
A meta-analysis on the efficacy of probiotics for maintenance of remission and prevention of clinical and endoscopic relapse in Crohn's disease

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CRD summary

The authors concluded that there was no evidence that probiotics were effective in maintaining remission and preventing recurrence in patients with Crohn's disease. Evidence appeared to support the authors' conclusions, but it was not clear if the entire evidence base had been assessed.

Authors' objectives

To determine if probiotics maintain remission in patients with Crohn's disease.

Searching

PubMed and Cochrane Central Register of Controlled Trials were searched from 1966 to May 2007. Search terms were reported. No language restrictions were applied. In addition, reference lists from retrieved studies were screened. Abstracts presented at meetings were eligible.

Study selection

Randomised placebo-controlled trials (RCTs) that evaluated the efficacy of probiotics for the maintenance of remission in patients with Crohn's disease were eligible for inclusion. Studies had to assess clinical or endoscopic relapse.

Lactobacillus rhamnosus strain GG was the most commonly evaluated probiotic. Studies also evaluated *Lactobacillus johnsonii*, *Escherichia coli* and *Saccharomyces boulardii*.

Intervention duration ranged from three to 24 months. Co-interventions included a variety of agents including antibiotics, corticosteroids and aminosalicylates. The mean age of patients ranged from 15 to 40 years. All but one study used the Crohn's Disease Activity Index (CDAI) to define clinical recurrence and all used the Rutgeerts scoring system to define endoscopic relapse.

The authors did not state how papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality

The authors did not state that they assessed validity, however, the level of blinding was noted in tables.

Data extraction

Data were extracted to complete 2x2 tables from which odds ratios (OR) and 95% confidence intervals (CI) were calculated for each study. The authors did not state how data were extracted for the review, or how many reviewers performed the data extraction

Methods of synthesis

Pooled ORs and 95% CIs were calculated using the fixed-effect Mantel-Haenszel method. Heterogeneity was assessed using the Breslow-Day test and explored using a L'Abbe plot. Publication bias was assessed using a funnel plot. Studies evaluating *Lactobacillus rhamnosus* strain GG were also analysed separately.

Results of the review

Eight RCTs were included (n= 320). Six were double-blind, one was single-blind and one was unblinded.

There was no statistically significant difference between probiotics and placebo in the rate of clinical relapse (seven studies, n=253) or endoscopic relapse (three studies, n=177). No significant heterogeneity was found for either analysis (p=0.098 and p=0.108, respectively).

There appeared to be some evidence of publication bias for the outcome of clinical relapse (funnel plot appeared asymmetrical).

Authors' conclusions

There was no evidence that probiotics were effective in maintaining remission and preventing recurrence in patients with Crohn's disease.

CRD commentary

The review question was clearly stated and appropriate inclusion criteria were specified. No language restrictions were applied to the search and abstracts were eligible. However, the search was limited to published studies listed in two databases and some evidence of publication bias was found. Methods used to select studies and extract data were not described, so it was not known whether efforts were made to reduce reviewer errors and bias. Other than the level of blinding, no mention was made of study quality, so results from these studies and any synthesis based on them may not be reliable. Appropriate methods were used for the meta-analyses and heterogeneity was assessed.

The paucity of evidence supported the authors' conclusion and this overall conclusion appeared reliable. However, the recommendations for practice seemed overly strong and not supported by the evidence presented.

Implications of the review for practice and research

Practice: The authors suggested that preparations containing *Escherichia coli* and *Saccharomyces boulardii* should be used.

Research: The authors did not state any implications for further research.

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