

NEW ROOTS

NATURAL HEALTH PRODUCTS
WWW.NEWROOTSHERBAL.EU

HERBAL

» PROBIOTIC RANGE



- Exclusive information for health-care professionals -



PRO-RECOVERY



GPS™ capsule

20 strains
120 billion CFU
With FOS and AOS

Dose: 1 capsule daily
Format: 30 capsules

Nutritional information 1 enteric capsule

Human strains:

<i>L. rhamnosus</i> UB5115	30 billion CFU
<i>L. casei</i> UB1499	20 billion CFU
<i>B. bifidum</i> UB4280	4 billion CFU
<i>B. breve</i> UB8674	4 billion CFU
<i>B. longum</i> ssp. <i>infantis</i> UB9214	4 billion CFU
<i>B. longum</i> ssp. <i>longum</i> UB7691	4 billion CFU
<i>L. acidophilus</i> UB5997	2,2 billion CFU
<i>B. animalis</i> ssp. <i>lactis</i> UB3963	1 billion CFU
<i>L. plantarum</i> LA-14	200 million CFU
<i>L. crispatus</i> UB4719	200 million CFU
<i>L. gasseri</i> UB8141	200 million CFU
<i>L. rhamnosus</i> GG	200 million CFU
<i>L. fermentum</i> UB9735	200 million CFU

Plant strains:

<i>L. plantarum</i> UB2783	40 billion CFU
<i>L. brevis</i> UB1214	200 million CFU

Dairy strains:

<i>L. paracasei</i> UB1978	8,3 billion CFU
<i>L. reuteri</i> UB2419	700 million CFU
<i>B. animalis</i> ssp. <i>lactis</i> HN19	200 million CFU
<i>L. helveticus</i> UB7229	200 million CFU
<i>L. johnsonii</i> UB3394	200 million CFU

Inulin	5 mg
Arabinogalactan	5 mg

OUR HIGHEST POTENCY PROBIOTIC

Prolonged and multiple antibiotic treatments



PRO-URGENCY



GPS™ capsule

10 strains
50 billion CFU
With FOS and AOS

Dose: 2 capsules daily
Format: 30 capsules

Nutritional information 1 enteric capsule

Human strains:

<i>B. longum</i> ssp. <i>longum</i> UB7691	9 billion CFU
<i>L. casei</i> UB1499	9 billion CFU
<i>L. rhamnosus</i> UB5115	9 billion CFU
<i>L. acidophilus</i> UB5997	1 billion CFU
<i>B. bifidum</i> UB4280	1 billion CFU
<i>B. breve</i> UB8674	1 billion CFU
<i>B. longum</i> ssp. <i>infantis</i> UB9214	1 billion CFU

Plant strain:

<i>L. plantarum</i> UB2783	9 billion CFU
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Dairy strains:

<i>L. helveticus</i> UB7229	9 billion CFU
<i>L. paracasei</i> UB1978	1 billion CFU

Inulin	15 mg
Arabinogalactan	15 mg
Vitamin C (L-ascorbic acid)	6 mg (8%*)

*NRV: Nutrient Reference Value in %.

FOR A RAPID RECOVERY OF A BALANCED FLORA

Acute infectious diarrhoea
Cardiovascular diseases
Stress and depression

IBS URGENCY



PH⁵D capsule

5 strains
12 billion CFU
Colostrum 8% p.r.p.
With FOS and AOS

Dose: 2 capsules daily
Format: 30 capsules

COMBINATION WITH HIGH CONTENT OF HIGH QUALITY BOVINE COLOSTRUM

Irritable bowel syndrome

Nutritional information 1 enteric capsule

Human strains:

<i>B. longum</i> ssp. <i>infantis</i> R0033	4 billion CFU
<i>B. longum</i> ssp. <i>longum</i> R0175	4 billion CFU
<i>L. acidophilus</i> R0418	1 billion CFU

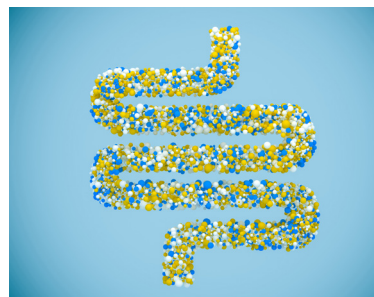
Plant strain:

<i>L. plantarum</i> R1012	1,333 billion CFU
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Dairy strain:

<i>L. rhamnosus</i> R0011	1,333 billion CFU
Bovine colostrum (from <i>Bos taurus</i>) (8% proline-rich polypeptides)	135 mg

Inulin	10 mg
Arabinogalactan	10 mg



HUMAN BIOTA



GPS™ capsule

12 strains
42 billion CFU
With FOS and AOS

Dose: 1 capsule daily
Format: 30 capsules

Nutritional information 1 enteric capsule

Human strains:

<i>L. rhamnosus</i> UB5115	31,5 billion CFU
<i>L. casei</i> UB1499	8,324 billion CFU
<i>L. acidophilus</i> UB5997	1,680 billion CFU
<i>B. infantis</i> UB9214	105 million CFU
<i>B. lactis</i> UB3963	105 million CFU
<i>B. bifidum</i> UB4280	42 million CFU
<i>B. breve</i> UB8674	42 million CFU
<i>B. longum</i> UB7691	42 million CFU
<i>L. crispatus</i> UB4719	42 million CFU
<i>L. gasseri</i> UB8141	42 million CFU
<i>L. acidophilus</i> LA-14	37,8 million CFU
<i>L. rhamnosus</i> GG	37,8 million CFU

Inulin	15 mg
Arabinogalactan	15 mg

12 STRAINS EXCLUSIVELY OF HUMAN ORIGIN TO COLONIZE THE ENTIRE INTESTINAL TRACT

Long-term general well-being
Strengthen the immune system
Repopulate the entire intestinal tract

FEMINA FLORA ORAL



GPS™ capsule

16 strains
55 billion CFU
With FOS and AOS

Dose: 1-2 capsules daily
Format: 30 capsules

PREVENTION OF VAGINAL INFECTIONS, IDEAL FOR PROLONGUED USE

Prevention of vaginal candidiasis and bacterial vaginosis

Nutritional information 1 enteric capsule

Human strains:

