BOOK REVIEW

STRUCTURE-ACTIVITY RELATIONSHIPS OF PROTEIN AND POLYPEPTIDE HORMONES, *edited by M. Margoulies and F. C. Greenwood, $53.70, 566 pages, Amsterdam, The Netherlands, Excerpta Medica, 1973.*

This book comprises the *Proceedings of the Second International Symposium*, which was held at Liège in September and October, 1971. Part 1 consists of thirty brief reviews by recognized authorities who focus attention on the relationship of peptide structure to biological function and immunoreactivity. The substances that are discussed include small polypeptides such as gastrin and angiotensin, glycoprotein hormones such as thyrotropin, luteinizing hormone, follicle-stimulating hormone and interstitial cell-stimulating hormone, and other peptide hormones such as insulin, glucagon and adrenocorticotropic hormone. The importance of differentiating hormone binding to cells from hormone action is brought out. For example, the amino acid sequence in adrenocorticotropic hormone that governs biological activity is not identical with the minimal segment needed for binding of the hormone to target cells. Part 2 of the book contains eighty-four very short papers that describe new experimental results related to the broader topics broached in Part 1. Only papers of Part 2 were actually delivered at the symposium. In general, each of the papers in this second section is devoted to a specific question of limited scope that would be of interest to a relatively small group of laboratory investigators.

ABSTRACTS

Arvanitakis, Constantine; Lorenzsonn, Vilja; and Olsen, Ward A. (Gastroenterol. Res. Lab., Madison V.A. Hosp., Madison, Wis.): PHENFORMIN-INDUCED ALTERATIONS OF SMALL INTESTINAL FUNCTION AND MITOCHONDRIAL STRUCTURE IN MAN. J. Lab. Clin. Med *82*:195-200, August 1973.

Previous studies have shown that phenformin may exercise an hypoglycemic effect by impairing the rate of orally administered glucose absorption. This study was designed to examine directly the influence of phenformin on jejunal absorption of glucose, water and sodium. In five subjects, after intubation with a triple lumen tube, the jejenum was perfused with a solution containing 20 mM of D. glucose, 140 mM sodium chloride and 0.5 per cent polyethylene glycol. After a thirty minute equilibration period, 3 twenty-minute collections were made from sites 15 and 45 cm. distal to the perfusion opening. Phenformin, 100 mg., was given and after forty-five minutes the perfusion was again started and similar collections were made. In three other persons proximal jejunal mucosal biopsies were obtained before and seventy-five minutes after 100 mg. of phenformin was administered. Phenformin reduced mean glucose absorption from 4,532 μmoles per hour per segment. It reduced water absorption from 228 ml. per hour per segment to -25 ml. Sodium absorption was reduced from 1,700 uEq. to 400. The postphenformin biopsies were normal by light microscopy, but electron microscopy showed complete disappearance of matrix granules from absorptive cell mitochondria. The results indicate that phenformin impairs intestinal transport through a mechanism of mitochondrial injury. T.G.S.

Ashcroft, S. H. H.; Capito, K.; and Hedeskov, C. J. (Dept. of Biochem. A, Univ. of Copenhagen, Denmark): TIME COURSE STUDIES OF GLUCOSE-INDUCED CHANGES IN GLUCOSE-6-PHOSPHATE AND FRUCTOSE-1,6-DIPHOSPHATE CONTENT OF MOUSE AND RAT PANCREATIC ISLETS. Diabetologia 9:299-302, August 1973.

Verbatim summary. The concentrations of glucose 6-phosphate (G6P) and fructose 1-6-diphosphate plus triose-phosphates (FDP + TPs) were measured in isolated islets of Langerhans from mice and rats after a sudden increase in extracellular glucose concentration from 0.5 to 3.4 mg./ml. In mouse islets, the contents of G6P and (FDP + TPs) were both raised after a two minute incubation at the high glucose concentration and remained elevated for at least thirty minutes. In rat islets, the G6P but not the (FDP + TPs) content was increased after a five minute exposure to high glucose. After a thirty minute incubation, both G6P and (FDP + TPs) contents were higher than at low glucose concentration. The (G6P)/(FDP + TPs) ratio was some tenfold higher in mouse islets than in rat islets. Increasing extracellular glucose concentration was associated with an increase in the (G6P)/(FDP + TPs) ratio. The results are consistent with the increased glycolytic rate in response to a raised extracellular glucose concentration arising primarily from an increase in the rate of phosphorylation of glucose, and with the hypothesis that the insulin secretory response to glucose may be mediated by a metabolite of the sugar.

Aynsley-Green, A.; Biebuyck, J. F.; and Alberti, K. G. M. M. (Nuffield Dept. of Clin. Med. and Metab. Res. Lab., Nuffield Dept. Clin. Med., Radcliffe Infirmary, Oxford, England): ANAESTHESIA AND INSULIN SECRETION: THE EFFECTS OF DIETHYL ETHER, HALOTHANE, PENTOBARBITONE SODIUM AND KETAMINE HYDROCHLORIDE ON INTRAVENOUS GLUCOSE TOLERANCE AND INSULIN SECRETION IN THE RAT. Diabetologia 9: 274-81, August 1973.

Verbatim summary. Fasting hyperglycemia occurred in rats starved forty-eight hours after thirty minutes of anesthesia with