primary studies - published RCT

Improvement of digestive health and reduction in proteobacterial populations in the gut microbiota of cystic fibrosis patients using a Lactobacillus reuteri probiotic preparation: a double blind prospective study.

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Study design (if review, criteria of inclusion for studies)

Randomized, double blind, crossover and with placebo study

Participants

30 CF patients from two Spanish hospitals.

Interventions

Patients were randomized in Group A (6 months of probiotic followed by 6 months of placebo) and Group B (6 months of placebo followed by 6 months of probiotic).

Outcome measures

GIQLI (gastrointestinal) and SF-12 (general) health tests were performed after probiotic and placebo intakes. Fat absorption coefficient, calprotectin, and inflammatory interleukin quantification were determined in fecal samples. Total fecal DNA was obtained and metagenomic 454-pyrosequencing was applied to analyze the microbiome composition. STATA v12 MP software was used for statistical analyses.

Main results

Statistically significant improvement in the gastrointestinal health and decrease of the calprotectin levels were demonstrated in patients after probiotic exposure, in comparison with placebo. All CF subjects reported good tolerance to L. reuteri without secondary effects. Metagenomic analysis showed an important dysbiosis in CF gut microbiota associated with a high concentration of Proteobacteria. Probiotic intake was followed by a reduction in the total bacterial density, mostly due to a considerable reduction in the gamma-Proteobacteria phylum; and an important increase of the microbial diversity with a higher representation of Firmicutes.

Authors' conclusions

Probiotics might ameliorate the dysbiosis of CF gut microbiota, characterized by a high density of Proteobacterial organisms. L. reuteri significantly decrease intestinal inflammation and increase digestive comfort.

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See also

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Keywords

Adolescent; Child; Lactobacillus; Probiotics; Supplementation; Oral; Immunoregulatory; pharmacological_intervention; Adult;