<i>L. rhamnosus</i> UB5115	19 billion CFU
<i>L. acidophilus</i> UB5997	5,25 billion CFU
<i>L. casei</i> UB1499	12 billion CFU
<i>B. bifidum</i> UB4280	2 billion CFU
<i>B. breve</i> UB8674	2 billion CFU
<i>B. longum</i> UB7691	2 billion CFU
<i>L. crispatus</i> UB4719	750 million CFU
<i>L. gasseri</i> UB8141	750 million CFU
<i>L. rhamnosus</i> GG	300 million CFU
<i>L. acidophilus</i> LA-14	300 million CFU

Plant strains:

<i>L. plantarum</i> UB2783	8 billion CFU
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Dairy strains:

<i>L. casei</i> LC-11	300 million CFU
<i>L. helveticus</i> UB7229	500 million CFU
<i>L. paracasei</i> UB1978	600 million CFU
<i>L. johnsonii</i> UB3394	750 million CFU
<i>L. reuteri</i> UB2419	500 million CFU

Inulin	10 mg
Arabinogalactan	10 mg

PRO-BOULARDII PLUS



PH^{5D} capsule

11 strains + *S. boulardii*
21 billion CFU
With FOS and ADS

Dose: 1-2 capsules daily
Format: 30 capsules

Nutritional information 1 enteric capsule



Human strains:

<i>L. acidophilus</i> R0418	619 million CFU
<i>B. longum</i> ssp. <i>longum</i> R0175	338 million CFU
<i>B. breve</i> R0070	338 million CFU
<i>B. infantis</i> R0033	338 million CFU



Plant strains:

<i>S. boulardii</i>	10 billion CFU
<i>L. plantarum</i> R1012	450 million CFU



Dairy strains:

<i>L. rhamnosus</i> R0011	4,5 billion CFU
<i>L. rhamnosus</i> R1039	3,375 billion CFU
<i>L. helveticus</i> R0052	563 million CFU
<i>L. casei</i> R0215	450 million CFU
<i>S. salivarius</i>	
ssp. <i>thermophilus</i> R0083	225 million CFU
<i>L. delbrueckii</i>	
ssp. <i>bulgaricus</i> R9001	56 million CFU

Inulin	8,3 mg
Arabinogalactan	8,3 mg

COMPLETE FORMULA WITH *S. BOULARDII* TO
COMBAT AND PREVENT INFECTIOUS DIARRHOEA

Traveler's diarrhoea
Infectious gastroenteritis
Antibiotic-associated diarrhoea
Intestinal candidiasis



CHILDREN'S PRO



12 strains
10 billion CFU
With FOS and ADS

Dose: 2 dose-measuring
scoops daily
Format: 20 g.

THE MOST COMPLETE PROBIOTICS SUPPLEMENT FOR
CHILDREN, WITH *L. REUTERI*
BALANCING INTESTINAL FUNCTIONS AND STRENGTHENING THE
IMMUNE SYSTEM

Antibiotic-associated diarrhoea
Lactose intolerance
Eczema, asthma, allergies

PRO-INTENSITY



GPS capsule

18 strains
20 billion CFU
Colostrum 8% p.r.p.
With FOS and ADS

Dose: 1-2 capsules daily
Format: 30 capsules

Nutritional information 1 enteric capsule



Human strains:

<i>L. rhamnosus</i> UB5115	7,427 billion CFU
<i>L. crispatus</i> UB4719	1,903 billion CFU
<i>L. casei</i> UB1499	1,887 billion CFU
<i>B. animalis</i>	
ssp. <i>lactis</i> UB3963	1,427 billion CFU
<i>L. gasseri</i> UB8141	1,427 billion CFU
<i>B. bifidum</i> UB4280	951 million CFU
<i>B. breve</i> UB8674	315 million CFU
<i>B. longum</i>	
ssp. <i>infantis</i> UB9214	315 million CFU
<i>B. longum</i>	
ssp. <i>longum</i> UB7691	315 million CFU
<i>L. acidophilus</i> UB5997	26 million CFU



Plant strains:

<i>L. salivarius</i> UB4198	1,427 billion CFU
<i>L. plantarum</i> UB2783	73 million CFU



Dairy strain:

<i>L. johnsonii</i> UB3394	1,903 billion CFU
<i>L. helveticus</i> UB7229	539 million CFU
<i>L. paracasei</i> UB1978	52 million CFU
<i>Lactococcus lactis</i> LL-23	13 million CFU

Bovine colostrum (from <i>Bos taurus</i>), high content of proline-rich polypeptides	25 mg
Inulin	10 mg
Arabinogalactan	10 mg
Xylooligosaccharides (XOS)	10 mg
Vitamin C (L-ascorbic acid)	6 mg

THE BROADEST CONTRIBUTION OF PROBIOTIC
STRAINS, WITH COLOSTRUM TO STRENGTHEN THE
IMMUNE SYSTEM

Crohn's disease
Ulcerative colitis
Hypercholesterolemia
Diabetes mellitus

Nutritional information 2 scoops



Human strains:

<i>L. rhamnosus</i> UB5115	6,629 billion CFU
<i>L. casei</i> UB1499	1,284 billion CFU
<i>B. longum</i> ssp. <i>infantis</i> UB9214	1,040 billion CFU
<i>L. rhamnosus</i> G.G	1 billion CFU
<i>B. breve</i> UB8674	214 million CFU
<i>B. longum</i> ssp. <i>longum</i> UB7691	214 million CFU
<i>L. acidophilus</i> UB5997	18 million CFU



Plant strains:

<i>L. plantarum</i> UB2783	50 million CFU
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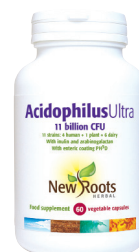


Dairy strains:

<i>L. reuteri</i> UB2419	351 million CFU
<i>L. helveticus</i> UB7229	43 million CFU
<i>L. paracasei</i> UB1978	36 million CFU
<i>L. johnsonii</i> UB3394	9 million CFU

Inulin	5 mg
Arabinogalactan	5 mg

ACIDOPHILUS ULTRA



PH^{5D} capsule

11 strains
11 billion CFU
With FOS and ADS

Dose: 1 to 2 capsules daily
Format: 30, 60, 120 capsules

Nutritional information 1 enteric capsule



Human strains:

<i>L. acidophilus</i> R0418	605 million CFU
<i>B. longum</i> ssp. <i>longum</i> R0175	330 million CFU
<i>B. infantis</i> R0033	330 million CFU
<i>B. breve</i> R0070	330 million CFU



Plant strains:

