Microbial Food Safety AND Preservation Techniques

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Preface

This book provides a comprehensive coverage of the fundamental and applied aspects of food safety, describes the control measures employed, and explores the advances in microbial food safety. It is divided into four sections. Section I, Microbial Food Safety and Hygiene, covers the hazards caused by food-borne pathogens and assesses the microbiological risk of raw, fresh produce and ready-to-eat (RTE), minimally processed and processed foods. Section II, Detection of Food-Borne Pathogens, deals with the detection of pathogens using advanced molecular techniques, biosensors, and nanotechnology. Section III, Food Preservation and Intervention Techniques, provides a detailed discussion on the various intervention and preservative techniques that are used to ensure high-quality and safe foods. The topics covered include smart/intelligent and active packaging techniques, hurdle technology, plasma technology, nanotechnology, use of natural flora belonging to lactic acid bacteria, and antimicrobials such as phytochemicals and essential oils. Novel food preservatives based on quorum sensing inhibitors are also addressed. Section IV, Modeling Microbial Growth in Food, comprises chapters on modeling microbial growth in food for enhancing the safety and quality of foods.

In recent years, rapid strides have been made in the fields of microbiological aspects of food safety and quality, predictive microbiology and microbial risk assessment, microbiological aspects of food preservation, and novel preservation techniques. Hence, this book comes as a timely guide and summarizes the latest advances and developments in these fields. All the contributing authors are international experts in their research fields. Therefore, the book will be an invaluable resource for graduate students, researchers, and professionals involved in food safety, hygiene, and quality control.

We acknowledge all the contributors for sharing their knowledge and expertise. We also thank the publisher for encouragement and technical support in publishing this book.

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Editors

V. Ravishankar Rai earned his MSc and PhD from the University of Mysore, India. He is currently a professor in the Department of Studies in Microbiology, University of Mysore, Mysore, India. He has been awarded a fellowship from the UNECSO Biotechnology Action Council, Paris (1996); an Indo-Israel Cultural Exchange Fellowship (1998); Biotechnology Overseas Fellowship, Government of India (2008); and Indo-Hungarian Exchange Fellowship (2011). He was invited by Academia Sinica, Taiwan, as a visiting fellow in 2010. Dr. Rai has recently edited a book entitled *Biotechnology: Concepts and Applications* published by Alpha Science International, Oxford, UK. His research interests include food biotechnology, bacterial quorum sensing, microbiological corrosion, bioprospecting of medicinal plants, and forest diseases and management. He is currently the coordinator for the innovative Program on Food Quality and Safety, funded by the University Grants Commission, New Delhi.

Jamuna A. Bai is an Indian Council of Medical Research senior research fellow with the Department of Studies in Microbiology, University of Mysore. She has authored four research papers, a review article, and four book chapters. She is currently conducting research on the role of quorum sensing in food-borne bacteria for regulating the expression of spoilage phenotypes and the production of virulence factors. Her research interests include studying quorum sensing and biofilms in food-related bacteria, developing quorum-sensing inhibitors, and investigating antimicrobial and anti-quorum-sensing activities of phytochemicals.