Evaluation of anti-microbial activity of \textit{Lactobacillus acidophilus} and \textit{Lactobacillus ruteri} against entero-pathoges by in vitro and in vivo methods

Soltan Dallal MM (Ph.D)*1,2, Keshtvarz M (M.Sc)3, Zamani S (M.Sc)4, Shirazi L (M.Sc)5

1Professor, Div. of Food Microbiology, Department of Pathobiology, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran. 2Professor, Food Microbiology Research Center, Tehran University of Medical Sciences, Tehran, Iran. 3Ph.D Candidate in Microbiology, Department of Pathobiology, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran. 4Ph.D Candidate in Microbiology, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran. 5M.Sc in Microbiology, Food Microbiology Research Center, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

**Background and Objective:** Probiotics are beneficial organisms therapeutic within microbial flora. \textit{Shigella, Escherichia coli} and \textit{Salmonella} are the most common cause of intestinal infectious diseases that lead to morbidity and mortality in infant and children worldwide. The aim of this study was to evaluate anti-microbial activity of \textit{Lactobacillus acidophilus} and \textit{Lactobacillus ruteri} against entero-pathoges by in vitro and in vivo methods.

**Methods:** In this experimental study, the therapeutic effect of the lactobacillus acidophilus ATCC 4356 and ruteri ATCC 23272 against \textit{Shigella sonnei} ATCC 9290, \textit{Escherichia coli} ATCC 25922 and \textit{Salmonella enterica} BAA-708 were evaluated by in vitro (spot agar) and in vivo (BALB/c mice) methods. Weight improvement and survival rate in mice were recorded.

**Results:** \textit{Lactobacillus acidophilus} and \textit{ruteri} had protective and therapeutic effect against diarrhea caused by pathogenic bacteria. Probiotics reduced the weight, colonization of pathogens and increased the survival rate of animals (P<0.05).

**Conclusion:** \textit{Lactobacillus acidophilus} and \textit{ruteri} has anti-microbial activity and their consumption can be effective in the prevention and also the treatment of intestinal disease.

**Keywords:** Entero pathogens, Probiotics, Antibacterial activity, Mouse

*Corresponding Author: Soltan Dallal MM (Ph.D), E-mail: msoltandallal@gmail.com

Received 9 Nov 2014 Revised 10 May 2015 Accepted 21 Jun 2015