<i>L. plantarum</i> R1012	440 million CFU
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Dairy strains:

<i>L. rhamnosus</i> R0011	4,4 billion CFU
<i>L. rhamnosus</i> R1039	3,3 billion CFU
<i>L. helveticus</i> R0052	550 million CFU
<i>L. casei</i> R0215	440 million CFU
<i>S. salivarius</i>	
ssp. <i>thermophilus</i> R0083	220 million CFU
<i>L. delbrueckii</i>	
ssp. <i>bulgaricus</i> R9001	55 million CFU
Inulin	10 mg
Arabinogalactan	10 mg

ADVANCED FORMULA WHICH HELPS MAINTAIN AND
RE-ESTABLISH THE FLORA'S FUNCTION

Balance of the intestinal flora
Reinforcement of immune system
Pregnancy and breastfeeding period

PREBIOTICS

INULIN

A fructooligosaccharide (FOS) from plants, extracted from the **chicory root** (*Cichorium intybus*). It acts as a prebiotic, creating an appropriate environment for probiotics, or beneficial microorganisms, to reproduce faster and in larger quantities⁽¹⁻³⁾. It increases

1. Inst. Food Technologists. What are fructooligosaccharides and how do they provide digestive, immunity and bone health benefits? ScienceDaily (2013).
2. Gibson, Glenn R. "Dietary modulation of the human gut microflora using the prebiotics oligofructose and inulin." J Nutr 129.7

- (1999): 1438S-1441S.
3. Flamm, Gary, et al. "Inulin and oligofructose as dietary fiber: a review of the evidence." Crit Rev Food Sci Nutr 41.5 (2001): 353-362.
4. Cardarelli, Haïssa R., et al. "Inulin and oligofructose improve

sensory quality and increase the probiotic viable count in potentially synbiotic petit-suisse cheese." LWT-Food Sci Tech 41.6 (2008): 1037-1046.

the population of *Bifidobacterium probiotics* in the colon and reduces toxic metabolites and harmful enzymes. It prevents pathological and autogenous diarrhoea as well as constipation, and protects liver function⁽⁴⁾.

ARABINOGLACTAN

An arabinooligosaccharide (AOS) from plants, from the **alerce tree** (*Larix laricina*). It's an excellent prebiotic since it increases the production of short-chain fatty acids, mainly butyrate, which acts as an energy substrate for the epithelial cells of the colon and as protection for the intestinal mucosa. It activates immune response and se-

1. Robinson, Ramona R., Joellen Feitrag, and Joanne L. Slavin. "Effects of dietary arabinogalactan on gastrointestinal and blood parameters in healthy human subjects." J Am Coll Nutr 20.4 (2001): 279-285.
2. Gibson, Glenn R. "Dietary modulation of

- the human gut microflora using the prebiotics oligofructose and inulin." J Nutr 129.7 (1999): 1438S-1441S.
3. Flamm, Gary, et al. "Inulin and oligofructose as dietary fiber: a review of the evidence." Crit Rev Food Sci Nutr 41.5 (2001): 353-362.

lectively stimulates the growth and activity of probiotic bacteria⁽⁴⁾. It's useful for combating infections because of its capacity to decrease bacterial adherence⁽²⁻³⁾. Additionally, it reduces the intestinal pH and improves mineral absorption⁽³⁻⁶⁾.

4. Van Loo, Jan, et al. "On the presence of inulin and oligofructose as natural ingredients in the western diet." Crit Rev Food Sci Nutr 35.6 (1995): 525-552.
5. Niness, Kathy R. "Inulin and oligofructose: what are they?" The Journal of Nutrition 129.7

- (1999): 1402S-1406S.
6. Rao, A. V. "Dose-response effects of inulin and oligofructose on intestinal bifidogenesis effects." The Journal of Nutrition 129.7 (1999): 1442S-1445S.

XYLOOLIGOSACCHARIDES

They are xylan-derived oligosaccharides with a prebiotic effect stimulating the selective growth of beneficial bacteria. XOS also have other beneficial health effects. These positive effects are related to the optimisation of colon functions, as well as the metabolism (in-

1. Samanta, A. K., et al. "Xylooligosaccharides prebiotics from agricultural by-products: Production and applications." Bioactive Carbohydrates and Dietary Fibre 5.1 (2015): 62-71.

2. Wang, Jing, et al. "Wheat bran xylooligosaccharides improve blood lipid metabolism and antioxidant status in rats fed a high-fat diet." Carbohydrate Polymers 86.3 (2011): 1192-1197.

creasing or changing the composition of short-chain fatty acids), antioxidant properties, immunostimulation, reduction of triglycerides and cholesterol, reduction of procarcinogenic enzymes, etc. (1-3).

3. Palaniappan, Ayyappan, Usha Antony, and Mohammad Naushad Emmambux. "Current status of xylooligosaccharides: Production, characterization, health benefits and food applica-

tion." Trends in Food Science & Technology 111 (2021): 506-519.

COLOSTRUM (STANDARDISED AT 30% IMMUNOGLOBULIN G)

Bovine colostrum from New Roots Herbal is high quality, free of pesticides, hormones, heavy metals and antibiotics, and has the maximum amount of **proline-rich polypeptides** (8% PRPs) available for reducing the inflammatory response responsible for some of the symptoms related to Irritable Bowel Syndrome and Permeable Bowel Syndrome (intestinal dysbiosis).

It contains a high proportion of **immunoglobulin (IgG)**, antimicrobial factors (lactoferrin), immune-modulating polypeptides, antiinflammatory cytokines, growth factors and other bioactive compounds that promote immune response. It inhibits an excessive production of "oxygen-reactive species" and acts synergically as a prebiotic for the intense growth of specific probiotic strains. **Growth factors** participate in the regeneration and proliferation of the intestinal epithelium for correct intestinal absorption and permeability⁽¹⁾. Proline-rich polypep-

1. Godhia, Meena L., et al. "Colostrum-its Composition, Benefits as a Nutraceutical-A Review." Curr Res Nutr Food Sci J 1.1 (2013): 37-47.
2. Fortin, A.M., et al. "Determinación de la calidad del colostro bovino a partir de la densidad y de la concentración de IgG y del número de partos de la vaca y su efecto en el desarrollo de los terneros hasta los 30 días de edad." BS thesis. Zamorano: Escuela Agrícola Panamericana, 2012, 2009.
3. Shing, C.M. "Effects of bovine colostrum supplementation on immune variables in highly trained cyclists." J Appl Physiol 102.3 (2007): 1113-22.

