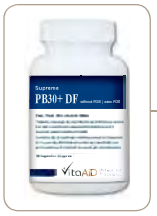
Probiotic Formulas

Modify and Promote Healthy Gut Flora | VA-100/108 VA-003/009 VA-007/004 VA-141 VA-094

Key Features

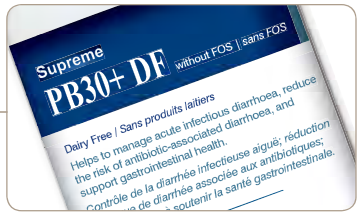
All strains in Vita Aid probiotic formulas feature the following criteria to meet the highest standard of quality:

- **All dairy-free formula**
- **Bile/acid resistance** test (no enteric coating required)
- Laboratory-tested for **human-gut anchoring ability**
- **Antibiotic resistance** panel to ensure safety
- **24-month stability test**
- Contain up to **200% viable cells** when manufactured
- **Multi-strains formula** (10~13 strains)
- Suitable for all age groups and tailored to meet specific needs
- Comes with or without Fructooligosaccharides (FOS) prebiotic (except for Baby & Mom-PB15+)



Supreme-PB30+

For SIBO, IBS, candidiasis, celiac disease, food sensitivity/ leaky gut syndrome, dyspepsia, peptic ulcer disease, as well as prevention of acute infectious and antibiotic-associated diarrhea.



Ultra-PB100+

Powdered, high-dose probiotic formula for easy dose adjustment. Also suitable when higher dose is desired, as in inflammatory bowel diseases (IBD).

Optimum-PB10+

For prevention of dysbiosis caused by antibiotics and general immune and digestive support.

Baby & Mom-PB15+

Formulation specifically designed to support immune system for infants, toddlers and pregnant/ breastfeeding moms. Contains effective strains to promote healthy development and prevent atopic disease for the babies, as well as gestational diabetes for moms.

S. boulardii

Safe to take with antibiotic to prevent antibiotic-associated diarrhea, acute traveller's diarrhea, *C. difficile* infections, and decease side effects during *H. pylori* eradication treatment.

Clinical Evidence of Featured Strains

Bifidobacterium bifidum Bb-06 [1]

B. bifidum is proved to help reduce risk of cold & flu as well as increase recovery time.

A study with 581 academically stressed undergraduate students receive 3 billion cfu/day of probiotic *L. helveticus*, *B. infantis*, *B. bifidum* or placebo for 6 weeks. The results showed *B. bifidum* supplementation resulted in a greater proportion of healthy days and a lower percentage of students reporting a day of cold/flu.

Bifidobacterium lactis BL-04 [2]

B. lactis Bl-04 is effective in supporting the immune system and reduce risk of repiratory infection in a clinical trial.

A total of 465 participants (241 males; 224 females) were randomly divided into 3 groups. One group had 2 billion cfu of *B. lactis* BL-04 only; the second group had 5 billion cfu of *L. acidophilus* NCFM + *B. lactis* BI-07, and both groups were compared to placebo. A 5-month intervention showed that only the *B. lactis* BL-04 group had significantly lower risk of URTI by 27% (risk ratio of 0.73; p=0.02) compared to placebo. BL-04 also delayed the first onset of URTI by ~0.8 month.

Antibiotic Resistance Test & Genome Database

Bacteria including probiotics are capable of sharing their genetic materials (eg. plasmids) with each other; such nature could be problematic as the antibiotic resistant genes from probiotics can potentially be passed onto the pathogenic bacteria.
Antibiotic resistance test ensures that the probiotic strains are sensitive to at least 3 commonly used antibiotics, especially the last-resort ones such as Vancomycin, and Carbapenems.

To take the safety issue further, all probiotics should have their genomes assayed and registered with well-known genome databases so that their safety and efficacy can continue to be monitored.

Lactobacillus rhamnosus (Lr-32, HN001, GG)

L. rhamnosus is part of normal human gut flora. Among many other benefits, *L. rhamnosus* is known to balance the immune system, as clinical trials have shown efficacy on prevention/ recovery of infectious disease, allergies, and atopic dermatitis.

Lactobacillus rhamnosus HN001

L. rhamnosus HN001 has been clinically shown to reduce risk of allergies (skin and respiratory systems) in children, as well as gestational diabetes in pregancy.

