

Abstract

Salmonella typhimurium is a foodborne pathogen which contaminates food by cross contamination and unsanitary process. This bacteria causes salmonellosis that affect to health and finally causes death. Normally, most bacteria can be treated by bleaching agent or antibiotic, but when bacteria join into a community known as biofilm, bacteria become harder to be eliminated. In addition, sanitizer and antibiotic are not efficient enough due to the price of antibiotic and health concern of sanitizer. The alternative substance from the nature as garlic that has antimicrobial property was studied in this research. This research was conducted by using rapid method to verify the bacterial attachment on to surfaces which are glass and polystyrene, and to determine the suitable concentration of garlic that can inhibit the biofilm development. The comparison of the elimination ability with sanitizer (sodium hypochlorite) was compared with the garlic extract. The 2% *S. typhimurium* was inoculated in glass tube and polystyrene tube contained 1/20 TSB. The bacterial attachment was measured based on staining the attached cells with 1% crystal violet. The staining of crystal violet indicates the amount of biofilm formed on the surface that normally occurred at the air-liquid interface. Consequently, biofilm can form more onto polystyrene by hydrophobic interaction, and 60 mg/ml garlic extract concentration was minimum inhibition concentration for an inhibition of *S. typhimurium* biofilm. Therefore, the elimination effect of garlic extract was compared with NaOCl at the concentration that is commonly applied in the industrial clean up. The study showed that garlic extract represented less elimination effect to the mature biofilm than NaOCl. The study was based on the absorbance value which showed to be lower in NaOCl treatment than the garlic extract treatment that illustrated the lower in the bacterial attachment when it was compared to the treatment by garlic extract. Although garlic is not the best option as NaOCl for elimination of mature biofilm, but garlic is safe in term of health concerned.