

## Efficacy and Safety of Probiotic Treatment in Patients with Liver Cirrhosis: A Systematic Review and Meta-Analysis

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**Abstract :** There is paucity of data about safety and efficacy of probiotic treatment on patient outcomes in cirrhosis. Specifically, it is important to know whether probiotics can improve mortality, hepatic encephalopathy (HE), number of hospitalizations, ammonia levels, quality of life, and adverse events. Probiotics may improve outcomes in patients with acute or chronic HE. However, it is also important to know whether probiotics can prevent development of HE, even in situations where patients do not have acute HE at the time of administration. It is also important to know if probiotics are useful as primary prophylaxis of HE. We aimed to conduct an updated systematic review and meta-analysis to evaluate the safety and efficacy of probiotics in patients with cirrhosis. We searched PubMed, Cochrane library, Embase, Scopus, SCI, Google Scholar, conference proceedings, and references of included studies till June 2017 to identify randomised clinical trials comparing probiotics with other treatments in cirrhotics. Data was analyzed using MedCalc. Probiotics had no effect on mortality but significantly reduced HE (14 trials, 1073 patients, OR 0.371; 95% CI 0.282 to 0.489). There was not enough data to conduct a meta-analysis on outcomes like hospitalizations and quality of life. The effect on plasma ammonia levels was not significant (SMD -0.429; 95%CI -1.034 - 0.177). There was no difference in adverse events. To conclude, although the included studies had a high risk of bias, the available evidence does suggest a beneficial effect on HE. Larger studies with longer periods of follow-up are needed to determine if probiotics can reduce all-cause mortality.

**Keywords :** cirrhosis, hepatic encephalopathy, meta-analysis, probiotic

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