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 ovualbumin. 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 liagand 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

Lee JR°, Choi JE, Eremin SA, Choi MJ

Bioanalysis and Biotransformation Research Center,
Korea Institute of Science and Technology, Seoul, Korea

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 17ß-estradiol 17-hemisuccinate. Different combination of tracers and antibody were investigated to find a matching pair in the FPIA system. E-6-F tracer ($Rf_{365\ nm}$ = 0.3 in chloroform/methanol developer solvent) showed better binding response than E-17-F ($Rf_{365\ nm}$ = 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 uM. Several estrogens were compared for their detection range by FPIA. By comparing 50 % bound concentration, 16-ketoestrdiol, 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

Woo YA, Kim JM*, Kim HJ

College of pharmacy, Dongduk Women's University, Seoul 136-714, Korea Spectron Tech. Co., Ltd. Seoul 136-132, Korea*

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