

SECOND EDITION

Advanced Technologies for Meat Processing



Edited by

Fidel Toldrá • Leo M. L. Nollet



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Advanced Technologies For Meat Processing Food Science And Technology

Y. H. Hui



Advanced Technologies For Meat Processing Food Science And Technology:

Advanced Technologies for Meat Processing Fidel Toldrá, Leo M. L. Nollet, 2017-10-10 As with the first edition the main goal of Advanced Technologies for Meat Processing is to provide the reader with recent developments in new advanced technologies for the full meat processing chain This book is written by distinguished international contributors with recognized expertise and excellent reputations and brings together all the advances in a wide and varied number of technologies that are applied in different stages of meat processing This second edition contains 21 chapters combining updated and revised versions of several chapters with entirely new chapters that deal with new online monitoring techniques like hyperspectral imaging and Raman spectroscopy the use of nanotechnology for sensor devices or new packaging materials and the application of omics technologies like nutrigenomics and proteomics for meat quality and nutrition The book starts with the control and traceability of genetically modified farm animals followed by four chapters reporting the use of online non destructive monitoring techniques like hyperspectral imaging and Raman spectroscopy real time PCR for pathogens detection and nanotechnology based sensors Then five chapters describe different advanced technologies for meat decontamination such as irradiation hydrostatic and hydrodynamic pressure processing other non thermal technologies and the reduction in contaminants generation Nutrigenomics in animal nutrition and production is the object of a chapter that is followed by five chapters dealing with nutritional related issues like bioactive peptides functional meats fat and salt reduction processing of nitrite free products and the use of proteomics for the improved processing of dry cured meats The last four chapters are reporting the latest developments in bacteriocins against meat borne pathogens the functionality of bacterial starters modified atmosphere packaging and the use of new nanotechnology based materials for intelligent and edible packaging

Advanced Technologies For Meat Processing Leo M.L. Nollet, Fidel Toldra, 2006-03-21 In recent years the meat industry has incorporated important technological advances that to this point have not been addressed in a single source Comprehensive and authoritative Advanced Technologies for Meat Processing presents developments concerning the quality analysis and processing of meat and meat products Co Edited by Fidel Toldra Recipient of the 2010 Distinguished Research Award from the American Meat Science Association Featuring contributions from a panel of international experts the book details technologies used in the meat processing chain It describes important processing methodologies such as gene technology automation irradiation hot boning high pressure vacuum salting enzymes starters and bacteriocins The book begins by exploring various production systems that include the use of modern biotechnology automation in slaughterhouses and rapid non destructive on line detection systems It proceeds to describe different new technologies such as decontamination high pressure processing and fat reduction The book then examines functional meat compounds such as peptides and antioxidants and the processing of nitrate free products and dry cured meat products It also discusses bacteriocins that fight against meat borne pathogens and the latest developments in bacterial starters for improved flavor in

fermented meats It concludes with a discussion of packaging systems of the final products **Handbook of Meat**

Processing Fidel Toldrá,2010-01-21 This handbook comprehensively presents the current status of the manufacturing of the most important meat products Editor and renowned meat expert Fidel Toldr heads an international collection of meat scientists who have contributed to this essential reference book Coverage is divided into three parts Part one Technologies begins with discussions on meat chemistry biochemistry and quality and then provides background information on main technologies involved in the processing of meat such as freezing cooking smoking fermentation emulsification drying and curing Also included are key chapters on packaging spoilage prevention and plant cleaning and sanitation Part two Products is focused on the description of the manufacture of the most important products including cooked and dry cured hams cooked and fermented sausages bacon canned meat pat restructured meats and functional meat products Each chapter addresses raw materials ingredients and additives processing technology main types of products production data particular characteristics and sensory aspects and future trends Part three Controls offers current approaches for the control of the quality and safety of manufactured meat products with coverage including sensory evaluation chemical and biological hazards including GMOs HACCP and quality assurance This book is an invaluable resource for all meat scientists meat processors R D professionals and product developers Key features Unparalleled international expertise of editor and contributing authors Addresses the state of the art of manufacturing the most important meat products Special focus on approaches to control the safety and quality of processed meats Extensive coverage of production technologies sanitation packaging and sensory evaluation Emerging Technologies in Meat Processing Enda J. Cummins,James G.

