tandem mass spectrometry reduces sample preparation time (non-derivatized procedure) and specificity is enhanced by using ratios of phenylalanine (Phe) to tyrosine (Tyr) concentrations. The specificity and sensitivity of the procedure is provided largely by the selectivity of the Multiple Reaction Monitoring (MRM) scan functions performed by the mass spectrometer. The method is very sensitive, with detection limits well below the normal concentrations of the amino acids found in blood.

[PD4-15] [04/19/2001 (Thr) 13:30 - 14:40 / Hall 4]

Determination of Recombinant Human Epidermal Growth Factor (rhEGF) in Pharmaceutical Formulation by High Performance Liquid Chromatography with Electrochemical Detection

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An improved determination method of recombinant human epidermal growth factor (rhEGF) using high performance liquid chromatography with electrochemical detection (ECD) has been developed. The factors affecting the response of rhEGF, have been studied the pH and kinds of buffer, polarisation voltage of the working electrode, cell temperature, and flow rate of eluent.
rhEGF was separated from other components in its formulation on a reversed-phase C18 column with 24 % acetonitrile in 100 mM phosphate buffer (pH 4.6) at a flow rate of 1.0 mL/min. Electrochemical oxidation of rhEGF at a glassy carbon electrode occurred at 0.90 V relative to the Ag/AgCl reference electrode. The limit of quantitation was approximately 0.5 ng and the calibration curve was linear in the concentration range between 1.0-20 ng of rhEGF (the correlation coefficient was 0.995). The method was successfully applied for the determination of rhEGF in a pharmaceutical formulation.

[PD4-16] [04/19/2001 (Thr) 13:30 - 14:40 / Hall 4]

Analysis of Acylcarnitines by Tandem Mass Spectrometry for Newborn Screening

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The acylcarnitines are a homologous group of metabolites derived from mitochondrial acyl-coenzyme A (CoA) intermediates of fatty acid and branched chain amino acid catabolism by the action of a family of enzymes, the carnitine acyltransferases. The diagnostic importance of acylcarnitines was not realized until recently, owing to the lack of specific method for their analysis. In this reason, Seoul Medical Science Institute has begun development of Acylcarnitines screening system using this new technology. In the triple quadruple, collision-induced dissociation (CID) of acylcarnitine buthyl ester M+ ions produces a common fragment of m/z 85, usually the base peak in the product ion spectrum. By scanning the first quadruple (Q1) over the mass range m/z 200-550 while Q3 transmits only ions of m/z 85, acylcarnitines are detected simultaneously and with high sensitivity.

[PD4-17] [04/19/2001 (Thr) 13:30 - 14:40 / Hall 4]

Improved Gas Chromatography-Mass Spectrometry Detection of Five Corticosteroids in Serum and Urine

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Measurement of plasma and urine concentrations of corticosteroids is clinically significant in adrenal and pituitary dysfunctions. Apparent mineralcorticoid excess and Cushing's syndromes can be diagnosed by measuring cortisol (F), cortisone (E), tetrahydrocortisol (THF), allo-THF, and tetrahydrocortisone (THE) excretions in pathological concentration. The present study describes the accurate and reproducible GC-MS method to measure E, F, THE, THF, and allo-THF in serum and urine. After extraction by a solid-phase cartridge using Oasis HLB copolymer, the residues were derivatized with a mixture of *N*-methyl-*N*-trimethylsilyl-trifluoroacetamide, ammonium iodide, and dithioerytrithol (1000:4:5; v/w/w), and analyzed by GC-MS. The method was linear over the range of 1-1000 ng/mL and 2-1000 ng/mL for serum and urine, respectively. Analytical recoveries were 82.4-93.7% and precision (%CV) was 2.8-10.3%. The limit of detection was 1 ng/mL and 3 ng/mL for serum and urine, respectively, and limit of quantification was 2.5 ng/mL and 5.5 ng/mL for serum and urine, respectively. The GC-MS method described is sensitive, specific, and suitable for the determination of E, F, THE, THF, and allo-THF in serum and urine by bench-top GC-MS.

[PD4-18] [04/19/2001 (Thr) 13:30 - 14:40 / Hall 4]

Simultaneous determination of benzophenone and 4-nitrotoluene in ground water and soil by a gas chromatography-mass spectroscopy

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4-Nitrotoluene is used primarily as an intermediate in the production of various dyes, explosives, pharmaceuticals, and in the production of rubber and agricultural chemicals. Benzophenone derivatives are used as UV-absorbing agents which are contained in a large number of products such as hair sprays, shampoo, lipsticks, hair dyes and sunscreen lotions, photoaffinity labeling for various biological materials. Benzophenone and 4-nitrotoluene are listed in World Wildlife Fund. and are suspected to be contaminated in ground water sites and soil. However no literatures of analytical method for determining the benzophenone and 4-nitrotoluene in soil and ground water are found. Benzophenone and 4-nitrotoluene were determined by selected ion monitoring mode of GC/MSD in water, sedimint and soil samples. These two chemicals were extracted with n-hexane for water samples, and with methanol and n-hexane for sediment and soil samples. Benzophenone-d_5 and Nitrobenzene-d_5 were used as internal standards for benzophenone and 4-nitrotoluene, respectively. Recovery in water samples was 72-114% with less than 13% of RSD. Recovery in sediment and soil samples was ranged from 51 to 89%. The detection limit of benzophenone and 4-nitrotoluene in water was 10 ng/L. The mothod detection limit of benzophenone and 4-nitrotoluene was 0.1 and 0.5㎍/kg in sediment and soil , respectively. This method is suitable for the trace analysis of benzophenone and 4-nitrotoluene in environmental samples.

[PD4-19] [04/19/2001 (Thr) 13:30 - 14:40 / Hall 4]

Characterization of DDT Antibodies for Immunoassay Application

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