BOOK REVIEWS

Annual Review of Medicine: Selected Topics in the Clinical Sciences, (ed.) W. P. Creger, (Published by Annual Reviews Inc., 4139 El Camino Way, Palo Alto, California 94306, USA), 1986, Vol. 37, pp. 465, Price: USA $31, Elsewhere $34.

The edition is in continuity with its earlier volumes with regard to selected topics as well as the quality of information in the text. The volume rightly begins with the topics on Electrophysiologic Studies in Patients with Ventricular Tachycardia by Roger A. Freedman, Keelley P. Anderson, and Jay. W. Mason giving a guide to drug and pharmacologic therapy. Some of the topics such as Involuntary Treatment in Medicine by Albert R. Jonsen and Acute Gastric Mucosal Injury: Pathogenesis and Therapy by Kenneth M. Holt and Daniel Hollander are very relevant and topical subjects faced by practising physicians. The topic on Pathogenesis of Exercise-Induced Asthma: Implications for Treatment by J. R. Haltom and R. C. Strunk addresses some of the current concepts and their implications for treatment of the problem. Similarly many topics such as Autonomic Nervous System in Congestive Heart Failure by Gary S. Francis and Jay. N. Cohn, Pulmonary Function of the Transplanted Human Lung by Keith D. Dawkins and Stuart W. Jamieson give interesting information. The topic on the Use of Beta Adrenoceptor Blockade During and After Acute Myocardial Infarction by Peter Sleight is a timely discussed subject, in view of the extensive use of this drug at various stages of I. H. D. In short all the topics discussed are relevant, timely and highly informative. The authors deserve every appreciation for their commendable and exemplary work and presentation. In fact each topic is as good as the other. The volume is an invaluable asset to be possessed by the research worker as well as the practising physician.

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Annual Review of Pharmacology and Toxicology, (eds) Robert George, Ronald Okun and Arthur K. Cho (Published by Annual Reviews Inc., 4139 El Camino Way, Palo Alto, California 94306, USA) 1986, Vol. 26, pp. 604, Price : USA $31.00 Elsewhere $34.00

The volume under review contains twenty-one short state of art overviews on diverse subjects related to the growth of pharmacology and toxicology. The wide spectrum is represented on one end by the genetic control of cytochrome P450 and on the other end by animal models for senile dementia of Alzheimer's type. In between one is exposed to the pharmacology of anti-depressants, diuretics and intravascular radio-contrast agents, biotransformation mediated by the extra-hepatic organs or the toxicological implications of alterations in pulmonary macrophage functions. The chapter on pharmacology and toxicology of interferon is a virtual trend-setter of development in the exciting area of biotechnology which has made available a number of genetically tailored therapeutic agents.

The prefatory autobiographical chapter is contributed by W. D. M. Paton of Oxford who testifies to his having discovered his profession in Pharmacology by his intention to go into academic medicine, a pathway by which many of his contemporaries were also led to embrace the new discipline. In the case of Paton, the strong background on physical organic chemistry influenced the choice of research problems, e.g., distinguishing between polarizing and depolarizing anaesthetics or the histamine releasing activity of dibasic compounds in which the basic groups were separated by around 6 or more carbon atoms. By giving clear definitions of pharmacology and toxicology, Paton also helps the reader in learning how diverse patterns of academic medicine which motivate researchers all belong to one family:

"If physiology is concerned with the function, anatomy with structure and biochemistry with the chemistry of the living body, then pharmacology is concerned with the changes in function, structure and chemical properties of the body brought about by chemical substances. . . . For pharmacology there results a particularly close relationship with chemistry; and the work may lead quite naturally,

with no special stress on practicability, to therapeutic application, or (in the case of adverse action) to toxicology"

The universal action of the first generation and second generation anti-depressants to increase the amount of aminergic neurotransmitter in the synapse is discussed by Hollister who has given a classification of depression based on characteristics: mixed manic, single or recurrent episodes, schizo-effective etc. The two systems currently used classify depression into bipolar, unipolar, reactive endogenous and manic-depressive. Nine brain receptors seem to be involved in the action of anti-depressants. The second generation drugs do not appear to have the side effects associated with the trycyclins of the first generation.

Opioid peptides belong to one of three peptide families each deriving from a distinct precursor molecule. The structures of these have been elucidated in recent years by recombinant DNA techniques. To match the multiplicity of opioid peptide precursors, the system has a multiplicity of receptors. There is evidence to indicate that post-translational proteolysis of opioid peptide precursor occurs in various regions of the brain and pituitary and that the products differ markedly in their selectivity for the receptors. The biochemistry of the concerned enzymes and the possibility of synthesizing specific inhibitors are discussed by Volker Holt.

In vivo studies and investigations using isolated kidneys and nephron segments have shown that diuretics have varying effects on renal calcium excretion. The modes of action of a few typical diuretics are discussed by Stier and Itskovitz who highlight the need for compensation in patients who are on long-term therapy with diuretics.

In an exceedingly fascinating review Pushkar Kaul and Pratibha Daftari give an account of the chemistry and pharmacology of a variety of agents isolated from marine organisms. These include nucleosides, glycosides, saponins, peptides and enzyme inhibitors. A nucleoside isolated from the red alga *Hypnea zalentina* is a powerful inhibitor of adenosine kinase. Cembranoids from the coral possess anticancer activity. The biocidal activity of a number of marine toxins is also discussed.

The potential use of ethylcholine aziridinuim ion to develop an animal model for senile dementia of Alzheimer's type is described by Fisher and Hanin. It may be recalled that a central cholinergic hypofunction is implicated in this disease.

Liver is accepted as the main site of endogenous biotransformation of xenobiotics. A good deal of evidence has however accumulated on a similar activity in other tissues as well. The role of extra hepatic organs like the respiratory tract, kidney, testis, ovary and bone marrow in disposing of chlorinated organics and aromatic chemicals is dealt with by Gram, Okine and Gram. Elsewhere Gillis has reviewed the metabolic processing of xenobiotics and normal metabolites in pulmonary microcirculation.

The induction of one or more forms of cytochrome P-450 involves diverse mechanisms. The oxygenated products of P-450 catalyzed reactions can be innocuous, toxic, mutagenic or carcinogenic. How enzyme induction can be used as a tool for studying gene expression in response to chemicals is reviewed by Whitlock. The biological concept of threshold is discussed by Aldridge in relation to toxicokinetics, compartmentalization and association and dissociation rates of ligands.

The mechanisms of action of botulinum neurotoxin involves the primary step of binding to receptors on the external surface of plasma membrane which produces paralysis but not the adverse effects on nerve cell function. The binding is followed by cell dysfunction when the toxin enters the cytoplasm endocytic transport. Then it blocks transmitter release by enzymatically modifying a substrate involved in excitation–secretion coupling. The model can be related to the structure of the toxin. The molecular biology of this interesting process is reviewed by Simpson.

The overview on the pharmacology and toxicology of interferons by Mannering and Deloria gives a fascinating account of the multiplicity of leukocyte interferons and their antiviral action. The toxic side effects produced by interferon resemble those inflicted by virial diseases but are much milder and reversible.

The Annual Review for 1986 has conformed to the high standards set earlier and provides in a handy volume, the current advances in a number of exciting frontier subjects of concern to biochemical pharmacologists and toxicologists.

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