Lyng,2016-11-18 Meat is a global product which is traded between regions countries and continents The onus is on producers manufacturers transporters and retailers to ensure that an ever demanding consumer receives a top quality product that is free from contamination With such a dynamic product and market place new innovative ways to process package and assess meat products are being developed With ever increasing competition and tighter cost margins industry has shown willingness to engage in seeking novel innovative ways of processing packaging and assessing meat products while maintaining quality and safety attributes This book provides a comprehensive overview on the application of novel processing techniques It represents a standard reference book on novel processing packaging and assessment methods of meat and meat products It is part of the IFST Advances in Food Science book series Handbook of Processed Meats and Poultry Analysis Leo M.L. Nollet,Fidel Toldra,2008-11-12 Muscle foods include a wide range of processed meats and poultry and therefore represent an important percentage of total worldwide food consumption The sheer volume of products and the variety of processes available makes analyzing them problematic Co Edited by Fidel Toldra Recipient of the 2010

Distinguished Research Award from the American **Handbook of Meat and Meat Processing, Second Edition** Y. H. Hui,2012-01-11 Retitled to reflect expansion of coverage from the first edition Handbook of Meat and Meat Processing

Second Edition contains a complete update of materials and nearly twice the number of chapters Divided into seven parts the book covers the entire range of issues related to meat and meat processing from nutrients to techniques for preservation and extending shelf life Topics discussed include An overview of the meat processing industry The basic science of meat with chapters on muscle biology meat consumption and chemistry Meat attributes and characteristics including color flavor quality assessment analysis texture and control of microbial contamination The primary processing of meat including slaughter carcass evaluation and kosher laws Principles and applications in the secondary processing of meat including breasting curing fermenting smoking and marinating The manufacture of processed meat products such as sausage and ham The safety of meat products and meat workers including sanitation issues and hazard analysis Drawn from the combined efforts of nearly 100 experts from 16 countries the book has been carefully vetted to ensure technical accuracy for each topic This definitive guide to meat and meat products it is a critical tool for all food industry professionals and regulatory personnel

Handbook of Muscle Foods Analysis Leo M.L. Nollet, Fidel Toldra, 2008-11-10 In today's nutrition conscious society there is a growing awareness among meat scientists and consumers about the importance of the essential amino acids vitamins and minerals found in muscle foods **Handbook of Muscle Foods Analysis** provides a comprehensive overview and description of the analytical techniques and application methodologies for t

Handbook of Meat and Meat Processing Y. H. Hui, 2012-01-11 Retitled to reflect expansion of coverage from the first edition **Handbook of Meat and Meat Processing** Second Edition contains a complete update of materials and nearly twice the number of chapters Divided into seven parts the book covers the entire range of issues related to meat and meat processing from nutrients to techniques for preservati

Handbook of Food Products Manufacturing Nirmal Sinha, 2007-04-23 The **Handbook of Food Products Manufacturing** is a definitive master reference providing an overview of food manufacturing in general and then covering the processing and manufacturing of more than 100 of the most common food products With editors and contributors from 24 countries in North America Europe and Asia this guide provides international expertise and a truly global perspective on food manufacturing

