable industry.

The international trade of fresh fruit has been growing quite rapidly, increasing the importance of rules, regulations, temperature regimes, and legal responsibilities, because the value of the shipped fresh produce is high. The variety of issues in terms of postharvest handling, packing, transporting, tracing the path of fresh produce, retailing, and addressing sustainability has increased as the population of consumers expands worldwide and becomes increasingly diversified in terms of their ability to purchase and their preferences. The systems approach remains relevant to fresh fruit and vegetable supply value chains for delivering the quality desired by consumers.

The authors are in the first line of the postharvest research and handling practice from very different, developed and developing, countries of the world, and they made their contributions to the current version. They continue the struggle with shaping a common vision of the industry, while sharing the recognition of the systems approach as the single vision driving their individual efforts. They intend to apply this approach while being open to new perspectives as the world around the fruit and vegetable industry changes. The progress of the last years is reflected in the content. The daily consumption of fresh products continues to fall short of the recommended level in many countries of the world. Consumers remain the key to the sustained economic success of the fresh product industry.

Chapters (1–5) present new contexts, imperatives of postharvest systems, challenges in handling, consumer eating habits, and perceptions of fresh produce quality; as well as testing and measuring consumer acceptance and laboratory methods of nutritional quality of fruit and vegetables.

Chapters (6–9) present technological approach of value change management, postharvest handling, consumer expenditures, regulation, quality standards, and fresh-cut produce quality.

Chapters (10–15) show theoretical background of postharvest physiology, quality maintenance of tropical fruit, microbial quality and safety, sorting for defects, and quality

measuring by non-destructive evaluation, as well. These parts show the connection between the quality and maturity, modeling quality attributes, and quality related product properties.

Chapters (16–18) present the practical side of the supply value chain of fresh produce from field to home: refrigeration and other supporting technologies, traceability in postharvest systems, and international trade.

Chapter 19 is devoted to innovative and integrated approaches to investigating postharvest stress physiology and the biological basis of fruit quality during storage. The book ends with a short summary of the future challenges in postharvest handling.

All chapters are followed by a rich list of relevant literature to postharvest handling. This book is a good tool to those working in agriculture and food industry, in academic and research institutions, and also is of value to lecturers and students of universities and high schools.

P. MERÉSZ

Adapting high hydrostatic pressure (HPP) for food processing operations

T. KOUTCHMA

Academic Press is an imprint of Elsevier, London, San Diego, Waltham, Oxford, 2014,
ISBN 978-0-12-420091-3 (print), ISBN 978-0-12-420099-9 (e-book), 67 pages

Nowadays novelty and innovation are the key issues of the development of the food industry. The engine of development is the demand of customers for fresh, additive-free, but at the same time, safe foods. Additional motivating factor is globalization, because food products can reach any point of the world as long as they have adequate shelf life. Thus, there is a need for food processes, which can increase the shelf life, while preserving the original properties of the treated product as much as possible (organoleptic properties, nutritional ingredients, valuable – often health promoting – components). The food industry can meet these expectations by the development and application of the so-called minimal processing technologies. These include procedures that primarily act as physical preserving technologies. High hydrostatic pressure treatment belongs also to these kinds of technologies, which has been used worldwide since its industrial introduction 25 years ago, and has become an acknowledged preservation process by consumers.

Due to continuous technology development and newer and newer information on the quality of the treated products, a considerable amount of knowledge has accumulated regarding the HPP technology, in which man can easily lose himself. This is the reason why I consider Tatiana Koutchma's book very useful, since it understandably reviews all important topics of the HPP technology in 67 pages. I would highlight that the book is able to provide relevant information for those who already know the technology, and at the same time for those who are new to this field. In the book chapters we are informed about the theoretical principles of the technology, mechanism of its action, the structure of the system itself, and the requirements for packaging materials of HPP-treated products. Products available in the commercial market are also described, and there are examples for the future development directions as well. Clarification of technical, legal, and economic issues is particularly important for industrial experts who think about the introduction of HPP technology. For them, chapters dealing with the machine procurement, installation considerations, cost analysis, and legislation of HPP-treated products are very useful. This book can be highly recommended for both academic experts and industrial professionals who are active in the field of research and development. Besides, it can also be used well in education.

I. DALMADI

Polyphenols in plants

Isolation, purification and extract preparation

R.R. WATSON (Ed.)

Academic Press is an imprint of Elsevier, London, UK, Waltham, San Diego, USA, 2014
ISBN 978-0-12-397934-6, 331 pages

Polyphenols are playing an important role in the secondary metabolism of plants and in chemical defence. Moreover, they have significant importance for their health promoting and disease treating effects. In this context, the study of polyphenolic compounds in plants has high importance, especially regarding the isolation, purification, and extract preparation methods.

