

## **Antagonistic effects of *Lactobacillus plantarum* 0612 on the adhesion of selected foodborne enteropathogens in various colonic environments**

### **ABSTRACT**

The study aims to investigate the antagonistic ability of *Lactobacillus plantarum* 0612 against foodborne enteropathogens adhesion to the human intestinal Caco-2 cells by competition in a simulated colon model. *L. plantarum* 0612 has been subjected to the gastrointestinal transits simulation (GITS) prior to assess its competitive inhibition on the adhesion of selected pathogenic strains using intestinal epithelial cells with different colonic pH conditions. Results showed that the adhesion of *E. coli* and *L. monocytogenes* on Caco-2 cells was significantly inhibited by *L. plantarum* 0612 with 4.35 and 4.14 log reductions, respectively. Exclusion and competition mechanisms seemed to be more effective in pre-venting the colonization of pathogens, indicating *L. plantarum* 0612 is able to compete for receptors of the epithelial cell surfaces. The GITS tolerance *L. plantarum* 0612 exhibited stronger competitive inhibition ( $p < 0.05$ ) on the adhesion of tested pathogens to the Caco-2 cells at lower colonic pH. It was observed that the viable count of *E. coli* significantly reduced by 5.10 log CFU/ml after 8 h of exposure at colonic pH 5.0. The antagonisms against the adhesion of all selected foodborne enteropathogens in the colonic conditions are probably due to the presence of surface adhesion proteins, which needs further investigation. However, the antagonistic effect of *L. plantarum* 0612 indicates it could be a promising therapeutic approach for the prevention and management of foodborne diseases.