Handbook of Analysis of Active Compounds in Functional Foods Leo M.L. Nollet, Fidel Toldra, 2012-01-18 Functional foods offer specific benefits that enhance life and promote longevity and the active compounds responsible for these favorable effects can be analyzed through a range of techniques **Handbook of Analysis of Active Compounds in Functional Foods** presents a full overview of the analytical tools available for the analysis of active ingredients in these products Nearly 100 experts from all over the world explore an array of methodologies for investigating and evaluating various substances including Amino acids peptides and proteins along with glutamine taurine glutathione carnitine and creatine Water and fat soluble vitamins and probiotics Terpenes including hydrocarbon carotenoids and oxycarotenoids xanthophylls Phenolic compounds such as flavonoids flavan 3 ols proanthocyanidins stilbenes resveratrol anthocyanins isoflavones tannins ellagic acid and chlorogenic acids Fibers and polysaccharides including chitosan insoluble dietary fiber

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Advanced Technologies for Physical Properties Measurement of Food and its Processing Hao Lin, Lei Zhang, Quansheng Chen, Man Zhou, Leiqing Pan, Qin Ouyang, Solomon Yao-Say Selorm Adade, Yanyu Li, 2025-02-11 This book provides a comprehensive overview of the physical properties of foods and the cutting edge technologies employed to measure them Delving into key topics such as optical thermal acoustic rheological and textural properties it provides a detailed examination of principles measurement methods and applications in food quality evaluation While it discusses advanced technologies such as near infrared spectroscopy computer vision spectral imaging acoustic resonance analysis electronic noses tongues eyes and multi sensor data fusion in detail the book also introduces intelligent equipment design and real time quality monitoring systems for the food industry including emerging technologies like 4D printing and terahertz technology The book also addresses critical questions about the application of these technologies in real world scenarios making it a must read for those seeking to understand and apply the latest advancements in food science This book is an invaluable resource for undergraduate and graduate students researchers and professionals in food science and engineering It helps readers understand the principles of various non destructive food quality measurement techniques and applies them to in situ evaluation and in field monitoring It also serves as both a textbook and a reference guide enabling readers to understand and apply advanced measurement and processing techniques for in situ evaluation and in field monitoring By providing a thorough understanding of the principles and applications of food physical properties this book ensures that its audience remains at the forefront of technological advancements in the field The book contains several chapters originally written in the Chinese language The translation was done with the help of artificial intelligence A subsequent human revision was done primarily in terms of content

Energy Efficiency and Management in Food Processing Facilities Lijun Wang, 2008-12-04 Energy efficiency environmental protection and processing waste management continue to attract increased attention in the food processing industry As with other industrial sectors reducing costs while also reducing environmental impact and improving overall sustainability is becoming an important part of the business process Providing practical

Natural Pesticides and Allelochemicals Mozaniel Santana de Oliveira, Leo M.L. Nollert, Ravendra Kumar, Eloisa Helena de Aguiar Andrade, Antônio Pedro da Silva Souza Filho, 2025-05-01 Natural pesticides and allelochemicals are used for protection against invasive plants but when released

into the environment they can have both positive and negative effects on plants This book discusses a holistic and sustainable approach that balances effective pest management with minimizing environmental impacts promoting biodiversity and ensuring food safety and quality It brings together proposals to help improve the quality of management and production of healthier foods utilizing compounds of natural origin The authors provide a broad and diverse picture of the applications of terpenoids in plant safety and the possibilities for innovative biotechnological approaches for their extraction Features Presents a comprehensive resource on recent advances in natural pesticides and new allelochemicals for crop protection Discusses natural herbicides sustainable agriculture and bioeconomic processes Explains the challenges of synthetic pesticides and their costs to human and environmental health Covers different aspects of natural pesticides such as their sources development application and toxicity Helps professionals and scholars involved in chemical technology biotechnology and agriculture gain a thorough understanding of crop protection practices tailored to specific crop types regional conditions and pest pressure This is a great reference for researchers academics students and professionals involved with or interested in agriculture and the environment pest control environmental chemistry biology food science and forest engineering