The book entitled “Polyphenols in Plants” summarizes the novel knowledge on the key role of polyphenols in the growth, regulation, and structure of plants, the isolation and analysis techniques, or the identification and occurrence in plants. The book is divided into sixteen chapters, which are grouped around three main tasks, as mentioned above.

Part 1 (Modification by plant growth and environment) deals with the effect of cultivars and production on bioactive polyphenols, with plant polyphenol profiles as a tool for traceability and valuable support to biodiversity. The other chapters are divided into two parts. Section A “Stress and polyphenol in plants” summarizes the presence of phenolic compounds and saponins in plants grown under different irrigation regimes, and the environment effects affecting the lichen phenolics. In section B “Plant systems of polyphenol modification”, the modulation of plant endogenous antioxidant systems and the effect on the control of freshwater planktonic nuisance phototrophs are reviewed.

In Part 2 (Isolation and analysis of polyphenol structure), Section A “Analysis techniques for polyphenols” introduces the readers to the novel technique of gas chromatography - mass spectrometry analysis of polyphenols in foods; to the novel techniques towards the identification of different classes of polyphenols; and to the characterization of polyphenolic profile of citrus fruit by HPLC/PDA/ESI/MS-MS. In section B “Isolation and extraction techniques” the isolation and analysis of the non-extractable polyphenols; the resin adsorption and ion exchange for fractionating polyphenols; the characterization and bioactivity of polyphenolic compounds from flowers of Hibiscus; the effect of hydrothermal processing of vegetables on phenols and polyphenols are delineated.

Part 3 (Polyphenols identification and occurrence) summarizes the novel techniques for analysis, like improved characterization of polyphenols using liquid chromatography; characterization and quantification of polyphenols in fruit; and determination of polyphenols, flavonoids, and antioxidant capacity in seeds.

This book is a useful brochure for food scientists, technologists, and for analysts.

N. ADÁNYI

Processing and impact on antioxidants in beverages

V.R. PREEDY (Ed.)

Academic Press is an imprint of Elsevier, Oxford, UK, Waltham, USA, 2014,
ISBN 978-0-12-404738-9 (print), 352 pages

There is an increasing demand in the food science and also from the consumers to understand the physiological importance of antioxidants, their amount in the different food types, how they are reduced and enhanced by processing, what new antioxidants are being characterized, and how they are measured.

In this recently published book, entitled “Processing and impact on antioxidants in beverages”, the most important fruit and herbal beverages, as wine, beer, coffee, tea, soft drinks, and fruit juices, are overviewed in the context of the contained antioxidant components. While the recent food analysis is unthinkable without modern instrumental methods that can objectively describe the properties of the food, the different analytical methods for the determination of the antioxidant capacity are also summarized.

The book is divided into thirty chapters, which are grouped around three main tasks, namely the Composition and characterization of antioxidants; Effect of production and processing; and Selective assays for antioxidants.

Chapter 1 (Composition and characterization of antioxidants) presents the different anthocyanic compounds, the antioxidants, and the antioxidant capacity of fortified wines, beers, coffee, green tea, herbal infusions, and soft drinks.

Chapter 2 (Effect of production and processing) summarizes the effects of the different cultivation and processing steps, the impact of fermentation and aging on the antioxidants in wine; the effects of the cultivars, growing conditions, and preparation techniques on the antioxidant capacity of coffee; the influence of environmental factors, of enzymes applied during processing, and of storage on fresh, green, and black tea; the impact of processing of herbal teas, as Rooibos beverages and Maté tea; the effects of processing steps and storage on the antioxidants in Goji berry juice, Acai liquefied pulp, pomegranate juice; the influence of novel homogenization techniques, as high-pressure and ultra-high-pressure homogenization, on fruit juices, and enzymatic debittering of grapefruit juice. New products for modern consumers, like flavoured waters and soy-based drinks, are also discussed, considering the antioxidant capacity.

Chapter 3 (Selective assays for antioxidants) delineates and compares the different traditional assays and novel instrumental methods for the determination of total antioxidant capacity. Among others, the CUPRAC methods, the use of oxygen radical absorbance capacity (ORAC) and trolox equivalent antioxidant capacity (TEAC) assays, off-line HPLC integrated total antioxidant capacity measurements, and antioxidant screening of beverages using the online HPLC-DPPH assay are reviewed.

