

# FPIN's Help Desk Answers

## Probiotics for Symptoms of Depression and Anxiety

Erin Westfall, DO, University of Minnesota Department of Family Medicine and Community Health, Mankato, Minnesota

Dana Brandenburg, PsyD, University of Minnesota Department of Family Medicine and Community Health, Minneapolis, Minnesota

### Clinical Question

Are probiotics effective for the treatment of symptoms of depression and anxiety?

### Evidence-Based Answer

A combination of three probiotic species slightly improves symptoms in patients with major depressive disorder. (Strength of Recommendation [SOR]: B, based on a small randomized controlled trial [RCT].) *Lactobacillus casei* alone does not affect depressive symptoms in patients with chronic fatigue syndrome, but it does improve anxiety. (SOR: C, based on a low-quality small RCT.)

### Evidence Summary

A 2016 RCT evaluated the clinical effect of probiotics on major depressive disorder.<sup>1</sup> Forty patients 20 to 55 years of age who had been diagnosed with major depressive disorder were recruited from an Iranian hospital. Treatment and control groups were well-matched except for higher baseline fasting glucose levels in the probiotic group. Patients received a capsule containing three viable, freeze-dried probiotic strains (n = 20; *Lactobacillus acidophilus*,  $2 \times 10^9$  colony-forming units [CFU] per g; *L. casei*,  $2 \times 10^9$  CFU per g; and *Bifidobacterium bifidum*,  $2 \times 10^9$  CFU per g) or placebo (n = 20) every day for eight weeks. They were instructed to not change their usual physical activity or diet and to avoid any additional supplements or medications. There were no statistically significant differences in self-reported diet or activity. The outcome measure was the total score on the Beck Depression Inventory, a 21-item questionnaire scored 0 to 63, with scores higher than 30 indicative of severe or

extreme depression. Patients who received probiotic supplements had a mean reduction of 5.7 points compared with a reduction of 1.5 points in the placebo group ( $P = .001$ ). Differences remained after adjustment for baseline differences in fasting glucose levels. Limitations of the study included uncertainty regarding which strain of probiotic led to the treatment effect, the study duration, and small sample size.

A 2009 RCT evaluated the effectiveness of probiotics on symptoms of depression and anxiety in 35 patients 18 to 65 years of age who had been diagnosed with chronic fatigue syndrome.<sup>2</sup> Patients completed the Beck Depression Inventory and the Beck Anxiety Inventory before being randomized to *L. casei* in a daily dosage of  $2.4 \times 10^9$  CFU per g (n = 19) or a placebo (n = 16) for eight weeks. Patients in the probiotic group had a greater decrease in posttreatment anxiety scores compared with those in the placebo group ( $P = .011$ ). There was no difference in scores on the Beck Depression Inventory ( $P = .29$ ). Limitations of the study include small sample size, short study duration, and lack of reporting of numerical scores, so the magnitude of effect is not known.

**Copyright** © Family Physicians Inquiries Network. Used with permission.

**Address correspondence** to Dana Brandenburg, PsyD, at brand444@umn.edu. Reprints are not available from the authors.

### References

1. Akkasheh G, Kashani-Poor Z, Tajabadi-Ebrahimi M, et al. Clinical and metabolic response to probiotic administration in patients with major depressive disorder: a randomized, double-blind, placebo-controlled trial. *Nutrition*. 2016;32(3):315-320.
2. Rao AV, Bested AC, Beaulne TM, et al. A randomized, double-blind, placebo-controlled pilot study of a probiotic in emotional symptoms of chronic fatigue syndrome. *Gut Pathog*. 2009;1(1):6. ■

**Help Desk Answers** provides answers to questions submitted by practicing family physicians to the Family Physicians Inquiries Network (FPIN). Members of the network select questions based on their relevance to family medicine. Answers are drawn from an approved set of evidence-based resources and undergo peer review. The strength of recommendations and the level of evidence for individual studies are rated using criteria developed by the Evidence-Based Medicine Working Group (<http://www.cebm.net>).

The complete database of evidence-based questions and answers is copyrighted by FPIN. If interested in submitting questions or writing answers for this series, go to <http://www.fpin.org> or e-mail: [questions@fpin.org](mailto:questions@fpin.org).

This series is coordinated by John E. Delzell Jr., MD, MSPH, Associate Medical Editor.

A collection of FPIN's Help Desk Answers published in *AFP* is available at <http://www.aafp.org/afp/hda>.

**Author disclosure:** No relevant financial affiliations.