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Ascension Marcos

Spanish National Research Council (CSIC), Spain

Effects of the consumption of *Lactobacillus coryniformis* CECT5711 strain on the immune response and intestinal function of healthy adults

Background: Among the various health-promoting functions of probiotics, much attention has been paid to their immunological function, specifically the prevention of infections, which seems to be related with their capability to modulate de intestinal microbiota.

Objective: Since effects of probiotics are strain-dependent, the main objective of this study was to assess the effect of *Lactobacillus coryniformis* CECT5711 (Lc) on both immune response and intestinal function of healthy adults during 6 weeks of treatment in a Hepatitis A vaccine model.

Methods: One hundred twenty three volunteers were randomized into 1) Placebo group (n=40), which received a daily capsule containing maltodextrin, 2) Probiotic group (n=41), which received a daily capsule of Lc (109 cfu/day) and 3) Mixed group (n=42), which received Lc for 2wk (prior to vaccination) and then placebo. Blood and stool samples were taken in 3 visits (V): at the beginning (V1), after two weeks of treatment just before the vaccination (V2) and at the end of the study (V3). At each V, lymphocyte subset counts, phagocytic capacity, natural killer activity, serum cytokine levels and microbiota composition by qPCR were analyzed, whereas specific HAV antibodies were measured just before and after the vaccine by ELISA tests (at the beginning and at the end of the study). Intestinal habits (bowel movements and stool consistency with the Bristol scale: types 1-2 hard, types 3, 4 and 5 normal, types 6-7 soft watery) were evaluated by a dairy record, and the intestinal symptoms appearance (nausea, borborigms, bloating, intestinal pain and flatulence) weekly in a single specific day. One-way ANOVA with Bonferroni post-hoc tests and lineal mixed models were performed for normally-distributed variables and Kruskal-Wallis with Mann-Whitney U test, Friedman's 2-way ANOVA and Kendall's coefficient of concordance for non-parametric variables. Chi square test was used to evaluate the frequency of intestinal symptoms between groups of treatments and visits.

Results: Specific HAV antibodies were significantly higher in the mixed group compared to the control group (P=0.017). Memory T-helper lymphocytes increased in V3 vs V1 (P=0.032) in the probiotic group. No differences were found in innate immunity parameters and cytokine concentrations, as well as in the intestinal microbiota composition, bowel movements and stool consistency. However, a trend to a lower appearance of total symptoms were observed in the last 4 weeks of intervention in the probiotic and mixed groups compared to the placebo group (82.9% y 80.9 % vs 97.5%) (P=0.054).

Conclusion: These results suggest that *Lactobacillus coryniformis* CECT5711 could improve vaccine efficiency by enhancing increasing antibody response and perhaps immunological memory. There were no remarkable effects on the intestinal function probably because they are healthy adults with a very low appearance of intestinal disorder symptoms. Even so, the intervention with this strain led to a lower tendency of symptoms appearance compared to the placebo group.

Biography

Ascension Marcos got her PhD at the School of Pharmacy at the Complutense University in Madrid, Spain (UCM) in 1982 and Master in Clinical Analysis by UCM in 1986, and got a grant at the Spanish National Research Council (CSIC). She was the Head of the Institute of Nutrition and Food Technology at the Mixed Center CSIC-UCM (1998-2002). She is the leader of the Immunonutrition Research Group at the Department of Metabolism and Nutrition at CSIC since 1987. She achieved the highest category at CSIC as a Research Professor in 2006 and her scientific consolidation has been recognized for 5 six-year terms since 1985. She is a pioneer in the field of Immunonutrition in Spain, Founder and President of the International Forum of Immunonutrition for Education and Research (i-FINER) since 2007. In 2014 the i-FINER group has developed the International Society for Immunonutrition (ISIN), she being also the President.

amarcos@ictan.csic.es