Molecular Detection of Shigella by PCR

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ABSTRACT

Background and objectives: Shigella spp are the most important intestinal pathogens in human. This species cause bloody diarrhea as called dysentery. The infectious dose of bacteria to cause the disease is very low, hence, rapid detection of bacterium especially in children, is of great concern. The aim of study was molecular detection of Shigella spp by PCR.

Material and methods: In this study, a pair of primers was used to replicate a chromosomal sequence (Putative integrase). For evaluation of method, we studied 30 Shigella spp that had been isolated from clinical cases, confirmed serologically, and biochemically. Boiling method was used for DNA extraction. PCR was performed by different thermal gradient. Amplified product was electrophoresed, stained by ethidium bromide and visualized by gel documentation. For evaluation of specificity of method, some related bacterial strains were used.

Results: The result of PCR showed expected amplified DNA band in all four Shigella. In the evaluation of optimum thermal gradient for polymerase chain reaction, best temperature was 62°C. Any non-specific reaction with other bacterial strains such as Escherichia and Salmonella was not seen and designed method was able to detect all 30 Shigella species.

Conclusion: The results showed that genes located on chromosomal conservative regions are appropriate targets for rapid detection of Shigella spp. Designed method with new primers is sensitive, easy, rapid, reliable and is recommended for detection of Shigella spp.

Keywords: Shigellosis, PCR, Shigella spp, rapid detection