**Study on Optimal Condition for *Salmonella* spp. Detection in Drinking Water by Polymerase Chain Reaction**

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**Introduction:** Contamination of *Salmonella* species in foods and water is a major problem affecting a worldwide industry and hospitalization. Generally, detection of *Salmonella* in drinking water is widely performed by conventional culture method. The method is laborious and requires 3-7 days to obtain results. However, the prevention and control of infection usually depend on rapidity, sensitivity and accuracy of diagnostic method. Therefore, rapid, easy and accurate detection method would be greatly developed to detect the contamination of *Salmonella* in foods and drinking water. The objectives of this study were to determine the effectiveness of different DNA extraction methods and enrichment media for detection of *Salmonella* spp. contamination in drinking water by Polymerase Chain Reaction (PCR) technique. **Material and Methods:** In a pre-enrichment step, *Salmonella typhi* and *Salmonella typhimurium* are cultured in 3 different pre-enrichment media including Luria broth (LB), Selenite cystine broth (SCB) or Tetrathionate broth (TTB) at 37°C overnight. Then DNA extractions were performed by 3 different methods including boiling method, phenol-chloroform method or lysis-buffer method. The specificity of PCR detection was determined using two sets of primers including hilA and P1-M13. *Escherichia coli* strain was used as a negative control. Sensitivity of PCR detection of *Salmonella* spp. in drinking water was performed using the boiling out method for DNA extraction. **Results:** The result showed that both of the DNA extraction methods and the type of pre-enrichment media did not have any effect on the specificity of PCR detection of *Salmonella* spp. The PCR detection provided positive detection for *Salmonella* spp. while the negative results were obtained for *E. coli*. The sensitivity for *S. typhi* and *S. typhimurium* detection using hilA primer set was detected at the lowest level of 1 CFU/ml in both strains. In contrast, the sensitivity for *S. typhi* and *S. typhimurium* detection was found at $10^5$ and $10^4$ CFU/ml, respectively, when using P1-M13 primer set. In addition, it was found that *S. typhi* and *S. typhimurium* with the concentration of 1 CFU/ml in drinking water could be detected when the pre-enrichment step was performed at 37°C overnight. **Conclusion:** The results demonstrated that PCR technique could be further developed as a rapid detection method for screening of *Salmonella* contamination in drinking water. However, the pre-enrichment media and DNA extraction methods were not revealed the significant difference in PCR detection step. The boiling out method for DNA extraction was recommended because of its simplicity and low cost.

**Keywords:** *Salmonella* spp., polymerase chain reaction, DNA extraction, pre-enrichment

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**Antibacterial activity of *Garcinia mangostana* against Methicillin-Sensitive *Staphylococcus aureus* (MSSA) and Methicillin-Resistant *Staphylococcus aureus* (MRSA)**

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**Introduction:** *Garcinia mangostana* has been traditionally used for skin infection but little is known about its antimicrobial activity. **Materials and Method:** Antibacterial activity of *G. mangostana* extracts from different extraction solvents against Methicillin-Sensitive *Staphylococcus aureus* (MSSA) and Methicillin-Resistant *Staphylococcus aureus* (MRSA) was performed using agar well diffusion. Minimum Inhibitory Concentration (MIC)and Minimum Bactericidal Concentration (MBC) were determined by microdilution method. In addition, the content of chemical markers (total phenolic, flavonoids, and anthocyanin) and tannin contribution of the extract were analyzed. **Results:** The ethanolic extract of *G. mangostana* showed the highest antibacterial activity against MSSA with MIC at 6.25 µg/ml and MBC at 12.50 µg/ml, respectively, and activity against MRSA with MIC and MBC at the same values of 6.25 µg/ml, whereas oxacillin, a positive control, showed MIC against MSSA at 0.625 mg/ml. The tannin contribution might be a factor associated with the antibacterial activity of the *G. mangostana* extracts, at least in part, in which the ethanolic extract had tannin contribution about 67.80%. **Conclusion:** These observations suggested the ethanolic extract of *G. mangostana* as a promising antibacterial candidate against MSSA and MRSA. Therefore, it is of interest to further study whether an active constituent mangostinwould have antibacterial role against MSSA and MRSA.

**Keywords:** *Garciniamangostana*, *Staphylococcus aureus*, MSSA, MRSA, antibacterial

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