4. Jones, A.W., et al. "The effects of bovine colostrum supplementation on in vivo immunity following prolonged exercise: a randomised controlled trial." Eur J Nutr (2017): 1-10.
5. Kotsis, Yiannis, et al. "A low-dose, 6-week bovine colostrum supplementation maintains performance and attenuates inflammatory indices following a Loughborough Intermittent Shuttle Test in soccer players." Eur J Nutr (2017): 1-15.
6. Crooks, Christine, et al. "Effect of bovine colostrum supplementation on respiratory tract mucosal defenses in swimmers." Int J Sport Nutr Exerc

Metab 20.3 (2010): 224-235.

Metab 20.3 (2010): 224-235.

7. Jones, A.W., et al. "Effects of bovine colostrum supplementation on upper respiratory illness in active males." Brain Behav Immun 39 (2014): 194-205.

Metab 20.3 (2010): 224-235.

8. Kaducu, F.O., et al. "Effect of bovine colostrum-based food supplement in the treatment of HIV-associated diarrhea in Northern Uganda: a randomized controlled trial." Indian Journal of Gastroenterology 30.6 (2011): 270-276.

9. Mitra, A.K., et al. "Hyperimmune cow colostrum reduces diarrhoea due to rotavirus: a double blind, controlled clinical trial." Acta Paediatrica 84.9 (1995): 996-1001.

10. Playford, Raymond J., et al. "Co-administration of the health food supplement, bovine colostrum, reduces the acute non-steroidal anti-inflammatory drug-induced increase in intestinal permeability." Clinical Science 100.6 (2001): 627-633.

11. Dzik, Sara, et al. "Properties of bovine colostrum and the possibilities of use." Polish Annals of Medicine 24.2 (2017): 295-299.

tides are some of the most important integrating components of colostrum because of their capacity to modulate the immune system and regulate the production of certain cytokines, the signaling molecules that control the inflammatory process⁽²⁻²⁾. Clinical studies show that bovine colostrum regulates immune response after exercise⁽³⁻⁴⁾, reduces muscle damage and inflammation after exercise⁽⁵⁾, has a protective effect on the respiratory tract mucosa⁽⁶⁻⁷⁾, is effective for diarrhoea associated with HIV treatment⁽⁸⁾, reduces the duration and severity of diarrhoea from rotavirus⁽⁹⁾, and prevents gastrointestinal damage (increased permeability) caused by non-steroidal antiinflammatory drugs⁽¹⁰⁾. The lactoferrin it contains inhibits the growth of various pathogenic microorganisms such as *Helicobacter pylori*⁽¹¹⁾.

7. Jones, A.W., et al. "Effects of bovine colostrum supplementation on upper respiratory illness in active males." Brain Behav Immun 39 (2014): 194-205.
8. Kaducu, F.O., et al. "Effect of bovine colostrum-based food supplement in the treatment of HIV-associated diarrhea in Northern Uganda: a randomized controlled trial." Indian Journal of Gastroenterology 30.6 (2011): 270-276.
9. Mitra, A.K., et al. "Hyperimmune cow colostrum reduces diarrhoea due to rotavirus: a double

blind, controlled clinical trial." Acta Paediatrica 84.9 (1995): 996-1001.

10. Playford, Raymond J., et al. "Co-administration of the health food supplement, bovine colostrum, reduces the acute non-steroidal anti-inflammatory drug-induced increase in intestinal permeability." Clinical Science 100.6 (2001): 627-633.

11. Dzik, Sara, et al. "Properties of bovine colostrum and the possibilities of use." Polish Annals of Medicine 24.2 (2017): 295-299.

STRAIN ORIGIN

A balance of probiotic species from HUMAN, DAIRY and PLANT sources ensures probiotic activity throughout the intestinal tract.



Human strains

Fundamental for immune performance and selective permeability within the intestine.



Dairy strains

Beneficial for lactose intolerance, digestive disorders and the production of lactic acid which inhibits excessive growth of pathogenic microorganisms.



Plant strains

These prosper without oxygen, which allows them to combat the growth and activity of gas-producing bacteria which contribute to Irritable Bowel Syndrome.

GPS™ ENTERIC CAPSULES



In order to ensure the efficacy of our probiotics, we use an advanced water-based GPS™ enteric coating.

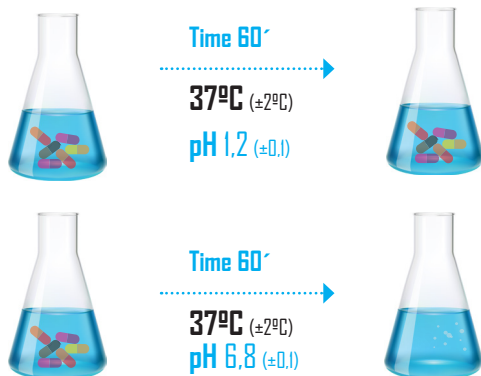
The GPS™ coating guarantees that the contents of the capsule survive stomach acids and are released only in the intestine.

The GPS™ capsules only disintegrate at a pH of 5.5 or higher.

In order to ensure that this is really the case, a disintegration test is carried out for each batch of the final product.

**Natural water-based
GPS™ enteric coating
Gastric Protective System**

DISINTEGRATION TEST OF THE UNITED STATES PHARMACOPOEIA, USP 2040 (2 steps):



Simulation of **stomach** conditions:

6 capsules are introduced into an acidic fluid (low pH) similar to gastric acids. All of the capsules must remain intact after 60 minutes.

Simulation of **intestino** conditions:

6 capsules are introduced into a pH-controlled fluid that simulates the conditions of the intestine. All of the capsules must disintegrate before 60 minutes.

PROBIOTIC RANGE

FEMINA FLOR ORAL

More than 55 billion CFU from 16 probiotic strains for the maintenance of a **balanced vaginal flora** and to **prevent** and fight **vaginal infections**. Various clinical studies have shown that oral administration of Lactobacillus populates the vaginal mucosa within a

1. Reid, Gregor, et al. "Oral use of *Lactobacillus rhamnosus* GR-1 and *L. fermentum* RC-14 significantly alters vaginal flora: randomized, placebo-controlled trial in 64 healthy women." *FEMS Immunology & Medical Microbiology* 35.2 (2003): 131-134.

