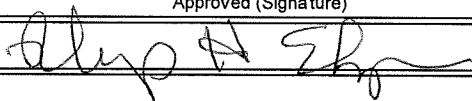


Joel

U.S. Department of Agriculture Accomplishments Report AD-421 U.S. Dept. of Agriculture, State Agricultural Experiment Stations and Other Institutions			Date (Month, Day, Year) 03/22/2012
1. Accession 0220413	Agency Identification No. 2. CSREES 3. LA.B	5. Work Unit/Project No. LAB94010	6. Status Annual Report
7. Title Development of Rapid Methods for Detection and Enumeration of <i>Vibrio vulnificus</i> , <i>Vibrio parahaemolyticus</i> and Enteric Viruses in Seafood and			
12. Investigator Name(s) (Last Name and Initials) Janes, M. E.			
20. Termination Date 09/30/2014		40. Period Covered (mo/da/year): 01/01/2011 TO 12/31/2011	
Outputs: Two journal articles and one presentation at a national meeting were used to disseminate project information.			
Outcomes/Impacts: <p><i>Vibrio vulnificus</i> (<i>V. vulnificus</i>) is considered to be the most invasive <i>Vibrio</i> in the U.S., causing high fatalities especially in immunocompromised individuals. The rapid detection of <i>V. vulnificus</i> is necessary for monitoring this pathogen in the environment and in seafood as a pro-active measure to reduce <i>V. vulnificus</i>-related infections. The purpose of this study was to develop a rapid, user friendly and compact screening dipstick device utilizing <i>V. vulnificus</i> anti H monoclonal antibodies, which can detect the presence of <i>V. vulnificus</i> from oyster homogenate within 5 min. The dipstick test strips were prepared by conjugating the species-specific anti <i>V. vulnificus</i> H monoclonal antibody 3-D-10 colloidal gold particles. Resultant antibody conjugate was dispensed onto a membrane at a rate of 1 micro-liter/cm. The control line was prepared by using Goat anti Mouse IgG and sprayed on the membrane at the rate of 1.5 micro-liter/cm. Specificity of the dipstick device was tested against pure culture of 8 vibrio strains while sensitivity was tested by utilizing serially diluted overnight grown <i>V. vulnificus</i> culture (10⁶ to 10¹ CFU/ml). Sensitivity of the device was tested with spiked oyster meat homogenate (10g oyster meat + 20ml APW), spiked with <i>V. vulnificus</i> ATCC 27562, to reach concentrations from 10¹ to 10⁶ CFU/ml. One ml from each sample was collected every hr for 6 hr and immediately tested with the dipstick. Our dipstick device successfully identified <i>V. vulnificus</i> and did not produce visible signal, for other <i>Vibrio</i> strains tested within 5 min. The lowest concentration of <i>V. vulnificus</i> that produced positive test strip results was 10⁴ CFU/ml, and when combined with 5 hr enrichment, the sensitivity of the dipstick increased to 10¹ CFU/ml. Our dipstick assay could be an answer to seafood industries rapid pathogen detection needs.</p>			
Publications: <p>Qureshi, M. E. Janes and D. Hayes. 2011. Biocompatible/Bioabsorbable silver nanocomposite coatings. <i>Journal of Applied Polymer Science</i> 120:3042-3053.</p> <p>M. R. Cole, M. Li, B. El-Zahab, M. E. Janes, D. Hayes, and I. M. Warner. 2011. Design, Synthesis, and Biological Evaluation of β-Lactam Antibiotic-Based Imidazolium- and Pyridinium-Type Ionic Liquids. <i>Chemical Biology & Drug Design</i> 78:33-41.</p> <p>Jadeja, R., M.E. Janes, and J. Simonson. 2011. Dipstick assay for <i>Vibrio vulnificus</i>. IAFP, Milwaukee, WI. Abstract P3-07.</p>			
Participants: M.E. Janes, (PI), and R. Jadeja, LSU AgCenter.			
Target Audiences: The oyster industry needs a rapid method for detection of <i>Vibrio vulnificus</i> in oysters. Our research project will help fill this gap.			
Project Modifications: Nothing significant to report during this reporting period.			
Approved (Signature)		Title	Date
			3-23-12