

clarify the relationship between the high levels of Linoleic acid (LA) in the maternal circulation and corresponding high levels of Arachidonic acid (AA) in the fetus.

Methods: Human placentas, maternal and fetal rat livers and placentas were homogenized and the microsomal fractions extracted. The various extracts were incubated and assayed by HPLC and the radioactivity on the constituents quantified.

Results: In human placental extracts the conversion of LA to AA was difficult to demonstrate, however, in maternal and fetal rat livers, as well as rat placentas, conversion of LA to γ -linolenic, dihomogamma-linolenic acid and AA were detected.

Conclusions: Conversion of LA to AA in the placenta is insufficient to explain the high concentrations of AA found in the fetus, therefore, the fetus must be capable of converting LA to AA.

71. Morphometric and Biochemical Studies on Hepatocytes of Rats during Pregnancy

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A morphometrical and hematological analysis of liver cells of pregnant rats was undertaken. Rats were divided into 5 groups of 0, 7, 14, 18 and 20 gestational days. Weibel's method for morphometrical analysis was employed. The serum concentrations of progesterone (P), 17β -estradiol E_2 and prolactin were measured by radioimmunoassay. The glycogen contents in liver were directly determined by the modified Roehrig's method using amyloglucosidase, glucose oxidase and peroxidase.

The cytoplasmic volume of the parenchymal cells at 18 days was 1.3 times larger than that of the controls. The most marked alteration of volume density (Vv) was an increase in the proportion of RER and SER during pregnancy. The Vv of canaliculi at 14 days was about 3 times greater than that of the controls. Hematological pattern was similar to human pregnancy. Before delivery, the serum concentration of E_2 increased, but that of P decreased, and glycogen of the liver diminished rapidly.

These findings suggest that the dramatic changes in the size of the parenchymal cells and the Vv of cytoplasmic organelles were associated with the increased requirements of the maternal metabolism

and hormonal environment.

72. A Study of Dopamine and Derivatives during Pregnancy and at Delivery

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The purpose of this study was to investigate the relationship between Catechalamine and pregnancy, labor pain. L-Dopa (D), dopamine (DA) and DOPAC were analysed in amniotic fluid, umbilical vein, umbilical artery and maternal vein by HPLC-ECD method. At the same time Prolactin and Cortisol were measured by RIA. Forty-five pregnancies were divided into 3 groups. Second trimester (16~19 weeks) group was 10, term vaginal delivery group was 25 and selective cesarean section group was 10. Levels of D, DA, DOPAC were compared with each other groups.

1. At term, there were significantly higher levels of DA and DOPAC in amniotic fluid than in umbilical vein, umbilical artery and maternal vein.

2. Levels of DA, DOPAC in amniotic fluid at IIIrd trimester were higher than those of IIrd trimester.

3. Levels of D, DA, DOPAC in amniotic fluid were affected by labor pain at delivery.

4. Level of prolactin in amniotic fluid at vaginal delivery had no relations to levels of D, DA, DOPAC.

Thus it was suggested that levels of DA, DOPAC in amniotic fluid reflect the condition of fetus—fetal growth, fetal distress. But D, DA, DOPAC had no relation to the feto-placental secretion system of prolactin.

73. The Changes of Serum Levels of Somatomedin-C in Pregnant Women

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Somatomedin-C (SM-C) has been originally considered to be one of the factors mediating the effects of growth hormone. In this study, a possible involvement of SM-C in the specific metabolism and nutrition in pregnancy was investigated. The serum levels