

ANIMAL PRODUCTS TECHNOLOGY

About the Book

Animal Products includes meat, milk, poultry, egg, fish etc. Animal Products Technology deals with the scientific harvesting, handling, processing, preservation, quality assurance, food safety and marketing of livestock products. It is a discipline in which the knowledge of Chemistry, Biochemistry, Microbiology and Engineering is applied. Animal proteins are essential and inevitable input for life sustenance of mankind. With the heavy economic burden towards energy saving, improving socio-economic status and increasing number of working couples, the processed food industry is growing very fast and processed animal foods find their way in the day-to-day menu of the family. This advance reference book "Animal Products Technology" deals with the current topics of interest related to Processing, Preservation, Packaging, Quality Assurance and Food Safety of Animal Products. Altogether the book covers the advance aspects of Animal Products Technology with contribution from eminent teachers, scientists and professionals recognized both nationally and internationally. It is a reference book which can be very useful for the livestock products technologists including meat and milk products technologist, food technologists and post-graduate students in Veterinary Science, Animal Science, Food Science and Nutrition, Home Science and Food Science and Technology. The Animal Products Technology will offer avenues for the integration of different kinds of knowledge base for the betterment of society. It is hoped that this book will be of immense value to all who are concern with foods of animal origin. In particular, this reference book will provide wealth of information and excellent reference material to teachers, researchers, postgraduate students of Livestock Products Technology/Animal Products Technology.

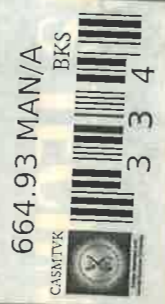
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4735/22, 2nd Floor Prakash Deep Building (Near PNB),
Ansari Road, Darya Ganj, New Delhi-110002
Phone: +91-11-43240200-15 (15 lines)
Fax: +91-11-43240215
E-mail: studiumpress@gmail.com
Website: <http://www.studiumpress.in>



Mandal
Biswas

ANIMAL PRODUCTS



TECHNOLOGY



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Prabhat Kumar Mandal
Ashim Kumar Biswas



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Editors

*Prabhat Kumar Mandal
Ashim Kumar Biswas*

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and by adding functional compounds in animal feeds to improve carcass composition and meat quality, incorporating functional ingredients into meat products during processing, reduction of specific unhealthy compounds, their generation during processing such as fermentation, curing and aging. *Chapter 22 'Dairy ingredients in meat products'* highlights role of dairy ingredients in meat products, function and use of whey proteins in meat products, use of caseinates, NFDM in meat products, use of dairy ingredients in restructured and reformed meats, miscellaneous dairy ingredients in meat products, benefits of using dairy ingredients in meats. *Chapter 23 'Nanotechnology for animal products'* is about potential of nanotechnology in the food industry for providing safer and more nutritious foods, nanotechnology in food packaging and efficient production, potential of nanotechnology in meat industry, uncertainties about the technology and its applications. *Chapter 24 'Natural preservation of meat'* explores the use of some natural antioxidants and antimicrobials like clove, *Ceratonia siliqua* essential oil, pomegranate extract, mint and curry leaves, celery powder, leafy green vegetable extracts, rosemary extract, citrus extracts, propolis etc. that can be used in meat. Detection of residues at very low levels, sample preparation by protein precipitation combined with ultra-filtration and quantitation, screening assays for licensed veterinary drugs, analysis of antibiotic residues using inhibitory assays, regulatory aspects and residue surveillance programs are reviewed in *Chapter 25 'Detection of drug residues in animal products'*.

Chapter 26 'Production of designer eggs' deals with the effect of consumption of eggs on blood cholesterol and heart disease, health benefits beyond basic nutrition, modification of the nutritional composition of eggs and reduction of cholesterol by feeding special diets. Dietary manipulation to increase the amount PUFAs directly or indirectly, enriching the level of antioxidant such as vitamin E in the egg. *Chapter 27 'Application of proteomics in meat science'* describes use of proteomics on skeletal muscle study and meat quality, proteome analyses in detection of changes in protein profiles during myogenesis, for biological markers of meat quality, particularly tenderness and of post-mortem muscle metabolism, effects of stress on meat quality traits or meat processing ability, recent technical developments in 2DE to MS technology. *Chapter 28 'Animal by-products utilization'* presents scope for processing and utilization of major by-products from slaughter and fallen animals. This includes processing and utilization of blood, bones, hides and skin, gut and intestine, glandular and other by-products.

Altogether the book covers the advance aspects of Animal Products Technology with contribution from eminent teachers, scientists and professionals recognized both nationally and internationally. It is assumed that this reference book will be of great value to the researchers, academicians, entrepreneurs, meat industry personnel, public health specialists and post graduate students related to production, processing, preservation, food safety & quality control and marketing of various animal products.

