

BOOK REVIEW

Chemical Food Safety and Health

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In *Chemical Food Safety and Health*, authors focus on certain hazardous substances that can be found in raw and processed foods, but also some others that may help protecting human health. The book pays a special attention to the effect of food microstructure and state of constituents on nutrient bioavailability and shelf life under certain circumstances. The known experts of related fields author the ten chapters of the book.

Food safety is the number one priority of the food and drink industry worldwide. It is always the target for modern food industry to meet the highest food safety standards based on sound science. In support to this frame, the book discusses in two chapters the relevance of acrylamide in the food industry and acrylamide mitigation in thermally processed foods. In Chapter 1, *Mariotti and others* gives comprehensive information about the ways to mitigate acrylamide in foods such as changing the process parameters, reduction of precursors in raw materials, using microorganisms, enzymes, amino acids cations, and non-reducing sugars. The second chapter by *Cieserová* gives an overview of the occurrence of acrylamide in heated foods, so its potential sources in human diet and their contribution to acrylamide intake, giving examples of exposure assessments from different countries. The third chapter by *Murkovic and Swasti* discuss in short the occurrence, exposure and detection of 5-hydroxymethyl-furfural and furfuryl alcohol in foods.

After a series of four chapters dealing with the compounds creating a serious safety concern in foods, the book continues with two chapters that focus on health beneficial compounds namely polyphenols and selenium. In Chapter 5, *Fellenberg* provides brief information about the antioxidant mechanism of polyphenols and their use in meat products. The Chapter 7 by *Mahn* discusses in detail the importance of selenium as an essential micronutrient, and its metabolism as well as its impact on human health as chemoprotective agent.

It is a fact that several microstructural characteristics can act in a food and affect the nutrient bioavailability. Therefore, it is necessary to understand the role of these characteristics for an adequate management of processing conditions in order to improve nutritional quality of food products. So, the Chapter 7 by *Parada and Aguilera* discusses the effect of food microstructure on nutrient bioavailability and health. This chapter describes the importance of nutrient bioavailability and bioaccessibility, and the methods to determine thereof. It continues with the examples of the bioavailability of different nutrients affected by the food microstructure.

The book ends with a series of three chapters dealing with the shelf life determination of food products. The Chapter 8 by *Zuñiga and Troncoso* provides comprehensive information about the facts on quality deterioration in foods and a summary of the kinetics of quality loss, in particular the microbial growth. The authors also describe the use of time-temperature indicators as a dynamic and simple method to evaluate the shelf life of foods. The Chapter 9 by *Enrione and Díaz-Calderón* discusses well the role of glassy state as a way to extend shelf life of foods. In this chapter, the stability of a food system as a function of water activity is described with its limitations. The importance of the glass transition temperature is also described, and its relevance on food stability is discussed in details providing some useful examples. The authors introduce here the encapsulation technique as one of the applications of glassy state in food system to improve stability. In the Chapter 10 by *Rubilar and others*, active antimicrobial packaging and potential antimicrobial agents are described with examples. The authors provide comprehensive information about chitosan as a polymer with antimicrobial properties with its application in various model systems inactivate different target microorganisms.

The book *Chemical Food Safety and Health* could serve as an up-to-date supplementary reading in almost any introductory food science course at the college level. At the same time, some chapters of the book are sufficiently thought provoking for the practicing food scientist or engineers as well.

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