

A chapter on ketonucleosides by K. Antonakis covers the synthesis of these unstable compounds, their spectral properties, and their use as intermediates through stereospecific reduction and nucleophilic additions. The ketonucleosides have interesting antiviral activity, and also have been postulated as key intermediates in the biosynthesis of naturally occurring nucleosides that inhibit DNA synthesis.

Present knowledge about plant cell-walls is far from complete, despite the voluminous record of research on this topic. In the largest chapter in this volume (117 pages, 689 references), P. M. Dey and K. Brinson have written a well-organized review that evaluates the research in this complex field, and delineates the areas of controversy. The chapter includes a substantial section on fruit ripening that is highly informative and readable, even for those who are not plant physiologists.

The final chapter, on L-arabinosidases, by Akira Kaji, must surely be one of the shortest (10 pages, 44 references) ever published in this series. Nevertheless, this summary of sources, purification, and substrate specificities of this group of enzymes will be valuable for anyone who wants to use L-arabinosidases in structural or biosynthetic studies.

The carbohydrate community owes an enormous debt of gratitude to the editors for the maintenance of such high quality in the continuing publication of this series.

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Glucose Syrups: Science and Technology, edited by S. Z. DZIEDZIC AND M. W. KEARSLEY, Elsevier Applied Science Publishers, London, 1984, x + 276 pages, £35.00.

This useful monograph describes the background and present operations of the glucose syrup industry in a short Introduction and seven well-written chapters. These syrups, known as corn syrups in the United States of America, may be made from any starch. Contemporary materials need not contain more than one percent of free D-glucose, and need not be connected with corn. Thus, they comprise a wide variety of materials which have very different compositions and properties, and find such diverse applications as natural sweeteners for confectionery, preserves, soft drinks, and frozen desserts; fermentation media for the production of alcoholic beverages; and suspending, thickening, or humidifying agents in animal feedstuffs, pharmaceuticals, cosmetics, paper, and tobacco products.

The industry has grown, not merely by increased consumption of corn syrups, but by the introduction of new types of starches and starch hydrolyzates used as

starting materials, and by the perfection of versatile techniques for the manufacture of the syrups themselves. Biotechnology has been used productively in the industry for twenty years, first in the use of enzymes for hydrolysis of the starches, and, more recently, for the isomerization of D-glucose to D-fructose. Therefore, it is an opportune time for the appearance of a monograph that summarizes this diverse industry.

In a brief introduction, D. Howling gives a synopsis of the history and development of the glucose syrup industry, from its beginnings in the early nineteenth century until the present time. Chapter 1, by G. Tegge, covers the chemistry, biochemistry, and supermolecular structure of starch, as well as industrial processes for recovering starch from various biological materials. Differences in rice, milo, wheat, potato, and other starches which relate to processing and purification are discussed.

In Chapter 2, P. D. Fullbrook presents a thorough discussion of the process technology and enzymology involved in the use of enzymes for the production of glucose syrups. F. Verwaerde and P. J. Sicard review, in Chapter 3, the production, characterization, and use of hydrogenated glucose syrups. The removal of the reducing group by hydrogenation increases the stability, water affinity, and chelating ability of the syrups, and precludes browning and fermentation reactions. S. Z. Dziedzic and M. W. Kearsley give a detailed summary of the physicochemical properties of glucose syrups in Chapter 4. Details are provided on the complex chemical compositions of the glucose syrups, which arise from the diverse starting-materials and the various processing steps employed.

The physiological aspects of glucose syrups and related carbohydrates are summarized in Chapter 5 by R. H. P. Lian-Loh. The human physiological response to these compounds has not been studied extensively, and the situation may become more complex by the recent introduction on a commercial scale of hydrogenated glucose syrups. Chapter 6 is a review by D. J. Folkes and A. Brookes of the analysis and characterization of glucose syrups. Conventional, wet-chemical techniques are described in full, and much useful detail is provided on gas and liquid chromatography of glucose syrups. In Chapter 7, M. McDonald reviews the use of glucose syrups in the food industry, and gives examples of the use of the syrups, based on their particular physical and functional properties, in a variety of food products.

This monograph is attractively typeset and sturdily bound. The text is complemented by many carefully-prepared figures, and a complete index is provided. However, the work has numerous typographical and grammatical errors, and significant departures from accepted carbohydrate nomenclature, all of which detract from the overall presentation. In addition, the discovery by French and Rundle of the helical conformation (the book uses the word "configuration") of amylose is incorrectly attributed to another. This book can be recommended to workers in the field, as well as to newcomers who wish a full introduction to this important industry.