

# Preface

Protection of foods and beverages from microbiological spoilage is essential to assure an adequate food supply for the world's population. Several generations of food microbiologists have labored to understand food spoilage and to develop control procedures for its prevention. Because many of these highly experienced food microbiologists are at or near retirement age, we were motivated to organize this *Compendium* in an effort to document and preserve as much of their accumulated knowledge and wisdom as possible. We are pleased that many expert food microbiologists eagerly agreed to contribute to this effort. To our knowledge, this is the first reference and textbook focused exclusively on the microbiological spoilage of foods and beverages.

We also think that this *Compendium* is necessary now because the resources of the food industry and academia have increasingly become focused on food safety initiatives over the past 30 years. To a significant extent, resources previously available to develop an understanding and the means to control food spoilage have been shifted into food safety programs. The emergence of prominent foodborne pathogens, such as *Escherichia coli* O157:H7, *Listeria monocytogenes*, and *Campylobacter*, combined with increased competition for limited financial resources, has resulted in decreased attention being given to food spoilage research. Global public health issues such as bovine spongiform encephalopathy and avian influenza H5N1, and their potential impacts on the food supply, have further reinforced the shift toward "mission-oriented" research. The increased number of potential microbiological food safety issues affecting the food supply also fueled a substantial increase in the number of food safety regulations and policies, both at the national and the international levels. Moreover, food regulatory actions are almost always related to food safety controls and requirements, thereby commanding a larger share of the food industry's technical resources to assure regulatory compliance.

The shift in emphasis from food quality research toward various types of food safety programs is understandable and necessary. This shift, however, is not as counterproductive for food quality and spoilage research as might first be suspected. The implementation of numerous new food safety control procedures and regulations can also help to reduce food spoilage and protect product quality through its shelf life as they also provide greater assurance of food safety. For example, pasteurization treatments intended to eliminate pathogens in raw milk also significantly

enhance the quality and shelf life of fluid milk. In fact, the unanticipated enhancement of product quality was a very strong selling point in gaining the food industry's acceptance of the hazard analysis and critical control point (HACCP) system of food safety management in the 1970s. Because of the successful development of HACCP, there remains today a very strong link between food quality and food safety control measures.

We are further motivated to develop this Compendium because, ultimately, the control of food spoilage means more than simply providing high quality, convenient, processed foods for consumption in economically developed regions of the world. We must think about feeding people in every region of the world. Food spoilage is a significant threat to food security, our ability to provide an adequate food supply to a large and increasing global human population. Shrinking fossil fuel and water reserves, soil erosion, loss of soil fertility, climate change, and political uncertainty are important factors that collectively threaten food security. If food spoilage and other factors that contribute to the waste of food could be substantially reduced, we would be able to feed more people without increasing primary food production. In the opinion of a former World Health Organization official, "This large increasing world population needs food and we have a moral obligation to utilize all our skills and technologies to increase not only food production but also *to limit food spoilage* (italics added for emphasis)."<sup>1</sup> Together with many of our colleagues, we share Dr. Käferstein's sense of professional responsibility. We anticipate that this *Compendium* will play a role in the global reduction of food spoilage and the accompanying enhancement of food security.

In 1958 professor William C. Frazier first published his widely used textbook, *Food Microbiology*. His comprehensive yet concise explanations of food spoilage and food safety were prominent features in the education of several generations of food microbiologists, including this *Compendium's* editors. It is our sincerest hope that this *Compendium* will provide similar benefits to future generations of food microbiologists.

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<sup>1</sup> Käferstein, F. K. (1990). Food irradiation and its role in improving food safety and the security of food. *Food Control* 1, 211–214.

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