observations to cholesterol metabolism will be discussed.

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The Identification of 17 α -Hydroxy-17 β -methyl-androsta-1,4-dien-3-one as a Metabolite of 17 β -Hydroxy-17 α -methylandrosta-1,4-dien-3-one in Man

By B. S. MACDONALD, P. J. SYKES, P. M. ADHIKARY and R. A. HARKNESS. (*Departments of Chemistry, Clinical Chemistry and Paediatric Biochemistry, University of Edinburgh, Edinburgh, U.K.*)

After the administration of the anabolic steroid 17 β -hydroxy-17 α -methylandrosta-1,4-dien-3-one (methandrostenolone) to man, two major metabolites have been found in the chloroform extract of fresh urine. The least polar metabolite has now been identified as 17 α -hydroxy-17 β -methylandrosta-1,4-dien-3-one, the 17-epimer of methandrostenolone. The polar metabolite has already been identified as 6 β -hydroxymethandrostenolone by Rongone & Segaloff (1963).

The 17-epimer was synthesized from 3 β -hydroxy-androst-5-en-17-one by reaction with triphenylmethylphosphonium bromide to form the 17-methylene derivative, which was oxidized and then isomerized to form the 4-en-3-one; this was oxidized with *m*-chloroperoxybenzoic acid to yield 17 β -methyl-17 α ,20-oxidoandrost-4-en-3-one. The oxido-ketone was reduced with lithium aluminium hydride to a 3 β ,17 α -diol, which was oxidized and dehydrogenated in one step with dichlorodicyanobenzoquinone to give 17 α -hydroxy-17 β -methylandrosta-1,4-dien-3-one. This was clearly distinguished from methandrostenolone by its n.m.r. spectrum and melting point, 221°C, which was similar to that of the metabolite isolated by Rongone & Segaloff (1963).

The freely extractable neutral fraction was obtained from a fresh 24h collection of urine from a

normal man after oral administration of 5mg of methandrostenolone. The component with the same 'carbon skeleton' as methandrostenolone (Adhikary & Harkness, 1969), which behaved chromatographically like methandrostenolone, was separated by t.l.c. followed by g.l.c. and then subjected to mass spectrometry (A.E.I. MS902). The epimer and metabolite showed a characteristic and similar pattern; for example, the molecular-ion peak at *m/e* 300 was always smaller than the peak at *m/e* 282. This was reversed for methandrostenolone.

No 17-epimer was found in the administered drug, nor was there any detectable conversion during the isolation procedure. It therefore seems justifiable to conclude that the 17-epimer is a metabolite apparently produced by a new pathway, which is relatively important since about 3.5% of an oral dose can be recovered as the epimer.

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Exchange of Sterols between Rat Brain Membranes

By N. L. BANIK and A. N. DAVISON. (*Department of Biochemistry, Charing Cross Hospital Medical School, 62 Chandos Place, London WC2N 4HH, U.K.*)

The long-term persistence and negligible turnover of [4-¹⁴C]cholesterol and other radioactive precursors in the white matter of the brain has been taken to indicate the relative metabolic stability of myelin (Davison, Dobbing, Morgan & Payling-Wright, 1959; Torvik & Sidman, 1965; Simon, 1966). However, Rawlins, Hedley-Whyte, Villegas & Uzman (1969) have evidence of reutilization of [1,2-³H]cholesterol in the peripheral nervous system. Recent studies on the metabolism of brain membrane sterols suggest that during development they undergo relatively rapid replacement. Thus substantial amounts of cholesterol precursors have been shown to be accumulated in brain and myelin after developing rats have been injected with hypocholesterolaemic drugs (Banik & Davison, 1967; Fumagalli, Smith, Urna & Paoletti, 1969). After injection of AY-9944 [*trans*-1,4-bis-(2-chlorobenzylaminomethyl)cyclohexane dihydrochloride] into 5-day-old rats myelin and all subcellular fractions of the brain were found to contain 50–60% of total sterol as 7-dehydrocholesterol. Within a week much of the 7-dehydrocholesterol was replaced by cholesterol. After administration of [1-¹⁴C]-acetate most of the radioactivity of the myelin 7-dehydrocholesterol could be subsequently recovered in cholesterol. These results suggested that 7-dehydrocholesterol is reduced *in situ* by 7-dehydro-reductase to cholesterol, but we found only about