Eczema and Allergic sensitization: A 6-year RCT [3]

A double-blind, randomized, placebo-controlled trial of 316 mothers and their infants (placebo, n=159; supplement, n=157). Pregnant mothers were supplemented daily from 5 weeks pre-term to 6 months post-term if breastfeeding. Infants were supplemented daily from birth until 2 years old.

At 2 years of age, the prevalence of eczema decreased by 49% (p=0.01) with supplementation. This effect persisted until 6 years of age with 44% lower prevalence (p=0.01).

In addition, *L. rhamnosus* HN001 showed a 31% decreased the prevalence of positive skin-prick tests (p=0.04), and 62 % less relative risk of rhinoconjunctivits (rhinitis and red eyes).

Gestational diabetes mellitus (GDM) risk reduction [4]

In a RCT, pregnant women were randomized at 14-16 weeks of gestation to receive 6 billion of L. rhamnosus HN001 (n=212) or placebo (n=211) daily. At 24-30 weeks, GDM prevalence was significantly lower in the HN001 group, 2.1 % (CI=0.6-5.2), vs. 6.5 % (CI=3.5-10.9) in the placebo group (P=0.03). Significant association of lower GDM was reported in women aged ≥35 years (RR=0.31; CI=0.12-0.81, P=0.009) and those with a history of GDM (RR=0.00; CI=0.00-0.66, P=0.004).

Lactobacillus rhamnosus GG

L. rhamnosus GG is by far the most studied probiotic strain. Studies have shown its effectiveness from general to serious GI/ repiratory/ dental infections, as well as reduce allergy and IBS in infants and children.

Gastrointestinal Health [5], [6], [7]

L. rhamnosus GG is known to be the most effective probiotic in reducing both severity and duration of acute onset infectious diarrhea (overall reduction 1.05 days). Several systemic review and meta-analysis studies also suggest a protective effect of *L. rhamnosus* GG against antibiotic associated diarrhea, preterm neonatal Candida, *Clostridium difficile* induced colitis, vancomycin-resistant enterococci, and improves abdominal pain in children with IBS (NNT=4).

Respiratory and Atopic Diseases Prevention

In additional to GI conditions, *L. rhamnosus* GG was effective in reducing the risk of respiratory tract infection in preterm infants and hospitalized children, as well as in protecting hospitalized patients and patients with cystic fibrosis against *Pseudomonas aeruginosa* pneumonia.

Another area for *L. rhamnosus* GG application is in the pre- & post-natal period. Prenatal supplementation of *L. rhamnosus* GG was shown to promote a beneficial profile dominated by bifidobacteria in neonates. A RCT involving 105 infants fed standard infant formula supplemented with *L. rhamnosus* GG developed better.[8] Two meta-analyses provided best evidence for *L. rhamnosus* GG supplementation in mothers and infants in long-term prevention of atopic dermatitis.[9]

Oral Health

Last but not least, milk containing *L. rhamnosus* GG has been demonstrated to reduce dental caries and lower streptococcus mutans levels from dental plaque and saliva. [10]

Lactobacillus reuteri 1E1

L. reuteri is helpful in reducing the time of crying in infantile colic and promote recovery in acute infectious diarrhea.

One meta-analysis of 3 RCTs on infantile colic (n=209) showed

"Human Strains" v.s. "Human Gut Anchoring Strains"

Humans are born sterile before they encounter a variety of bacteria from the surrounding environment. Therefore, even though "human strain" is one of the highly marketed features in probiotic formulas, there is no strain from human origin. Any strains of bacteria succeeded in colonizing in their host human become the "human strains". Probiotics' human-gut anchoring ability can actually be tested via their adhesion to human intestinal cell lines – HT-29 and Caco-2.

L. reuteri supplementation reduced risk of infant crying time at 14 and 21 days (NNT = 2). [11]

The other meta-analysis of 8 RCTs involving 1,229 children found that *L. reuteri* supplementation reduced the duration (25 hours) of acute infectious diarrhea and increased the cure rate on days 1 and 2. [12]

Bifidobacterium infantis Bi-26

B. infantis is passed from mother to baby during vaginal birth and is considered a superior colonizer of infant gut due to its unique ability to digest oligosaccharides in the human milk.[13]

Naturally, *B. infantis* helps with proper metabolic and immune development of the infants. However, with the growing practice of C-section, avoidance of breastfeeding, and exposure to antibiotics in mother's life, colonization of *B. infantis* has been largely eliminated in babies born today, which leads to dysbiosis and detrimental consequences in the baby's life.