Handbook of Fermented Meat and Poultry Fidel Toldrá,Iciar Astiasaran,Joseph Sebranek,Regine Talon,2014-12-31 Fermented meat products have been consumed for centuries in many different parts of the world and constitute one of the most important groups of food Bacterial cultures are used in their manufacture to preserve the meat and confer particular textures and sensory attributes Examples of fermented meats include salami chorizo pepperoni and saucisson This fully revised and expanded reference book on meat fermentation presents all the principle fermented meat products and the processing technologies currently used in their manufacture The 54 chapters of this substantial book are grouped into the following sections Meat fermentation worldwide overview production and principles Raw materials Microbiology and starter cultures for meat fermentation Sensory attributes Product categories general considerations Semidry fermented sausages Dry fermented sausages Other fermented meats and poultry Ripened meat products Biological and chemical safety of fermented meat products Processing sanitation and quality assurance There are five new chapters in the second edition that address the following topics Smoking and new smoke flavourings Probiotics Methodologies for the study of the microbial ecology in fermented sausages Low sodium in meat products and Asian sausages *Handbook of Fermented Meat and Poultry Second Edition* provides readers with a full overview of meat fermentation the role of microorganisms naturally present and or added as starter cultures safety aspects and an account of the main chemical biochemical physical and microbiological changes that occur in processing and how they affect final quality Finally readers will find the main types of worldwide fermented meat products typically produced in different areas with the description of their main characteristics

Handbook of Dairy Foods Analysis Leo M.L. Nollet,Fidel Toldra,2009-11-04 Dairy foods account for a large portion of the Western diet but due to the potential diversity of their sources this food group often poses a challenge for food scientists and

their research efforts Bringing together the foremost minds in dairy research Handbook of Dairy Foods Analysis compiles the top dairy analysis techniques and methodologies from around the world into one well organized volume Co Edited by Fidel Toldra Recipient of the 2010 Distinguished Research Award from the American Meat Science Association Exceptionally comprehensive both in its detailing of methods and the range of products covered this handbook includes tools for analyzing chemical and biochemical compounds and also bioactive peptides prebiotics and probiotics It describes noninvasive chemical and physical sensors and starter cultures used in quality control Covers the Gamut of Dairy Analysis Techniques The book discusses current methods for the detection of microorganisms allergens and other adulterations including those of environmental origin or introduced during processing Other methodologies used to evaluate color texture and flavor are also discussed Written by an International Panel of Distinguished Contributors Under the editorial guidance of renowned authorities Leo M L Nollet and Fidel Toldra this handbook is one of the few references that is completely devoted to dairy food analysis a extremely valuable reference for those in the dairy research processing and manufacturing industries Global Regulations of Medicinal, Pharmaceutical, and Food Products Faraat Ali,Leo M.L. Nollet,2024-07-05 Medicine regulation demands the application of sound medical scientific and technical knowledge and skills and operates within a legal framework Regulatory functions involve interactions with various stakeholders e g manufacturers traders consumers health professionals researchers and governments whose economic social and political motives may differ making implementation of regulation both politically and technically challenging This book discusses regulatory landscape globally and the current global regulatory scenario of medicinal products and food products comprehensively Features Discusses how recent developments of medicinal and food products have opened up innovative solutions for many of the current challenges societies face presently Explores the manifold variations between the regulatory bodies in different countries that have not previously been collected to this extent Presents details on the substantial progress in analytical methodologies for labelling applications and the creation of appropriate test criteria for pharmaceuticals and their safety analysis Reviews how more worldwide collaboration and cooperation in the regulatory area is still required **Handbook of Food Science, Technology, and Engineering** Yiu H. Hui,2006 Food Biochemistry and Food Processing Benjamin K. Simpson,Leo M. L. Nollet,Fidel Toldrá,Soottawat Benjakul,Gopinadhan Paliyath,Y. H. Hui,2012-04-11 The biochemistry of food is the foundation on which the research and development advances in food biotechnology are built In Food Biochemistry and Food Processing Second Edition the editors have brought together more than fifty acclaimed academicians and industry professionals from around the world to create this fully revised and updated edition This book is an indispensable reference and text on food biochemistry and the ever increasing developments in the biotechnology of food processing Beginning with sections on the essential principles of food biochemistry enzymology and food processing the book then takes the reader on commodity by commodity discussions of biochemistry of raw materials and product processing Chapters in this second edition have been

