

Preface

Preservation of food is crucial to achieve global food supply and its safety with desired sensory and nutritional quality. The traditional as well as advance methods are being used to achieve the desired shelf life with appropriate nutrients, appealing color, flavor, and texture. In principle, all foods are not subjected to the same degree or severity of processing. The minimally processed foods are constantly growing due to their increased demand by the consumers. There are different types of products under minimally processed foods, for example, fresh-cut, ready-to-serve, ready-to-eat, and/or ready-to-cook, cook-chill, cook-freeze, part-baked products. Always there is an attempt to use low severity of processing as well as minimal chemicals. The foods termed as *minimally processed* are fresh like products that need special care in preparation, processing, storage, and handling. The minimal processing techniques maintain the desired shelf life and safety of the products with higher sensory and nutritional quality. The new or novel technologies are being applied to achieve high quality safe minimally processed foods. The scientists are continuously working to develop new technologies to fulfil the consumers' expectations. In terms of science and applications, several advances on new technologies have been achieved to develop new minimally processed foods with desired safety, quality, and convenience.

The safety and efficacy of minimal processing depend on the use of novel preservation technologies. A professional food manufacturer, food scientist, food engineer, and/or postharvest technologist indulged in the processing of minimally processed foods should be well versed with the basic principles, processes, as well as quality and safety concerns. This book **“Minimally Processed Foods: Technologies for Safety, Quality, and Convenience”** has been developed primarily for fulfilling these expectations and intended to be used by the students in the undergraduate and graduate courses in Food Process Engineering/Food Technology/Postharvest Technology. This would be a valuable source to the professionals working in the food industry. It could also be used by graduates of other disciplines, such as Horticulture and/or Livestock Products Technology.

Editors of this book have an adequate experience in teaching, research, and extension activities related to food science and postharvest technology. They have realized a need of such reference book that covers many important aspects of plant- and animal-based minimally processed foods, starting from farm to fork. They endeavored to gather eminent academics and professionals across the globe for their contributions in this book. The authors have diverse backgrounds and vast experiences in the field. Each chapter of this book is intended to provide concise, to-the-point descriptions of basic principles, technologies, and applications in different categories of minimally processed foods.

The book contains 12 chapters and the first chapter determines/describes the scope of the minimally processed foods and available new technologies or methods to produce quality products in terms of safety and nutrition. Chapter 2 presents hurdle concepts in food preservation and processing. It explains the individual assessment of each product using logical tree based on their hurdles as proposed by IFT/FDA. Theoretical concepts of F-value, water activity, glass transition, state diagram, and macro–micro region concepts are explained in order to apply these in determining food stability. A brief overview on the prediction models is also presented. Chapter 3 has devoted to basic principles and methods of packaging required for minimally processed foods. Chapters 4 and 5 are well versed with important operations (i.e., washing, peeling, cutting) and technologies (traditional and novel) involved in manufacturing of plant-based fresh-cut products. The new technologies or methods, such as edible coating, natural preservatives (i.e., antimicrobial, flavour enhancer, anti-browning), advanced packaging (active, antimicrobial, and modified or controlled atmosphere), and selected nonthermal techniques (high pressure, pulsed electric field, ultrasound, light) are also included. Chapter 6 concisely describes the trends, convenience, and safety issues of ready meals. Cook-chill and half-baked/part-baked products have been an important category of minimally processed foods. These are most popular ones owing to their benefits in terms of quality, safety, and convenience. Three chapters 7–9 are dedicated to processing, quality, and storage issues of these products. Nowadays, the production and processing of meat and fish products without compromising safety and quality is a challenge. The chapters 10 and 11 deal with various conventional and latest minimal processing approaches used in meat and seafood products. Finally, the chapter 12 discusses the important issues of minimal processing in terms of the sustainability and challenges along with remedial measures to preserve the quality and safety of minimally processed foods.

The editors are confident that this book will prove to be a standard reference work for the food industry in developing minimally processed foods. The information can be used to extend the shelf life by retaining safety as well as nutritional and sensory quality. The editors would appreciate receiving new information and comments to assist in the future development of the next edition.

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