Editors

Table of Contents

<i>List of Contributors</i>	v
<i>Preface</i>	xi
	1
1. Animal Products and Human Health <i>U.K. Pal and P.K. Mandal</i>	18
2. Animal Products Processing and Marketing <i>P.K. Mandal and U.K. Pal</i>	33
3. Packaging Materials for Animal Products <i>A.K. Biswas and P.K. Mandal</i>	51
4. Milk Pasteurization and Equipments <i>Anant V. Dhotre</i>	79
5. Technology of Comminuted Meat Products <i>M. Muthukumar and I. Prince Devadasan</i>	102
6. Quality Assurance of Meat <i>P.K. Mandal and U.K. Pal</i>	133
7. Processing of Mozzarella Cheese <i>Atanu Jana</i>	152
8. Biotechnology for Animal Products <i>P.K. Mandal and A.P. Najeeb</i>	174
9. HACCP for Clean Meat Production <i>S.G. Bhandare, V.S. Wasker and S.K. Nagappa</i>	185
10. Bio-Preservatives for Animal Products <i>A.K. Biswas, P. Singh and P.K. Mandal</i>	203
11. Functional Starters for Dairy Products <i>S. Mandal, S. Hati and K. Khamrui</i>	216
12. Novel Processing of Animal Products <i>A.K. Biswas and P.K. Mandal</i>	254
13. Enrobed Meat Products <i>Chidanandaiah and R.C. Keshri</i>	

14. Natural Antioxidants for Muscle Foods <i>A.P. Najeeb, P.K. Mandal and K.P. Mini</i>	270
15. Processing and Storage of Meat Soup <i>Chidanandaiah and M.K. Sanyal</i>	289
16. Pesticides and Mycotoxins in Animal Products <i>A.K. Biswas, P.K. Mandal and K.P. Mini</i>	305
17. Functional Dairy Beverages <i>S. Hati, S. Mandal and S. Vij</i>	344
18. Modern Packaging of Meat and Meat Products <i>A.K. Biswas and P.K. Mandal</i>	354
19. Low-fat Meat Products <i>S.K. Das and P.K. Mandal</i>	371
20. High Pressure Processing of Meat <i>A.K. Biswas, Gauri Jairath and P.K. Mandal</i>	387
21. Functional Meat and Meat Products <i>Sunil Kumar, Z.F. Bhat, Pavan Kumar and P.K. Mandal</i>	404
22. Dairy Ingredients in Meat Products <i>P.K. Mandal</i>	456
23. Nanotechnology for Animal Products <i>A.K. Biswas, Gauri J. and P.K. Mandal</i>	472
24. Natural Preservation of Meat <i>K.S. Bhuvana, P.K. Mandal and K.P. Mini</i>	490
25. Detection of Drug Residues in Animal Products <i>A.K. Biswas, P.K. Mandal and K.P. Mini</i>	510
26. Production of Designer Eggs <i>Z.F. Bhat, Sunil Kumar and Pavan Kumar</i>	543
27. Application of Proteomics in Meat Science <i>A.K. Biswas and P.K. Mandal</i>	569
28. Animal By-Products Utilization <i>P.K. Mandal</i>	586
Subject Index	609

1

Animal Products and Human Health

UTTAM KUMAR PAL AND PRABHAT KUMAR MANDAL

ABSTRACT

Animal products play an important role in planning the meal for a balanced diet. Meat supplies many important nutrients viz. high quality protein, most of the B-vitamins and vitamins A, D, E and K. Lean red meat is a vital source of highly bioavailable iron, zinc and many more micronutrients. Recently, many bioactive substances have been detected in various meats in different concentrations. These compounds have been shown to have antioxidative, antiatherosclerotic, antihypertensive and anticarcinogenic activities which make the lean red meat to be considered as a functional food. Besides the saturated fatty acids, meat supplies substantial quantity of monounsaturated fatty acids (MUFA) and good amount of polyunsaturated fatty acids (PUFA) which are considered to be healthy. Various studies have proved that meat alone cannot be specifically identified as an independent risk factor for coronary heart diseases (CHD) and colorectal cancer as these diseases are multifactorial in origin. Milk and dairy products supply high quality proteins, bone-forming minerals and health giving vitamins and furnish energy-giving lactose and milk fat with certain essential fatty acids, in an easily digestible and assimilable form. The time has come to change consumer's attitude about eggs to overall health and as a risk factor in heart disease. Scientists, medical professionals and communicators should change their attitudes and thinking about eggs. Furthermore, it is time that eggs be recognized as a nutritious food which also have functional health benefits beyond basic nutrition. In this article an attempt has been made to examine the role of animal products viz. meat, poultry, eggs, milk and their products as component of a balanced diet and their implications on human health in the light of existing dietary recommendations reviewing the available literature.

1. INTRODUCTION

Foods are generally grouped in to five major categories viz. cereals and breads, protein foods, greens, vegetables and fruits and oil, fats and sugars. In order to