

GASTROENTEROLOGY

Effect of multispecies probiotics on irritable bowel syndrome: A randomized, double-blind, placebo-controlled trialJun Sik Yoon,* Won Sohn,* Oh Young Lee,* Sang Pyo Lee,* Kang Nyeong Lee,* Dae Won Jun,* Hang Lak Lee,* Byung Chul Yoon,* Ho Soon Choi,* Won-Seok Chung[†] and Jae-Gu Seo[†]*Department of Gastroenterology, Hanyang University School of Medicine, and [†]Cell Biotech, Co. Ltd, Seoul, Republic of Korea**Key words**

irritable bowel syndrome, microbiota, probiotics.

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Competing interests: None.

Abstract**Background and Aim:** The efficacy of treatment with multispecies probiotics on irritable bowel syndrome (IBS) symptoms and the alterations of gut microbiota in patients who have taken probiotics were investigated.**Methods:** This randomized, double-blind, placebo-controlled trial involved 49 IBS patients (probiotics: 25, placebo: 24) diagnosed according to the Rome III criteria. Patients were randomly assigned to two groups: either to receive multispecies probiotics (a mixture of *Bifidobacterium longum*, *B. bifidum*, *B. lactis*, *Lactobacillus acidophilus*, *L. rhamnosus*, and *Streptococcus thermophilus*) twice a day for 4 weeks or to receive a placebo twice a day for 4 weeks. The primary efficacy end-point was the proportion of participants whose IBS symptoms were substantially relieved at week 4. Secondary end-points were the intensity of abdominal pain/discomfort, bloating, stool frequency/consistency, alterations in fecal microflora over the 4 weeks. Fecal microflora were analyzed in 34 patients (probiotics: 17, placebo: 17) by quantitative real-time polymerase chain reaction assays.**Results:** The proportion of patients whose IBS symptoms were substantially relieved at week 4 was significantly higher in the probiotics group than in the placebo group: 68.0% (17/25) versus 37.5% (9/24) ($P < 0.05$). Secondary end-points such as improvement in abdominal pain/discomfort and bloating occurred in the probiotics group but not in the placebo group. Fecal analysis revealed that *B. lactis*, *L. rhamnosus*, and *S. thermophilus* had increased significantly in the probiotics group after 4 weeks and that *B. lactis* had increased in the placebo group.**Conclusions:** Multispecies probiotics are effective in IBS patients and induce the alterations in the composition of intestinal microbiota.**Introduction**

Irritable bowel syndrome (IBS) is a functional gastrointestinal disease that presents as abdominal pain or discomfort with abnormalities of stool consistency and frequency. IBS is a common chronic gastrointestinal disorder and results in reduced health-related quality of life.¹

The pathophysiology of IBS is not completely understood but probably involves a variety of factors. These include gut motor dysfunction, visceral hypersensitivity, dysregulation of the brain-gut axis, post-infectious bowel changes, altered intestinal microbiota, and psychological factors.² Attempts to treat patients with IBS have been based on different approaches, depending on the different factors involved.³

There is a growing interest in the relationship between gut microbiota and human health and disease.⁴ Alterations in intestinal

microbiota (employing probiotics, prebiotics, synbiotics and antibiotics) are used in attempts to treat gastrointestinal disorders including IBS.⁵ Probiotics are effective in the treatment of IBS symptoms, but the most effective species are unclear.^{6,7}

The composition of gut microbiota in patients with IBS is different to that in healthy people,⁸ and this fact underpins the use of probiotics in IBS treatment. However, although treatment with multispecies probiotics rather than a single organism relieve some IBS symptoms, it is not clear which organisms induce the change in intestinal microbiota.⁶

The aim of this randomized, double-blind, placebo-controlled trial was to investigate the efficacy of multispecies probiotics in treating IBS. We assessed the effects of multispecies probiotics on IBS symptoms in comparison with placebo and evaluated alterations in gut microbiota after probiotics therapy by analyzing fecal microflora.