as subsensitivity, supersensitivity, and desensitization, are examined.

The third chapter deals with the structure-activity relationships of receptor directed ligands – this chapter is too long and certain topics, for example, the α-antogonists are overdiscussed.

Some insight into the events occurring subsequent to receptor-ligand interaction is given in chapter 4. The discussion is good but would be more complete if the general, opening, part were expanded. In very few cases such as the nicotinic acetylcholine receptor, studies have been performed on different levels, Correlations between the behaviour of receptor rich membrane fragments and the electrical behaviour of the whole tissue have been made, as well as those between the purified receptor and its behaviour within the membrane. Even certain disease conditions, such as *Myasthenia gravis*, are known today to be directly related to the acetylcholine receptor. It seems, therefore, that if this receptor had been discussed fully it would have demonstrated how the chemical pharmacology of a synapse can be studied and, thus, set the standard for research on other receptors.

The last chapter discusses the different types of receptors and is a fairly good summary up to the end of 1974. Due to the nature of the available data, the chapter is bound to be fragmentary, although it still manages to provide a substantial amount of useful information.

Typographical errors are scattered throughout the book, such as 'distnct' instead of 'distinct' (p. 21, line 4 from bottom); in Table 1.7 (p. 24) Cl appears instead of Cl^-, and Na instead of Na^+; names for some of the structures shown in Fig. 3.6a are missing; p. 57, line 1, should read 1–3 μM, not 1–3 μm.

On the whole, the book is a serious attempt to bring together pharmacological, biochemical, electrophysiological, and chemical information. It, therefore, provides a useful textbook for all those who wish to learn about the function of synapses.

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Phospholipids

Function and Metabolism of Phospholipids in the Central and Peripheral Nervous Systems

edited by Giuseppe Porcellati, Luigi Amaducci and Claudio Galli, published by Plenum Press, New York and London, 1976 (412 pages)

This book contains the research papers presented at the satellite meeting of the International Society for Neurochemistry held at Cortona, Italy in August, 1975. The papers are broadly divided into the following sections: (i) structural requirements for phospholipids in biological membranes (3 papers), (ii) metabolism and turnover of phospholipids (11 papers) (iii) aspects of phospholipid function in the nervous system (4 papers) and (iv) phospholipids in brain damage (5 papers).

Although the current interest in the structure and function of biological membranes started with investigations on the myelin membrane, present day membrane research is mostly done with simpler systems. This is reflected in the first section, where only one article deals directly with brain. However, most of the other articles deal with phospholipid metabolism in the nervous system, and these are presented mainly in the second and third sections. The main emphasis here is not on the newer pathways of lipid metabolism in brain, but on the comparison of known pathways and their possible controls.

A number of articles describe studies on the turnover of brain phospholipids. Though it has been established for some time that all brain lipids have both fast and slow turnover, the methods for studying these rates are still controversial. One of the problems is that many investigators do not measure the turnover rates of the water-soluble precursors, and it is almost futile to calculate rapid turnover rates of lipid products without any knowledge of their immediate precursors. A few papers deal with the effect of various phospholipids on different brain enzymes, either adding or removing them from the system enzymatically or by solvent extraction. No definite conclusion could be drawn from these data however, as we still do not know enough about the precise roles of polar head groups of lipids play in regulating the structure and function of membrane proteins. The paper by Dawson and Gould was of particular interest, for it employed autoradiographic technique to study the movement of phospholipids in myelin membrane as a function of time. The results may modify some of our concepts of membrane biogenesis. An important technique described by several authors is the use of cell culture to study the pathways of lipid metabolism.

A number of papers in the third section are directed towards the study of the effects of neurotransmittors on the turnover of phospholipids in different systems. Almost twenty five years ago, Hokin and Hokin reported stimulation of the rapid labeling of phosphatidic acid and phosphatidyl inositol from labeled precursors by acetylcholine in brain slices. Since then a large volume of work has been done to further study the effects of these neurotransmittors on phospholipid turnover. However, we still do not have a clear understanding of the biochemical mechanism and the physiological significance of the rapid turnover of these lipids. Most of the papers presented in the third section deal with the different aspects of the problem and suggest that various acidic phospholipids may have important roles in excitable membranes.

The rest of the book contains articles on the pharmacological effects of phospholipids on different brain constituents and the changes in phospholipid metabolism in some pathological states (ischemia, brain damage, lipid-storage disease, muscular dystrophy, etc.). These results seem to be somewhat preliminary, but indicate possible directions for further investigations.

The chapters in this book are reproduced directly from the authors' manuscripts and, as expected with a book of multiple authorship, the articles are of uneven quality in their review of the background materials and in the presentation of the results. The editors are to be commended for providing a good index, but it is a pity that they did not include the discussions which followed the presentation of each paper. Without them one can question the usefulness of publishing the proceedings of such a symposium, as many of these articles have already been published in greater detail as full papers. An introductory review of each area of research and the inclusion of comments and discussion by experts in the field subsequent to the presentation of each paper would have more clearly justified publication. As a whole, the volume adequately covers current areas of research on the different aspects of the metabolism and functions of phospholipids and would be a useful addition to personal collections provided one can afford it.

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