

Preface

Food allergy is an abnormal immunological reaction to food proteins, which causes an adverse clinical reaction. It can occur as a consequence of conformational cross-reactivity to respiratory allergens (oral allergy syndrome), or following sensitization via gastrointestinal tract. Almost all known food allergens that sensitize via gastrointestinal system belong to the prolamin and cupin protein superfamilies of allergens. Those are mainly characterized by resistance to heat and digestion. The discrepancy between the vast numbers of proteins we encounter and the limited number of proteins that actually become allergens, have led scientists to investigate what unique features make proteins destined to be allergens. The information gained from these studies has led to an allergy assessment strategy that characterizes the potential allergenicity of biotechnology products prior to their commercialization. Beside allergen structure, new data are emerging on the influence of various other factors on the allergen survival and uptake by the gut immune system and presentation by the antigen-presenting cells, some of them related to the biophysical and immunomodulatory properties of the food matrix, and other to the way we process food. Nevertheless, the built of knowledge on all those various and complex interactions between food components and gut immune system will help us to better understand food allergies and to manufacture safer food.

The most efficient treatment of food allergy is allergen avoidance. Thus, labeling of food for the allergen content is required by European food production regulative. Clear guidelines have been established in the EU regarding the allergenic food labelling according to EC Directive 2000/13/EC and amendments: Directive 2000/1/EC Annex IIIa and the Directive 2007/68/EC. The former included a list of 12 potentially allergenic food (cereals containing gluten, crustaceans, eggs, fish, peanuts, soybeans, milk, nuts, celery, mustard, sesame, and sulphur dioxide) that must always be declared on the label of the foodstuffs present in pre-packaged food traded inside EU. The latter included two more food (lupine and molluscs).

This monograph covers the topics of biochemistry, digestibility, and uptake in the gastrointestinal tract of the most important food allergens causing IgE-mediated food allergy that is believed to be responsible for most immediate-type, food-induced hypersensitive reactions. Currently available tests and strategies for food allergens identification and quantification in food matrices are reviewed in the

monograph, as well as links between food processing, food matrix, and immunomodulatory components of food that can influence food allergy development and onset of allergic reactions.

The authors of the book are professors of Biochemistry at the University of Belgrade, Faculty of Chemistry and also lead researchers of the Center of Excellence for Molecular Food Sciences at the Faculty of Chemistry. The monograph is also intended for students of the courses of Food Biochemistry and Nutrition, as well as Molecular Allergology of the postgraduate studies at the University of Belgrade, Faculty of Chemistry. We also hope that the monograph will be valuable to all those who are involved in elucidation of allergenic structures which contribute to elicitation of food allergy and food scientists involved in design of safer and more functional food products.

Food Allergens

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