

Quick Guide to Probiotics for Digestive Health

The following are some commercially available probiotic single-strain or multi-strain products with evidence from human clinical trials (see references) for benefit on overall or individual symptoms of irritable bowel syndrome, which include bloating, distension, abdominal pain, diarrhea and constipation. Notes on the clinical use of probiotics are found below the table.

Use	Probiotic strain(s)	Typical Dose	Key benefit	Product/ Brand/ Country	References
Irritable Bowel Syndrome	Lactobacillus plantarum 299V (DSM 9843)	20 billion CFU daily	Overall symptoms	UltraFlora Intensive Care (Metagenics), US,CA Probex (Metagenics), AU, NZ IBS Support (Ethical Nutrients), AU, NZ Probi (Solgar), EU, UK, US, CA Probi Digestis (Probi AB), SE	1, 2, 3
	Bifidobacterium infantis 35624	1 billion CFU daily	Overall symptoms	Align (Procter & Gamble), US, CA Alflorex (Alimentary Health), IE, UK	4,5
	Multi-strain combination: L. acidophilus CUL60 (NCIMB 30157) and CUL21 (NCIMB 30156), B. lactis CUL34 (NCIMB 30172) and B. bifidum CUL20 (NCIMB 30153)	12.5 to 25 billion CFU daily	Overall symptoms	ProCare (Viridian Nutrition), UK, EU BioAcidophillus Forte (BioCare), UK, EU UltraBiotic IBS (Bioceuticals), AU, NZ PureBi•Ome G.I. (Pure Encapsulations), US, CA, UK, EU	6
	Escherichia coli DSM 17252	30 drops (providing between 45 to135 million CFU) daily	Overall symptoms	Symbioflor 2 (SymbioPharm), DE, EU	7,8,9



	VSL#3 (high-potency, multi- strain combination of 8 probiotics)	450 billion twice daily	Bloating	VSL#3 (Ferring Pharmaceuticals), UK, CA VSL#3 (Sigma-Tau), US	10, 11, 12
	Saccharomyces boulardii	10 billion CFU (500 mg) 1-2 times daily	Diarrhea	Saccharomyces (Pure Encapsulations), US, CA, UK, EU Gastro Relief (Ethical Nutrients), AU, NZ UltraFlora Acute Care (Metagenics), US, CA	13, 14, 15, 16
	Bacillus coagulans GBI-30, 6086	2 billion CFU once daily	Overall symptoms	Digestive Advantage (Schiff), US	17, 18
	Bacillus coagulans MTCC 5856	2 billion CFU once daily	Overall symptoms, diarrhea	Lactobacillus Sporogenes/ LactoSpore® Bacillus coagulans (Pure Encapsulations), US, CA, UK	19
	Saccharomyces cervisiae CNCM I-3856	4 billion CFU (500 mg) once daily	Pain and discomfort	NA	20, 21, 22
	Lactobacillus reuteri DSM 17938	100 million CFU 30-minutes after eating twice daily	Constipation	BioGaia Protectis (BioGaia), UK, EU	23, 24, 25
	Lactobacillus rhamnosus GG	3 billion CFU twice daily	Children (5- 16 years)	Advanced Daily Biotic (Inessa), UK, EU Mother & Baby (Viridian Nutrition), UK, EU	26, 27



*AU (Australia), CA (Canada), DE (Germany), EU (Europe), IE (Ireland), NZ (New Zealand), SE (Sweden), UK (United Kingdom), US (United States).

Clinical use of probiotics

Dose: There is a large variation in the effective dose, from tens of millions to almost a trillion CFU (colony forming units, or number of bacteria). This reflects the dose used in the clinical research and is the best guide to ensure efficacy for a product. A higher dose does not always mean a product will be more effective. In fact, there is better evidence for lower-dose products.²⁸

Multi vs. single strain: A multi-strain product is not necessarily better than a single-strain product. It has been suggested that a multi-strain probiotic mixture could be more effective due to a broader spectrum of action than that provided by a single strain. However, current research does not conclusively support this. Evidence that a product is effective, such as a positive result from a clinical study, is better proof of efficacy than the number of different bacterial strains it provides.^{30 31}

Clinical response: Currently, the best practice for identifying a clinically effective probiotic is one or more clinical trials showing a positive outcome for a clinical indication. The probiotic strains, dose and duration of a clinical trial can inform use. If there is a poor or no treatment response over the anticipated time to see benefit (typically 4-weeks), it is recommended that you trial a different product to see if it is more effective. Probiotics have shown good evidence of efficacy and low incidence of side-effects, however, the number needed to treat (NNT; i.e. the number of patients that need to be treated for one of them to benefit compared with a control in a clinical trial) is 7.32 Probiotics usually result in a reduction of symptoms in some people, not a resolution in everyone, and response is variable from person to person, product to product.31

For more information on the use, safety and benefits of probiotics in conjunction with dietary and lifestyle changes for better digestive health, see The Digestive Health Solution book (www.TheDigestiveHealthSolution.com).

