proteins might be synthesized by the liver under the control of oestradiol.

Liver slices from immature fish incorporated L-[¹⁴C]leucine into material precipitable with trichloroacetic acid, the incorporation being inhibited by puromycin. Addition of carrier egg protein to an extract of slices and precipitation with antiserum gave no radioactivity in the precipitate. Liver slices from immature fish that had received an injection of 1 mg of oestradiol benzoate/kg 5 days previously gave a rate of incorporation of L-[¹⁴C]leucine into the trichloroacetic acid precipitate greater than that of the controls and also gave incorporation of L-[¹⁴C]leucine into the egg protein immunoprecipitate, the rate being about 40% of that for the trichloroacetic acid precipitate.

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Steroid Metabolism by Foetal Sheep Adrenals

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The development and control of steroid-metabolizing enzyme systems in the foetus has received little attention. It is of interest therefore that destruction of the foetal sheep pituitary or infusion of synthetic adrenocorticotrophic hormone into the foetus *in utero* (Liggins, 1968, 1969) delays or advances parturition respectively. It has been hypothesized consequently that the developing pituitary-adrenal axis is responsible for the timing of parturition.

This preliminary study is concerned with the transformation *in vitro* of pregnenolone and progesterone by foetal sheep adrenals. Steroid metabolism has been investigated in adrenals from fetuses of different gestational age, from a foetus whose birth was prematurely induced by the intraperitoneal infusion of Synacthen *in utero* (790 µg over 76 h) and from the adult animal. Isotopically labelled pregnenolone and progesterone were incubated for 2 h at 39.5°C in Krebs-Ringer bicarbonate-glucose medium with ovine adrenal tissue from (a) adult non-pregnant ewe, (b) foetus at 122 days gestation, (c) foetus at 143 days gestation and (d) foetus at 116 days gestation after Synacthen infusion *in utero*. Steroids were extracted, isolated after extensive chromatography and derivative formation, and measured by procedures previously described (Pierrepoint, Anderson, Griffiths & Turnbull, 1969).

Foetal and adult adrenal tissues extensively metabolized pregnenolone. In the foetal adrenal at

122 days progesterone was the main product from pregnenolone, in contrast with the Synacthen-stimulated and term foetal adrenals, and also the adult gland, where there was a large conversion of this substrate into corticosteroids. Cortisol and corticosterone were the major products from pregnenolone in the Synacthen-stimulated foetal adrenal and in the adult, whereas a relative inactivity of the 11β-hydroxylation enzyme system was demonstrated in the term adrenal, 11-deoxycorticosterone and 11-deoxycortisol being the chief metabolites.

The effect of infused Synacthen on progesterone metabolism was not only to produce a greater transformation of the steroid but also to increase the production of cortisol and corticosterone compared with the unstimulated gland of similar gestational age. In the foetal tissue at 122 and 143 days 11-deoxycorticosterone was the major metabolite of progesterone, the yields of corticosterone and cortisol being relatively small. Progesterone was converted mainly into corticosterone by adult adrenal tissue.

No 3β-hydroxy steroid sulphokinase-transferase activity was demonstrated in either foetal or adult sheep adrenal tissue.

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The Distribution of ¹³¹I-Labelled Adrenocorticotrophin in the Normal Guinea Pig

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The organ distribution of injected adrenocorticotrophin has been investigated by using labelled and unlabelled preparations (Richards & Sayers, 1951; Sonenberg, Keston & Money, 1951). These were often of lower purity than those currently available and the doses were outside the physiological range. The present experiments were carried out with synthetic α¹⁻²⁴-adrenocorticotrophic hormone labelled at high specific radioactivity with ¹³¹I and the doses injected were about 20–30-fold less than those previously reported.

Normal unanaesthetized guinea pigs were injected intravenously with α¹⁻²⁴-adrenocorticotrophic hormone (CIBA, Basle, Switzerland)