

Colonization Property of *Lactobacillus reuteri* and Its Antagonistic Activity in Mice Infected With *Salmonella enterica* serovar Typhimurium DT104

So Hyun Kim¹, Nam Hoon Kwon¹, Ji Yeon Kim¹, Ji Youn Lim¹,
Jun Man Kim¹, Wonki Bae¹, Kyoung Min Noh¹, Jin Hur¹,
Woo Kyung Jung¹, Sook Shin¹, Byung Woo Yoo², and Yong Ho Park¹

¹Department of Microbiology, College of Veterinary Medicine and
School of Agricultural Biotechnology, Seoul National University,
Seodooon-Dong 103, Kwonsun-Gu, Suwon, Gyunggi, 441-744, KOREA

²Agribands Purina Korea, Inc., Shinan Building, 943-19, Daechi-Dong,
Kangnam-Gu, Seoul, 135-280, KOREA

Introduction

Currently, there is a growing interest in probiotics, microbial cell preparations, or components of microbial cells that have a beneficial effect on the health and well-being of the host, with the increasing occurrence of antibiotic-resistant bacteria by overuse of antibiotics. *Lactobacillus* spp. are important probiotic strain and several studies have shown the possibility for therapeutic use of *Lactobacillus* spp. *Lactobacillus* spp. may promote the immunologic and nonimmunologic defense barriers in the gut and prevent pathogen adherence or pathogen activation via production of inhibitory metabolites, such as organic acids, bacteriocins, etc. The aim of this study was to compare the colonization properties of three probiotic strains, *Lactobacillus reuteri*, *L. bulgaricus* and *L. casei*, and their antagonistic activities against *Salmonella enterica* serovar Typhimurium DT104 infection in mice.

Materials and Methods

Mice were fed with one of three probiotic strains (10^9 cfu/mouse) for 7 days and fecal samples were collected daily from day 8 to 11. To investigate the antagonistic activity, mice were challenged with *S. enterica* serovar Typhimurium DT104 (3.7×10^8 cfu/mouse), after prefeeding with one of the above three probiotic strains for 7 days. The fecal shedding of *S. enterica* serovar Typhimurium DT104 and serum IgG and intestinal IgA against the organism were examined.

Results and Discussion

Mice fed with *L. reuteri* continued to be present at high lactobacilli population in feces even 4 days after stopping feeding

it, compared with the others. The fecal shedding was dramatically decreased and *S. enterica* serovar Typhimurium DT104 was not detected in feces and intestines 3 days after challenge in mice fed with *L. reuteri*. Antibody responses of the intestinal IgA were significantly increased and relatively strong responses were also observed for serum IgG in mice fed with *L. reuteri*. These findings suggest that *L. reuteri* can survive better in the gastrointestinal tract and has superior antagonistic activity against *S. enterica* serovar Typhimurium DT104 compared with the others. Also, administration of *L. reuteri* might enhance the mucosal and systemic immune responses against *S. enterica* serovar Typhimurium DT104. Further study will be followed to define the mechanism of immunomodulatory effects of *L. reuteri*.

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