The Chemistry and Biochemistry of Plant Proteins

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Edited by J. B. Harborne and C. F. van Sumere
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This book collects together the invited contributions to a symposium organised by the Phytochemical Society (of the United Kingdom) in Gent during September 1973: it forms No. 11 in the series of the Society's symposia.

Plants contribute all the protein eaten by farm animals and most of that consumed by mankind: in a world where the pressures on food resources will rise, man's dependence on plant proteins will inevitably increase. No apology is then necessary for this new volume.

Although proteins show many common features irrespective of their source, there are nevertheless important differences between those from plants and those present in other living organisms. Such differences become obvious when fractionation techniques are employed to separate protein species, when the composition and solubility behaviour of the proteins of seeds are examined, or when the complexities of protein biosynthesis in plant cell organelles are considered.

Several chapters provide detailed discussion of techniques now available to the plant biochemist for the separation, characterization and amino acid sequencing of plant proteins, and show how immunochemical and electrophoretic methods have increased our knowledge of the protein complexes of cereals and potato tubers (chapters by J. Daussant, H. Stegemann and G. Préaux and R. Lontie). J. G. Vaughan provides a nice account of how information, gained by these techniques, about the protein complement of seeds can be used critically for taxonomic purposes.

A general account of recent work on protein biosynthesis using systems from higher plants (O. Ciferri) is followed by separate discussions of the degree to which mitochondria and chloroplasts from plant cells can act autonomously in the synthesis of proteins (C. J. Leaver and B. Parthier and co-workers). C. F. Van Sumere, the local organizer of the symposium, presents an authorative review of the various types of interaction between protein and phenolic molecules from plant cells: he further describes a protein from barley grain in which a ferulic acid moiety acylates the amino-N of the terminal glycine residue – does N-ferulylglycine act as an initiator in the biosynthesis of this protein?

A quite unique attribute of certain plant proteins is their extraordinary sweetness. G. E. Inglett writes about the discovery and work leading to the isolation and partial characterization of several protein sweeteners or taste modifiers from tropical plants. These can be several thousand times sweeter than sucrose, and two are being developed commercially as new sweeteners for diabetic or dietetic use.

Altogether the book provides a most interesting mix and will be welcomed by both specialists and browsers.

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