

Detection of *Salmonella* in raw beef: a polymerase chain reaction (PCR) assay

Food - born transmission of salmonellosis is of increasing concern to many countries. The control of the infection depends increasingly on the availability of rapid and specific diagnostic tests for monitoring the primary animal production as well as final food products. Standard culture methods are time consuming (5-6 days), costly and labour intensive. Alternative methods including PCR assays have been developed in other countries for the detection of *Salmonella*. However, in Sri Lanka, detection of *Salmonella* in food using PCR has not been evaluated and established. Therefore, this study was initiated towards the development of a rapid and sensitive PCR assay for the detection of *Salmonella* in raw beef.

Salmonella specific primers were designed from previously sequenced ompC gene to amplify a 159 bp region. All *Salmonella* isolated tested (n=33) successfully amplified the 159 bp fragment whereas; non-*Salmonella* isolates (n=24) did not yield this fragment. Under optimal conditions the PCR assay was sensitive enough to detect 10pg of *Salmonella typhimurium* genomic DNA and less than 600 cells of *Salmonella typhimurium* in pure culture, when the whole bacterial cells were processed with 0.45% Nonidet NP 40 prior to PCR. The PCR assay could also detect less than 10 cells of *Salmonella typhimurium* in artificially contaminated raw beef following a 6 hour-enrichment step in trypticase soy broth. The sensitivity and the specificity of this assay in detecting *Salmonella* in market samples were in total agreement with the culture method. However, the culture method requires 5-6 days for detection whereas, the PCR assay is rapid and can be carried out after a short enrichment period.