[PD4-3] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Determination of Water in Alcohol by Portable Near Infrared (NIR) System

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In this study, water content in the mixture of ethanol and methanol was nondestructively measured by near infrared (NIR) spectroscopy. Two types of NIR instruments, portable NIR system with a photo-diode array and scanning type NIR spectrometer, were used and the calibration results were compared. Partial least squares regression (PLSR) was applied for the calibration and validation for quantitative analysis of water content. The calibration result from both instruments showed good correlation with actual values. The calibration with the use of PLS model predicted water concentration for validation set with a standard error of prediction (SEP) of 0.097% for photo diode array type-NIR, 0.11% for scanning type-NIR, respectrively. Also, during 6 days, routine analyses for 3%, 5% and 7% water in alcohol solution were performed to validate the robustness of the developed calibration model. The routine analyses showed good results with standard deviation of within 0.9% for both types of NIR spectrometers. This study showed that the rapid determination of water in the mixture of ethanol and methanol was successfully performed by NIR spectroscopy and the performance of the portable NIR system with a photo diode array detector was comparable to that of the scanning type-NIR spectrometer.

[PD4-4] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Chiral discrimination of β-blockers by proton nuclear magnetic resonance spectroscopy using (S)-2-tert-butyl-2-methyl-1,3-benzodioxole-4-carboxylic acid

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The use of (S)-2-tert-butyl-2-methyl-1,3-benzodioxole-4-carboxylic acid ((S)-TBMB-COOH) as NMR chiral derivatizing agent to resolve the enantiomers of β-bolckers was investigated. Optically pure (S)-TBMB-COCl was synthesized and its CH3CN solution was successfully used for the chiral discrimination of β-blockers as their diastereomeric (S)-TBMB derivatives.
Diastereotopic nonequivalence 1H-NMR examination of the resultant amids without any racemization and kinetic resolution has proved (S)-TBMB-COOH to be useful, efficient and reliable chiral derivatizing agent for the enantiomeric excess determination of β-blockers.

[PD4-5] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Determination of Ambroxol in Human Plasma by Liquid Chromatography Tandem Mass Spectrometry

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A sensitive and selective method for the determination of ambroxol in human plasma have been developed After the addition of the domperidone (internal standard), ambroxol in human plasma were extracted with diethyl ether under basic condition. Centrifuged upper phase was evaporated and dissolved in methanol. The supernatant was directly introduced into LC/MS/MS. Chromatography was carried out on a C18 Xtera column (2.1X30mm) with a particle size of 3.5um. The mobile phase was 20mM ammonium acetate in 90% acetonitrile(pH 9.0) and the flow rate was 250μL/min. The mass spectrometer was operated in positive ion

mode using the electrospray ionization source maintained at 300℃. Nitrogen was used as the nebulizer, curtain, collision and auxiliary gas. Ambroxol and domperidone were detected by MS/MS using multiple reaction monitoring(MRM). Ambroxol gave a parent molecule([M+H]+) at m/z 379 and a corresponding product ion of m/z 264. Detection of ambroxol was accurate and precise, with a limit of detection of 0.01ng/mL in plasma. The calibration curve for ambroxol in human plasma was linear in a concentration range of 0.1ng/mL - 200ng/mL for plasma. This method has been successfully applied to determined the concentration of ambroxol in human plasma from pharmacokinetic and relative studies.

[PD4-6] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Studies on development of analytical methods for the official compendium drugs. - Cholic acid and its derivatives

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A high performance liquid chromatography method has been developed and validated for the determination of cholic acid and its derivatives such as dehydrocholic acid (DHCA), ursodesoxycholic acid (UDCA), desoxycholic acid (DOCA), chenodeoxycholic acid (CDCA) and lithocholic acid (LCA) in pharmaceuticals for quality control purpose. The linear gradient elution of 200 mM phosphate buffer (pH 3.0) and acetonotrile was available for separating 6 cholic acid derivatives using octadesylsilan silica column at 45℃. UV detection was set at 210nm. Selectivity, linearity, range, repeatability, precision and acuuracy showed good result. The detection limit of cholic acid was 12.3 ㎍/mL, DHCA 0.03 ㎍/mL, UDCA 39.8 ㎍/mL, DOCA 31.2 ㎍/mL, CDCA35.4 ㎍/mL and LCA 46.2 ㎍/mL. This new developed method would be applicable to quality control for cholic acid derivatives in pharmaceuticals.

[PD4-7] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Chiral recognition of 18-crown-6 tetracarboxylic acid as a chiral selector determined by NMR spectroscopy

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We recently reported that a new HPLC chiral stationary phase prepared by bonding (+)-(18-crown-6)-2,3,11,12-tetracarboxylic acid (18-C-6-TA) has been successfully employed in resolving various racemic compounds containing a primary amino functional group. Related to these results, in this study we performed detailed NMR studies for each enantiomer of phenylglycine and phenylglycine methyl ester with 18-C-6-TA to investigate the chiral recognition mechanism of the diastereomeric complexes in solution state. These NMR results were consistent with the chromatographic data obtained on chiral HPLC.

[PD4-8] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Quantitative analysis of Letosteine in film-coated tablet by HPLC

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Letosteine(Viscotiol), a cyclic cysteine derivative, is used in treatment of bronchitis.

Handok Pharmaeuticals, Co. Ltd have manufactured Letozol film-coated tablet with letosteine as a active ingredient. We have coated this product using enteric coating materials for taste and smell masking.