Abstract

Background & aim: Immunosenescence can increase morbidity-mortality. Lactic acid producing bacteria may improve immunity and reduce morbidity and mortality in the elderly. We aimed to investigate the effects of a mixture of two new probiotic strains of Lactobacillus plantarum—CECT 7315 and 7316—on systemic immunity in elderly. Methods: 50 institutionalized elderly subjects were randomized, in a double-blind fashion, to receive for 12 weeks 1) 5·10^8 cfu/day of L. plantarum CECT7315/7316 (“low probiotic dose”) (n = 13), 2) 5·10^9 cfu/day of the probiotic mixture (“high probiotic dose”) (n = 19), or 3) placebo (n = 15). Leukocyte subpopulations, and cytokine levels (IL-1, IL-10, TGF-β) were measured in venous blood at baseline, end of treatment (week 12), and end of follow-up (week 24). Infection and survival rates were recorded. Results: After treatment, high probiotic dose resulted in significant increases in the percentages of activated potentially T-suppressor (CD8+CD25+) and NK (CD56+CD16+) cells, while low probiotic dose increased activated T-helper lymphocytes (CD4+CD25+), B lymphocytes (CD19+), and antigen presenting cells (HLA-DR+). Also, plasma TGF-β concentration significantly decreased after treatment with both probiotic doses. Most of these changes remained 12 weeks after probiotic discontinuation. Incidence of infections during treatment showed a significant trend to be lower in the high probiotic dose group. In addition, there was a significant trend for mortality to be greater in the placebo group vs. both probiotic groups. Conclusions: Depending on the dose, L. plantarum CECT7315/7316 have different immune-enhancing effects in elderly subjects. These effects might result in a better clinical outcome.

Keywords

Immune cells, Cytokines, Aging, Probiotics, Lactobacillus plantarum.