

**Multiplex PCR for the concurrent detection and differentiation of Salmonella spp.,  
Salmonella Typhi and Salmonella Typhimurium.**

ABSTRACT

Salmonellosis outbreaks involving typhoid fever and human gastroenteritis are important diseases in tropical countries where hygienic conditions are often not maintained. A rapid and sensitive method to detect Salmonella spp., Salmonella Typhi and Salmonella Typhimurium is needed to improve control and surveillance of typhoid fever and Salmonella gastroenteritis. Our objective was the concurrent detection and differentiation of these food-borne pathogens using a multiplex PCR. We therefore designed and optimized a multiplex PCR using three specific PCR primer pairs for the simultaneous detection of these pathogens. The concentration of each of the primer pairs, magnesium chloride concentration, and primer annealing temperature were optimized before verification of the specificity of the primer pairs. The target genes produced amplicons at 429 bp, 300 bp and 620 bp which were shown to be 100% specific to each target bacterium, Salmonella spp., Salmonella Typhi and Salmonella Typhimurium, respectively.

**Keyword:** Multiplex PCR; Optimization; Salmonella spp.; Salmonella Typhi; Salmonella Typhimurium.