methylenedioxyamphetamine (MDA) and methylenedioxymethamphetamine (MDMA) by GC/MS in Hair

Lee JS, Park MJ, Kim EM, Chung HS and Yoo YC

Narcotics Analysis Div., Forensic Science Dep., National Institute of Scientific Investigation

The abuse of amphetamine's methylenedioxy-derivatives such as 3,4-methylenedioxyamphetamine (MDA) and 3,4-dimethylenedioxymethamphetamine (MDMA) has increased recently in Korea. In this study, a method is investigated for the simultaneous determination of amphetamine (AM), methamphetamine (MA), MDA and MDMA in hair. To extraction of drugs, fine cutted hair sample was incubated with MeOH (1% HCl) overnight (18 hrs) while stirring. For GC/MS analysis, the extract was evaporated and derivatized with trifluoroacetic anhydride / EtOAc and applied to Hewlette Packard 5973 MSD with selective ion monitoring (SIM) mode.
Quantification of AM, MA, MDA and MDMA in hair sample were based on peak area ratio to their internal standards, like as AM-d_5, MA-d_5, MDA-d_5 and MDMA-d_5, respectively. Selected ions at m/z 140 for AM, m/z 144 for AM-d_5, m/z 154 for MA and MDMA, m/z 158 for MA-d_5 and MDMA-d_5, m/z 162 for MDA and m/z 167 for MDA-d_5 were used in this analysis.

[PD4-11] [04/19/2001 (Thr) 13:30 - 14:40 / Hall 4]

Studies on the Quality Evaluation of Pharmaceuticals (III) - Comparative Analysis of Pyrogen and Endotoxin Test in Amino acid injections

Kim HS°, Lee SD, Ze KR, Kim HS°, Kim MJ, Jang SH, Jung KS, Lee YH, Jung HY and Jang SJ

Division of Drug Chemistry, Department of Drug Evaluation, KFDA

Limulus Amebocyte Lysate(LAL) test (endotoxin test) is supposed to be a alternative to the rabbit pyrogen test in that the former is more convenient, specific and inexpensive. To compare the LAL test with the rabbit pyrogen test, we prepared spiked samples of 5 pharmaceutical amino acid injections with concentration of 0.25, 0.5, 1.0 EU/mL and tested those by pyrogen and endotoxin test simultaneously.
The LAL test was accomplished by using 2 different methods, gel-clot method and kinetic turbidimetric method and the pyrogen test was accomplished by using KP official pyrogen test method. In our results, the LAL test was about 15.8 times more sensitive than the rabbit pyrogen test in the case of gel-clot method and about 97.3 times more sensitive than the rabbit pyrogen test in the case of kinetic turbidimetric method. The amounts of endotoxin in 5 amino acid injections estimated by the LAL test was well recovered and correlated with the rise of body temperature in rabbit pyrogen test. These results suggest that the LAL test could be used as an alternative method for the rabbit pyrogen test to examined 5 amino acid injections.

[PD4-12] [04/19/2001 (Thr) 13:30 - 14:40 / Hall 4]

Mass Spectrometric Study of cyclofenil and its metabolites in human urine

Myung S-W[1], Min H-K[1], Chang Y-J[1], Kim H-Y [1], Yoon SH[1], Kim MS [1], Cha SJ° [2], Yoo EA [2]

[1]Doping Control Center/Korea Institute of Science and Technology, [2]Department of Chemistry/Sungshin Women's University

The mass spectrometric study for the elucidation of cyclofenil's metabolites in human urine was performed by the electrospray ionization (ESI)-tandem mass spectrometry (MS/MS), electron impact (EI) and chemical ionization (CI)-mass spectrometry (MS). Cyclofenil, 4,4'-(cyclohexylidenemethylene) bis(phenyl acetate), is used to stimulate gonadotrophin release by inhibiting the negative feedback effects of endogenous oestrogen. It works as an antiestrogen, by binding with the receptors and preventing gynecomastia. Athletes also use this one, as it has effects similar to both clomiphene and hCG. The cyclofenil and metabolites were extracted from urine and characterized by the high performance liquid chromatography (HPLC) with ESI-tandem mass spectrometry. The metabolites were found by comparing chromatograms of the control urine and the dosed urine. The structures of the metabolites were identified by the MS/MS which can take place secondary fragmentation. And also the metabolites were identified using the gas chromatography /mass spectrometry (GC/MS). The extracted metabolites after hydrolysis from urine were derivatized and separated by the GC and subsequently identified by both of the EI and CI-MS. A di-deacetylated metabolite (m.w. 280) was a major metabolite and the other was a di-deacetylated-hydroxylated form (m.w. 296) of the cyclofenil. The parent was not detected from the urine and the metabolites were identified with the glucuronide metabolites (m.w. 456 and 472) by the HPLC/MS/MS. The identified metabolites can be used to confirm the fact of the cyclofenil's dose in the drug analysis.

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

Quantitative determination of clarithromycin in human plasma by high-performance liquid chrpmatography using C18 reverse column with flourescence detection chrpmatography

Ki-Won Nam°, Sung-Kuk Chun, Young-Gwan Kim, Sung-Hoon Seo, Seon-Pyo Hong, Kyung-Tae Lee

College of pharmacy, Kyunghee Uninversity, Seoul. 130-701, Korea

A validated, highly sensitive and precise high-performance liquid chromatographic method for the determination of the clarithromycin in human plasma is described. A diethyl ether extract, obtained from plasma using a saturated sodium carbonate solution, was treated with 9-fluorenylmethyl-oxycarbonyl chloride FMOC-CL for 40 min at 40℃ and chromatographed capcell Pak C18 MG maintained at 50℃ during elution, using an eluent composed of acetonitrile-hydrogen phosphate buffer, pH 5.0, with 0.05 v/v% triethylamine. Flourescence detection was used at an excitation wavelength of 255nm and an emission wavelength of 315 nm. These results suggest that pre-treated clarithromycin was well separated with internal standard erythromycin on chromatogram file and the lower limit of quantitation was 0.1 ㎍/ml for clarithromycin.

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

Analysis of Phenylalanine and Tyrosine by Tandem Mass Spectrometry for PKU Screening

Kim HH, Kim JY°, Lee KP, Yoon HR

Seoul Medical Science Institute, Seoul Clinical Laboratories (SCL)

Phenylketonuria (PKU) is an autosomal recessive genetic disorder caused by a deficiency of hepatic phenylalanine hydroxylase (PAH) activity. As a result, phenylalanine is not converted to the amino acid tyrosine. This causes an excessive amount of phenylalanine and toxic metabolites to accumulate in the body, including the brain, blood and urine. Recently, an important development for PKU screening has been the measurement of analytes by tandem mass spectrometry. Seoul Medical Science Institute has begun development of a PKU screening system using this new technology. Analysis for PKU by