2. Petricevic, Ljubomir, et al. "Randomized, double-blind, placebo-controlled study of oral lactobacilli to improve the vaginal flora of postmenopausal women." *European Journal of Obstetrics & Gynecology and Reproductive Biology* 141.1 (2008): 54-57.

week⁽¹⁻³⁾.

It also provides more than 5,2 billion CFU of *Bifidobacterium bifidum* and *longum*, which typically reside in the colon and are capable of reinforce the performance of the immune system⁽⁴⁻⁵⁾.

3. Reid, Gregor, et al. "Oral probiotics can resolve urogenital infections." *FEMS Immunology & Medical Microbiology* 30.1 (2001): 49-52.

4. Park, Ji-Hee, et al. "Encapsulated *Bifidobacterium bifidum* potentiates intestinal IgA production." *Cellular immunology* 219.1 (2002): 22-27.

5. Laparra, José Moisés, et al. "*Bifidobacterium longum* CECT 7347 modulates immune responses in a gliadin-induced enteropathy animal model." *PLoS One* 7.2 (2012): e30744.

PRO-RECOVERY

Our **highest potency probiotic** delivers 120 billion CFUs of 20 beneficial probiotic strains, including 13 human strains to rapidly **re-establish flora throughout the intestinal tract**. It re-establishes the predominance of beneficial strains that can be drastically reduced by frequent antibiotic use⁽¹⁻³⁾. Pro-Recovery's strain selection reflects the probiotic species that provide maximum benefits. Probiotic species of **human origin** exhibit the ability to

1. Foster, L., T. Tompkins, and W. Dahl. "A comprehensive post-market review of studies on a probiotic product containing *Lactobacillus helveticus*

R0052 and *Lactobacillus rhamnosus* R0011." *Beneficial Microbes* 2.4 (2011): 319-334.

2. Spinler, J.K. "Probiotics as adjunctive therapy

survive intestinal transit. This characteristic allows them to colonise and exert their benefits at multiple sites throughout the gastrointestinal tract. It **includes the strength and diversity** of over 70 billion CFUs from 13 human strains; over 40 billion CFUs from 2 plant strains and over 9 billion CFUs from 5 dairy strains.

for preventing *Clostridium difficile* infection—What are we waiting for?." *Anaerobe* 41 (2016): 51-57.

3. Basu, Sriparna, et al. "Effect of *Lactobacillus*

rhamnosus GG in persistent diarrhea in Indian children: a randomized controlled trial." *Journal of clinical gastroenterology* 41.8 (2007): 756-760.

PRO-BOULARDII PLUS

It supplies 10 billion CFUs from *Saccharomyces boulardii*, a non-pathogenic yeast capable of neutralizing the effects of **pathogenic bacteria** such as *E. coli*⁽¹⁾ and *C. difficile*⁽²⁾. In addition to infectious diarrhoea, it's effective at preventing **antibiotic-associated diarr-**

1. Czerucka, Dorota, et al. "Experimental effects of *Saccharomyces boulardii* on diarrheal pathogens." *Microbes infection* 4.7 (2002): 733-739.

2. McFarland, Lynne V. "Systematic review and

meta-analysis of *Saccharomyces boulardii* in adult patients." *World journal of gastroenterology: WJG* 16.18 (2010): 2202.

3. McFarland, Lynne V., et al. "Prevention of b-lactam-associated diarrhea by *Saccharomyces*

hoia⁽³⁾, **traveler's diarrhoea**⁽⁴⁾ and **intestinal candidiasis**⁽⁵⁾.

ProBoulardii Plus also contains 11 billion CFUs from 11 probiotic strains scientifically proven to restore balance to intestinal flora.

boulardii compared with placebo." *Am J Gastroenterol* 90.3 (1995): 439-448.

4. McFarland, L.V. "Meta-analysis of probiotics for the prevention of traveler's diarrhea." *Travel Med Infect Dis* 5.2 (2007): 97-105.

5. Kumar, S, et al. "Evaluation of efficacy of probiotics in prevention of *Candida* colonization in a PICU—a randomized controlled trial." *Crit Care Med* 41.2 (2013): 565-572.

PRO-URGENCY

It provides 50 billion CFUs from 10 strains of beneficial probiotics to quickly re-establish intestinal flora. It greatly reduces the risk of **anti-biotic-associated diarrhoea** (AAD) and helps treat **acute infectious diarrhoea**. There is evidence backing the effectiveness of high doses of probiotics for reducing the risk of acute antibiotic-associated diarrhoea and diarrhoea from *Clostridium difficile* ⁽¹⁻³⁾. Pro-Urgency can be used for the relief or prevention of AAD or infections caused by pathogens. The use of *Bifidobacterium infantis* is uncommon in

1. Gao, X.W., et al. "Dose-response efficacy of a proprietary probiotic formula of *Lactobacillus acidophilus* CL1285 and *Lactobacillus casei* LB-C80R for antibiotic-associated diarrhea and *Clostridium difficile*-associated diarrhea prophylaxis in adult patients." *Am J Gastroenterol* 105.7 (2010): 1636.
2. Spinler, J.K. "Probiotics as adjunctive therapy for preventing *Clostridium difficile* infection—What are we waiting for?." *Anaerobe* 41 (2016): 51-57.
3. Maziade, P.J., et al. "A decade of experience in primary prevention of *Clostridium difficile* infection at a community hospital using the probiotic combination *Lactobacillus acidophilus* CL1285, *Lactobacillus casei* LBC80R, and *Lactobacillus rhamnosus* CLR2 (Bio-K+)." *Clin Infect Dis* 60.2 (2015): S144-S147.
4. Brenner, D.M. "*B. infantis* 35624: a novel probiotic for the treatment of irritable bowel syndrome." *Rev Gastroenterol Disord* 9.1 (2009): 7-15.
5. Cheikhoussef, A., et al. "Bifidin I-A new bacteriocin produced by *Bifidobacterium infantis*

in primary prevention of *Clostridium difficile* infection at a community hospital using the probiotic combination *Lactobacillus acidophilus* CL1285, *Lactobacillus casei* LBC80R, and *Lactobacillus rhamnosus* CLR2 (Bio-K+)." *Clin Infect Dis* 60.2 (2015): S144-S147.