revised to include safety considerations and the chemical changes induced by processing in the biomolecules of the selected foodstuffs This edition also includes a new section on health and functional foods as well as ten new chapters including those on thermally and minimally processed foods separation technology in food processing and food allergens Food Biochemistry and Food Processing second edition fully develops and explains the biochemical aspects of food processing and brings together timely and relevant topics in food science and technology in one package This book is an invaluable reference tool for professional food scientists researchers and technologists in the food industry as well as faculty and students in food science food technology and food engineering programs The Editor Dr Benjamin K Simpson Department of Food Science and Agricultural Chemistry McGill University Quebec Canada Associate Editors Professor Leo Nollet Department of Applied Engineering Sciences Hogeschool Ghent Belgium Professor Fidel Toldr Instituto de Agroqu mica y Tecnologia de Alimentos CSIC Valencia Spain Professor Soottawat Benjakul Department of Food Technology Prince of Songkla University Songkhla Thailand Professor Gopinadhan Paliyath Department of Plant Agriculture University of Guelph Ontario Canada Dr Y H Hui Consultant to the Food Industry West Sacramento California USA

Radio-Frequency Heating in Food Processing

George B. Awuah, Hosahalli S. Ramaswamy, Juming Tang, 2014-12-04 Radio Frequency Heating in Food Processing Principles and Applications covers the fundamentals of radio frequency RF heating and the use of RF heating technologies in modern food processing preservation and related industries Focusing on industrial and lab scale applications where RF heating has been employed successfully or reported to have potential benefits over conventional heating options this state of the art reference Explains the similarities differences advantages and limitations of RF and microwave heating as applied to agricultural products Describes fiber optics temperature sensors and their utility in monitoring temperature during RF and microwave heating Discusses the dielectric and thermo physical properties of agricultural products amenable to RF and microwave heating presenting measurement techniques mathematical concepts and computer simulation models Provides practical perspectives on industrial RF units used in manufacturing food products addressing free running oscillators and 50 designs for RF heaters and applicators Uses finite element formulations to determine design parameters including resonant modes circuit impedance and electric field distribution in RF applicators Examines RF heating effects on microorganisms enzymes and food quality attributes for products such as poultry beef pork eggs fish milk fruits vegetables and seafood Explores RF heating applications beyond food processing such as agricultural product deinfestation waste treatment counterfeit prevention package tracking and transportation of food from farm to table Radio Frequency Heating in Food Processing Principles and Applications supplies an in depth overview of the fundamental science and engineering principles governing RF applications as well as a solid understanding of industrial RF unit design options challenges and opportunities for development

Handbook of Meat, Poultry and Seafood Quality Leo M. L. Nollet, Terri Boylston, Feng Chen, Patti Coggins, Grethe Hydlig, L. H. McKee, Chris Kerth, 2012-05-29 A great need exists for valuable information on factors affecting

the quality of animal related products The second edition of Handbook of Meat Poultry and Seafood Quality focuses exclusively on quality aspects of products of animal origin in depth discussions and recent developments in beef pork poultry and seafood quality updated sensory evaluation of different meat products revised microbiological aspects of different meat products Also included are new chapters on packaging new chapters and discussion of fresh and frozen products new aspects of shelf life and recent developments in research of meat tainting This second edition is a single source for up to date and key information on all aspects of quality parameters of muscle foods is a must have The reader will have at hand in one focused volume covering key information on muscle foods quality

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Advanced Technologies For Meat Processing Food Science And Technology Introduction

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