Whey Processing, Functionality and Health Benefits

Whey Processing, Functionality and Health Benefits provides a review of the current state of the science related to novel processes, functionality, and health benefit implications and documents the biological role of whey protein in selected areas that include muscle metabolism after exercise, muscle and body composition in the elderly, weight management, food intake regulation, and maintenance of bone mass. The topics addressed and the subject experts represent the best science knowledge base in these areas. In some of these areas, the state of the art and science are compelling, and emerging data are confirming and solidifying the human knowledge base. Collating the understanding and knowledge of the metabolic roles of whey protein and developing the clinical datasets that demonstrate efficacy for improving human health will speed up new product innovations and sustainable opportunities for the food industry as evidenced by the processing and functionality research conducted so far.

Topics covered in this volume include:
- Whey utilization history and progress in process technology
- Fractionation and separation with health implications
- Whey emulsions and stability in acidic environments
- Current applications in films, coatings, and gels
- Texturized whey in snacks, meat analogs, and candies
- Nanoparticles in hydrogels for delivery of bioactive components
- Whey protein role in human health

Health and wellness, processing, and functionality are clearly areas of continuing research and offer growth opportunity for the food industry. The benefits from such concentrated body of knowledge will be new ingredients and innovative products that improve overall wellbeing. Whey Processing, Functionality and Health Benefits provides food scientists and manufacturers insight into the health implications of whey protein science. Ultimately, the consumer will benefit from better formulated, healthier products.

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Whey Processing, Functionality and Health Benefits
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Preface

Milk whey proteins have come into wider use as food ingredients only in the last 40 years, taking their proper place at an emerging frontier, where nutrition and health interface. Largely regarded in the past as a waste by-product, advanced processing technology has propelled whey proteins to the top of the list of important nutrients, and still newer technologies will help keep it there permanently. This book provides an overview of the successes and challenges of the new whey processing industry. As food ingredients, whey proteins are used in a multitude of combinations and advanced well beyond the stage of simply delivering nutritional value by also providing essential functional and health benefits to complex food systems. The contributing authors to this book are outstanding scientists and health professionals in their fields of specialty, working diligently to enhance the utility of whey ingredients for the development of products that deliver demonstrated health benefits to consumers.

The knowledge presented in this book documents the wide range of potential uses for whey proteins not only as ingredients in food formulations but also as functional components providing additional metabolic and physiological benefits beyond merely supplying essential amino acids. Health and wellness, processing and functionality, are clearly areas of continuing research and offer growth opportunity for the food industry. The benefits from this continuously growing body of knowledge will be new ingredients and innovative products that will improve the overall well-being of consumers. Topics covered in this volume will provide food scientists and manufacturers with new insight into and appreciation of the health-promoting implications of whey protein science. The topics identified below and contributed by their respective subject matter experts represent the best science knowledge base in these areas. The state of the art and science are compelling, and an
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Emerging database is confirming and solidifying the human knowledge base.

The compilation of knowledge on the functional and metabolic roles of whey proteins and their demonstrated biochemical efficacy in improving human health enhances the vision of the Institute of Food Technologists Book Communications Committee that supported the publication of *Whey Processing: Functionality and Health Benefits*. By presenting the latest information on the processing and functionality research conducted on whey proteins up to the present, this volume will accelerate new product innovation and create opportunities for the food industry.

Topics covered in volume include

- whey utilization, its history, and progress in process technology;
- fractionation and separation into biological fractions with health implications;
- whey emulsions and stability in acidic environments;
- some current applications in films, coatings, and gels;
- new process: texturization—use of texturized whey in snacks, meat analogs, candies, and as inclusions in candies;
- nanoparticles in hydrogels for delivery of bioactive components; and
- role of whey proteins in human health.

This book serves as a valuable resource for food industry professionals in research and development, academic faculty and students in food science, human nutrition and dairy science, nutrition and health professionals, and also policy makers.

Charles I. Onwulata, Ph.D.
Whey Processing, Functionality and Health Benefits