

Book Review

Seafood Enzymes: Utilization and Influence on Postharvest Seafood Quality

N.F. Haard, B.K. Simpson (Eds.); Marcel Dekker, Inc., New York, 2000, xvii + 681 pages, ISBN 0-8247-0326-X, US\$ 225.00

Seafoods, after harvesting, are generally more perishable than other foods as most undergo ‘autolysis’ or endogenous biochemical reactions. The increased understanding of seafood enzymes may help develop future methods on the better preservation of seafood quality. Seafood enzymes are also very important as industrial processing aids. Although some of the enzymes found in aquatic creatures are homologous to those found in animals, enzymes from different sources may exhibit vastly different properties with respect to stability, temperature optimum, secondary substrate specificity, as well as some other factors.

This book covers a myriad of topics on how enzymes are important in improving the uses of seafood raw materials. It is a reference book, and topics include the nature of such enzymes and the biological factors affecting them. The role of native enzymes in post-mortem effects on quality attributes such as texture, flavour and colour are discussed, as are the uses of the products of enzyme breakdown as quality indices. The control of enzyme activities by modification of the environmental conditions, processing or use of inhibitors is covered, as are the uses of enzymes isolated from fish processing by-products, as processing aids.

Seafood Enzymes: Utilization and Influence on Postharvest Seafood Quality is divided into five parts, starting with an introduction on how the properties of enzymes from sea animals are related to inter and intra specific factors. Then specific enzymes or enzymes groups that are known to be important to seafood technologists and have been studied are reviewed. The third and fourth parts of the book describe the relationship between enzymes and seafood quality, and the control of enzyme activities in seafood products. Finally, the application of enzymes as seafood processing aids and the recovery of useful enzymes as by products from seafood wastes are covered.

This book discusses the special roles of seafood enzymes in post-mortem fish metabolism, as the quality changes they effect are critical pieces of knowledge in achieving the goal of obtaining maximum value from the available resources. This text has over 150 detailed illustrations and contains over 2570 references. It contains contributions from 33 international experts, and gives a comprehensive and timely coverage of the subject.

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Carbohydrate Chemistry

G.-J. Boons (Ed.); Blackie Academic & Professional, London, 1999, xiv + 508 pages, ISBN 0-751-40396-2, £89.00

Carbohydrates are the most abundant group natural products. Comprising of mono-, oligo-, polysaccharides and their derivatives, carbohydrates have uses both dietary and structural in plants and animals, as well as playing key roles in living systems. The understanding of some of the biological roles played by carbohydrates and glycoconjugates has resulted in increasing their importance. This new understanding of carbohydrates has put their study in the forefront of modern chemical research. An expanded awareness of the roles of carbohydrates in the biological and pharmaceutical sciences has also increased the interest in carbohydrate chemistry.

Carbohydrate Chemistry focuses on the chemistry of oligosaccharides, glycoconjugates and neoglycoconjugates. It starts with an introductory chapter on the physical properties of mono- and oligosaccharides, which is crucial for understanding the chemical reactivities of these compounds. Initial chapters cover the preparation of precursors for the synthesis of complex saccharides and the use of modern protecting group strategies and functionalization of saccharides. The main part of this book covers oligosaccharide and glycoconjugate chemistry and the preparation of natural and unnatural compounds. The concluding chapters contain less preparative information, which is nonetheless essential to carbohydrate chemists. It also includes a short review highlighting possible uses of naturally occurring saccharides as leads for new therapeutic developments. This book ends with a chapter describing physical methods used in carbohydrate research. The application of enzymes in saccharide chemistry is covered throughout the book.

The abundance of carbohydrates in nature has prompted research into utilizing simple monosaccharides as starting materials for a range of high value compounds, offering a renewable alternative to current starting materials. *Carbohydrate Chemistry* is aimed for chemists, biochemists and biologists. It provides very useful information for scientists, as well as for postgraduates, and is a guide for lecturing staff at an undergraduate level. It contains extensive referencing at the end of each chapter, as well as detailed diagrams and illustrations.

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New Ingredients in Food Processing: Biochemistry and Agriculture

G. Linden, D. Lorient; Woodhead Publishing, Cambridge, 1999, xviii + 366 pages, ISBN 1-855-73443-5, £115.00

The agro-food industry has experienced a technology revolution over the last decade which has led to a dramatic expansion in the manufacturing of tailor-made ingredients, which are often referred to as ‘intermediate food products’ (IFPs). This volume aims to provide a comprehensive guide to the development and use of IFPs, covering their purpose, benefits, properties, and ways in which their manufacture can be tailored to the requirements of the food industry. The food industry is under constant pressure to innovate as it faces ever increasing variations in demand and specific requirements from the consumer, in terms of both nutritional and sensory characteristics.

This volume is essentially divided into two broad sections. The first section comprises nine chapters that cover the manufacture of IFPs, and looks at their development, common functional properties, methods of extraction, purification and texturisation, and details those IFPs derived from plants (proteins, oils and fats), milk (proteins and lipids), eggs, meat, fish and seaweed. IFPs from by-products (whey, blood, collagen and gelatin) are also discussed.

The second section of this volume comprises six chapters that examine the properties and potential utilisation of biomolecules, namely carbohydrates, lipids, amino acids, peptides, pigments and aroma compounds, which are purified and/or modified by enzymatic and chemical treatments. In each case composition, functional properties, methods of manufacture, and applications are covered. Three chapters

in this section are devoted to carbohydrates and detail sugar chemistry, starch products, and hydrocolloids and dietary fibre, respectively. Specific carbohydrates discussed include sucrose, lactose, inulin, polyols, parietal carbohydrates, starch, maltodextrins, cyclodextrins, carrageenan, agar, alginate, chitin and polysaccharide gums.

This volume successfully delivers a summary of the work performed on IFPs during previous decades, and more importantly, details the biochemical foundations for the future commercial exploitation of agricultural products. It is therefore highly recommended as an invaluable reference volume for individuals involved in all aspects of food research.

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Cellulose Derivatives: Modification, Characterization, and Nanostructures

ACS Symposium Series 688; T.J. Heinze, W.G. Glasser (Eds.); American Chemical Society, Washington, DC, 1998, xii + 361 pages, ISBN 0-8412-3548-1, US\$ 130.00

Significant advances in cellulosic modification, both chemically and enzymatically, and the resultant production of derivatives with unique chemical, physical and physiological properties, has dramatically increased the interest in cellulose research over the past decade. This renewed focus upon cellulose derivatives is a result of several factors, for example the availability of new cellulose sources (especially bacterial cellulose), the development of new solvent systems for cellulose activation/solubilisation (and their corresponding regenerated fibres), the development of new regioselective modification methodologies, and increased understanding of the enzyme systems involved in cellulose degradation.

The purpose of the ACS Symposium Series is to publish timely, comprehensive books developed from ACS sponsored symposia based on current scientific research. This book was developed from a symposium entitled ‘Recent Advances in Cellulose Modification’ held at the 212th National Meeting of the American Chemical Society, and