Probiotics Urgency provides enhanced defense and protection to the gastrointestinal tract by providing the most beneficial probiotic species, within an adequate dose, in an advanced PH\textsuperscript{5}D enteric-coated capsule to bypass stomach acids. Probiotics are defined as live microorganisms which, when administered in adequate amounts, offer health benefits to the host by improving intestinal microbial balance.\textsuperscript{(1)} A large amount of bacteria and microorganisms found in the human gut are beneficial for health and well-being, and increase the natural resistance to infectious agents.\textsuperscript{(2, 3)} Ingredients in Probiotics Urgency aid in protein digestion, and favor the stimulation of the immune system both locally and systemically.\textsuperscript{(4, 5, 6)} The dosage of 50 billion CFU per capsule makes Probiotics Urgency the ideal supplement for antibiotic-induced diarrhea, acute diarrhea, or acute symptomatic inflammatory or irritable bowel disease.

### Ingredients

Each PH\textsuperscript{5}D vegetable enteric-coated vegetable capsule contains 10 cultures of 50 billion live active healthy cells:

- **Bifidobacterium longum** R0175 ............................................................ 9 billion
- **Lactobacillus casei** R0215 ........................................................... 9 billion
- **Lactobacillus plantarum** R1012 ......................................................... 9 billion
- **Lactobacillus rhamnosus** R0011 ......................................................... 9 billion
- **Lactobacillus helveticus** R0052 ......................................................... 9 billion
- **Bifidobacterium bifidum** R0071 ......................................................... 1 billion
- **Bifidobacterium breve** R0070 ........................................................... 1 billion
- **Bifidobacterium infantis** R0033 ........................................................... 1 billion

Non-medicinal ingredients: **Lactobacillus delbrueckii** subsp. **bulgaricus** R9001 (1 billion CFU), **Streptococcus salivarius** subsp. **thermophilus** R0083 (1 billion CFU), maltodextrin, fructooligosaccharides, arabinogalactan and ascorbic acid in a NON-GMO vegetable capsule composed of vegetable hypromellose, purified water and aqueous solution.

### Dosage

**Adults, adolescents, and children \( \geq 1 \) year old:** Take 1 to 2 capsules daily with water or juice for one month or as directed by your health care practitioner.

### Note

Keep refrigerated.

### Warning\textsuperscript{(7)}

Caution is suggested for people who are immunocompromised.

### Indication

- Probiotics Urgency delivers the most advanced probiotic formula in Europe, Asia and North America.
- Probiotics Urgency is a unique formula of complementary probiotic cultures proven to improve lactose tolerance, prevent and treat **Clostridium difficile** disease or other antibiotic-induced diarrhea; balance the systemic immune system; replenish the gastrointestinal tract; and aid digestion, absorption and solubilization of proteins, lipids, minerals and vitamins.
- Probiotics Urgency plays a major role in safeguarding intestinal health, reducing **Candida** yeast infections, building the immune system and supplying essential nutrients.
- Probiotics Urgency’s advanced PH\textsuperscript{5}D enteric-coated capsules bypass stomach acids and deliver 50 billion cells per capsule to the intestines.
- Probiotics Urgency helps to reduce symptoms such gas, bloating, constipation, diarrhea, bad breath, dull complexion, strong body odor, vaginal infections, deficiency in B-complex vitamins, lack of energy, red eyes and many other symptoms of chronic disease.

### Purity, cleanliness and stability

Third-party testing is performed on finished product to ensure Probiotics Urgency is free of heavy metals, solvent residues, pesticides and other impurities.
Probiotics are live microorganisms that, under normal circumstances, maintain health of the intestines and provide defense towards infectious agents. *Lactobacilla* and *Bifidobacteria* are normal inhabitants of the human colonic flora. As a supplement, probiotics help to restore the normal microflora after antibiotic use, acute diarrhea, or symptoms of irritable or inflammatory bowel. In addition, probiotics benefit both the musocal and systemic immunity, providing colonic defense against infectious agents and regulating the immune system in many immune-related conditions. Probiotics Urgency is the supplement to take when changes in the population of these normal bacteria become altered by antibiotics, diarrhea, stress, or other health conditions.

A meta-analysis (2012) of 82 randomized controlled trials on the use of probiotics found that orally administered probiotics, in particular *Lactobacillus* species, conferred a statistically significant reduction in infection-related diarrhea. A similar meta-analysis (2006) conducted on the pediatric population, testing *Lactobacillus*, *Bifidobacterium*, *B. lactis* and *Streptococcus thermophilus*, showed a similar trend in reduced antibiotic-associated diarrhea. In reviewing the effects on gastrointestinal disease, a meta-analysis (2012) found that eleven strains of probiotic species showed a positive effect for the prevention and treatment of six different gastrointestinal diseases (RR = 0.58): Pouchitis, infectious diarrhea, irritable bowel syndrome, *Helicobacter pylori*, *Clostridium difficile*, and antibiotic-associated diarrhea.

