DETECTION OF *SALMONELLA invA* GENE IN SHRIMP ENRICHMENT CULTURE BY POLYMERASE CHAIN REACTION

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Abstract. Contamination of seafood with salmonellae is a major public health concern. Detection of *Salmonella* by standard culture methods is time consuming. In this study, an enrichment culture step prior to polymerase chain reaction (PCR) was applied to detect 284 bp fragment of *Salmonella invA* in comparison with the conventional culture method in 100 shrimp samples collected from four different shrimp farms and fresh food markets around Bangkok. Samples were pre-enriched in non-selective lactose broth (LB) and selective tetrathionate broth (TTB). PCR detection limit was 10 pg and 10^4 cfu/ml of viable salmonellae with 100% specificity. PCR assay detected 19 different *Salmonella* serovars belonging to 8 serogroups (B, C1, C2-C3, D1, E1, E4 and K) commonly found in clinical and environmental samples in Thailand. The detection rate of PCR following TTB enrichment (24%) was higher than conventional culture method (19%). PCR following TTB, but not in LB enrichment allowed salmonella detection with 84% sensitivity, 90% specificity and 89% accuracy. Shrimp samples collected from fresh food markets had higher levels of contaminated salmonellae than those from shrimp farms. The results indicated that incorporation of an enrichment step prior to PCR has the potential to be applied for detection of naturally contaminated salmonellae in food, environment and clinical samples.

Key words: *Salmonella*, shrimp, polymerase chain reaction, enrichment culture

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