Preclinical data has shown that *B. infantis* has anti-inflammatory activity, and could decreases intestinal permeability in premature intestinal cells. In premature infants, *B. infantis* was found to decreases Enterobacteriaceae (e.g. Salmonella, *E. coli*, Klebsiella, and Shigella) and reduce the risk of necrotizing enterocolitis. Colonization with *B. infantis* is also associated with better weight gain, increased thymic index, and better response to vaccines.

In a phase I clinical trial, *B. infantis* supplement was safe and well-tolerated, and showed fewer and better formed stool in healthy term breastfed infants, compared to "frequent, watery" stool in the control group. [14]

Multiple clinical trials and a meta-analysis found *B. infantis* supplementation significantly relives many IBS symptoms (abdominal pain, gas/bloating, bowel dysfunction, etc), as well as normalization of inflammation marker. The effect on bloating/distension was more prominent with *B. infantis* in composite formula.[15,16, 17,18]

Saccharomyces boulardii

S. boulardii is the most studied yeast probiotic. Research has documented efficacy of *S. boulardii* for the treatment of acute gastroenteritis, especially in children, and for the prevention of antibiotic-associated diarrhea, both in adults and children. There is also evidence supporting the use of *S. boulardii* to increase the eradication rate of *Helicobacter pylori* and decrease antibiotic side effects. [19]

Other clinical utility for *S. boulardii* include improved weight gain and feeding tolerance in preterm infants [20], reduced bacterial translocation and inflammatory marker in HIV patients [21], as well as lowered coronary artery disease biomarker in patients with hypercholesterolemia. [22]

Yeast Probiotic vs. Yeast Infection

Some may have concern that taking yeast probiotic such as *S. boulardii* might lead to *Candida* infection in otherwise healthy individuals has not been substantiated by clinical evidence. In fact, preclinical data showed inhibitory effect of *S. boulardii* on the ability to form filaments and biofilms of *C. albicans* [25]; *S. boulardii* could also reduce pro-inflammatory cytokine IL-8 expressed by *C. albicans*-infected intestinal cells.[26]

In a clinical study of preterm infants with low birth weight, prophylactic *S. boulardii* is as effective as nystatin for the prevention of fungal colonization and invasive infection. Moreover, *S. boulardii* reduce incidence and number of sepsis attacks significantly more than nystatin and showed better feeding intolerance.[27]

Why Single Strain *S. boulardii*?

Although combination probiotics with *S. boulardii* are available on the market, existing clinical trials have been utilizing single-strain preparation. Possible **antagonism** may exist **between "the yeast & bacteria"** and decrease therapeutic efficacy.[23] In a RCT on children with acute rotavirus diarrhea, significantly shortened duration of fever & diarrhea was seen with single-strain *S. boulardii*, but not with combination of *S. boulardii* + other probiotics. [24]

Dairy Free Probiotic Size	**Supreme-PB30+** 56 veg caps*	****Ultra-PB100+** 28 servings (1 tsp)*	**Optimum-PB10+** 56 veg caps*	****Baby & Mom-PB15+** 56 servings (1/2 tsp)	**S. boulardii** 84 veg caps
Viable cells at time of manufacture (CFU)	**Up to 55 billion**	**Up to 200 billion**	**Up to 18 billion**	**Up to 25 billion**	
Lactobacillus acidophilus La-14	6 billion	15 billion	2.1 billion	1.5 billion	
Lactobacillus rhamnosus Lr-32	2 billion	15 billion	1 billion	1.5 billion	
Lactobacillus casei Lc-11	5 billion	10 billion	0.6 billion	1 billion	
Lactobacillus salivarius Ls-33	1 billion	8 billion	0.6 billion	1 billion	
Bifidobacterium bifidum Bb-06	1 billion	2 billion	0.4 billion	0.5 billion	
Bifidobacterium lactis Bl-04	5 billion	12 billion	1.6 billion	1.5 billion	
Streptococcus thermophilus St-21	2 billion	8 billion	0.5 billion	1 billion	
Bifidobacterium breve Bb-03	1.5 billion	5 billion	0.6 billion	1 billion	
Lactobacillus plantarum Lp-115	1.5 billion	15 billion	1.5 billion	1.5 billion	
Lactobacillus rhamnosus GG	3 billion	6 billion	1.2 billion	2 billion	
Lactobacillus rhamnosus HN001	2 billion	3 billion		2 billion	
Bifidobacterium infantis Bi-26		1 billion		1 billion	
Lactobacillus reuteri 1E1		1 billion		0.5 billion	
Saccharomyces boulardii					5 billion

