Detection System for Small Molecules

Tech ID: 25076 / UC Case 2013-097-0

ABSTRACT

Researchers at the University of California, Davis have developed an efficient and easy assay to determine the presence of very small molecule analytes such as pollutants, pesticides, drugs, toxins, and pharmaceuticals.

FULL DESCRIPTION

Due to their simplicity, speed, specificity, and low cost, immunoassays have become useful tools for the analysis of a variety of biological substances and small compounds. While noncompetitive screening methods for analytes, such as ELISAs would be ideal, this is not possible for small analytes. Once an antibody binds the target molecule, there is no longer any available site for the direct binding of a secondary reporter antibody. As a result of this, current methods for screening for small analytes involve a competitive format, where an indirect reporter is utilized to determine the presence of an analyte. These assays typically have a lower sensitivity than immunoassays utilizing a noncompetitive format. Additionally, the competitive assay also leads to a readout which are inversely proportional to the concentration of the analyte, which is counterintuitive and may lead to potential misinterpretations of results.

Researchers at the University of California, Davis have developed a method for high sensitivity detection of small analytes using a noncompetitive assays. With this technology a protein-multipeptide nanomer construct is used for direct detection of the analyte. A major advantage of this new method, in addition to its almost 20 fold heightened sensitivity, is that it allows for the development of a rapid point-of-use tests with an easy to read visual endpoint for very small analytes. This is directly due to the noncompetitive format of the assay. This method is a perfect way to enhance sensitivity and selectivity for any lateral flow assay or ELISA type assay for very small molecules.

APPLICATIONS

▶ Easy to use analyte detection system for small molecules

FEATURES/BENEFITS

▶ Increased sensitivity
▶ Assays with a positive proportional readout
▶ Easily adaptable into lateral flow tests with an intuitive easier to detect readout

PATENT STATUS

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INVENTORS

▶ Hammock, Bruce D.

OTHER INFORMATION

KEYWORDS

Non-competitive immunoassay, phage display, lateral-flow, immunochromatography, immunocomplexes, small analyte, molecule, detection, diagnostics

CATEGORIZED AS

▶ Medical
▶ Research Tools
▶ Research Tools
▶ Reagents
▶ Screening Assays

RELATED CASES

2013-097-0, 2005-644-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ Method of Preventing Bone Loss and Periodontal Disease
▶ Multi-Target Inhibitors for Pain Treatment
▶ Methods and Compositions of Treating Diabetic Nephropathy and Insulin Resistance
▶ Improved Dioxin Detection and Measurement
▶ Soluble Epoxide Hydrolase-Conditioned Stem Cells for Cardiac Cell-Based Therapy
▶ Beneficial Effects of Novel Inhibitors of Soluble Epoxide Hydrolase as Adjuvant Treatment for Cardiac Cell-Based Therapy
▶ Antibodies: Bacillus Delta Endotoxin PAbs
▶ Antibodies: Bromacil Herbicide PAbs
▶ Recombinant Neurotoxin: A More Effective Insecticide
▶ Novel Neuropathy Treatment Using Soluble Epoxide Inhibitors
▶ PTUPB Compound Potentiates Cisplatin-Based-First Line Therapies with No Additional Toxicity
▶ Novel and Specific Inhibitors of p21
▶ Antibodies for Pseudomonas (P.) aeruginosa
▶ Antibodies: Urea Herbicide Pabs
▶ Bioavailable Dual sEH/PDE4 Inhibitor for Inflammatory Pain
▶ Chemical Synthesis of Lipid Mediator 22-HDoHE and Structural Analogs
▶ Antibodies: Triazine Herbicide Pabs