HUMAN BIOTA

Exclusive formula providing more than 42 billion CFU from 12 beneficial strains of human origin. Although the origin of a probiotic strain is not the sole criterion for efficacy, the probiotic species of human origin have the capacity to survive the intestinal transit. This characteristic allows them to **colonize and exert their benefits at multi-**

1. Dunne, Colum, et al. "In vitro selection criteria for probiotic bacteria of human origin: correlation with in vivo findings." *The Am J of Clin Nutr* 73.2 (2001): 386S-392S.
2. Nagpal, Ravinder, et al. "Human-origin probiotic cocktail increases short-chain fatty acid production via modulation of mice and human gut microbiome." *Scientific Reports* 8.1 (2018): 12649.
3. Vemuri, Ravichandra, et al. "A human origin strain *Lactobacillus acidophilus* DDS-1 exhibits superior in vitro probiotic efficacy in comparison

to plant or dairy origin probiotics." *International Journal of Medical Sciences* 15.9 (2018): 840-848.

PRO-INTENSITY

It contains 20 billion CFUs from 18 therapeutic probiotic strains (including 10 human strains) with colostrum for improved immune and digestive performance. The origin of a probiotic strain isn't the only criterion for its effectiveness, however, **human strains** have the capacity to colonize different zones throughout the entire gastrointestinal tract ⁽¹⁾. It has a high content of *L. rhamnosus* which can improve the blood **lipid profile** ⁽²⁾ and reduce **cholesterol** ⁽³⁾; and when combined with other probiotics, can be of help for **diabetes mellitus** ⁽⁴⁻⁵⁾. *B.*

1. Dunne, Colum, et al. "In vitro selection criteria for probiotic bacteria of human origin: correlation with in vivo findings—" *The American Journal of Clinical Nutrition* 73.2 (2001): 386S-392S.
2. Kekkonen, RA, et al. "Effect of probiotic *Lactobacillus rhamnosus* GG intervention on global serum lipidomic profiles in healthy adults." *World J Gastroenterol*: WJG 14.20 (2008): 3188.
3. Costabile, A. "Effect of soluble corn fibre with *Lactobacillus rhamnosus* GG and the pilus-deficient derivative GG-PB12 on faecal microbiota, immune function and metabolism in healthy elderly (Saimes study)." *Front Immunol* 8 (2017): 1443.
4. Asemi, Z., et al. "Effect of multispecies probiotic supplements on metabolic profiles, hs-CRP, and oxidative stress in patients with type 2 diabetes." *Ann Nutr Metab* 63.1-2 (2013): 1-9.
5. Wickens, K.L., et al. "Early pregnancy pro-

biotic supplementation with *Lactobacillus rhamnosus* HN001 may reduce the prevalence of gestational diabetes mellitus: a randomised controlled trial." *British Journal of Nutrition* 117.6 (2017): 804-815.

CHILDREN'S PRO

Formula based on 12 probiotic strains (10 billion CFUs) aimed at maintaining gastrointestinal health in children as of the first stages of life. The probiotic strains in Children'sPro have shown their effectiveness in diverse clinical trials against different conditions that can affect children's health. Among these conditions are gastrointestinal problems such as **antibiotic-associated diarrhoea** ⁽¹⁾, **infectious diarrhoea** ⁽²⁾ and **lactose intolerance** ⁽³⁾, as well as immune system problems such

1. Maydannik, V., et al. "Efficiency and safety of Lacidofil in children with antibiotic-associated diarrhoea caused by *Clostridium difficile*." *Pediatrics, Obstetrics and Gynecology* 3 (2010): 53-57.
2. Kocmrovri, N. "Probiotics in the treatment of diarrhoeal disease of children." *Nutrition, Aliments Fonctionnels, Aliments Santé*. 3 (2005): 25-28.
3. Rampengan, Novie Homenta, Jeanette Manoppo, and Sarah Maria Warouw. "Comparison of efficacies between live and killed probiotics in children with lactose malabsorption." *Southeast Asian Journal of Tropical Medicine and Public Health* 41.2 (2010): 474.
4. Foolad, N., and A. W. Armstrong. "Probiotics and probiotics: the prevention and reduction in severity of atopic dermatitis in children." *Beneficial Microbes* 5.2 (2014): 151-160.
5. Sardecka, Izabela, Aneta Krogulska, and Ewa Toporowska-Kowalska. "The influence of dietary immunomodulatory factors on development of food allergy in children." *Advances in Dermatology and Allergology/Post py Dermatologii i Alergologii* 34.2 (2017): 89.
6. Lundelin, Krista, et al. "Long term safety and efficacy of perinatal probiotic intervention: Evidence from a follow up study of four randomized, double blind, placebo controlled trials." *Pediatric Allergy and Immunology* 28.2 (2017): 170-175.

as **atopic dermatitis** ⁽⁴⁾, **food allergies** ⁽⁵⁾ and **asthma** ⁽⁶⁾. *Lactobacillus reuteri* prevents necrotizing enterocolitis in newborns ⁽⁷⁾, improves the symptoms of **baby colic** ⁽⁸⁾, increases digestive health in children, being effective for **acute infantile diarrhoea** ⁽⁹⁾ and **antibiotic-associated diarrhoea** ⁽¹⁰⁾, it's capable of reducing the adverse effects of treatment for *Helicobacter pylori* in children ⁽¹¹⁾ and is effective for **infantile constipation** ⁽¹²⁾.

adults, but studies have shown its benefit for **intestinal symptoms** such as pain and bloating; it regulates intestinal transit ⁽⁴⁾ and protects against pathogenic bacteria ⁽⁵⁾. *L. plantarum* reduces the risk factors for **cardiovascular diseases** such as atherosclerosis ⁽⁶⁾, hypercholesterolemia and high arterial blood pressure ⁽⁷⁾. Its high content of *B. longum* and *L. helveticus* can help improve and prevent the symptoms of **depression** ⁽⁸⁻⁹⁾.

1. Naruszewicz, Marek, et al. "Effect of *Lactobacillus plantarum* 299v on cardiovascular disease risk factors in smokers." *The American Journal of Clinical Nutrition* 76.6 (2002): 1249-1255.
2. Costabile, A, et al. "An in vivo assessment of the cholesterol-lowering efficacy of *Lactobacillus plantarum* ECGC 13110402 in normal to mildly hypercholesterolaemic adults." *PLoS One* 12.12 (2017): e0187964.
3. Arseneault-Bréard, Jessica, et al. "Com-

bination of *Lactobacillus helveticus* R0052 and *Bifidobacterium longum* R0175 reduces post-myocardial infarction depression symptoms and restores intestinal permeability in a rat model." *British Journal of Nutrition* 107.12 (2012): 1793-1799.

ple sites within the entire gastrointestinal tract. ⁽¹¹⁻¹⁵⁾ It helps restore mucosal barrier integrity and function and is useful to promote long-term general wellbeing. It boosts immunity against bacterial infections (e.g., *E. coli*) and viral infections (e.g., influenza vaccinations) ⁽¹⁰⁵⁻¹⁰⁸⁾ and is effective in preventing antibiotic-associated diarrhoea ⁽¹⁰⁹⁾.

