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BOOK REVIEW

Chemical hazards in foods of animal origin

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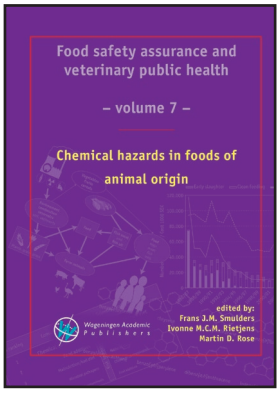

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The book 'Chemical hazards in foods of animal origin' is the seventh in the series 'Food Safety Assurance and Veterinary Public Health'. It represents a continuation of the scientific efforts to cover the most important food safety topics, from various areas of the integrated food chain, in a highly comprehensive manner, providing an invaluable source of information for readers. The wide variety of scientific expertise from the authors, contributors to this book, representing different disciplines, demonstrates an exemplary manner of the integrated and multidisciplinary nature of tackling the most important food safety and environmental issues pertaining to chemical hazards. The contributors to this book include experts from veterinary and human medicine, chemistry, food toxicology and microbiology, food risk assessment and management. In an ever-changing world, the collaboration between different disciplines is of utmost importance to tackle chemical hazards emerging from industrialisation and climate change and safeguard the safety of food for the consumer.

The book gives a comprehensive overview of information, risk assessments and control strategies for a wide range of chemical hazards which are logically presented in four sections following on an introduction provided by the editors. The book comprises 25 chapters describing various chemical hazards associated with the production, processing and consumption of wide range of food products of animal origin. Chemical hazards from muscle foods (red meat, white meat, game meat and fish), milk and dairy, eggs and honey, are identified and characterised in detail, using risk assessment and risk management approach. Each chapter concludes with the summary of the areas where sufficient scientific progress has been achieved, areas that have been neglected and recommendations for the future work and where further research is essential.

The introductory part of the book, written by the editors, sets out the elementary considerations about the chemical risks in foods. It provides, with a narrative clarity, the key concepts that will be discussed in the following book chapters. The reader is progressively introduced into the subject and some aspects discussed in an intriguing way (for example, perceived (consumer perception) vs. actual risk from chemical hazards (i.e. scientific reality) or the political context in which some risk management decision are made). Furthermore, the role of major international risk assessment and management bodies is analysed, with substantial consideration given to the role of European Food Safety Authority (EFSA) whose importance and mission is repeatedly highlighted in almost every subsequent chapter. The chapter then goes on to detail the potential health effects of chemical hazards, toxicokinetics, and outlines the main categorisation of chemical hazards according to their sources into 'avoidable' and 'unavoidable'. The role and importance of veterinary profession in risk management of chemical hazards is also highlighted, which is an aspect that

is being repeatedly considered throughout in the subsequent chapters.

The first section in the book discusses chemical hazards and their residues that are 'avoidable'. These are the chemicals that have been deliberately used in the production of the food product, namely veterinary medicines, pesticides, feed and food additives, and chemicals from the food contact materials. In the four chapters reviewing this group of chemical hazards, authors provide an overview of their sources, toxicological effects of their residues, exposure assessment, monitoring and available controls. A selection of short case studies is also provided, aiming to contextualise the problem. Interesting details are given in the chapters describing food additives, particularly regarding the intriguing aspect of widespread using of nitrites in cured meat products. The principles of the assessment of consumer safety are illustrated in details giving plenty of examples how regulatory authorities (and EFSA) evaluate health effects for consumers.

In the second section of the book, the authors present an overview of the 'unavoidable' chemical contaminants. These comprise large group of contaminants which can be both natural in origin (e.g. mycotoxins, marine biotoxins, phytotoxins and biogenic amines) or are a result of anthropogenic activity or processing, e.g. persistent organic pollutants (such as dioxins, PAHs and others) and toxic metals. The seven chapters where this group of chemical hazards are discussed in details provide a compelling evidence of an effect human activity has on the environment, and consequently to human population as well. This anthropogenic activity represent a threat not only to humans but also to wildlife as a whole. Good example is expansion of 'algal blooms' in areas where they had not existed worldwide, as a result of eutrophication of water and climate change, having a devastating impact on public health and economy.

After discussing the more general information about the chemical hazards, the third section in the book illustrates more specific examples of chemical hazards associated with particular foods of animal origin. Six chapters describe the most relevant chemical hazard/food commodity combinations, providing a comprehensive overview of the main aspects of risk assessment and management of 'avoidable' and 'unavoidable' chemicals. Logically, this section is followed by more specific case studies presented in the last section of the book. Here, reports of the incidents with chemical hazards in various food categories at the European level (with the overview of the implications for food safety and trade at global level), are presented in seven chapters. This approach contextualise in a very sound manner the topics covered in preceding three sections. The well-known food incidents with dioxins, melamine and other chemical are presented in an interesting, easy-to-read manner, which introduces reader into real life consequences of environmental pollution, climate change and food fraud. Several repeated incidents with dioxins and PCBs for example, prompted a huge shift in European food legislation in 1990s and 2000s, which laid out a foundation to the food safety assurance system that nowadays exist in the EU. It also highlights difficulties that official authorities come across in tracking and tracing sources of chemical contamination in an overly complex food production and distribution chain in the EU. Of particular interest to the consumers are the cases involving game meat chemical contamination, as this product is gaining increased popularity among consumers potentially increasing the level of risk for them. The emphasis is placed on an increased monitoring of game meat, considering that it is gaining increased popularity among consumers and can be associated with an increased risk of exposure to chemical hazards, particularly heavy metals.

Substantial consideration is given to the risk communication part of the overall risk analysis process for chemical risks arising from the production, processing and consumption of foods of animal origin. Professionals, and particularly veterinarians, involved in an overall process of food production and controls, have an utmost responsibility to convey a clear message to the consumers in an educated and transparent way. Hence, the book targets wide audience, from risk assessors, to risk managers, both from official authorities and industry background. It also focuses on the topics required by the European College of Veterinary Public Health (ECVPH), considering that the chemical hazards and food chemistry represent an important part of veterinary official controls and form significant part of undergraduate and postgraduate veterinary curriculum. Thus, the book is invaluable source of information for students and residents of the ECVPH. In conclusion, this book, as well as other publications in the whole 'Food Safety Assurance and Veterinary Public Health' series, place veterinarian role at the forefront of food safety assurance, and similarly to the previous books in the series, will undoubtedly be well received by the readers.