Multiple Ionic-Polymer Coated Capillary

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Recently, particular attention has been paid to the chiral separation of amino acid enantiomers because of their different biological activities. Among the various amino acids, L-DOPA and 5-hydroxy-L-tryptophan are used to treat Parkinson's disease, a neurological disorder, and mental disorders, respectively. Hence, the high optical purity of aromatic amino acids is critical because of their important functions in the central nervous system. In this study, a successive multiple ionic-polymer(SMIL) coated capillary was tested for its precision in migration times in the enantiomeric separation by chiral capillary electrophoresis employing highly sulfated cyclodextrins as the chiral selectors.

[PD4-22] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Achiral and Chiral Determination of Yatein from Juniperus and Some Related Species by capillary electrophoresis

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A capillary zone electrophoresis method was developed for the achiral and chiral determination of yatein from Juniperus and some related species. The achiral separation was done by using 100 mM sodium borate buffer (pH 10.5) containing 30% (v/v) methanol, from which we set up the chiral method by simply adding several chiral selectors. As a result, the CM-b-CD was selected with the concentration of 10 mM. Finally, we obtained the information about the content difference of yatein among the species and it could be a potent quality control method of the species.

[PD4-23] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Capillary Electrophoretic Determination of PEGylation Sites of Mono-PEGylated Human Parathyroid Hormone (1-34)

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A capillary electrophoretic method was developed for the determination of the PEGylation sites and positional isomer contents of mono-PEGylated human parathyroid hormone (1-34) (hPTH1-34). Two different types of activated PEG, monomethoxy PEG-succinimidyl propionate (SPA-MPEG) and MPEG-propionaldehyde (ALD-MPEG), were employed to conjugate with hPTH1-34. Each mono-PEGylated hPTH1-34 molecule was purified by anion-exchange and size-exclusion chromatography. The purified fractions were digested with *Endoproteinase* Lys-C and were directly analyzed by capillary zone electrophoresis. Resistance to Lys C digestion on the PEGylation sites resulted in different patterns of CE electropherograms for the Lys C-digested mono-PEG-hPTH1-34, and the PEGylation sites were assigned accordingly. The content of positional isomers of mono-PEG-hPTH1-34 was also determined by quantifying PEGylated fragments in the CE electropherograms. The PEGylation sites were also confirmed directly by determining the molecular masses of Lys-C digested mono-PEG- hPTH1-34 by the MALDI-TOF mass spectrometry. This method may have a potential for characterizing other PEGylated therapeutic peptides.

[PD4-24] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Noninvasive blood glucose measurement by portable near infrared (NIR) system

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The purpose of this study is to develop a noninvasive blood glucose measurement method by portable near infrared (NIR) system which was newly integrated by our laboratory. The portable NIR system includes a tungsten halogen lamp, a specialized reflectance fiber optic probe and a photo diode array type InGaAs detector, which was developed by a microchip technology based on the lithography. Reflectance NIR spectra of different parts of human body (finger tip, earlobe, and inner lip) were recorded by using a fiber optic probe. The spectra were collected over the spectral range 1100~1700 nm. Partial least squares regression (PLSR) was applied for the calibration and validation for the determination of blood glucose. The calibration model from earlobe spectra showed better results, showing good correlation with standard values, which were acquired by a glucose oxidase method. This model predicted the glucose concentration for validation set with a SEP of 33 mg/dL. This study indicated the feasibility for noninvasive monitoring of blood glusose by portable near infrared system.

Poster Presentations - Field E1. Pharmaceutics

[PE1-1] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Phonophoretic Delivery of Piroxicam Gel

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Piroxicam (PX) is one of the NSAIDs, it is used in the systemic and topical treatment of a variety of inflammatory conditions. Conventionally, for topical use, the drug is formulated in a cream, ointment and gel. We designed a phonophoretic drug delivery system to investigate the PX permeability and the influence of ultrasound application(continuous, pulse), frequency(1.0 MHz, 3.0 MHz) and intensity(1.0 w/㎠, 1.5 w/㎠, 2.0 w/㎠) with 0.5 % PX gel. Percutaneous absorption studies are performed in vitro models to determine the rate of drug absorption via the skin. Permeation study using mouse skin was performed at 37 ℃ using buffer saline (pH 7.4, 10% propylene glycol solution) as the receptor solution. Anti-inflammatory activity determined using carrageenan induced foot edema in rat. The pronounced effect of ultrasound on the skin absorption of the PX was observed at all ultrasound energy level studied. Ultrasound was carried out 10 hours. The highest permeation was observed at an intensity 2.0 w/㎠, frequency 1.0 MHz and continuous output. In carageenan-induced edema, the anti-inflammatory activity of phonophoresis was better than non-treatment and only gel application group. The inclusion of phonophoresis was found to improve significantly the skin permeation in vitro and the anti-inflammatory activity in vivo.

[PE1-2] [04/19/2002 (Fri) 10:00 - 13:00 / Hall E]

Protective Effects of Honokiol and Magnolol on t-Butyl Hydroperoxide or D-Galactosamine-Induced Toxicity in Rat Primary Hepatocytes

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