THE EFFECTS OF OOLONG TEA ON THE GROWTH OF PATHOGENIC BACTERIA AND PROBIOTICS

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ABSTRACT

Tea infusions are commonly consumed by Chinese in Malaysia. This study aimed to examine the effect of oolong tea at different concentrations on the growth of pathogenic bacteria (*Staphylococcus aureus* and *Salmonella* sp.) and probiotics (*Lactobacillus casei*). Besides, the synergistic effect between oolong tea and probiotics towards growth of *S. aureus* was also examined. In order to ascertain the connection between antimicrobial properties and different concentrations of oolong tea, different amounts of oolong tea leaves were used in preparation of tea infusions to test on the growth of these bacteria. All the bacteria were incubated at 3 and 6 hours incubation period at 37°C and the bacterial proliferation was measured by using viable plate count method. The growth (Δ log CFU/ml) of the bacteria was calculated. The inhibition effect of oolong tea was calculated by comparing the samples with control. Tukey test was used to examine the presence of interaction effects between oolong tea and these bacteria. At both 3 and 6 hours incubation periods, Sample 3 which contained oolong tea infusion prepared from the highest amount of tea leaves (4g) showed the strongest inhibition effect against all the bacteria tested. Oolong tea showed stronger inhibition effect towards *S. aureus* than *Salmonella* sp.. *S. aureus* in Sample 3 showed the highest percentage of inhibition (83.1% and 76.8%) which was significant ($P < 0.05$) at both 3 and 6 hours incubation periods respectively. In contrast, *Salmonella* sp. was proven to be less sensitive to the oolong tea which the inhibition effect was not significant among all the samples and control at both incubation periods. Besides, *L. casei* was also proven to be resistant to oolong tea and showed stimulation effect although not significant at both incubation periods. This study demonstrated that the higher the amount of oolong tea leaves used in preparation of tea infusions, the higher the inhibition effect. The present study also showed that a synergistic effect was observed between oolong tea and probiotics towards growth of *S. aureus* at 3 hours incubation period where by 94.5% of the growth of *S. aureus* was inhibited.