

To develop rapid detection method of DDT (4,4'-dichlorodiphenyl-2,2,2-trichloroethane) and its metabolites, DDT derivatives created carboxyl group (DDA, DDHP, DDCP) were conjugated to KLH for the use of immunogen. Monoclonal and polyclonal antibodies were prepared. Fifteen hybridoma cell lines obtained from each immunogen were screened using matching DDT-BSA derivatives. For the use of coating ligands to measure titration level of antibody and free ligand displacement, DDT derivatives (DDA-, DDHP-, DDCP-, DDHH-, and DDHHAP-) were conjugated to ovalbumin. To screen a matching pair of antibody and coating legend for the simultaneous detection of DDT and its metabolites (DDA, DDE, DDD), each antibody was investigated for displacement of free ligand using combination of five coating ligands and two carrier proteins. The competitive ELISA results indicate that titration level and free ligand displacement were greatly influenced by ligands derivatized and carrier proteins used. Three matching pairs of antibody and coating ligand are screened for this purpose and they were 1A3 and DDA-OVA, 1A1 and DDHHAP-BSA, and 1A4 and DDHP-OVA.

[PD4-20] [04/19/2001 (Thr) 13:30 - 14:40 / Hall 4]

Homogeneous Fluorescence Polarization Immunoassay of Estrogens using Fluorescein-labeled Tracer

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A homogeneous fluorescence polarization immunoassay (FPIA) was developed to measure estrogen level using a fluorescence polarization analyzer in photocheck mode (Abbott Labs). Two tracers of fluorescein isothiocyanate (FITC)-labeled estrogens were synthesized for this purpose: estrogen-6-FITC (E-6-F) derived from 6-ketoestradiol 6-(o-carboxymethyl)oxim and estrogen-17-FITC (E-17-F) derived from 17 β -estradiol 17-hemisuccinate. Different combination of tracers and antibody were investigated to find a matching pair in the FPIA system. E-6-F tracer (R_f _{365 nm} = 0.3 in chloroform/methanol developer solvent) showed better binding response than E-17-F (R_f _{365 nm} = 0.2) in immunoassay. This result indicates that the 17-position of estrogen plays an important role for binding to antibody. At the optimized condition, estradiol can be detected in the range of 10 nM and 1 μ M. Several estrogens were compared for their detection range by FPIA. By comparing 50 % bound concentration, 16-ketoestradiol, 4-methoxyestradiol and 2-hydroxyestradiol-3-methylether is 100 times sensitive than estradiol and 17-epiestriol is 100 times less sensitive. Other estrogens will be discussed. This FPIA require no separation step and assay time is apporoximately 7 minutes for 10 samples. Therefore, it is useful for the screening of eco-estrogens in water sample.

[PD4-21] [04/19/2001 (Thr) 13:30 - 14:40 / Hall 4]

A COMPACT AND PORTABLE NEAR INFRARED (NIR) SYSTEM USING MICROSPECTROMETER

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In recent years, a miniature spectrometer has been extensively developed due to the marriage of fiber optics and semiconductor detector array. This type of miniature spectrometer has advantages of low price and robustness due to the capability of mass production and no moving parts are required such as lenses, mirrors and scanning monochromator. These systems are ideal for use in teaching labs, process monitoring and field analyses. A portable near infrared (NIR) system has been developed for

qualitative and quantitative analysis. This system includes a tungsten halogen lamp for light source, a fiber optics connected a light source, and a sample module to the microspectrometer. The size of spectrometer can be as small as 2.5 cm x 1.5 cm x 0.1 cm. Wavelength ranges can be chosen as 360–800 nm, 800–1100nm and 1100–1900 nm depending on the type of detector. The software consists of various tools for multivariate analysis and pattern recognition techniques. To evaluate the system, long and short-term stability, wavelength accuracy, and stray light have been investigated compared with conventional scanning type NIR spectrometer. This developed system can be sufficiently used for quantitative and qualitative analysis for various samples such as agricultural product, herbal medicine, food, petroleum, and pharmaceuticals, etc.

Poster Presentations – Field E1. Pharmaceuticals

[PE1-1] [04/19/2001 (Thr) 15:30 – 16:30 / Hall 4]

Possibility of Enteric Polymer to Sustain Absorption of Drug with Narrow Absorption Window

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Enteric polymers were used as a modulator for release of cefatrizine (CFT), which reported to be absorbed at the region of upper small intestine. Among those polymers, hydroxypropylmethylcellulose acetate succinate (HPMCAS) was chosen owing to the better formation of matrix tablet upon the simple physical pressure. In this tablet CFT was released wholly after about 2 hours in gastric fluid and more rapidly released when the tablet was transferred into intestinal fluid due to the faster erosion of enteric polymer.

As a result of in vivo absorption study using beagle dogs it was strikingly evident that there was no difference of total absorption of drug between the enteric matrix tablet and plain immediate-release capsule. They showed a little but significant difference in T_{max} and insignificant C_{max}. These results suggest that this enteric matrix tablet could displace the present immediate-release dosage form into sustained-release one with relatively prolonged action.

[PE1-2] [04/19/2001 (Thr) 15:30 – 16:30 / Hall 4]

Development of Liposomal Formulations of a Camptothecin Derivative

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Camptothecin derivative, a synthetic and water-soluble analogue of topoisomerase I inhibitor, can be used in treatment of various solid tumors. To develop liposomal formulations of a camptothecin derivative, we prepared DPPC(dipalmitoylphosphatidylcholine) and DSPE-PEG2000(distearoyl-N-monoethoxy poly(ethyleneglycol) succinylphosphatidylethanolamine) liposome with a camptothecin derivative entrapped. DPPC liposome composed of DPPC/Chol (2:1 molar ratio) and PEGylated liposome composed of DPPC:Chol:DSPE-PEG2000 (22:11:2 molar ratio) were prepared by reverse-phase evaporation method. Formed liposome was characterized in terms of morphology, size and encapsulation efficiency. To elucidate steric stability of PEGylated liposome, the PEGylated liposome