



Textbook on

# Meat, Poultry and Fish Technology

The book entitled "Textbook on Meat, Poultry and Fish Technology" contains Part I Fresh Meat technology Chapter 1-11 containing History and development; Structure and chemistry of animal tissues; Postmortem changes- rigor mortis; Effect of transport on meat quality; PSE and DFD in meat quality; Composition, essential nutrients in meat and poultry meat; General quality characterization; Meat microbiology; Factors affecting; Tenderization; and Chemical residues. Part II Poultry and Fish Technology Chapter 12-30 contains History and development; Anti-nutrients and antibiotics effect on egg and meat; Quality identification and quality maintenance of poultry meat; Structure, chemical, nutritional and microbiological quality of poultry meat; Nutritive value, preservation and packaging techniques; Quality identification and factors influencing the quality; Pre-slaughter care, transportation, resting, fasting, ante-mortem examination; Methods of slaughter and slaughtering procedure-postmortem inspection; Yield and loss in poultry carcass component parts; Structure, nutritive value, compositional chemistry, microbiology and functional properties of eggs; Low cholesterol-cum-designer eggs; GMP, HACCP, Codex regulation for food products safety, WTO/GOI regulations; National and international regulations, Utilization of fish processing waste; Fishery resources, fishes, transportation, processing, preservation, grading standards; Post-processing value added meat for export-integration, poultry and fish processing and marketing; Storage, packaging, preservation methods; Cooking and preparation of further processed poultry and fish products.

This is a dependable text book not only for the students of all Veterinary Colleges of India, but also it serves as a helpful guide to the teaching faculty who are engaged in teaching in the area of Livestock Products Technology/Animal Products Technology/Meat Science and Technology/Food Science and Technology.



Dr. Jhari Sahoo, obtained his M.V. Sc. (APT) from HAU, Hisar and Ph.D. (LPT) from IVRI, Izatnagar. He has about 32 years of experience as teaching faculty. He served for a long period of 21 years at Department of Animal Products technology, CCSHAU, Hisar in the capacity of Assistant professor, Associate professor and Professor. Later on he joined to the post of professor on dt.22.12.2003 at PAU, Ludhiana and remained Professor-cum-Head from dt.06.01.2004 to dt.12.08.2012 in the Department of Livestock Products Technology at PAU/GADVASU.



Dr. Manish Kumar Chatli, has more than 16 year experience in industry, teaching, research and extension in the area of Livestock Products Technology. He worked as Dairy Manager, Bombay and Assistant Professor at CSK HPKV, Palampur. He has joined PAU as Associate Professor in 2003 and subsequently promoted to Professor in 2009 and Head position in 2012.



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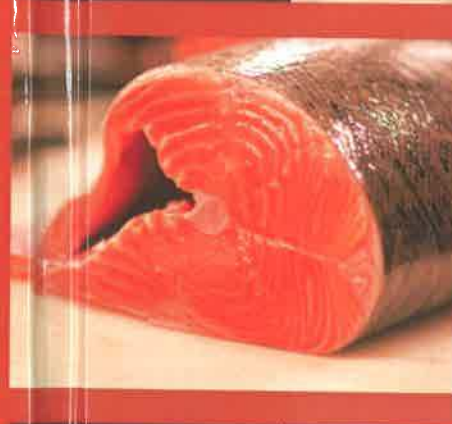
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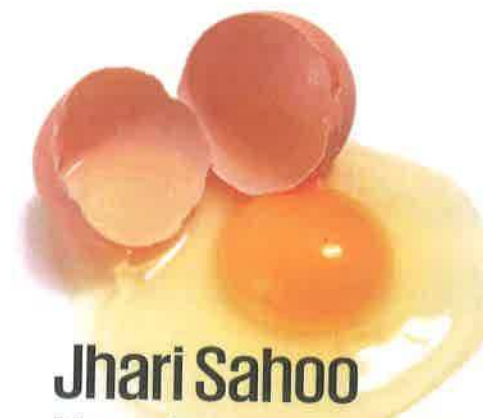
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Jhari Sahoo  
Manish Kumar Chatli



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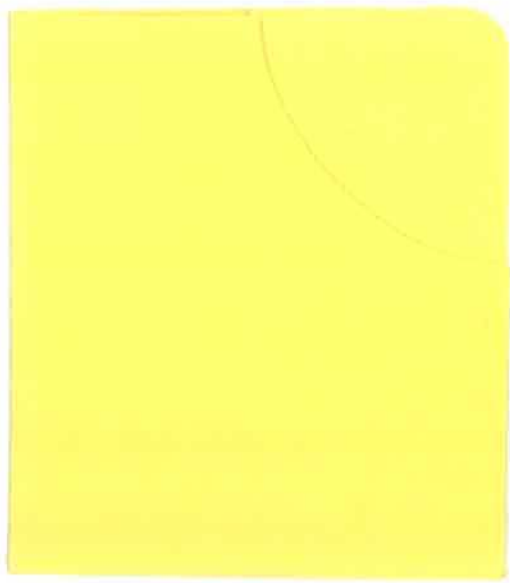