This book is a very useful guide not only for food scientists and technologists, but for nutritionists, as well.

N. ADÁNYI

Food structures, digestion and health

M. BOLAND, M. GOLDING and H. SINGH (Eds)

Academic Press is an imprint of Elsevier, Amsterdam, Boston, Heidelberg, London, New York, Oxford, Paris, San Diego, San Francisco, Singapore, Sydney, Tokyo, 2014.
ISBN 978-0-12-404610-8, 570 pages

The book has covered a broad range of approaches in different disciplines to understand the interactions between food structures and digestion and health. It is a published version of selected presentations held in 2012 at the conference on food structures, digestion, and health held by experts from around the world. The authors updated their oral publications by inserting data published in the newest papers and give outlook on fields of interest to be investigated in more detail in the future. The book is structured in four sections:

- Understanding food structures in natural and processed foods and their behaviour during physiological processing
- Impact of food structures and matrices on nutrient uptake and bioavailability
- Modeling the gastrointestinal tract
- Food developments to meet the modern challenges of human health

We can find good definitions of colloidal, nano, and mesoscopic particles, main classes of structural entities in food colloids, and different types of food emulsions. Deals with the influence of food structure and sensory perception on digestion. The food digestion process is described in detail with special concern to availability of the main nutrients.

Structure modifications caused by technological procedures and cooking are shown. The importance of protein–polysaccharide interaction and their possible role in formulation of “intelligent” nanoscale microcapsule systems for food applications are discussed.

The modelling of the gastrointestinal tract is a review of mathematical modelling work, which addresses digestion in the human stomach and also the model of gastric emptying. Exceptionally interesting is the chapter dealing with protein digestion and allergen release. Both for nutritionist and food technologists, the part of dietary energy and formulation of weight loss foods is of interest. Importance of microbiota and host interactions throughout life is short, but the referred literature gives further possibilities for those who are dealing with this special area. The book could be recommended for MSc, PhD students, nutritionists, and for food technologists designing new food products for special purposes.

A. HALÁSZ

Satiation, satiety and the control of food intake

Theory and practice

J.E. BLUNDELL and F. BELLISLE (Eds)

Woodhead Publishing Series in Food Science, Technology and Nutrition: Number 257,
Woodhead Publishing Limited, Cambridge, UK, 2013,
ISBN 978-0-85709-543-5 (print), 460 pages

The terms satiation and satiety are used to embody true mechanistic processes that influence the pattern of eating behaviour and associated sensation; and also satiation and satiety can be understood with reference to the biological process that causes people to begin eating, to maintain an episode of eating, and then to bring it to an end, to generate a suppression of the motivation to eat, and finally to preserve the inhibition of eating for a given period of time. Recently, human daily energy expenditure is far too low, but energy intake from food is very high, consequently unhealthy overconsumption and consecutive overweight and obesity are remarkable all over the world. The main question now is how human appetite can be managed to produce more healthy lives, and what we need to know to bring this about. Features of satiation and satiety and also their role in weight regulation are in question in normal and obese people, as well. In the book edited by J. BLUNDELL and F. BELLISLE, all these processes and questions are discussed in deep detail from the cultural, environmental, hedonic, biological, genetic, and metabolic factors that are able to set and/or modify satiety through food composition, solids and liquids, energy density, portion size, food components like proteins, fats and fatty acids, carbohydrates and sugars, up to food industry's challenge as functional food and legal aspects as health claims. Invited authors of the 20 chapters are acknowledged experts in the fields of physiology, psychology, medicine, gastroenterology, nutrition, genetics, and epidemiology from all over the world.

The final conclusion of the book is that satiation and satiety are in the centre of a multifaceted research regarding the control of human appetite, and there will never be a hundred percent consensus about the methodology or the outputs, but the scientific views expressed in this book should stimulate further thinking and research in order to find the best toolkit against overweight and obesity.

A. LUGASI

Wine science

Principles and applications, 4th edition

R.S. JACKSON

Academic Press, an imprint of Elsevier, London, Waltham, San Diego, 2014
ISBN 978-0-12-381469-2 (e-book), ISBN: 978-0-12-381468-5 (print), 984 pages

With its three previous best-selling editions, *Wine Science* is probably the best work ever published on the topic of grape growing and wine making in a single volume. “Nobody gets close to Jackson in broadening the science of wine without diluting it, extending this vast and diverse subject back to the origin of vines and forward to wine laws, geographic origin, terroir, sensory perception and health issues.” (Tom Stevenson, Author of *Sotheby’s Wine Encyclopedia*). As Dr. Markus Keller, professor of Washington State University says, “Jackson manages to give each topic enough depth to make his book relevant for students, practitioners, scientists - and wine lovers.”