*FOS and FOS-free formula available. **Powder form. Unit: CFU = colony-forming unit.

Reference:

1. Langkamp-Henken, B., Rowe, C. C., Ford, A. L., Christman, M. C., Nieves, C., Khouri, L., ... & Dahl, W. J. (2015). Bifidobacterium bifidum R0071 results in a greater proportion of healthy days and a lower percentage of academically stressed students reporting a day of cold/flu: a randomised, double-blind, placebo-controlled study. British Journal of Nutrition, 113(3), 426-434.
2. West, N. P., Horn, P. L., Pyne, D. B., Gebski, V. J., Lahtinen, S. J., Fricker, P. A., & Cripps, A. W. (2014). Probiotic supplementation for respiratory and gastrointestinal illness symptoms in healthy physically active individuals. Clinical Nutrition, 33(4), 581-587.
3. Wickens, K., Stanley, T. V., Mitchell, E. A., Barthow, C., Fitzharris, P., Purdie, G., ... & Crane, J. (2013). Early supplementation with Lactobacillus rhamnosus HN001 reduces eczema prevalence to 6 years: does it also reduce atopic sensitization?. Clinical & Experimental Allergy, 43(9), 1048-1057.
4. Wickens, K. L., Barthow, C. A., Murphy, R., Abels, P. R., Maude, R. M., Stone, P. R., … Crane, J. (2017). Early pregnancy probiotic supplementation with Lactobacillus rhamnosus HN001 may reduce the prevalence of gestational diabetes mellitus: a randomised controlled trial. The British Journal of Nutrition, 117(6), 804–813.
5. Goldenberg, J. Z., Lytvyn, L., Steurich, J., Parkin, P., Mahant, S., & Johnston, B. C. (2015). Probiotics for the prevention of pediatric antibiotic-associated diarrhea. The Cochrane Library.
6. Yan, F., & Polk, D. B. (2012). Lactobacillus rhamnosus GG: an updated strategy to use microbial products to promote health. Functional food reviews (Print), 4(2), 77.
7. Segers, M. E., & Lebeer, S. (2014). Towards a better understanding of Lactobacillus rhamnosus GG - host interactions. Microbial Cell Factories, 13(Suppl 1), S7.
8. Szajewska, H., & Chmielewska, A. (2013). Growth of infants fed formula supplemented with Bifidobacterium lactis Bb12 or Lactobacillus GG: a systematic review of randomized controlled trials. BMC Pediatrics, 13, 185.
9. Wollina, U. (2017). Microbiome in atopic dermatitis. Clinical, Cosmetic and Investigational Dermatology, 10, 51–56.
10. Näse, L., Hatakka, K., Savilahti, E., Saxelin, M., Pönkä, A., Poussa, T., ... & Meurman, J. H. (2001). Effect of long–term consumption of a probiotic bacterium, Lactobacillus rhamnosus GG, in milk on dental caries and caries risk in children. Caries research, 35(6), 412-420.
11. Anabrees, J., Indrio, F., Paes, B., & AlFaleh, K. (2013). Probiotics for infantile colic: a systematic review. BMC pediatrics, 13(1), 186.
12. Urbańska, M., Gieruszczak-Białek, D., & Szajewska, H. (2016). Systematic review with meta-analysis: Lactobacillus reuteri DSM 17938 for diarrhoeal diseases in children. Alimentary pharmacology & therapeutics, 43(10), 1025-1034.
13. Underwood, M. A., German, J. B., Lebrilla, C. B., & Mills, D. A. (2015). Bifidobacterium longum subspecies infantis: champion colonizer of the infant gut. Pediatric research, 77, 229.
14. Smilowitz, J. T., Moya, J., Breck, M. A., Cook, C., Fineberg, A., Angkustsiri, K., & Underwood, M. A. (2017). Safety and tolerability of Bifidobacterium longum subspecies infantis EVC001 supplementation in healthy term breastfed infants: a phase I clinical trial. BMC pediatrics, 17(1), 133.
