

## Abstract

Lactic acid bacteria or LAB are widely used in many food industries as a starter of the process producing fermented products; for instance, yoghurt, fermented sausage, or Korean traditional food like kimchi. Most of LAB are also considered as probiotic which are safe for consumption, additionally beneficial to host providing balance condition in the gut. Moreover LAB can simply form biofilm, considerably, they are capable of defeat against pathogenic biofilms. We isolated two strains of lactic acid bacteria (C3 and C6) from homemade Nam-Chicken and Nam-Fish to study on the inhibitory activities against *Bacillus cereus* ATCC 11778, *Escherichia coli* ATCC 8739, *Salmonella enterica* subsp. *Enterica* serovar *typhimurium* ATCC 13311 biofilm formations. The biochemical and physiological tests of isolated were evaluated based on morphology, cell motility, hemolytic activity, acid and bile salt tolerance, biofilm formation, auto- and co- aggregation, antimicrobial activities, and minimum inhibitory concentration (MIC) of antibiotics. Isolates were gram-positive cocci, non- motile, lacked of hemolytic activity. In acid and bile salt tolerance test, growth of culture in acidic media (pH range 1.5-3.0) were significantly affected on the growths of isolates when compared to neutral pH 6.5. Moreover, C3 and C6 could tolerate to 6% bile salt. The biofilm formation of C6 was significantly dominated than C3. Auto- aggregation of two LAB strains and three strains of studied foodborne pathogen represented the equivalents in the percent of aggregations ( $p>0.05$ ). Under the co-aggregation, C6 dominately co-aggregation with three pathogenic cultures. In addition, testing an antimicrobial of produced compound in LAB supernatant exhibited inhibition of pathogenic biofilm significantly in all LAB when compared to the control ( $p<0.05$ ) except C3 and *Bacillus cereus* ATCC 11778. As the result of minimum inhibitory concentration test among two isolates according to EFSA guidance, all were susceptible to the antibiotics.

**Keywords:** Lactic acid bacteria, biofilm, foodborne pathogen, probiotics