Food Stabilisers, Thickeners and Gelling Agents
To Katie
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Stabilisers, thickeners and gelling agents are inherent in almost all living organisms. They determine a number of critical functions including moisture binding and control, structure and flow behaviour that enable organisms to thrive in a natural environment. For use in food products, the functional materials are carefully extracted from various natural raw materials and incorporated into foods to give the structure, flow, stability and eating qualities desired by consumers.

These additives include traditional materials such as starch, a thickener obtained from many land plants, and gelatine, an animal by-product giving characteristic melt-in-the-mouth gels. Cellulose, the most abundant structuring polymer in land plants, seed gums and other materials derived from sea plants extend the range of polymers. Recently approved additives include the microbial polysaccharides of xanthan, gellan and pullulan. With stringent regulations in place governing the use of additives, it is unlikely that many new polymers will be approved and researchers must employ the current range of products to deliver the range of attributes needed for their particular food products.

Hydrocolloids have a profound impact on food properties when used at levels ranging from a few parts per million for carrageenan in heat-treated dairy products to high levels of Acacia gum, starch or gelatine in jelly confectionery. The correct application of these materials is a fascinating topic that continues to engage the attentions of many expert researchers. Over recent years, investigative techniques have shed more light on the fine structure of the polymers to enhance the understanding of network formation and how they combine with other polymers. These structures determine a number of properties in finished foods, such as emulsion stability, the long-term suspension of fortified beverages using ‘fluid gels’ and for giving rich, creamy eating qualities.

Calorie-dense materials such as fats and oils may be replaced with ‘structured water’ to give healthy, reduced-calorie foods with excellent eating quality. Some fibres are currently being studied for their effects on satiety and the reduction of daily energy intake. In addition to the functional attributes, future acceptance and, possibly, positive endorsement may derive from the recognition that soluble and insoluble fibres contribute many physiological benefits to the natural function and well-being of the body.

This book is highly practical and directed to all those involved in various sectors of the food industry. Although it is particularly valuable for product and process developers, marketing personnel will appreciate the value of these highly functional materials and it will help people involved in ingredient procurement appreciate that these materials are often complex functional additives. The information is easy to read and assimilate. New students will find chapters presented in a standard format, enabling key points to be located quickly.
Those with more experience will be able to compare and contrast different materials and gain a greater understanding of the interactions that take place during food production. This concise, modern review of hydrocolloid developments will be an invaluable teaching resource and reference text for all academic and practical workers involved in hydrocolloids in particular and food development and production in general.
In commending this book to readers, I must pay tribute and thank all the authors and contributors to the chapters in this book. Their great enthusiasm and commitment over the long period needed to complete this project has produced an excellent series of chapters linking the structure and function of the polymer in nature to a wide range of properties needed for high-quality foods.

These excellent contributions summarise the current state of knowledge on the use of these materials in food. The authors have used data, diagrams and figures made available by many suppliers to the hydrocolloid industry. The cooperation and support from major manufacturers and suppliers have been essential in producing this book. These companies continue to enhance and extend their product ranges, to actively investigate new applications for their products, to provide detailed support and direction to new customers and to contribute to new publications.

I would also like to acknowledge the support of the publishers, Wiley-Blackwell, who have continued to encourage and support this project, despite several setbacks, before this successful conclusion.

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