As a researcher and university professor, the author had been working on the field of plant disease before his interest was redirected from *Botrytis* toward viticulture and oenology. After a significant teaching career at Brandon University, Canada, Dr. Jackson has resigned from his position as the chair of the Botany Department, to concentrate on writing. At present, he is a fellow of the Cool Climate Oenology and Viticulture Institute, Brock University, defining himself as a “wine writer”, and having obtained, indeed, a high international reputation on this field.

Thanks to its scientifically reliable and up-to date content and its highly readable format, the earlier editions of this book become a bible of the students and professionals all over the world. The fourth edition is an enlarged and fully updated revision of the work.

Condensed to a single volume (984 pages), *Wine Science* covers an extremely wide range of subjects. The first chapters discuss the topics of viticulture (Grape Species and Varieties, Grapevine Structure and Function, Vineyard Practice as well as Site Selection and Climate). Updated topics of this part involve precision viticulture, including GPS potentialities, organic matter in soil, and grapevine pests and disease.

The dominant part of the book focuses on oenology. Chemical composition of grapes and wine is discussed deeply but without particular details important for specialists only. Here and throughout the book the author keeps presenting where further study is needed.

The chapters Fermentation and Post-fermentation Treatments cover the whole process of winemaking, including the latest advances in the scientific basis and practical applications. Only these two chapters are based on more than 1200 references. Topics new to this edition are as follows: expanded coverage of micro-oxidation and the cool pre-fermentative maceration of red grapes, the nature of the weak fixation of aromatic compounds in wine – and the significance of their release upon bottle opening, new insights into flavour modification post bottle, and the shelf-life of wine as part of wine aging. Winery wastewater management was also included as a new subchapter.

A separate chapter deals with sparkling wines and wine specialties like botrytized sweet wines, or fortified wines. Additional chapters include wine laws and authentication, sensory assessment of wine, and the health aspects of wine consumption.

To guide further study, a list of Suggested Readings is given at the end of each chapter, in addition to a full list of References. The book contains enormous number of high quality figures, graphs, and photos, each of them reproduced with exact references to the original sources.

I. MAGYAR

Processing and impact on active components in food

V.R. PREEDY (Ed.)

Academic Press is an imprint of Elsevier, London, Waltham, San Diego, 2014.
ISBN 978-0-12-404699-3 (print), ISBN 978-0-12-4047099 (e-book), 752 pages.

“We are what we eat”– it is really true. One of the greatest tasks of food research and food technology is maintaining sustainable food production and at the same time the innovation of high quality food products with functionality to prevent life-style related diseases, such as cancer, obesity, diabetes, etc. Foods contain several bioactive components that typically are present in small quantities in foods but may provide desirable health benefits beyond basic nutrition and play important roles in the prevention, like vitamins, polyphenols, or carotenoids. Some components have significant effect on the sensorial properties of foods, typically fruit and vegetables, and these components can be influenced by postharvest processing or storage as well. Other foods have a main role in nutrition due to their macromolecular composition, like meats, cereals, pulses, or dairy products. In the course of processing and storage some new antinutrients may form or the concentration of these harmful substances changes.

The quality and the quantity of these bioactive components in food can vary under the various food processing technologies and the parameters of these techniques are significant in the respect of bioactivity. Food processing is defined as including all treatment of foodstuffs from harvest to consumption, subsequently more than 95% of our food may be considered as processed. These facts prove that the investigation of the effect of food processing technologies is topical and important.

This book, combining scientific access with practical usefulness, contains new information on the effect of processing on a variety of bioactive components in different foods.

“Processing and impact on active components in food” focuses on these food components that have bioactive effect in the human body. There are 10 main sections: Vegetables and root crops; Fruit; Dairy and eggs; Oils and spreads; Meats; Grain, beans, pulses, nuts and seeds; Marine foods; Beverages; Herbs and spices and miscellaneous vegetation; Confectionary and other food items. All the sections involve several chapters concerning the given food items. All the chapters have a unique structure that makes this book usable: a short list summarizes the main focus points and the knowledge concerning the given food. After a short introduction, the chapter can be divided into three parts: How composition is altered; Analytical techniques; and Summary points.

The book serves as a tool for food scientists, food chemists, nutritionists, dieticians, engineers, and students as well. I think this book is a good and synthetic work that will inspire food scientists to produce higher quality and healthier foods by optimizing and modifying existing conventional processing.

R. TÖMÖSKÖZI-FARKAS