

primary studies - published RCT

## Gut Bifidobacteria enrichment following oral Lactobacillus-supplementation is associated with clinical improvements in children with cystic fibrosis.

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

Multi-center, double-blind, randomized placebo-controlled trial

### Participants

CF patients

### Interventions

Lactobacillus supplementation. Daily Lactobacillus rhamnosus strain GG (LGG) probiotic supplementation over a 12-month period.

### Outcome measures

Fecal 16S rRNA biomarker sequencing was used to profile fecal bacterial microbiota and analyses were performed in Qiime.

### Main results

Bifidobacteria-dominated fecal microbiota were more likely to arise in LGG-treated children with CF ( $P=0.04$ ). Children with Bifidobacteria-dominated gut microbiota had a reduced rate of pulmonary exacerbations (IRR  $=0.55$ ; 95% CI 0.25 to 0.82;  $P=0.01$ ), improved pulmonary function ( $+20.00\%$  of predicted value FEV(1); 95% CI 8.05 to 31.92;  $P=0.001$ ), lower intestinal inflammation (Calprotectin; Coef  $=16.53 \text{ Å}^2 \text{ g}^{-1}$  feces; 95% CI  $-26.80$  to  $6.26$ ;  $P=0.002$ ) and required fewer antibiotics (IRR  $=0.43$ ; 95% CI 0.22 to 0.69;  $P=0.04$ ) compared to children with Bacteroides-dominated microbiota who were less likely to have received LGG.

### Authors' conclusions

The majority of pediatric CF patients in this study possessed a Bacteroides- or Bifidobacteria-dominated gut microbiota. Bifidobacteria-dominated gut microbiota were more likely to be associated with LGG-supplementation and with better clinical outcomes.

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### See also

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### Keywords

Child; Probiotics; Supplementation; Oral; Immunoregulatory; pharmacological\_intervention; Adult; Lactobacillus; Synbiotic;