043. IMMUNOCHEMISTRY FOR THE SELECTIVE PRETREATMENT OF ENVIRONMENTAL SAMPLES

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Immunochemistry has been applied to the sample pretreatment; using antibodies chemically bonded to silica-based sorbent. Antibodies have been tailored for the recognition of a group of structurally related analytes. These immunosorbents can be used as classical solid-phase extraction sorbents. Their main characteristics (recoveries for the group of interest, selectivity, capacity, re-usability, etc.) are given. Multiresidue analyses are presented for two groups of herbicides (phenylurea., triazines) and groups of pollutants (polyaromatic hydrocarbons, chloroanilines, nitroaromatics) in various complex environmental samples.

044. DEVELOPMENT OF A NOVEL DRY PROCESS TO FUNCTIONALIZE MEMBRANES FOR THE COVALENT ATTACHMENT OF ANTIBODIES USED IN IMMUNOCHEMICAL-BASED ENVIRONMENTAL STRIP TESTS.

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The controlled attachment of antibodies is a prime requirement for developing membrane-based immunoassays used in field tests. A novel dry process was developed to functionalize a nitrocellulose membrane by introducing amino groups on the surface, allowing an oriented covalent linkage of antibodies. A non-equilibrium, low pressure plasma of NH_3 and NH_3/H_2 mixtures was used to incorporate an average of 2.4 amine functions per nm^2 of porous surface. Immobilization of radiolabelled antibodies resulted in an average binding capacity of 60 $\mu g/cm^2$. The activity of the immobilized antibodies was retained as shown by enzyme linked immunosorbent assay. This fast and reproducible process was demonstrated to be efficient in developing functionalized membranes suitable for environmental strip tests.

045. DEVELOPMENT AND VALIDATION OF A METHOD FOR THE MEASUREMENT OF METOLACHLOR MERCAPTURATE IN URINE.

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Commercially available ELISA (enzyme-linked immunosorbent assay) kits, developed for the detection of metolachlor in ground water, have been applied to the detection of metolachlor in urine. In humans, metolachlor is metabolized to its mercapturic acid derivative. Cross-reactivity tests using synthetic metolachlor mercapturate (MM) have shown that the available kits do not detect this metabolite. In order to develop a method for the detection of MM in urine, polyclonal antibodies were prepared from KLH (keyhole limpet hemocyanin) and BSA (bovine serum albumin) MM conjugates. MM substitution of the respective proteins was analyzed by chemical and instrumental methods. The anti-MM protein antibodies were then used in the development of an ELISA method. The prepared antibodies were also used in an IAC (immunoaffinity chromatography) method. IAC purified urine samples were analyzed by HPLC (high-performance liquid chromatography) with fluorescence detection of the methylmethoxycoumarin ester of MM.

046. DEVELOPMENT OF A cELISA FOR THE DETECTION OF MUTAGENIC METABOLITES OF THE HERBICIDE ALACHLOR.

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The acetanilide compounds 2-chloro-2',6'-diethylacetanilide(CDA) and 2-hydroxy-2',6'-diethylacetanilide(HDA) are environmental degradative products of the chloroacetanilide herbicide alachlor. CDA, HDA and alachlor are ground and surface water contaminants. CDA and HDA are mutagenic in the *Salmonella*/ microsome assay. We report the development of a competitive enzyme-linked immunosorbent assay (cELISA) for the detection of CDA and HDA.