

## Abstract

Lactic acid bacteria (LAB), which are mostly gram-positive bacteria, are frequently utilized in the food fermentation processes. In the last decade, LAB has been used in the development of probiotics to promote health and well-being by boosting the immune system and balancing gut microbes. An effective probiotic must have the capacity to adhere to human epithelial cells, and produce antimicrobial substances; bacteriocins, while also not bringing any toxic effects to the hosts. Several surface proteins are necessary for probiotics to adhere to human intestinal cells and by having the ability, it will prevent the attachment of pathogenic bacteria to the intestinal cells. *Enterococcus faecium* and *Lactococcus lactis* are well-characterized LAB that has suitable properties to be considered as probiotics and have been widely used in pharmaceutical and food processes. However, research and clinical trials on the effects of these probiotics on human cell lines are still lacking. This research was done to investigate the adhesion ability of these LAB on Caco-2 cell lines by using the adhesion assay and also to observe their safety and toxicity along with the presence of pathogenic bacteria by using the MTT assay. The results showed that both LAB have good adhesive ability with 73% and 72% for both *L. lactis* and *E. faecium* respectively. Moreover, the result also showed that both LAB have a good protective effect to Caco-2 cells against ETEC and *S. typhi*. In conclusion, both *L. lactis* and *E. faecium* indicate good probiotic bacteria and might be used to counteract food-borne pathogens, especially ETEC and *S. typhi*.

Keywords: Lactic acid bacteria, *Enterococcus faecium*, *Lactococcus lactis*, Enterotoxigenic *Escherichia coli*, *Salmonella typhi*, Caco-2 cell