The Biosynthesis of Prostaglandins in Thrombocytes

By J. CLAUSEN and K. C. SRIVASTAVA (*Department of Nutrition, Institute of Hygiene, University of Copenhagen and the Neurochemical Institute, 58 Radmandsgade-2200, Copenhagen N, Denmark*)

Prostaglandins are metabolic products of dihomog- γ -linoleate and arachidonate. Studies by Clausen *et al.* (1969) have shown that prostaglandins are able to inhibit the ADP-induced thrombocyte agglutination. Since the half-life of prostaglandins in the blood stream is only 2 min owing to enzymic inactivation in tissues such as lungs, the pathological significance of this inhibition in relation to the formation of thrombi in cardiovascular disorders can only be accepted if the prostaglandins are formed by enzymic systems of the thrombocytes. The present studies were designed to prove this theory.

Thrombocytes were isolated by selective spontaneous sedimentation from erythrocytes and leucocytes. Incubation of the platelets with [14 C]acetate in Krebs-Ringer bicarbonate solution in the presence of O_2 gave rise to significant incorporation of the label into the endogenous linoleate. The chain-elongating and desaturating enzymic systems gave rise to incorporation of the label into dihomog- γ -linoleate and arachidonate. T.l.c. on gel impregnated with $AgNO_3$ and t.l.c. of mercury adducts followed by assay of radioactivity revealed a significant desaturation activity of platelets.

Preparative separation and identification of prostaglandins from the platelets incubated as described above were investigated. Thus by means of silicic acid column chromatography and t.l.c. (J. Clausen & K. C. Srivastava, unpublished work) a significant amount of label was shown to be present in the prostaglandin E fraction when prostaglandin E was added to the thrombocyte reaction mixture before incubation. These data thus indicate the ability of the platelets to synthesize prostaglandin E and argue in favour of the theory that one of the factors of coronary thrombosis may be a relative linoleate deficiency leading to a lowering of prostaglandin E formation in thrombocytes.

These studies were supported by a grant from the Danish Heart Association.

Clausen, J., Kloeze, J., Houtmuller, U. M. T. & Vles, R. O. (1969) *Atheroscler. Res.* 9, 319

The Synthesis and Biological Role of Prostaglandins

By BENGT SAMUELSSON (*Department of Medical Chemistry, Royal Veterinary College, S-104 05 Stockholm, Sweden*)

Studies on the biosynthesis and the biological transformation of prostaglandins will be described. The latter studies have afforded the chemical background for quantitative work on the synthesis of prostaglandins. Recent experiments dealing with the endogenous synthesis of prostaglandins in relation to the physiological state of experimental animals have provided new information on the biological role of prostaglandins.

Fatty Acid Metabolism in Multiple Sclerosis

By R. H. S. THOMPSON (*Courtauld Institute of Biochemistry, The Middlesex Hospital Medical School, London W1P 5PR, U.K.*)

Studies of the changes in the fatty acid composition of the choline- and ethanolamine-containing phospholipids of the brain white matter taken from patients dying with multiple sclerosis will be reviewed. Changes in the linoleate content of the plasma lipids in patients suffering from this disease will also be described, together with work on the linoleate concentrations in erythrocyte and platelet phospholipids, indicating that there is growing evidence of a widespread abnormality in the handling of certain types of fatty acids in patients with multiple sclerosis. The effect of linoleate administered orally over a 5-day period on the plasma fatty acid concentrations, both in healthy controls and in patients with this disease, has been investigated. The results of this work, and their significance in terms of the aetiology and pathogenesis of multiple sclerosis, will be discussed.

Disorders of Lipid Metabolism

By ROSCOE O. BRADY (*Laboratory of Neurochemistry, National Institute of Neurological Diseases and Stroke, National Institutes of Health, Bethesda, Md. 20014, U.S.A.*)

The nature of the metabolic abnormalities in all of the known sphingolipid-storage diseases has been conclusively established within the past 6 years. This remarkable achievement is due largely to two developments. The first is the demonstration that the synthesis of the sphingolipids which accumulate in patients