References:

_

¹ Ducrotté P, et al. Clinical trial: Lactobacillus plantarum 299v (DSM 9843) improves symptoms of irritable bowel syndrome. World J Gastroenterol. 2012 Aug 14;18(30):4012-8.



- ² Sen S, et al. Effect of Lactobacillus plantarum 299v on colonic fermentation and symptoms of irritable bowel syndrome. Dig Dis Sci. 2002 Nov;47(11):2615-20.
- ³ Niedzielin K, et al. A controlled, double-blind, randomized study on the efficacy of Lactobacillus plantarum 299V in patients with irritable bowel syndrome. Eur J Gastroenterol Hepatol. 2001 Oct;13(10):1143-7.
- ⁴ Whorwell PJ, et al. Efficacy of an encapsulated probiotic Bifidobacterium infantis 35624 in women with irritable bowel syndrome. Am J Gastroenterol. 2006 Jul;101(7):1581-90.
- ⁵ O'Mahony L, et al. Lactobacillus and bifidobacterium in irritable bowel syndrome: symptom responses and relationship to cytokine profiles. Gastroenterology. 2005 Mar;128(3):541-51.
- ⁶ Williams EA, et al. Clinical trial: a multistrain probiotic preparation significantly reduces symptoms of irritable bowel syndrome in a double-blind placebo-controlled study. Aliment Pharmacol Ther. 2009 Jan;29(1):97-103.
- ⁷ Enck P, et al Randomized controlled treatment trial of irritable bowel syndrome with a probiotic E.-coli preparation (DSM17252) compared to placebo. Z Gastroenterol. 2009 Feb;47(2):209-14.
- ⁸ Enck P, et al. A mixture of Escherichia coli (DSM 17252) and Enterococcus faecalis (DSM 16440) for treatment of the irritable bowel syndrome--a randomized controlled trial with primary care physicians. Neurogastroenterol Motil. 2008 Oct;20(10):1103-9.
- ⁹ Martens U, et al. Probiotic treatment of irritable bowel syndrome in children. Ger Med Sci. 2010 Mar 2;8:Doc07.
- ¹⁰ Guandalini S, et al. VSL#3 improves symptoms in children with irritable bowel syndrome: a multicenter, randomized, placebo-controlled, double-blind, crossover study. J Pediatr Gastroenterol Nutr. 2010 Jul;51(1):24-30.
- ¹¹ Kim HJ, et al. A randomized controlled trial of a probiotic combination VSL# 3 and placebo in irritable bowel syndrome with bloating. Neurogastroenterol Motil. 2005 Oct;17(5):687-96.
- ¹² Kim HJ, et al. A randomized controlled trial of a probiotic, VSL#3, on gut transit and symptoms in diarrhoea-predominant irritable bowel syndrome. Aliment Pharmacol Ther. 2003 Apr 1;17(7):895-904.
- ¹³ Abbas Z, et al. Cytokine and clinical response to Saccharomyces boulardii therapy in diarrhea-dominant irritable bowel syndrome: a randomized trial. Eur J Gastroenterol Hepatol. 2014 Jun;26(6):630-9.
- ¹⁴ Choi CH, et al. A randomized, double-blind, placebo-controlled multicenter trial of Saccharomyces boulardii in irritable bowel syndrome: effect on quality of life. J Clin Gastroenterol 2011; 45: 679_83.
- ¹⁵ Maupas, J, et al. Treatment of irritable bowel syndrome with Saccharomyces boulardii: a double-blind, placebo-controlled-study. 1983 Med Chir Dig 12, 77-79.



