



ELSEVIER

## Book Reviews

### Starches

D.J. Thomas, W.A. Atwell; Eagan Press, St. Paul, MN, 1999, vi + 94 pages, ISBN 0-891127-01-2 (US\$ 59-00)

Starches (and modified starches) from various botanical origins, such as corn, wheat, rice, potato, tapioca, and sago, are often utilised to control and/or modify the physicochemical properties and characteristics of many foods (e.g. gelation, thickening, adhesion, binding, moisture retention, stabilisation, texturisation, film formation and antistaling). 'Starches' is a single source of practical information about starches, their functions, and their applications in food processing. This convenient, ingredient handbook is divided into nine concise chapters, the first of which discusses the structure of starch, covering basic carbohydrate chemistry, starch polymer biosynthesis, the properties of amylose and amylopectin, and starch granule composition and structure.

Over the years, instruments and methodologies have been developed that have led to a better understanding of the basic structure of starch and of the changes that occur in the presence of water, heat, or other food ingredients. The second chapter of this volume is thus devoted to starch analysis methods, and includes discussion of microscopic techniques, X-ray crystallography, viscosity measurements, starch contents, and amylose:amylopectin ratios, whilst the third chapter focuses upon gelatinisation, pasting, and retrogradation. The pastes and gels produced by native starches are often cohesive (gummy) or rubbery, the functional properties of these starches can be improved by modification. The fourth chapter therefore discusses chemical (derivatisation and crosslinking) and physical (pregelatinisation and heat treatment) modification of starches. There are numerous factors to consider in the choice of a starch for use in a particular food system.

The desired properties of the food (e.g. texture, mouthfeel, and viscosity), the method of processing, and the distribution parameters, especially storage temperatures, must all be examined. An up-front strategy in which the various requirements of the food product are reviewed before selection of a starch saves time, frustration, and probably money in the product development process. The fifth chapter of this volume therefore presents the matching of starches to applications and covers such criteria as sensory, pH, formula-related, processing, distribution and end-use considerations. The next five chapters are devoted to specific application areas and cover the use of starches in a variety of foods, confections, dairy products, grain-based

products (bakery products, fillings, icings, batters and breadings), sauces, gravies, soups, dressings, and meat products. The final chapter encompasses special topics, such as fat replacement, emulsion stabilisation, encapsulation, and resistant starch.

'*Starches*' is part of the Eagan Press Handbook series, which was developed as a series of practical guides serving the interests of the food industry. The series aims to offer a practical approach to understanding the basics of food ingredients, applications, and processes. Presented contents aim to bridge the gap between highly specialised information presented in the scientific literature and the product-specific information available from suppliers. Eagan Press is the food science publishing imprint of the American Association of Cereal Chemists (AACC).

In conclusion, this handbook is presented in a straightforward, user-friendly, essentially non-technical format with definitions of terms, examples, illustrations, tables, and trouble-shooting tips included throughout, making it clear and understandable for individuals at any level. It is therefore recommended as an asset to a variety of food industry professionals, including new product developers, quality assurance personnel, technical sales representatives, food scientists and students.

C.J. Knill

J.F. Kennedy

Birmingham Carbohydrate and Protein Technology Group,  
ChembioTech Laboratories, The University of Birmingham  
Research Park,  
Birmingham B15 2SQ, UK

PII: S0144-8617(00)00289-7

---

### Human Biology, Third Edition

C. Starr, B. McMillan; ITP Europe, London, 1999, xxvii + 624 pages, ISBN 0-534-55105-X, £27.50

The biological perspective on human life is a valuable educational tool that helps individuals cut through the overwhelming information concerning medical, environmental, and social issues that confront us as part of our every day life. This introductory text presents human biology in an easy to read manner, highlighting key concepts, current understandings, and research trends. The structure and function of tissues, organs and organ systems, i.e. the anatomy