

plasma concentration of DHA was  $917.6 \pm 317.8$  ng/100 ml (range 324–3575) in 22 females and  $922.65 \pm 290$  ng/100 ml (range 161–1841) in 17 males. From 2 to 30 days of age, plasma DHA levels were significantly lower:  $344.4 \pm 93.7$  ng/100 ml (range 99–696) in 18 girls and  $229.81 \pm 81.11$  ng/100 ml (range 54–685) in 18 boys. A progressive decline was observed throughout the first year of life; from 1 to 6 month of age mean values were  $147.1 \pm 53.6$  ng/100 ml (range 43–409) in 16 girls and  $151.6 \pm 62.7$  ng/100 ml (range 16–614) in 28 boys, and from 6 to 12 months of age they were  $90.92 \pm 43.3$  ng/100 ml (range 20–218) in 11 girls, and  $68.14 \pm 30.9$  ng/100 ml (range 8–330) in 24 boys. The adrenal origin of plasma DHA was confirmed by the sharp rise observed during stress and acute or chronic ACTH stimulation. In boys the testicular origin was attested by the increase noted under HCG stimulation.

**54. Plasma aldosterone concentrations during the neonatal period and the first year of life.** M. C. RAUX, M. T. PHAM-HUU-TRUNG, D. MARREC, F. GIRARD, J. HERVE and J. SALAT-BAROUX, Laboratoire de physiologie endocrinienne infantile, Hop. Trousseau, Paris, France Maternité Hôpital Rothschild, Paris, France

A direct radioimmunoassay for plasma aldosterone (PA) was applied to 85 normal newborns and infants, using a highly specific antibody. Blood samples were taken from the antecubital vein of the resting babies, 3 to 5 h after feeding, between 9 and 11 a.m. The 0–7-day-old babies had PA levels ranging from 0 to 330 ng/100 ml (65 determinations). In most cases, the levels could be considered high since only 3 values were found to be within the range of those of the non-stimulated normal adults ( $< 3.5$  ng/100 ml) and 60% of the values were higher than those of the stimulated normal adults ( $> 30$  ng/100 ml). In the first 3 to 5 days, the weight loss was between 3 and 10.5% and thereafter occurred a normal weight increase. There was no correlation between PA levels and the variations in weight. Sodium intake was evaluated for breast fed (0.1 to 0.3 mEq/kg), bottle fed (0.5 to 1 mEq/kg) and sodium loaded (3.5 to 4.5 mEq/kg) newborns. No correlation was found between PA and the sodium intakes. When the mother was submitted to a salt restricted diet during the late pregnancy, the PA level of the newborn was unaffected. In comparison with newborns, lower PA values and narrower ranges were found in older babies (3 to 80 ng/100 ml in the group aged 2 to 8 weeks,  $n = 12$  and 3 to 12 ng/100 ml in the 2 to 12-month-old babies,  $n = 9$ ). After the first year of life, the observed levels were within the range of those of adults. Some values reaching 5 to 42 ng/100 ml were observed in newborns suffering from adrenal diseases with acute salt loss. These values might reflect a limited aldosterone biosynthesis. Infants with salt losing kidney diseases had PA levels over 320 ng/100 ml. From this study, it appears that within the first year of life, PA levels must be interpreted with caution.

**55. Ovarian-placental dependency in rat: estrogen biosynthesis by the rat ovary in late pregnancy.** ROMAN REMBIESA, MARIA MARCHUT and AMELIA WARCHOL, Department of Endocrinology, Institute of Pharmacology, Polish Academy of Sciences, Kiaków, Poland

While the biosynthesis of estrogens from progesterone has been adequately documented in the ovaries before placental development, evidence for the ability of the luteinized rat ovary to form estrogens in the late state of

pregnancy is lacking. Observations in a number of laboratories suggested that the placenta could not take over the endocrine function of ovaries. Our observation confirmed this conclusion because no estrogens were isolated from rat placental tissue. However, we have observed conversion of C-21 steroids to androgens by placental tissue. This observation suggests that in rat during the second half of pregnancy ovarian-placental dependency may exist in the synthesis of estrogens. (Steroids 1972, 19, 65). Thus, it was proposed that pregnant rat ovaries could synthesize estrogens from androgens.

To evaluate the ovarian-placental dependency hypothesis, we examined: (1) whether rat ovaries collected during late pregnancy were capable of removing the 17-side-chain of progesterone and of aromatizing the cleavage product and (2) whether rat ovaries were capable of aromatizing C-19 precursors. Our results indicated that rat ovary during late pregnancy is capable of forming estradiol-17 $\beta$  *in vitro* from 4-androstendione but not from pregnenolone, progesterone and 17-hydroxyprogesterone. Hence it appears that during pregnancy, placental androgens may be a precursor for the synthesis of estrogens by the ovary.

**56. Comparison of plasma hormone levels in the first trimester of normal human pregnancy with these same levels in pregnancies following induction of ovulation.** J. R. T. COUTTS, P. ENGLAND and W. P. BLACK, Department of Gynaecology Research, Glasgow University, Glasgow Royal Infirmary, 106 Castle Street, Glasgow, Scotland

The corpus luteum in the human secretes relatively large amounts of hormones including progesterone, 17-hydroxyprogesterone and oestradiol-17 $\beta$ . In anovulatory women in whom ovulation was stimulated by treatment with human menopausal gonadotrophin (HMG) and human chorionic gonadotrophin (HCG), the ovarian production of these hormones was increased. When conception occurs the corpus luteum secretes increasing amounts of these hormones and maintains the pregnancy in the first trimester. The stimulus for luteotrophic activity is probably HCG synthesized by the products of conception. Serial weekly plasma samples have been collected in two groups of pregnant women from 5 to 16 weeks after their last menstrual period. The first group consisted of 12 apparently normal pregnancies and the second group of 8 pregnancies in women following induction of ovulation with HMG and HCG. Plasma levels of HCG, progesterone, 17-hydroxyprogesterone and oestradiol-17 $\beta$  were determined by specific radioimmunoassays in each of the plasma samples. The results of these assays in each of the 2 groups of patients were averaged and these results show that the corpus luteum of pregnancy has a functional life of 8 to 10 weeks; thereafter maintenance of the pregnancy is the responsibility of the trophoblast. Comparison of the hormone levels in the 2 groups of patients confirmed the increased ovarian activity as a result of induction of ovulation. Comparison of the profiles of these hormones in peripheral plasma in the 2 groups of patients will be made and the hormone levels will be related to the outcome of the pregnancy in successful and unsuccessful cases.

**57. Monitoring early pregnancy with RIA of steroids. Prognostic value of estrogens and progesterone.** R. MONDINA, P. CAPETTA, G. MOJANA, E. ANTIFORA, M. MEILLE and F. POLVANI, II<sup>o</sup> Clinica Ostetrica Ginecologica della Università di Milano, Laboratorio di chimica degli ormoni del C.N.R. di Milano, Italy