

## Book Reviews

**Protein Structure – Function Relationships in Foods.** Edited by R. Y. Yada, R. L. Jackman & J. L. Smith, Blackie Academic & Professional, London. ISBN 07514 01862. pp. 202 + xi.

This well produced book is one of the series arising out of the 8th World Congress of Food Science & Technology, held in Canada in 1991 and attended by over 1400 delegates. Although the Congress was held over 3 years before the book was published several of the contributors have obviously been able to update their chapters since a few of them refer to work published or carried out in 1993 and even 1994. This is important since several of the chapters deal with techniques and concepts that are developing rapidly. The book consists of eight chapters on a range of topics concerning aspects of protein structure – function relationships which fall into two distinct categories, namely, those that use a variety of foods to demonstrate the intricacies of the relationships between protein structure and function and those that describe techniques used to study these relationships or elucidate protein structure.

Chapter 1, by Kinsella, Rector & Phillips is a short review of current knowledge regarding the relationship between molecular structure and functional properties with particular emphasis on their own work. This article could be a useful starting point for researchers moving into the area.

Chapter 2, by Hermansson is again mainly a summary of her own work in the area of microstructure of protein gels related to functionality and is primarily concerned with microscopic (TEM & SEM) techniques. The author acknowledges the possible formation of artefacts during preparation and suggests techniques that should eliminate these problems.

Chapter 3, by Swaisgood, Chen, Oh & Catignani discusses the potential of using controlled (limited) proteolysis to study structural changes and selected domains in proteins. I found this chapter fascinating since I had not previously considered the potential of this approach to the problem.

Chapter 4, by Osuga, Van der Schaaf & Whitaker is a wealth of information about the large number of different polyphenol oxidases to be found in nature. Though these differ widely in amino acid composition and molecular size there does appear to be a good deal of homology around the active site. The authors discuss how polyphenol oxidase activity may be controlled using a catalytic mechanism.

Staff from the University of California are also major contributors to Chapter 5 (Ho, Yin, Filho, Lajola & Whitaker) which is a concise and comprehensive

account of the numerous natural  $\alpha$ -amylase inhibitors to be found in nature. Our knowledge in this area is still very limited and this chapter summarises current knowledge but acknowledges that much work still needs to be done to determine the mechanisms of recognition and binding between the  $\alpha$ -amylase inhibitors and  $\alpha$ -amylases.

Chapter 6, by Nakai, Aishima & Yada discusses the application of multivariate analysis in the study of food protein functions and clearly the approach has much to offer.

Chapter 7, by Fuller & Roscoe describes the use of a platinum electrode to investigate the surface adsorption of  $\beta$ -lactoglobulin A using cyclic voltammetry, again a technique I am not familiar with but one with obvious applicability to any situation where surface adsorption of proteins needs to be studied.

Chapter 8, by Li-Chan, Nakai & Hirotsuka describes the use of Raman spectroscopy to probe protein structure, a technique I would expect food scientists to resort to more frequently since it can look at structural features, primarily backbone structures, in concentrated systems.

Overall a useful and valuable addition to the literature.

D. A. Ledward

**Protein Functionality in Food Systems.** Edited by Navam S. Hettiarachchy & Gregory R. Ziegler. Marcel Dekker, New York. inc. 1994. pp. xii + 519. ISBN 0 8247 9197 5. US\$ 150.00.

This book covers the proceedings for the 17th Basic Symposium held by the Institute of Food Technologists (IFT) and the International Union of Food Science and Technology (IUFoST). This topic was selected to meet the demands of the Food industry, to serve as reference material on protein functionality in food systems, and to enhance the teaching of advanced courses on proteins.

The first chapter gives a very good general overview of the structure–function relationship of food proteins. This chapter covers the surface-active properties (adsorption and film formation), foaming, emulsifying, and gelling properties of food proteins.

Chapter 2 deals in some detail with molecular modelling techniques for developing structure–function relationships such as the solubility of proteins concerning protein–salt–water interactions. The following chapter (3) gives a good and useful outline on protein separation and analysis of some skeletal muscle proteins (titin, nebulin, calpastatin,  $\mu$ - and m-calpain). Principles and techniques include chromatography, differential centrifugation, gel