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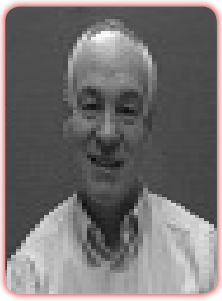

Andre Senecal

Natick Soldier Research, Development and Engineering Center, USA

Bacteriophages: A novel technology for improving safety of produce

The incidence of foodborne outbreaks involving fresh produce is of worldwide concern. The United States is deployed worldwide to places where lack of food sanitation standards and food safety enforcement which could result in food-borne disease outbreaks. These outbreaks have potential harmful effects on troop health and readiness. Simultaneously, military commanders want to maximize the availability of freshly prepared meals, to improve the overall troop morale. Fruits and vegetables to support these meals are generally procured locally at the region of deployment. Fresh produce are commonly consumed uncooked and have been identified as primary causes of illnesses associated with outbreaks of foodborne disease. Therefore, strategies to eliminate food pathogens on fresh produce must be designed and validated for military and civilian use. An old anti-pathogen technology that has emerged as a novel method for improving produce safety is bacteriophages. Bacteriophages are naturally occurring predators of bacteria that can reduce the levels of their specifically-targeted pathogenic bacteria. The Army has worked with industry to develop a series of lytic bacteriophage cocktails specific against *Escherichia coli* O157:H7, *Salmonella* and *Shigella*. Studies were conducted to identify potential best approaches for eliminating these pathogens from broccoli, cantaloupe and strawberries. Bacteriophage cocktails, levulinic acid produce wash, and a combination of both treatments (BCPW) was compared to the Army standard of washing produce in 200 ppm free available chlorine. Our findings indicated that the BCPW treatment was a very effective method for treating produce contaminated with these pathogens even in the presence of elevated organic loads.

Biography

Andre Senecal received BA in Biology from Assumption College, MS in Biological Sciences from Long Island University and PhD in Biological Sciences from the University of Rhode Island. Currently, he serves as the Scientific Technical Advisor for the Food Protection and Inovative Packaging Team, at the Natick Soldier Research Development and Engineering Center. In his 28 years at Natick, he has been as a senior research food technologist with responsibilities for advancing military field ration quality, stability, performance, and food safety. Presently, he is the lead Scientist for researching technologies for improving military food safety and detection. He is a member of the Department of Defense Veterinary Services Activity, Office of the Surgeon General Food Risk Evaluation Committee and Laboratory Working Group where he serves as a Technical Consultant for food sampling protocols and detection technologies.

andre.g.senecal.civ@mail.mil

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