1. Punia, Monica, et al. "Isolation and Charac-

terization of *Lactobacillus* spp. of Human Origin for Studying their Prevalence." *Research & Reviews: Journal of Dairy Science and Technology* 2.3 (2018): 7-15.

bifidum and *L. acidophilus* reduce the incidence of **radiotherapy-associated diarrhoea** ⁽⁶⁾. *B. bifidum*, when combined with other probiotics, prevents **chemotherapy-associated diarrhoea** ⁽⁷⁾. The bovine **colostrum** has a high content of proline-rich polypeptides. The immunoglobulin contained in the colostrum destroys pathogenic bacteria, while the specific growth factors exercise an improving effect on the intestinal **mucosal lining** ⁽⁸⁾.

1. Mego, Michal, et al. "Prevention of irinotecan induced diarrhea by probiotics: A randomized double blind, placebo controlled pilot study." *Complementary Therapies in Medicine* 23.3 (2015): 356-362.
2. Mizelmann, Eiran, et al. "The Health Benefits of Bovine Colostrum." *Nutrients in Dairy and their Implications on Health and Disease*. 2018. 51-60.

terization of *Lactobacillus* spp. of Human Origin for Studying their Prevalence." *Research & Reviews: Journal of Dairy Science and Technology* 2.3 (2018): 7-15.

as **atopic dermatitis** ⁽⁴⁾, **food allergies** ⁽⁵⁾ and **asthma** ⁽⁶⁾. *Lactobacillus reuteri* prevents necrotizing enterocolitis in newborns ⁽⁷⁾, improves the symptoms of **baby colic** ⁽⁸⁾, increases digestive health in children, being effective for **acute infantile diarrhoea** ⁽⁹⁾ and **antibiotic-associated diarrhoea** ⁽¹⁰⁾, it's capable of reducing the adverse effects of treatment for *Helicobacter pylori* in children ⁽¹¹⁾ and is effective for **infantile constipation** ⁽¹²⁾.

1. Hunter, Chelsea, et al. "Effect of routine probiotic, *Lactobacillus reuteri* DSM 17938, use on rates of necrotizing enterocolitis in neonates with birthweight < 1000 grams: a sequential analysis." *BMC Pediatrics* 12.1 (2012): 142.
2. Savino, Francesco, et al. "*Lactobacillus reuteri* DSM 17938 in infantile colic: a randomized, double-blind, placebo-controlled trial." *Pediatrics* 126.3 (2010): e526-e533.
3. Francavilla, R., et al. "Randomised clinical trial: *Lactobacillus reuteri* DSM 17938 vs. placebo in children with acute diarrhoea: a double blind study." *Alimentary Pharmacology & Therapeutics* 36.4 (2012): 363-369.
4. Kolodziej, Maciej, and Hania Szajewska.

"*Lactobacillus reuteri* DSM 17938 in the prevention of antibiotic-associated diarrhoea in children: protocol of a randomised controlled trial." *BMJ open* 7.1 (2017): e013928.

ACIDOPHILUS ULTRA

The probiotic strains present in AcidophilusUltra have been extensively researched in human clinical trials for the treatment of diverse afflictions such as antibiotic-associated diarrhoea, *H. pylori* colonization, irritable bowel syndrome, gastrointestinal disorders and lactose intolerance, among others.

The effectiveness of multi-strain probiotics has also been studied on diverse pathological conditions such as: Crohn's disease ⁽¹⁾, ulcerative colitis ⁽²⁻³⁾, *H. pylori* colonization ⁽⁴⁾ and antibiotic-associated

1. Fujimori, Shunji, et al. "High dose probiotic and prebiotic cotherapy for remission induction of active Crohn's disease." *Journal of Gastroenterology and Hepatology* 22.8 (2007): 1199-1204.
2. Sood, Ajit, et al. "The probiotic preparation, VSL# 3 induces remission in patients with mild-to-moderately active ulcerative colitis." *Clinical Gastroenterology and Hepatology* 7.11 (2009): 1202-1209.
3. Tursi, Antonio, et al. "Treatment of relapsing mild-to-moderate ulcerative colitis with the probiotic VSL# 3 as adjunctive to a standard pharmaceutical treatment: a double-blind, randomized, placebo-controlled study." *The American Journal of Gastroenterology* 105.10 (2010): 2218.
4. McFarland, L.V., et al. "Systematic review and

meta-analysis: Multi-strain probiotics as adjunct therapy for *Helicobacter pylori* eradication and prevention of adverse events." *United European Gastroenterology Journal* 4.4 (2016): 546-561.

5. Selinger, C. P., et al. "Probiotic VSL# 3 prevents antibiotic-associated diarrhoea in a double-blind, randomized, placebo-controlled clinical trial." *Journal of Hospital Infection* 84.2 (2013): 159-165.

6. Baldassarre, Maria Elisabetta, et al. "Administration of a multi-strain probiotic product to women in the perinatal period differentially affects the breast milk cytokine profile and may have beneficial effects on neonatal gastrointestinal functional symptoms. A randomized clinical trial." *Nutrients* 8.11 (2016): 677.

