hypoxia was tested by FHR recording. In maternal *peripheral blood,* HCG remained unchanged until evacuation. HPL, P, E_2 and E_3 showed a uniform fall during hypoxia with subsequent restitution. In the *uterine vein* (UV) HPL, P, E_2 and E_3 rose during the tourniquet period, demonstrating probably an accumulation by the reduced outflow from the site of hormonal production. Following the tourniquet release UV levels showed a fall to pretourniquet values at the time of peripheral restitution, demonstrating restituted synthesis. In the *amniotic fluid,* no significant concentration changes occurred during hypoxia. An increase of HPL, P, E_2 and especially E_3 was found at the end of the restitution period.

65. Saturated metabolites of progesterone in maternal and fetal plasma at delivery, H. MICKAN* and J. ZANDER, *(DFG Mi 109/5), I. Frauenklinik und Hebammenschule der Universität D-8000 München 2, Maistrasse 11, Germany.

The metabolic reduction of progesterone at positions C-3 and C-5 has been demonstrated *in vitro* by perfusion and incubation of different human tissues. In order to determine quantitatively the epimeric pregnanolones in small plasma samples a sensitive method was developed using gas-liquid chromatography (g.l.c.). In brief, plasma is extracted with ethanol–diethylether. Extracts are purified by thin-layer chromatography, "free" and "sulfate" fractions are separated, the hexadecafluoronanoyl derivative is formed and determined by g.l.c. and electron capture detection. The sensitivity of the method is 1 ng steroid per sample, accuracy 102 ± 21% (S.D.), precision 17–26% (CV). Fifteen sets of plasma samples (maternal vein, umbilical vein and arteries) were obtained at termination of pregnancy by cesarean section. Recovery of added radioactive labelled tracers was 48·2 ± 8% (S.D.). In fetal and maternal plasma the metabolites were present mainly as sulfoconjugates up to 1·8 μg/ml. The free steroids were sometimes undetectable especially in fetal plasma (range 0–170ng/ml). 3α-hydroxy-5α-pregnan-20-one and 3β-hydroxy-5α-pregnan-20-one were found in similar concentrations in fetal arteries, vein and maternal vein. Only for 3α-sulfoxy-5β-pregnan-20-one a definite arteriovenous difference was demonstrated with higher concentrations in arterial plasma of the fetus.

These results show that ring A saturated metabolities of progesterone are present in fetal plasma also at concentrations higher than the parent steroid. 3α-hydroxy-5β-pregnan-20-one seems to be eliminated more effectively from the fetal compartment than the 5α-epimers.

66. Effects of surfactant stimulating agents on plasma estriol and progesterone in third trimester pregnancy, E. FRIEDRICH, A. ETZRODT, H. CHANTRAINE and W. SCHWENZEL, Abteilung Gynäkologie und Geburtshilfe der RWTH Aachen, Germany

Medication with betamethasone (BM) in cases of premature labour results in a significant decrease of respiratory distress syndrome (RDS) in the newborn. BM exerts its effect by surfactant stimulation of the fetal lung. Only recently a new compound, "Bromhexine", metabolite VIII, (NA 872), has been shown to have a similar effect as BM. BM however causes a fall of total estrogens in 24 h urine and thus impairs monitoring of fetal well-being. It was the purpose of this study to investigate the effect of NA 872 on plasma estriol and progesterone in comparison to BM.NA 872 was applied by i.v. infusion to 15 patients with premature labour (30–38 weeks of gestation). The initial dose was 500 mg on the first day of medication and 200 mg daily on 4 following days. BM (6 mg BM-sodiumphosphate plus 4·5 mg BM-acetate) was given by intramuscular injection on two subsequent days to 15 patients with premature labour (30–38 weeks of gestation). Unconjugated plasma estriol (E_3) and progesterone (P) were measured by radioimmunoassay and the following results were obtained: BM caused a rapid fall of E_3 concentrations to 47% (mean) and 49% (mean) of pretreatment levels on days 2 and 3 after injection. This was followed by gradually rising E_3 levels on the following days. In contrast, a slight increase of E_3 was observed in patients treated with NA 872. P showed uncharacteristic day to day fluctuations in both treatment groups. These results suggest that NA 872 does not interfere with steroid biosynthesis of the feto-placental unit and thus offers a major advantage compared to BM treatment.

67. Urinary cortisol in normal and anencephalic pregnancy, SATI C. CHATTORAJ, ADRIAN K. TURNER and DAVID CHARLES, Departments of Obstetrics and Gynecology, Boston University School of Medicine, Boston, Mass. 02118 and Memorial University of Newfoundland, St. John's, Newfoundland, Canada

The urinary excretion of free cortisol was measured in 17 normal pregnant women, 9 pregnant women bearing anencephalic fetuses and 10 non-pregnant females in reproductive life. In normal pregnancy, during the last trimester, the urinary excretion of free cortisol (29·71 ± 19·10 μg/24 h) is close to three times than that noted in normal non-pregnant women (11·03 ± 6·42 μg/24 h). In pregnancies associated with an anencephalic fetus, the urinary free cortisol (8·07 ± 5·18 μg/24 h) is significantly lower ($P < 0{\cdot}005$) than that found in normal pregnancy but is within the non-pregnant range. However, the distinction of excretion values among the three groups becomes less apparent when measurements are carried out without purification of urinary extracts by chromatography.

The decreased urinary excretion values of cortisol in the presence of an anencephalic fetus indicates that during normal pregnancy the fetus substantially contributes to the maternal plasma cortisol pool. Furthermore, such a contribution is significant, enough to increase the non-protein bound fraction in the plasma which is reflected by the urinary excretion. Measurements of urinary free cortisol may be a useful index of fetal well-being (Supported by NICHD, Grant No. HD-06799.)

68. Plasma concentrations of aldosterone and progesterone during normal and hypertensive pregnancy, H. H. WEINBERGER, N. J. KRAMER, L. P. PETERSEN, R. CLEARY and P. YOUNG, Indiana University School of Medicine, Indianapolis, Indiana, U.S.A.

During normal pregnancy aldosterone production increases sequentially, similar increases are seen in plasma renin activity. The production of progesterone, a natriuretic agent with potent anti-aldosterone activity is also known to increase during pregnancy, but the relationship between the 2 steroids has not been examined. In pregnancy complicated by hypertension, aldosterone and progesterone excretion have been reported to be suppressed, as has plasma renin activity, in comparison to observations in normotensive pregnant subjects of the same gestational period. The present study was undertaken to examine whether plasma concentrations of these