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## ABOUT THE BOOK

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## ABOUT THE AUTHORS



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# *Textbook on* **Meat, Poultry and Fish Technology**

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## Preface

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The Expert Committee of the Indian Council of Medical Research (ICMR) has recommended 60 g of protein per day with net protein utilization (NPU) of 65. A minimum requirement of animal protein would be targeted at 20 g per person per day compared to the present availability of 10.8 g and the world average of 25 g. Demand for meat and poultry products is also expected to grow in tune with the population growth, rising incomes and increasing urbanization. In view of this, supplying wholesome, safe and acceptable meat foods to the ever increasing non-vegetarian consumers must be ensured.

There are 30 export-oriented modern abattoirs and 77 meat processing plants registered with APEDA exporting raw meat (chilled and frozen) to about 56 countries. The present production of meat is estimated at 6.27 million tons in 2010 (FAO, 2012), which is 2.21 per cent of the world's meat production. The contribution of meat from buffalo is about 23.33 per cent, while cattle contributes about 17.34 per cent, sheep 4.61 per cent, goat 9.36 per cent, pig 5.31 per cent, poultry 36.68 per cent and other species 3.37 per cent. The meat production has increased from 764,000 tonnes in 1970-71 to 6.27 million tons in 2010. The compounded average growth rate (CAGR) during the last two decades works out to be 4.5 per cent. It is noticed that about 10.6 per cent cattle, 10.6 per cent buffaloes, 24.1 per cent sheep, 58.7 per cent goats, 95.0 per cent pigs and 190.0 per cent chicken are slaughtered each year. The value of meat and by-products is Rs 79,889 crore including skin and hides, while the export value of meat and meat products work outs to be more than Rs 6,000 crore in the year 2009-10. The contribution of buffalo meat accounts for more than 75 per cent of total exports/foreign earnings. The poultry has gaining the widely acceptance by consumers and growing 10-15 per cent annually. The chicken meat contributes about 37 per cent

meat to total production and number one contributors. The growth is expected more in near future. This might be due to popularity, price, easy availability, no religious taboos and much more characteristics in poultry.

There is a changing trend in consumer priorities. Today, the consumer looks out for the Safety of the products, Animal Welfare, Ethics of the trade, Reliability and Zero Risk. With a view to this, The Food Safety and Standards Authority of India (FSSAI) has been established under Food Safety and Standards Act, 2006 which consolidates various acts and orders that have hitherto handled food related issues in various Ministries and Departments. FSSAI has been created for laying down science based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import to ensure availability of safe and wholesome food for human consumption.

The conditions of domestic meat market in India is very precarious with acute problems of environmental pollution, animal welfare issues, lack of ante mortem and postmortem meat inspection, unhygienic slaughter practices, unhygienic transport of dressed carcasses from slaughter houses to the retail shops and very unhygienic substandard retail meat shops.

It is the need of the hour to awake and aware the all concerned persons including students and faculty to improve the aforementioned prevalent situations of the country. Prevention of postharvest loss of meat in terms of both quantity and quality is indirectly increasing of meat production. This is possible only if the persons involved directly / or indirectly should have knowledge about the meat production, processing, preservation, packaging and marketing safely of meat and poultry products till it reaches the consumer table. The students and teachers are at foundation level for this. Keeping in view the above matter, very sincere efforts were made by the authors to publish this book "**Textbook on Meat, Poultry and Fish Technology**". The first author of the book Dr. Jhari Sahoo has been associated with industry, teaching, research, training and quality control in the field of meat and poultry products technology for more than 32 years, who has been aware of their problems and needs. He also helped Secretary, Veterinary Council of India while developing course curriculum both in the old and new VCI Syllabus pertaining to the subject discipline of Livestock Products Technology. This book has incorporated the Veterinary Council of India(VCI) New Syllabus 2008 Course No. LPT-321 Course Title: Meat Science prescribed for B.V. Sc. and A.H. degree programme and BSMA (ICAR) syllabus for Course No. LPT 601 Course Title: Fresh meat technology and LPT 603 title: Poultry and fish products technology. This book can be used as a dependable primary textbook for B.V. Sc. and A.H., M.V.Sc. and Ph.D. students of different veterinary colleges of the country. Besides, this book is of immense help to the teaching faculty of State Agricultural Universities(SAUs) and Veterinary Universities of the country who are engaged in teaching in the area of Livestock Products Technology / Animal Products Technology / Meat Science and Technology / Food Science and Technology.

I am thankful to the co-author Dr. Manish Kumar Chatli for his contribution in some chapters of the book.

I am dedicating this book to my darling wife Pravasini, for her constant support, cooperation and encouragement in every step while writing the book.

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