

124.

ELISA METHOD IN DETERMINATION OF SULFENTRAZONE AND THE ACID METABOLITE IN WATER SAMPLES. *Audrey W. Chen, Environmental Sciences Team, FMC Corporation, P.O. Box 8, Princeton, NJ 08543, fax: 609-951-3670, audrey_chen@fmc.com*

Sulfentrazone represents a new class of herbicide (Aryl Triazolones). It inhibits the protoporphyrinogen oxidase (PPO) in the plant chlorophyll biosynthetic pathway. Sulfentrazone can be applied either pre-emergence or pre-plant incorporated to the soil. The major metabolite identified in the water and soil is sulfentrazone-3-carboxylic acid (SCA). An ELISA test kit for sulfentrazone and SCA residues in water has been developed with LOQ and LOD at 0.1 and 0.05 ppb. This ELISA method has been used as a screening tool for the water samples (including well, lysimeter, and other source water) from groundwater monitoring studies. LC/MSD has been used for confirmation and the final quantitation of positive and negative water samples. Items that will be presented and discussed include: ELISA method scheme, precision and accuracy of ELISA, method recovery correlation between ELISA and LC/MSD, confirmation results with LC/MSD, and others.

125.

DIAGNOSTIC IMMUNOBIOCHEMISTRY: INTERPRETATION AND REPRODUCIBILITY OF FDA-CLEARED DIAGNOSTIC IMMUNOASSAYS FOR LATEX ALLERGY. *R.E. Biagini¹, E.F. Krieg¹, R.G. Hamilton², C.A.F. Striley¹, B.A. MacKenzie¹, D.M. Viers¹, and S.K. Robertson¹.* (1) *Division of Biomedical and Behavioral Science, DHHS, PHS, CDC, NIOSH, 4676 Columbia Parkway, Cincinnati, OH 45226, fax: 513-533-8494, reb4@cdc.gov,* (2) *Johns Hopkins University School of Medicine, 5501 Hopkins Bayview Circle, Baltimore, MD 21224*

The absence of an FDA-licensed *Hevea brasiliensis* latex extract in the USA has restricted its use and serological tests have become critically important as diagnostic tools (JACI, 103:925-930, 1999). Three manufacturers (Pharmacia-UpJohn [CAP], Diagnostic Products Corporation [Ala] and Hycor Biomedical [HY]) currently have FDA clearance for their in vitro latex kits. Paired-comparisons of results from the three assays indicates that they will disagree on the positive or negative status of some individual sera. Reproducibility as evaluated by repeated testing of low latex specific antibody concentration sera showed ~35% of results will vacillate between positive and negative results. Receiver operating characteristic (ROC) analyses of the three assays revealed significant differences in areas under the ROC curves. This may explain the wide disparity in reported seroprevalence rates for latex allergy and discordant data for individual sera between commercial assays, as well as the low sensitivity of these assays compared to PST.

126.

BIOEFFECT-RELATED ANALYSIS. *Bertold Hock, Department of Botany, Technical University of Muenchen, Alte Akademie 12, D-85350 Freising Germany, fax: +49-8161-714403, hock@weihenstephan.de*

Environmental monitoring requires new concepts, especially with respect to large scale screening. A novel approach to environmental analysis will be introduced, which applies tight coupling of bioassays and chemical analysis. This bioeffects-related approach combines biomolecular recognition and chemical analysis. Since the number of key processes in organisms, sensitive to environmental compounds, is restricted, crucial targets can be determined at the molecular and subcellular level. Advances in analytical instrumentation of biological macromolecules have triggered the concept of hyphenated technologies, which enable the automated coupling of binding assays with chemical analysis. Although this technology is relatively new, the power of the strategy is obvious. It provides both, information on (1) biological effects with respect to the applied target structures and (2) the chemical identity of the active substances present in a sample. This concept is discussed in more detail using endocrine disruptors as an example.

127.

USE OF AN ANTIGEN BASED ON MOLECULAR MODELING RESULTED IN THE DEVELOPMENT OF A MONOCLONAL ANTIBODY-BASED IMMUNOASSAY FOR THE COCCIDIOSTAT NICARBAZIN. *Ross C. Beier, Immunochemistry Group, USDA, ARS, Southern Plains Agricultural Research Center, 2881 F&B Road, College Station, TX 77845-4998, fax: 409-260-9332, RCBeier@ffsr.tamu.edu and Larry H. Stanker, USDA, ARS, Western Regional Research Center, 800 Buchanan Street, Albany, CA 94710.*

Nicarbazin is a feed additive used to prevent outbreaks of fecal and intestinal coccidiosis in poultry, and is composed of equimolar amounts of 4,4'-dinitro-carbanilide (DNC) and 2-hydroxy-4,6-dimethylpyrimidine (HDP). The drug also is used to increase the rate of weight gain in poultry. DNC is the active component in nicarbazin and analysis of DNC is used to determine nicarbazin residues in tissue. Currently, detection of tissue residues and feed levels are limited to laboratory-based liquid chromatographic techniques. It would be advantageous to produce antibodies to DNC and develop an ELISA that could be used in screening tests for DNC. Antibodies to DNC have not been previously produced. Antibodies to DNC have now been produced with the use of a DNC mimic immunogen proposed from molecular modeling studies. Due to the low solubility of DNC in aqueous systems, a solvent system was developed that both provided appropriate solubility of DNC and that could be used in an ELISA. Finally, the use of an appropriate plate-coating antigen resulted in the successful development of monoclonal antibodies to nicarbazin.