Innovations in Food Technology Special Issue

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The development of novel processing techniques to obtain healthier and safer food products is one of the major challenges facing the food industry in the new century. On one hand, novel processes and products are driven by the stunning technological advances of this global era, to which food science and technology are not alien. Such advances include not only the design and application of new equipment and process lines, which constitute what has been called “emerging technologies”, but also the biotechnological and nanotechnological applications of such cutting-edge disciplines for food production and control. On the other hand, innovation in food technology flows in parallel with consumers’ demand for healthier and safer foods with improved quality and shelf life. As a consequence of these developments, and in an effort to give a response to such challenges, food technologists have paid special attention to the development and application of minimal processing strategies to a myriad of food products, thus avoiding the nutritional shortcomings that occur from the application of traditional preservation methods such as intense heat processing. Nevertheless, although the nutritional components of minimally processed foods may be more intact in products subjected to such light preservation methods, the presence of spoilage and pathogenic bacteria that are able to survive such minimal processing may incur novel risks. These risks require the development of robust and sensitive control methods to ensure not only the quality

but also, and especially, the safety of such novel food products.

In such an actively changing food technology environment, scientists working in this field are ready to find solutions from different approaches. Some of the most relevant solutions have been compiled in this “Innovations in Food Technology Special Issue”. Among the most promising novel technologies with a higher transfer potential from research to development and innovation, the application of pulsed electric fields and high-pressure processing are still at the top. Nevertheless, more specific and still less known techniques, such as hydrodynamic cavitation, are also gaining increasing importance for certain applications in water and food processing, while thermosonication and ultraviolet radiation are also gaining attention as food processing strategies. Sometimes, the combination of novel techniques and the obtention of added value food ingredients goes together, such is the case with the application of solvent-free strategies to the extraction of antioxidants that are relevant to the food industry.

Novel food biopreservation techniques constitute another innovative field that deserves special attention. Active packaging techniques extend the possibility of keeping food quality at its best during storage, whereas the development of novel bacteriocins and other novel inhibitory agents, such as essential oils or the so-called vitamin K₅, which are able to inhibit spoilage and pathogenic bacteria and fungi, represent valuable steps toward hurdle technologies for the production of minimally processed food products.

The ever changing field of biotechnology also provides us with selected and engineered enzymes and starter cultures for novel food applications, such as microbial proteases and selected lactic acid bacteria for wine production, respectively. Novel technologies for cell immo-

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bilisation have also received attention for the development of new food processing techniques that provide improved foods and novel nutraceuticals. Likewise, the development of novel nanotechnological tools, such as the application of nanoemulsions, as delivery systems for nutrients and other bioactive ingredients will also contribute to the development of value added food products.

Finally, the quality and safety of such novel foods require updated techniques to explore the presence of contaminants and undesirable microorganisms with a view to guaranteeing quality and preventing risks that may compromise food safety. For example, the growing market of ready-to-eat food products implies additional risks linked to authenticity issues or to the presence of allergens or emerging pathogens. In this area, the development and application of robust analytical methods, such as MALDI-TOF mass fingerprinting, Raman spectrometry and, more

recently, DNA microarrays may provide accurate and updated tools in our effort to guarantee food quality and safety.

All the subjects outlined here are represented in this special issue with the sincere hope that they will attract our readers' attention. At this point, we want to express our most sincere gratitude to the authors who have contributed their expertise to this issue with both original and review articles on these relevant topics and to the reviewers whose efforts have decisively contributed to the improvement of the quality of the manuscripts. It may be argued that some innovative techniques may not be reflected in this issue, but the readers will surely agree that all the articles presented here represent a relevant compilation of innovations in the field of food technology aimed at improving food processing, preservation and control for providing consumers with healthier and safer foods.