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SINGLE AND PARALLEL DYE-BASED REAL-TIME PCR DETECTION OF FOODBORNE PATHOGENS *SALMONELLA ENTERICA* AND *CAMPYLOBACTER JEJUNI*

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ABSTRACT

Salmonella enterica and *Campylobacter jejuni* are some of the common foodborne pathogens causing gastrointestinal illnesses worldwide. The development of sensitive and specific detection methods is essential to ensure food safety. Dye-based real-time PCR assay using SYBR™ GreenER™ dye was developed for the detection of *Salmonella enterica* and *Campylobacter jejuni*. Designed primer sets specifically targeting the genes *ompF* and *omp50* in *Salmonella* and *Campylobacter*, respectively, were utilised in the study. The assay was able to detect *Salmonella* and *Campylobacter* at as low as 50 fg/µl and 10 fg/µl, respectively. Specificity analysis performed using 16 different bacterial strains to check for cross-reactivity with the respective bacteria found the assay to be specific to *Salmonella* and *Campylobacter*. The assay successfully detected *Salmonella enterica* in inoculated food at as low as 5 fg/reaction for some food samples. Meanwhile, the detection limit for *Campylobacter jejuni* in all inoculated food samples was 2000 fg/reaction. The coefficient variations (CV%) of the assays for both pathogens indicated that the assays were highly reproducible. Therefore, the developed real-time PCR assays for both *Salmonella enterica* and *Campylobacter jejuni* detections were specific and sensitive and can be used for rapid screening to detect these foodborne pathogens.