specimens.

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Paraquat(methyl viologen) is a bis-quaternary ammonium compound as a wide range herbicide, which was first introduced as an oxidation-reduction indicator dye. When paraquat(fatal dose, 1-2g) was administered to men, the oxido-reduction system of cell was repeatedly acted to perpetuate the cell membrane system. Many death cases had been occurred after ingestion of paraquat around Daejon area for the last six months. Therefore, development of more rapid, simpler, and more sensitive paraquat detection method in biological specimens than the conventional methods was indispensable. The most important step of paraquat analysis in the biological specimens is its extraction from the specimens because paraquat is very insoluable in organic solvent due to its strong polar property. As a most common extraction method, solid phase extraction (SPE) has been used for paraquat extraction from biological specimen. However, SPE procedures were somewhat time-consuming and resulted unsatisfactory recovery in our laboratory. We developed simple, sensitive and reproducible Liquid-Liquid-Extraction method of high recovery for paraquat in the biological specimens. A 0.5 mL of blood was extracted with 0.5 mL of chloroform-ethanol 7:3 mixture solvent. After centrifugation at 13000 rpm for 3 minutes, the ethanol layer(upper layer) was directly injected into HPLC. For qualitative test the ethanol layer was evaporated and the residue was color tested by adding $Na_2S_2O_4$ and ammonium water. The recoveries of paraquat in 6 blood samples which were already spiked with paraquat standard in this method were average 102 % but recovery in SPE was about 80 %. Linearity in the range of 1.05 - 67.3 μg/mL was obtained with correlation coefficient (r2 > 0.999). Limit of detection (LOD, with S/N ≥ 3) and limit of quantitation (LOQ, with S/N ≥ 10) were 0.5 μg/mL and 1.0 μg/mL, respectively. Seven postmortem specimens, bloods, were analyzed by this validated LLE method for paraquat determination. The concentration ranges was from 1.5 μg/mL to 335.9 μg/mL. The published praquat concentrations from bloods of 32 fatalities were in the ranges of 0-60 μg/mL. This LLE extraction method was much time saved and recovery, sensitivity, and reproducibility were significantly improved when compared to those of SPE.

[PA4-3] [10/18/2002 (Fri) 09:30 - 12:30 / Hall C]

Simultaneous Determination of Underivatized Diazepam and Nordiazepam in Plasma Using Gas Chromatography/Mass Spectrometry.

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Diazepam (DZ) is one of the most frequently prescribed drugs as an antianxiety agent, muscle relaxant, and anticovulsant and sometimes causes intoxication due to accidental overdose, misuse or abuse. DZ is metabolized to nordiazepam (NDZ, desmethyldiazepam), oxazepam (OX) and temazepam (TM) which are also pharmacologically active, although OX and TM do not accumulate in blood or plasma to an appreciable extent. Screening or confirmation methods for DZ and NDZ in plasma are very important for clinical and toxicological studies and in forensic cases.

To human thawed plasma) was added internal standard solution and various amounts of DZ and NDZ. Plasma samples were adjusted to pH 9 and were extracted with ethyl acetate. GC/MS analysis was performed using a Agilent MSD 5973 mass spectrometer and the column was a DB-5MS. The detection limit was 0.5 ng/mL and the assay was sensitive to 1 ng/mL and linear to 500 ng/mL with correlation coefficients of >0.99 for both DZ and NDZ. The recoveries of DZ and NDZ were 89.6 % and 88.4 %. This sensitive and simple method is useful for plasma samples of forensic toxicological interest and in clinical studies when low concentrations of DZ are to be detected. Preliminary studies extended this approach to additional benzodiazepines. The results suggested that sensitive assay methods that do not require derivatization can be developed for midazolam, prazepam and flurazepam. The method appeared to be less well suited for the development of methods for lower concentration of oxazepam, temazepam, lorazepam, flunitrazepam, alprazolam and triazolam.

[PA4-4] [10/18/2002 (Fri) 09:30 - 12:30 / Hall C]