



# Ability of probiotics to reduce functional abdominal pain in children

Ji Sook Park, MD, PhD

Department of Pediatrics, Institute of Health Sciences, Gyeongsang National University Hospital, Gyeongsang National University College of Medicine, Jinju, Korea

## Key message

- The ability of probiotics to relieve pain caused by functional abdominal pain disorders (FAPD) in children is unclear.
- *Lactobacillus reuteri* may effectively reduce pain caused by childhood FAPD.
- Since the routine use of probiotics cannot be recommended due to a lack of clinical evidence, research into probiotic mixtures or symbiotics remains necessary.

Functional abdominal pain disorders (FAPD) in children are frequently encountered in clinics; however, adequate treatment options for them are lacking. The prevalence of FAPD is reported 0.2%–23%, and its underlying etiology is poorly understood.<sup>1)</sup> The gut microbiota is an essential factor in the development of functional gastrointestinal disorders, and compositional alterations are correlated with many gastrointestinal illnesses.<sup>2,3)</sup> This randomized controlled clinical trial evaluated the ability of polymicrobial probiotics (PMP) and mono-strain probiotics (MSP) to relieve childhood functional abdominal pain according to Rome IV Diagnostic Criteria for Irritable Bowel Syndrome. Children were randomly assigned to receive PMP containing a mixture of  $6 \times 10^9$  units of *Bifidobacterium lactis*, *Lactobacillus acidophilus*, *Bifidobacterium bifidum*, and *Lactobacillus rhamnosus*, or MSP containing  $8 \times 10^8$  units of *Lactobacillus reuteri* for 4 weeks. Pain scores in the PMP and MSP groups decreased at 7 weeks after study initiation.<sup>4)</sup> However, intergroup differences in pain scores were not significant at any time point. Due to the lack of a placebo group in this study, the reduction of pain intensity with time was insufficient to conclude the effectiveness of probiotics for childhood functional abdominal pain.

The use of probiotics has been an attractive clinical topic for controlling pain related to FAPD or other functional gastrointestinal disorders such as irritable bowel syndrome and functional constipation for several decades because dysbiosis is considered a contributing factor in many functional abdominal disorders.<sup>2,3)</sup> Recent studies of the effects of probiotics on childhood functional abdominal pain reported the efficacy of probiotics to

be widely heterogeneous, and clinical evidence is still lacking due to the inclusion of diverse probiotic strains.<sup>1,4,5)</sup> Among them, *L. reuteri* might effectively reduce pain intensity in children.<sup>6-8)</sup> Dysbiosis seems to be associated with pathophysiological factor in FAPD, and previous randomized controlled trials suggested that *L. reuteri* may be able to reduce FAPD-related pain in children.<sup>6-8)</sup> However, recent recommendations do not encourage the routine use of probiotics to treat childhood functional gastrointestinal disorders due to a lack of evidence.<sup>9,10)</sup>

The current randomized clinical trial investigated the ability of multi- versus mono-strain probiotics to reduce FAPD-related pain in children. However, it failed to prove that multi-strain *L. reuteri* probiotics were more effective in relieving pain in children with FAPD than mono-strain probiotics; moreover, data on probiotic mixtures or synbiotics remained limited. Therefore, a well-controlled large-scale clinical study is required to further elucidate this issue.

See the article “Ability of polymicrobial probiotic and mono-strain probiotic to reduce functional abdominal pain in children: a randomized clinical trial” via <https://doi.org/10.3345/cep.2022.00339>.

## Footnotes

Conflict of interest: No potential conflict of interest relevant to this article was reported.

ORCID:

Ji Sook Park  <https://orcid.org/0000-0002-4704-2246>

## References

1. Wegh CAM, Benninga MA, Tabbers MM. Effectiveness of probiotics in children with functional abdominal pain disorders and functional constipation: a systematic review. *J Clin Gastroenterol* 2018;52 Suppl

1. Proceedings from the 9th Probiotics, Prebiotics and New Foods, Nutraceuticals and Botanicals for Nutrition & Human and Microbiota Health Meeting, held in Rome, Italy from September 10 to 12, 2017: S10-S26. <https://doi.org/10.1097/MCG.0000000000001054>.
2. Simrén M, Barbara G, Flint HJ, Spiegel BM, Spiller RC, Vanner S, et al. Intestinal microbiota in functional bowel disorders: a Rome foundation report. *Gut* 2012;62:159-76.
3. Johnson CL, Versalovic J. The human microbiome and its potential importance to pediatrics. *Pediatrics* 2012;129:950-60
4. Jafari SS, Hasherami SM, Sadeghi B, Hashiani AA. Ability of polymicrobial probiotic and mono-strain probiotic to reduce functional abdominal pain in children: a randomized clinical trial. *Clin Exp Pediatr* 2022. <https://doi.org/10.3345/cep.2022.00339>. [Ahead of print].
5. Trivic I, Niseteo T, Jadresin O, Hojsak I. Use of probiotics in the treatment of functional abdominal pain in children-systematic review and meta-analysis. *Eur J Pediatr* 2021;180:339-51.
6. Rahmani P, Ghouran-orimi A, Motamed F, Moradzadeh A. Evaluating the effects of probiotics in pediatrics with recurrent abdominal pain. *Clin Exp Pediatr* 2020;63:485-90.
7. Jadrešin O, Hojsak I, Mišak Z, Kekez AJ, Trbojević T, Ivković L, et al. *Lactobacillus reuteri* DSM 17938 in the treatment of functional abdominal pain in children: RCT study. *J Pediatr Gastroenterol Nutr* 2017;64:925-9.
8. Maragkoudaki M, Ghouliaras G, Orel R, Horvath A, Szajewska H, Papadopoulou A. *Lactobacillus reuteri* DSM 17938 and a placebo both significantly reduced symptoms in children with functional abdominal pain. *Acta Paediatr* 2017;106:1857-62.
9. Su GL, Ko CW, Bercik P, Falck-Ytter Y, Sultan S, Weizman AV, et al. AGA Clinical Practice Guidelines on the role of probiotics in the management of gastrointestinal disorders. *Gastroenterology* 2020;159:697-705.
10. Levy EI, Geyter CD, Chaib AO, Aman BA, Hegar B, Vandenplas Y. How to manage irritable bowel syndrome in children. *Acta Paediatr* 2022;111: 24-34.

**How to cite this article:** Park JS. Ability of probiotics to reduce functional abdominal pain in children. *Clin Exp Pediatr* 2022;65:585-6. <https://doi.org/10.3345/cep.2022.00913>