15. O'Mahony, L., McCarthy, J., Kelly, P., Hurley, G., Luo, F., Chen, K., ... & Quigley, E. M. (2005). Lactobacillus and bifidobacterium in irritable bowel syndrome: symptom responses and relationship to cytokine profiles. Gastroenterology, 128(3), 541-551.
16. Whorwell, P. J., Altringer, L., Morel, J., Bond, Y., Charbonneau, D., O'mahony, L., ... & Quigley, E. M. (2006). Efficacy of an encapsulated probiotic Bifidobacterium infantis 35624 in women with irritable bowel syndrome. The American journal of gastroenterology, 101(7), 1581.
17. Ringel-Kulka, T., McRorie, J., & Ringel, Y. (2016). Multi-center, double-blind, randomized, placebo-controlled, parallel-group study to evaluate the benefit of the probiotic Bifidobacterium infantis 35624 in non-patients with symptoms of abdominal discomfort and bloating. The American journal of gastroenterology.
18. Yuan, F., Ni, H., Asche, C. V., Kim, M., Walayat, S., & Ren, J. (2017). Efficacy of Bifidobacterium infantis 35624 in patients with irritable bowel syndrome: a meta-analysis. Current Medical Research and Opinion, 1-7.
19. Szajewska, H., Konarska, Z., & Kołodziej, M. (2016). Probiotic bacterial and fungal strains: claims with evidence. Digestive Diseases, 34(3), 251-259.
20. Xu, L., Wang, Y., Wang, Y., Fu, J., Sun, M., Mao, Z., & Vandenplas, Y. (2016). A double-blinded randomized trial on growth and feeding tolerance with Saccharomyces boulardii CNCM I-745 in formula-fed preterm infants. Jornal de Pediatria (Versão em Português), 92(3), 296-301.
21. Villar-García, J., Güerri-Fernández, R., Moya, A., González, A., Hernández, J. J., Lerma, E., … Knobel, H. (2017). Impact of probiotic Saccharomyces boulardii on the gut microbiome composition in HIV-treated patients: A double-blind, randomised, placebo-controlled trial. PLoS ONE, 12(4), e0173802.
22. Ryan, J. J., Hanes, D. A., Schafer, M. B., Mikolai, J., & Zwickey, H. (2015). Effect of the Probiotic Saccharomyces boulardii on Cholesterol and Lipoprotein Particles in Hypercholesterolemic Adults: A Single-Arm, Open-Label Pilot Study. Journal of Alternative and Complementary Medicine, 21(5), 288–293.
23. Kelesidis, T., & Pothoulakis, C. (2012). Efficacy and safety of the probiotic Saccharomyces boulardii for the prevention and therapy of gastrointestinal disorders. Therapeutic Advances in Gastroenterology, 5(2), 111–125.
24. Grandy, G., Medina, M., Soria, R., Terán, C. G., & Araya, M. (2010). Probiotics in the treatment of acute rotavirus diarrhoea. A randomized, double-blind, controlled trial using two different probiotic preparations in Bolivian children. BMC Infectious Diseases, 10, 253.
25. Krasowska, A., Murzyn, A., Dyjankiewicz, A., Łukaszewicz, M., & Dziadkowiec, D. (2009). The antagonistic effect of Saccharomyces boulardii on Candida albicans filamentation, adhesion and biofilm formation. FEMS yeast research, 9(8), 1312-1321
26. Murzyn, A., Krasowska, A., Augustyniak, D., Majkowska-Skrobek, G., Łukaszewicz, M., & Dziadkowiec, D. (2010). The effect of Saccharomyces boulardii on Candida albicans-infected human intestinal cell lines Caco-2 and Intestin 407. FEMS microbiology letters, 310(1), 17-23.
27. Demirel, G., Celik, I. H., Erdeve, O., Saygan, S., Dilmen, U., & Canpolat, F. E. (2013). Prophylactic Saccharomyces boulardii versus nystatin for the prevention of fungal colonization and invasive fungal infection in premature infants. European journal of pediatrics, 172(10), 1321-1326.

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