Eighty percent of the body’s immunity is in the gut-associated lymphoid tissue (GALT). Microbial balance is important for the development and functioning of the GALT. It functions to reduce transepithelial passage of bacteria across the intestine by producing antibodies and configuring the humoral immune response. Microflora of the intestinal tract affects both the specific and nonspecific arms of the immune system, as well as the factors regulating nutrition and nutrient metabolism. The microflora does not only regulate local infections, but may also be implicated in systemic immune-related conditions, such as inflammatory bowel disease.

**Pharmacodynamic**

The mechanism by which probiotics exert their effects have been intensively studied. Some probiotics act in the lumen of the gut by elaborating antibacterial molecules such as bacteriocins; others enhance the mucosal barrier by increasing the production of innate immune molecules, including goblet cell-derived mucins and trefoil factors and defensins produced by intestinal Paneth cells; and other probiotics mediate their beneficial effects by promoting adaptive immune responses (secretory IgA, regulatory T cells, interleukin-10); while some species of probiotics have the capacity to activate receptors in the enteric nervous system. Some strains have been tested in vitro to reduce inflammation by modulating cytokines such as tumor necrosis factor, while others have shown a 3–4-fold increase in secretory IgA (which transports antibodies across the intestinal barrier). Tightness of the intestinal barrier, or a reduction in intestinal permeability, was increased with probiotics. The data also demonstrates that binding of nonspecific secretory IgA to bacteria potentiates their effect on selected events associated with adhesion and cell signaling, and it is postulated that mucus-binding protein from probiotics bind to immunoglobulins IgG or IgA.

**Pharmacokinetic**

The probiotic *Lactobacillus acidophilus* is ingested orally with primary distribution in the colon and excreted through feces. When the probiotic comes into contact with intestinal cells, the capsule begins to disintegrate, and acidophils are released. In vitro experiments have demonstrated that the acidophils resume their metabolism and cause a reduction in pH within a few hours. The pharmacokinetics of active constituents released by probiotics are unknown, and further studies are needed. The survival of probiotics to the intestine depends on their intrinsic resistance to gastric acids and bile salts, on host factors and on the vehicle in which they have been ingested. Some probiotics are destroyed in the stomach, whereas others have a high survival rate until they reach the feces. In several human studies using intestinal intubation techniques, approximately 1–10% of *Lactobacillus acidophilus* ingested in fermented products were found to survive transit to the ileum. *Lactobacillus plantarum* and some *Bifidobacterium* subsp. exhibited a high survival rate in the whole gastrointestinal tract with 25–30% recovery in the feces respectively.

**Bifidobacterium longum, Bifidobacterium infantis and Bifidobacterium breve**

*Bifidobacterium* spp. is one of the largest species of probiotics to be studied for the prevention and treatment of several gastrointestinal disorders. Studies investigating the mechanism have reported many beneficial effects. *Bifidobacterium* reduces gastrointestinal transit time by approximately 20%. It increases the production of lactic acid and acetic acid, lowering the intestinal pH from 7–8 to 5–6, consequently limiting and controlling the proliferation of pathogenic bacteria.
and invasion of coliform and clostridia pathogenic bacteria. Evidence shows that a protein factor produced by Bifidobacterium longum inhibits the adhesion of enterotoxigenic Escherichia coli strain.\(^{(25)}\) Bifidobacterium infantis acts specifically against microbial infections. A study on Bifidobacterium breve has been shown to raise antigen-specific IgA antibodies, to stabilize and normalize intestinal permeability, and to enhance systemic immune system function, thus preventing the overgrowth of pathogenic bacteria and viruses in the body.\(^{(26)}\)

**Lactobacillus rhamnosus**

*Lactobacillus rhamnosus* enhances the specific and nonspecific immune system. Evidence suggests that maternal intake of *L. rhamnosus* 2–4 weeks before childbirth, and for six months while breast-feeding, reduces the risk of atopic allergies in infants.\(^{(27)}\) The mechanism is through enhanced production of maternal secretory IgA, transferred through breast milk to coat and protect the infant’s gastrointestinal tract.\(^{(28)}\) *L. rhamnosus* also confers protection to vaginal flora by inhibiting colonization and growth of pathogenic bacteria or microorganisms.\(^{(29)}\)

