

A portable near infrared (NIR) system which was newly integrated by our lab has been used to develop a non-invasive blood glucose monitoring. The portable NIR system includes a tungsten halogen lamp, a photo diode array type-InGaAs detector, and specialized reflectance fiber optic probes. The shape of probes is composed of two parts, one for illumination into sample and the other for receiving the radiation from sample. Three kinds of probes with different distance between illumination and receiving part, such as 0.03, 0.1, and 0.5mm, were investigated for optimization. The spectra were collected over the spectral range 1100~1730 nm. Partial least squares regression (PLSR) was applied for the calibration and validation for the determination of blood glucose levels. NIR reflectance spectra of different parts of human body (finger tip, earlobe, and inner lip) were acquired and showed a specific trend by the distance of fiber optic probe. This trend indicated that the distance of fiber optic probe had an effect on penetration depth into skin tissue of human body and the optimum distance of fiber optic probe according to the parts of human body should be considered. Calibration modeling results were compared based on the kinds of probes and the measured human body parts. This study provided the useful information concerning sample presentation for non-invasive blood glucose monitoring.

Poster Presentations – Field E1. Pharmaceuticals

[PE1-1] [10/18/2002 (Fri) 13:30 – 16:30 / Hall C]

Mucoadhesive Drug Carrier Using Poly(acrylic acid)/poly(vinyl alcohol) Interpolymer Complexes by Template Polymerization

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A interpolymer complexes composed of poly(acrylic acid)(PAA) and poly(vinyl alcohol)(PVA) were prepared by template polymerization of acrylic acid in the presence of PVA for mucoadhesive drug delivery. FT-IR results showed that the PAA/PVA interpolymer complex was formed by hydrogen bonding between the carboxyl groups of PAA and the hydroxyl group of PVA. The dissolution rate or the swelling ratio of the PAA/PVA interpolymer complexes was dependent on the pH and molecular weight of PVA that was used as a template. The adhesive force of the PAA/PVA mucoadhesive polymer complex with a plastic plate(poly propylene) was usually stronger than that of commercial Carbopol 971P. The adhesive force of the PAA/PVA interpolymer complex increased as the molecular weight of PVA increased.

[PE1-2] [10/18/2002 (Fri) 13:30 – 16:30 / Hall C]

Surfactant-free microspheres of poly(ϵ -caprolactone)/poly(ethylene glycol)/poly(ϵ -caprolactone) triblock copolymers as a novel protein carriers

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The aim of this study is to prepare biodegradable microspheres without use of any kind of surfactants or emulsifiers for a novel sustained delivery carriers of protein drugs. Poly(ϵ -caprolactone)/poly(ethylene glycol)/poly(ϵ -caprolactone) (CEC) triblock copolymer was synthesized by ring-opening of ϵ -caprolactone with dihydroxy poly(ethylene glycol) and was used to make surfactant-free microspheres. When DCM or EF were used, microspheres was not formed at any formulation conditions and resulted in disintegrated form or irregular microparticles after lyophilization. Although microspheres could be formed before lyophilization at certain conditions, morphology of microspheres was not maintained during filtration and lyophilization process. Surfact-