7. ROUTINE PLASMA/URINE STEROID-PROFILING WITH GASCHROMATOGRAPHY-/HIGH PRESSURE LIQUID-CHROMATOGRAPHY-NEGATIVE CHEMICAL IONIZATION-MASS SPECTROMETRY

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To obtain a sensitive method to demonstrate the presence of steroids in plasma of fish, bovine urine and human plasma an advanced isolation, purification and separation method is developed. Identification and quantification take place by gaschromatography- or high pressure liquidchromatography-mass spectrometry. To select a proper mass spectrometrical method several modes of ionization as positive-and negative chemical ionization with various reagent gases (CH_4,CH_4-N_2O) of several electrophilic derivatives (heptafluorobutiryl- and O-pentafluorobenzoyloxime/methoxime/tri-methylsilyl-derivatives) are compared. With GC-or LC/MS (CI-neg.) the mass fragments are more specific and the detection is 100 times more sensitive than with GC/MS-Pos.CI.Routine identification and quantification analysis will be shown of the Total Ion chromatogramme with the use of relative retention time/selected ion mass ("Hp QUANTID-software") or by high sensitivity confirmation with the Selected Ion Monitoring mode of MS-operation ("Hp 100 Ion S.I.M.-software").
NCI-LC/MS-method is shown to be the method of choice for the quantitative analysis of the OPFB-glucuronide-steroids.

8. FETO-PLACENTAL FUNCTION ASSESSED BY MEASUREMENT OF SALIVA ESTRIOL

Vining, R.F., Rice, B.V. and McGinley, R. - Garvan Institute of Medical Research, St. Vincent's Hospital, Darlinghurst, N.S.W. 2010, Australia .

Placental production of estriol (E3) as reflected by the concentration of E3 in maternal plasma or urine has often been used as an indicator of feto-placental well-being. We have investigated the possibility of replacing serum E3 measurements with a measurement of saliva E3.

Saliva E3 concentrations were measured by radioimmunoassay in samples obtained from normal subjects in late pregnancy; time matched samples of serum and saliva were obtained from some subjects. The variability of saliva E3 at intervals of 1 day, 1 hour and 10 minutes (approx. 13-23%) was not significantly different from that of serum. The saliva E3 concentration closely reflected the serum free E3 concentration, was highly significantly correlated with the serum E3 and the increase in saliva E3 with gestational age was consistent with the established pattern for serum E3.

The ease with which saliva samples may be collected and the non-invasive nature of the collection procedure, together with the high correlation between saliva and serum E3 concentration suggest that measurement of saliva E3 should replace serum E3 measurements for assessing feto-placental function in high-risk pregnancies.

9. Characterization of the major steroids present in amniotic fluid obtained between the 14th and 17th weeks of gestation.

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Using capillary gas chromatography/mass spectrometry technique a non-selective analysis of the steroid constituents of amniotic fluid were carried out. 46 steroids were characterized. In pooled amniotic fluid obtained between the 14th and 17th weeks of gestation the concentration of free steroids and steroid glucuronides were found 40 µg/dl. The concentration of steroid nonsulfates and disulfates was 19 µg/dl. About the half of the characterized steroids are progesterone metabolites. The "fetal type" 3β-hydroxy-5-ene steroids were found exclusively in the sulfoconjugated form. The concentration represents 20% of the total steroid content. The identification of two 15β-hydroxylated C_{21} steroids, 5-pregnene-3β,15β,17α-triol-20-one and 5-pregnene-3β, 15β,17α,20α-tetrol[1] isolated from mid-pregnancy amniotic fluid is reported here. The identified cortisol metabolites in amniotic fluid with about 8.6% total steroid concentration were found equivalent to the percentage of 17-deoxycorticosteroids (9.4%).

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