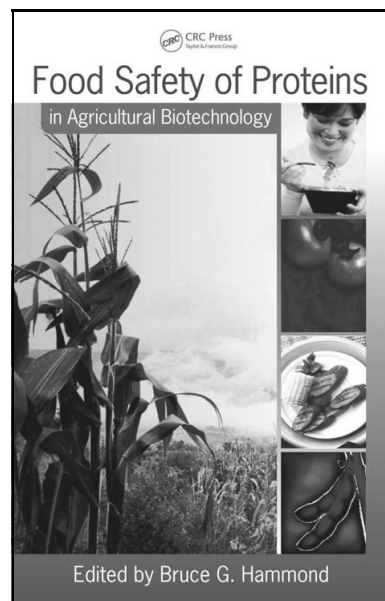


MNF Books



Food Safety of Proteins

Bruce G. Hammond (Editor)
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Diffuse fears and a lack of knowledge still represent the major drawbacks for the public acceptance of agricultural biotechnology in Europe, and especially in Germany. As genetic engineering primarily addresses the plants' protein fraction, the safety assessment of recombinant proteins of foodstuffs is of major importance. The book edited by Bruce Hammond closes a gap in the scientific literature by providing detailed insights into the safety considerations of food produced by means of agricultural biotechnology.

Starting from the single amino acids, chapter one gives an introduction into protein biochemistry. Protein synthesis,

structure, and functions in animals and plants are discussed. By explaining methods for the estimation of the nutritional intake of food proteins, chapter nine is dedicated to the basics of nutritional sciences. Assuming that the book is addressed to scientists, both chapters may refresh knowledge rather than provide new insights.

A generalized model for the behavior of bacterial protein toxins is discussed in chapter two, putting a special focus on the "life cycle" of toxic proteins. These general toxicological considerations are interesting, but remain somewhat abstract. Nevertheless, they build a fundament for the following reports on genetically modified crops which express bacterial toxins from *Bacillus thuringiensis* (Bt). Considering the tens of millions of acres where so-called Bt crops are grown, and the controversial discussion on the safety of Bt plants, two chapters are devoted to this topic.

Based on the description of *Bacillus thuringiensis* and its main toxins, chapters three and four highlight the toxins' mode of action and summarize in detail the safety aspects of Bt-based insecticides and Bt crops. The comprehensive descriptions and literature reviews reflect the intense safety studies on humans, vertebrates, and non-target invertebrates which have been performed within the past 50 years.

The complex field of food allergy is shortly and precisely introduced in chapter eight. Apart from the classification of the various types of food allergies, state-of-the-art methods and technologies for allergy assessment are exemplified. These include bioinformatic approaches as well as *in vitro* assays and animal models.

Chapter ten reflects an industrial perspective (Monsanto) on the safety assessment of proteins introduced into food by agricultural biotechnology. The case studies include the protein 5-enolpyruvylshikimate-3-phosphate synthase from the *Agrobacterium* sp. strain CP4 (CP4 EPSPS). This enzyme confers tolerance to glyphosate, the active ingredient of Roundup¹ herbicides. Compared to the more than 80 pages dedicated to Bt toxins and crops, this topic would certainly have deserved a broader discussion than the single page devoted to it.

Reviews on the safety assessment of biotechnology-derived therapeutic drugs (including the veterinary production drug bovine somatotropin), and for microbial enzymes in food preparation complete the book's contents (chapters five to seven).

In summary, "Food safety of proteins in agricultural biotechnology" represents an accurately written and well edited collection of reviews on the safety assessment of recombinant proteins. It gives an excellent overview of the up-to-date literature and additionally provides numerous interesting hyperlinks. As with many multi-author books, some redundancies may have been unavoidable. It is certainly not addressed to a broad public readership, but represents a valuable tool for academic education and specialist working in the field.

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