Faculty of Veterinary Medicine
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Rapid detection of bacterial food borne pathogens by using molecular techniques

A thesis presented

By

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Abstract

Rapid detection of pathogens in food becomes a critical and important demand for human safety, since most foodborne illnesses and deaths are caused by pathogenic bacteria. So application of rapid, sensitive method to detect foodborne pathogen is essential in controlling food safety. In this study, a two multiplex polymerase chain reaction (mPCR) technique for the simultaneous detection of some foodborne pathogens (*Salmonella* ,*S. aureus* , *Bacillus cereus* , *Listeria monocytogenes, E. coli* and *Campylobacter* spp.) was done in culture broth and artificial food matrix. Pathogen-specific DNA sequences in the *inv*A, *clf*A, *gro*EL, *16S* rRNA, *pho*Aand*23S* rRNA genes were used as targets to design primers for the identification of *Salmonella*, *S. aureus*, *Bacillus cereus*, *Listeria monocytogenes, E. coli* and *Campylobacter* spp.respectively. The detection of sensitivity in this assay was 10 CFU/ml of each pathogen in a culture broth and artificially inoculated samples after enrichment for 24 h. The mPCR assay proposed here can gain results within

24 h and correspond to the results obtained by the classical cultivation based on ISO methods, which will be valuable for food safety investigations.

Key words: mPCR-foodborne pathogens,, *Salmonella, S. aureus, B. cereus, L. monocytogenes, E. coli* and *Campylobacter*.