the 12hr./12hr. ovary, decreasing the conversion to the same extent as melatonin. The effect of DMBA on the 24hr. ovary is completely unexpected in that the conversion is zero. Melatonin protects against this effect to some extent in that the conversion is 0.23 times that of the DMBA control, but, in the 12hr./12hr. ovary, conversion is stimulated to 2.6 times that of the DMBA control.

It has been suggested that the changes in oestrogen conversion result from an increased secretion of follicle-stimulating hormone. The changes in progestogen conversion described here are in agreement with an alteration in the follicle-stimulating hormone/luteinizing hormone ratio, which is markedly in favour of follicle-stimulating hormone, as a result of exposure to light or melatonin administration.

Fiske, V. M. (1941). *Endocrinology*, **49**, 187.

Hamilton, T. & Sneddon, A. (1968). *Brit. J. Surg.* **55**, 76.

Huang, W. I. & Pearlman, W. H. (1962). *J. biol. Chem.* **237**, 1060.

Huggins, C., Grand, C. H. & Brillantes, F. P. (1961). *Nature, Lond.*, **189**, 204.

Weist, R. I. (1959). *Endocrinology*, **65**, 825.

Another Pathway of Oestriol Biosynthesis in Pregnancy

By M. M. SHAHWAN, R. E. OAKEY and S. R. STITCH.
(Division of Steroid Endocrinology, Department of Chemical Pathology, School of Medicine, University of Leeds)

In late pregnancy the major pathway of oestriol biosynthesis involves the secretion of dehydroepiandrosterone sulphate by the foetal zone of the foetal adrenal and hydroxylation of this material at C-16 α by the foetal liver. The placenta converts 16 α -hydroxydehydroepiandrosterone sulphate into oestriol. Other pathways cannot, however, be neglected. Siiteri & MacDonald (1965) demonstrated that the maternal adrenal contributes precursors. Kirschner, Wiqvist & Diezfalussy (1966) suggested that 16 α -hydroxy C₂₁ steroids might be involved, by utilizing a pathway that avoids dehydroepiandrosterone (DHA). Shahwan, Oakey & Stitch (1968) observed the conversion of [¹⁴C]-pregnenolone into 16 α -hydroxy[¹⁴C]dehydroepiandrosterone (16 α -OH-DHA) *in vitro* by slices of adrenal tissue from a newborn anencephalic infant. The foetal zone of the foetal adrenal of the anencephalic infant is atrophic and the gland is composed almost entirely of definitive zone tissue.

We now report further results which demonstrate the formation of 16 α -OH-DHA from pregnenolone by a pathway that excludes DHA.

Adrenal tissue (145mg.) obtained within 0.5hr. of death from a newborn anencephalic infant was incubated with [7 α -³H]pregnenolone (19 μ C, 24 μ g.) and [4-¹⁴C]DHA (0.8 μ C, 22 μ g.) in Krebs-Ringer phosphate buffer (5ml., pH 7.3) at 37° with air as the gas phase. After incubation for 5hr., non-radioactive DHA and 16 α -OH-DHA (100 μ g. of each) were added in acetone. A 'neutral steroid' fraction was prepared as described by Shahwan, Oakey & Stitch (1968). After paper chromatography of this fraction in light petroleum (b.p. 40–60°)–toluene–methanol–water (5:5:7:3, by vol.), ³H and ¹⁴C were found associated with carrier 16 α -OH-DHA. Both isotopes remained with this carrier after rechromatography in benzene–methanol–water (10:7:3, by vol.). However, ¹⁴C, but not ³H, was separated from carrier 16 α -OH-DHA during conversion into oestriol by treatment with placental microsomes and reduction of the 16 α -hydroxy-oestrone formed. Therefore, [³H]pregnenolone, but not [¹⁴C]DHA, was a precursor of 16 α -OH-DHA. Consequently, there exists, at least *in vitro*, a pathway for the biosynthesis of an oestriol precursor that excludes DHA.

If such a pathway operates in the foetal adrenal *in vivo* it is unlikely to contribute significantly to oestriol biosynthesis in normal pregnancy. In pregnancy with an anencephalic foetus, however, where oestriol excretion is reduced by 90%, but may still be 100 times that of non-pregnancy, such a pathway could play, relatively, a more important role.

Kirschner, M. A., Wiqvist, N. & Diezfalussy, E. (1966). *Acta endocr., Kbh.*, **53**, 584.

Shahwan, M. M., Oakey, R. E. & Stitch, S. R. (1968). *J. Endocrin.* **40**, 29.

Siiteri, P. K. & MacDonald, P. C. (1965). *J. clin. Invest.* **44**, 465.

The Influence of Oestradiol-17 β on Ribonucleic Acid Synthesis in Rat Uterus

By R. J. BILLING, B. BARBIROLI and R. M. S. SMELLIE. (Department of Biochemistry, University of Glasgow)

RNA from the uteri of oestradiol-treated and untreated immature rats was fractionated on columns of methylated serum albumin–kieselguhr (MAK), after the administration of radioactive precursors of RNA, and the distribution of radioactivity in the various RNA fractions was examined.

In one series of experiments, 1 μ g. of oestradiol-17 β was administered intraperitoneally to the test animals 1hr. before they were killed; the controls received 0.1ml. of 0.9% (w/v) NaCl. At 30min. before they were killed, both groups received a