**Lactobacillus helveticus**

*Lactobacillus helveticus* has the ability to survive stomach acidity. It delivers antimicrobial properties against harmful pathogens, reduces symptoms of lactose intolerance and shortens duration of gastrointestinal problems as well as helping the body’s immune defenses.\(^{(30)}\)

**Lactobacillus bulgaricus**

*Lactobacillus bulgaricus* is effective in stimulating nonspecific immune responses. It reduces intestinal pH, increases phagocytosis, and modulates inflammatory cytokine production to favorably maintain homeostasis. *L. bulgaricus* is recommended to support the growth of good bacteria, improve lactose and protein digestion and metabolism, and produce natural antibiotic-like substances.\(^{(31)}\)

**Lactobacillus casei**

*Lactobacillus casei* may prevent enteric infections and significantly stimulate secretory IgA production, especially in response to *Salmonella Typhimurium* inoculation.\(^{(32)}\) It has been shown to reduce the duration and severity of rotavirus infection in children compared to the control group.\(^{(33)}\)

**Lactobacillus plantarum**

*Lactobacillus plantarum* reduces translocation, improves liver and immune functions, and mucosal inflammation. In individuals with irritable bowel syndrome (IBS), *L. plantarum* has been shown to decrease the frequency and severity of IBS symptoms, such as abdominal bloating, by up to 95%.\(^{(34, 35)}\) *L. plantarum* secretes a liquid culture containing bacteriocins which help to prevent the proliferation and colonization of pathogenic bacteria such as *Pseudomonas aeruginosa, Enterococcus faecalis, Klebsiella pneumoniae* and *Escherichia coli*.\(^{(5)}\) A six-week study demonstrated that supplementation with *L. plantarum* significantly lowered the risk of cardiovascular disease in smokers, by lowering LDL cholesterol, fibrinogen, and systolic blood pressure, compared to the control group.\(^{(36)}\)

**Streptococcus thermophilus and Bifidobacterium bifidum**

*Streptococcus thermophilus* contains lactase, which breaks down lactose into lactic acid, and therefore may be helpful to reduce symptoms of lactose intolerance.\(^{(37)}\) The low pH or acid environment inhibits the growth of proteolytic bacteria.\(^{(38)}\) *S. thermophilus* also produces a bacteriocin that is effective against several pathogens such as *Listeria monocytogenes, Salmonella typhimurium, Escherichia coli, Yersinia pseudotuberculosis* and *Yersinia enterocolitica*.\(^{(6)}\) Evidence suggests that *Bifidobacterium bifidum* combined with *Streptococcus thermophilus* reduces rotavirus symptoms in children.\(^{(39, 40)}\) *Bifidobacterium bifidum* increased the total secretion of major Ig isotypes as well as the number of IgA-secreting cells, and has been shown to increase the proliferation of spleen cells.\(^{(41)}\) *Bifidobacterium bifidum* has been recently shown, in vitro and in vivo, to inhibit *Helicobacter pylori* infection.\(^{(42)}\)

**Prebiotics**

A prebiotic is a nondigestible food that improves intestinal health by stimulating growth and/or the activity of beneficial bacteria.\(^{(43)}\) Fructooligosaccharides and arabino-oligosaccharides promote growth of *Bifidobacterium* and *Lactobacillus*, decrease intestinal pH, produce short-chain fatty acids that are fuel for intestinal cells, and improve mineral absorption.\(^{(44, 45)}\)

**F.O.S. (Fructooligosaccharides)**

The fructooligosaccharides in Probiotics Urgency are composed entirely of inulin extracted from chicory root. In elderly volunteers, supplementation of inulin for a period of 19 days increased significantly the levels of *Bifidobacteria* from 7.9 to 9.2 log\(_{10}\)/g, and a reduction in the number of harmful *Enterococcus* and frequency of *Enterobacteriaceae* was observed.\(^{(46)}\) These naturally occurring indigestible carbohydrates encourage fecal volume and reduce intestinal pH.\(^{(47)}\) The fructooligosaccharides also show a protective effect on liver functions.\(^{(48)}\)
Arabinogalactans are prebiotics that stimulate the proliferation and activity of beneficial bacteria in the digestive system. Evidence suggests that daily supplementation of arabinogalactan for a period of six weeks significantly increased the populations of Lactobacillus and Bifidobacteria within the intestinal flora. Arabinogalactans support the beneficial effects of probiotics and maintain microbial balance which is essential for proper immune function. Arabinogalactans stimulate phagocytosis or opsonization of bacteria such as Escherichia coli and Klebsiella species. Arabinogalactans have also been shown to reduce the production of ammonia, which may help in the treatment of portal-systemic encephalopathy, a disease caused by an excessive concentration of ammonia in the liver.

References