- ¹⁶ Kabir MA, et al. Role of Saccharomyces boulardii in diarrhea predominant irritable bowel syndrome. Mymensingh Med J 2011; 20: 97 401.
- ¹⁷ Dolin BJ. Effects of a proprietary Bacillus coagulans preparation on symptoms of diarrhea-predominant irritable bowel syndrome. Methods Find Exp Clin Pharmacol. 2009 Dec;31(10):655-9.
- ¹⁸ Hun L. Bacillus coagulans significantly improved abdominal pain and bloating in patients with IBS. Postgrad Med. 2009 Mar;121(2):119-24.
- ¹⁹ Majeed M, Nagabhushanam K, Natarajan S, et al. Bacillus coagulans MTCC 5856 supplementation in the management of diarrhea predominant Irritable Bowel Syndrome: a double blind randomized placebo controlled pilot clinical study. Nutr J. 2016 Feb 27;15:21. ²⁰ Pineton de Chambrun G, Neut C, Chau A, et al. A randomized clinical trial of Saccharomyces cerevisiae versus placebo in the irritable bowel

syndrome. Dig Liver Dis. 2015 Feb;47(2):119-24.

- ²¹ Spiller R, Pélerin F, Cayzeele Decherf A, Maudet C, Housez B, Cazaubiel M, Jüsten P. Randomized double blind placebo-controlled trial of Saccharomyces cerevisiae CNCM I-3856 in irritable bowel syndrome: improvement in abdominal pain and bloating in those with predominant constipation. United European Gastroenterol J. 2016 Jun;4(3):353-62.
- ²² Cayzeele-Decherf A, Pélerin F, Leuillet S, Douillard B, Housez B, Cazaubiel M, Jacobson GK, Jüsten P, Desreumaux P. Saccharomyces cerevisiae CNCM I-3856 in irritable bowel syndrome: An individual subject meta-analysis. World J Gastroenterol. 2017 Jan 14;23(2):336-344.
- Riezzo G, Orlando A, D'Attoma B, Linsalata M, Martulli M, Russo F. Randomised double blind placebo controlled trial on Lactobacillus reuteri DSM 17938: improvement in symptoms and bowel habit in functional constipation. Benef Microbes. 2017 Oct 12:1-10.
- ²⁴ Ojetti V, Petruzziello C, Migneco A, Gnarra M, Gasbarrini A, Franceschi F. Effect of Lactobacillus reuteri (DSM 17938) on methane production in patients affected by functional constipation: a retrospective study. Eur Rev Med Pharmacol Sci. 2017 Apr;21(7):1702-1708.
- ²⁵ Ojetti V, Ianiro G, Tortora A, D'Angelo G, Di Rienzo TA, Bibbò S, Migneco A, Gasbarrini A. The effect of Lactobacillus reuteri supplementation in adults with chronic functional constipation: a randomized, double-blind, placebo-controlled trial. J Gastrointestin Liver Dis. 2014 Dec;23(4):387-91.
- ²⁶ Gawrońska A, Dziechciarz P, Horvath A, Szajewska H. A randomized double-blind placebo-controlled trial of Lactobacillus GG for abdominal pain disorders in children. Aliment Pharmacol Ther. 2007 Jan 15;25(2):177-84.



²⁷ Francavilla R, Miniello V, Magistà AM, De Canio A, Bucci N, Gagliardi F, Lionetti E, Castellaneta S, Polimeno L, Peccarisi L, Indrio F, Cavallo L. A randomized controlled trial of Lactobacillus GG in children with functional abdominal pain. Pediatrics. 2010 Dec;126(6):e1445-52.

²⁸ Sanders ME, Guarner F, Guerrant R, Holt PR, Quigley EM, Sartor RB, Sherman PM, Mayer EA. An update on the use and investigation of probiotics in health and disease. Gut. 2013 May;62(5):787-96.

²⁹ Sanders, ME. How Do We Know When Something Called "Probiotic" Is Really a Probiotic? A Guideline for Consumers and Health Care Professionals. Functional Food Reviews, Vol 1, No 1 (Spring), 2009; pp 3–12

³⁰ Chapman CM, Gibson GR, Rowland I. Health benefits of probiotics: are mixtures more effective than single strains? Eur J Nutr. 2011 Feb;50(1):1-17.

³¹ Zhang Y, Li L, Guo C, Mu D, Feng B, Zuo X, Li Y. Effects of probiotic type, dose and treatment duration on irritable bowel syndrome diagnosed by Rome III criteria: a meta-analysis. BMC Gastroenterol. 2016 Jun 13;16(1):62.

³² Ford AC, Quigley EM, Lacy BE,et al. Efficacy of prebiotics, probiotics, and synbiotics in irritable bowel syndrome and chronic idiopathic constipation: systematic review and meta-analysis. Am J Gastroenterol. 2014 Oct;109(10):1547-61; quiz 1546, 1562.