Detection of *Salmonella* spp. in Meat Products Using a Commercially Available Kit Based Real Time PCR Method

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Abstract

Salmonella is a major food borne pathogen and *Salmonella* detection in food is an essential food safety standard. Conventional methods of *Salmonella* detection are laborious and require multiple days for confirmation. Therefore, this research mainly focused on developing a rapid Real Time Polymerase Chain Reaction (real time PCR) based method to detect *Salmonella* species in meat products. Feasibility of the method was established with the use of artificially contaminated chicken and pork meat products which were subjected to pre-enrichment, followed by DNA extraction and real time PCR using the mericon® DNeasy food kit and mericon *Salmonella* spp. kit, respectively. The DNeasy® mericon® food kit efficiently reduced the carryover of PCR inhibitors inherent to meat products. The HotStarTaq® based mericon *Salmonella* spp. real time PCR kit showed high specificity for *Salmonella* and the use of an internal amplification control successfully eliminated false negative results that can occur due to PCR inhibition. Validation studies with both raw and processed meat products indicated the presence of *Salmonella* DNA in most of the samples and PCR results of food samples that had been confirmed to be negative for *Salmonella* were in full agreement with the conventional culturing results. The assay however failed to distinguish between viable and non-viable DNA and confirmed only the presence of pathogen DNA. This method produced results in approximately 24 hours including the pre-enrichment step. Real time PCR has high potential for automation and proved to be extremely useful for rapid detection of *Salmonella* in food samples.

Keywords - Salmonella, Real time PCR, Food borne Pathogens, Meat products, Commercial kits