

Comparing Pathogen Inhibition Effect of Different Preparations of Probiotic *L. reuteri* Strains

Authors : Tejinder Pal Singh, Ravinder Kumar Malik, Gurpreet Kaur

Abstract : Adhesion is key factor for colonization of the gastrointestinal tract and the ability of probiotic strains to inhibit pathogens. Therefore, the adhesion ability is considered as a suitable biomarker for the selection of potential probiotic. In the present study, eight probiotic *Lactobacillus reuteri* strains were evaluated as viable, LiCl treated or heat-killed forms and compared with probiotic reference strains (*L. reuteri* ATCC55730). All strains investigated were able to adhere to Caco-2 cells. All probiotic *L. reuteri* strains tested were able to inhibit and displace ($P < 0.05$) the adhesion of *Escherichia coli* ATCC25922, *Salmonella typhi* NCDC113, *Listeria monocytogenes* ATCC53135 and *Enterococcus faecalis* NCDC115. The probiotic strain *L. reuteri* LR6 showed the strongest adhesion and pathogen inhibition ability among the eight *L. reuteri* strains tested. In addition, the abilities to inhibit and to displace adhered pathogens depended on both the probiotic and the pathogen strains tested suggesting the involvement of various mechanisms. The adhesion and antagonistic potential of the probiotic strains were significantly decreased upon exposure to 5M LiCl, showing that surface molecules, proteinaceous in nature, are involved. The heat-killed forms of the probiotic *L. reuteri* strains also inhibited the attachment of selected pathogens to Caco-2 cells. In conclusion, in vitro assays showed that *L. reuteri* strains, as viable or heat-killed forms, are adherent to Caco-2 cell line model and are highly antagonistic to selected pathogens in which surface molecules, proteinaceous molecules in particular, plays an important role.

Keywords : probiotics, *Lactobacillus reuteri*, adhesion, Caco-2 cells

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