

Public Abstract

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Title:Application of Real-Time PCR for Detection of Antibiotic Resistant Pathogens and Shiga-Toxin Producing Escherichia coli

Salmonella and Shiga toxin producing Escherichia coli (STEC) are among the most important food pathogens. In addition to that increasing use of antibiotics for treatment and as a therapeutic agent on food animals has been proposed as a reason for the emergence of multiple drug resistant (MDR) strains of food pathogens. Culture based method for the identification and characterization of antibiotic resistant profile of food pathogens takes 4-5 days. Alternatively, real-time PCR based methods are specific and sensitive method for the detection of foodborne pathogens. In this study three real-time PCR methods were developed. First assay detected antibiotic resistant strains of Salmonella whereas; the second assay identified extended-spectrum β -lactam (ESBL) and carbapenem resistant pathogens. The United States Department of Agriculture Food Safety and Inspection Service (USDA-FSIS) declared seven STEC serogroups O157, O26, O45, O103, O111, O121 and O145 as adulterants in ground beef and beef trims. Real-time PCR assays were standardized for the detection of seven STEC serogroups with their virulence genes and Salmonella. The assays standardized can be useful tool for epidemiologic, laboratory, and traceback investigations of tainted food samples.