Cerebral Protein Metabolism in Relation to Neuroendocrine Function

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An investigation has been made into the incorporation of [^{35}S]methionine into protein in various discrete areas of the brain that are considered to be involved in neuroendocrine function. Marked changes in incorporation in the preoptic area were seen in the rat and mouse during puberty and in the rat during the oestrous cycle. Marked changes during the oestrous cycle were also seen in the median eminence and anterior pituitary concomitant with the surge of luteinizing-hormone secretion that occurs before ovulation. Further, a circadian rhythm in the incorporation of [^{35}S]methionine into protein was observed in the rat, with the fluctuation in the male being almost 180° out of phase when compared with that of the female.

Effects of some Adrenocorticotrophin Analogues on Protein Synthesis in Brain

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Certain peptide fragments of the adrenocorticotrophin molecule delay loss of conditioned avoidance response in rats. The effects of the D- and L-isomers

of adrenocorticotrophin-(4-10)-heptapeptide on cerebral RNA and protein metabolism in rats were compared. Neither isomer had any effect on incorporation of labelled orotate or on brain and pancreatic ribonuclease activity. The L-isomer, however, showed a marked and specific stimulatory effect on [^{14}C]leucine incorporation into brain protein.

The Effect of Inhibitors of Protein Synthesis to Inhibit Brain Protein Synthesis and Prevent the Hyperactivity and Hyperpyrexia in Rats Produced by Inhibition of Monoamine Oxidase and the Administration of L-Tryptophan or 5-Methoxy-*NN*-dimethyltryptamine

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Parenteral cycloheximide, acetoxycycloheximide and emetine all inhibit brain protein synthesis and prevent the hyperactivity and pyrexia normally produced in mice by a monoamine oxidase inhibitor and either L-tryptophan or 5-methoxy-*NN*-dimethyltryptamine. It is suggested that the brain protein may be involved in mediating the effects of brain 5-hydroxytryptamine and administered 5-methoxy-*NN*-dimethyltryptamine.

MOLECULAR ENZYMOLOGY GROUP COLLOQUIUM ON 'ENZYMOLOGICAL ASPECTS OF AFFINITY CHROMATOGRAPHY'

Affinity Chromatography: a Tool in Protein Chemistry

By MEIR WILCHEK (*Department of Biophysics, The Weizmann Institute of Science, Rehovot, Israel*)

Conventional procedures for the purification of proteins are based on differences in the physical and chemical properties that exist between the proteins to be purified and all other substances present in the mixture. Such separations are usually laborious and the yields are frequently low, primarily because of the many steps required for purification and the low concentrations of many of the proteins to be purified. Many macromolecules of biological importance, such as enzymes, repressors, permeases, receptors and hormones, fall into this group. One way to overcome these difficulties is through the use of 'affinity chromatography' (Cuatrecasas *et al.*, 1968).

Affinity chromatography exploits the reversible and

specific interactions of ligands with macromolecules for their purification. Purification is affected by chromatography of the mixture, containing the protein to be purified, on a column of an insoluble matrix to which a specific ligand was covalently attached. Proteins and other molecules not exhibiting appreciable affinity for the ligand will pass unretarded through the column, whereas those that recognize the ligand will be retarded to an extent related to their affinity to the ligand. Elution of the bound protein is readily achieved by changing the medium to conditions unfavourable for combination, e.g., change in pH or salt concentration.

Workers in several laboratories have attempted such a technique for the isolation of antibodies, nucleotides, complementary strands of nucleic acids and enzymes by utilization of polystyrene or cellulose for the insoluble supporting matrix. Until recently only limited success has been encountered in the