IBS-URGENCY

Exclusive formulation based on 5 strains of probiotics (12 billion CFUs), colostrum and prebiotics, aimed at maintaining colon health and helping improve intestinal well-being in certain digestive disorders such as Irritable Bowel Syndrome. Among the different strains, it is worth highlighting that *Bifidobacterium infantis* has proven benefits for the symptoms of Irritable Bowel Syndrome like pain and bloating, and regulates intestinal transit and the IL-10/IL-12 ratio ⁽⁴⁻⁵⁾; it also fights

1. Whorwell, Peter J., et al. "Efficacy of an encapsulated probiotic *Bifidobacterium infantis* 35624 in women with irritable bowel syndrome." *The American Journal of Gastroenterology* 101.7 (2006): 1581-1590.
2. Brenner, Darren M., and William D. Chey. "*Bifidobacterium infantis* 35624: a novel probiotic for the treatment of irritable bowel syndrome." *Reviews in Gastroenterological Disorders* 9.1 (2009): 7-15.
3. O'Mahony, Liam, et al. "*Lactobacillus* and *Bifidobacterium* in irritable bowel syndrome: symptom responses and relationship to cytokine profiles." *Gastroenterology* 128.3 (2005): 541-551.
4. Cheikhoussef, Ahmad, et al. "Antimicrobial activity and partial characterization of bacteriocin-like inhibitory substances (BLIS) produced by *Bifidobacterium infantis* BCRC 14602." *Food Control* 20.6 (2009): 553-559.

against pathogenic bacteria such as Salmonella, Shigella and *E. coli* ⁽⁴⁻⁵⁾. The probiotics *Bifidobacterium longum* ⁽⁶⁾ and *Lactobacillus plantarum* ⁽⁷⁾ have also shown a more pronounced effect on improving the symptoms associated with this syndrome. The bovine colostrum included in this formula has a high content of proline-rich polypeptides, completes the benefits of IBS-Urgency by helping control intestinal inflammation ⁽⁸⁾.

5. Cheikhoussef, Ahmad, et al. "Bifidin I-A new bacteriocin produced by *Bifidobacterium infantis* BCRC 14602: Purification and partial amino acid sequence." *Food Control* 21.5 (2010): 746-753.
6. Ortiz-Lucas, Maria, et al. "Effect of probiotic species on irritable bowel syndrome symptoms: A bring up to date meta-analysis." *Rev Esp Enferm Dig* 105.1 (2013): 19-36.
7. Niedzielin, Krzysztof, Hubert Kordecki, and

Boz ena Birkenfeld. "A controlled, double-blind, randomized study on the efficacy of *Lactobacillus plantarum* 299V in patients with irritable bowel syndrome." *European Journal of Gastroenterology & Hepatology* 13.10 (2001): 1143-1147.

8. Menchetti, Laura, et al. "Potential benefits of colostrum in gastrointestinal diseases." *Frontiers in Bioscience* 8.1 (2016): 331-351.



PRODUCT CHART

PRODUCT	POTENCY	STRAINS	ADDITIONAL INGREDIENTS	ENTERIC COATING	INDICATIONS	RECOMMENDED DAILY DOSE
FeminaFlora Oral (16 strains)	55 billion CFU	<i>L. rhamnosus</i> (2 strains), <i>L. acidophilus</i> (2 strains), <i>L. casei</i> (2 strains), <i>B. bifidum</i> , <i>B. breve</i> , <i>B. longum</i> , <i>L. crispatus</i> , <i>L. gasseri</i> , <i>L. plantarum</i> , <i>L. helveticus</i> , <i>L. paracasei</i> , <i>L. johnsonii</i> , <i>L. reuteri</i>	Inulin, arabinogalactan and vitamin C	GPS™	<ul style="list-style-type: none"> Prevention of vaginal candidiasis and bacterial vaginal infections 	1-2 capsules daily
Pro-Recovery (20 strains)	120 billion CFU	<i>L. rhamnosus</i> (2 strains), <i>L. casei</i> , <i>B. bifidum</i> , <i>B. breve</i> , <i>B. infantis</i> , <i>B. longum</i> , <i>L. acidophilus</i> (2 strains), <i>B. lactis</i> , <i>L. crispatus</i> , <i>L. gasseri</i> , <i>L. fermentum</i> , <i>L. plantarum</i> , <i>L. brevis</i> , <i>L. paracasei</i> , <i>L. reuteri</i> , <i>L. helveticus</i> , <i>L. johnsonii</i>	Inulin, arabinogalactan and vitamin C	GPS™	<ul style="list-style-type: none"> Prolonged and multiple antibiotic treatments (intestinal dysbiosis) Immune support after illness 	1 capsule daily
Pro-Urgency (10 strains)	50 billion FU	<i>B. longum</i> , <i>L. casei</i> , <i>L. rhamnosus</i> , <i>L. acidophilus</i> , <i>B. bifidum</i> , <i>B. breve</i> , <i>B. infantis</i> , <i>L. plantarum</i> , <i>L. helveticus</i> , <i>L. paracasei</i>	Inulin, arabinogalactan and vitamin C	GPS™	<ul style="list-style-type: none"> Acute infectious diarrhoea Cardiovascular diseases Depression and stress Lactose intolerance Antibiotic-associated diarrhoea 	2 capsules daily
HumanBiota (12 strains)	42 billion CFU	<i>L. rhamnosus</i> (2 strains), <i>L. casei</i> , <i>L. acidophilus</i> (2 strains), <i>B. infantis</i> , <i>B. lactis</i> , <i>B. bifidum</i> , <i>B. breve</i> , <i>B. longum</i> , <i>L. crispatus</i> , <i>L. gasseri</i>	Inulin, arabinogalactan and vitamin C	GPS™	<ul style="list-style-type: none"> Mucosal barrier integrity and function Repopulation of the entire intestinal tract Immune system regulation Long-term general well-being 	1 capsule daily
Pro-Boulardii Plus (12 strains)	21 billion CFU	<i>S. boulardii</i> , <i>L. rhamnosus</i> (2 strains), <i>L. acidophilus</i> , <i>L. helveticus</i> , <i>L. casei</i> , <i>L. plantarum</i> , <i>B. breve</i> , <i>B. infantis</i> , <i>B. longum</i> , <i>S. thermophilus</i> , <i>L. bulgaricus</i>	Inulin, arabinogalactan and vitamin C	PH5D	<ul style="list-style-type: none"> Treatment and prevention of infectious gastroenteritis Traveler's diarrhoea Antibiotic-associated diarrhoea Intestinal candidiasis 	1-2 capsules daily <ul style="list-style-type: none"> Traveler's diarrhoea: 1 caps. twice daily as of 5 days before and during the entire trip. Gastroenteritis: 2 capsules 2-3 times daily.
Pro-Intensity (18 strains)	20 billion CFU	<i>L. rhamnosus</i> , <i>L. crispatus</i> , <i>L. casei</i> , <i>B. lactis</i> , <i>L. gasseri</i> , <i>B. bifidum</i> , <i>B. breve</i> , <i>B. infantis</i> , <i>B. longum</i> , <i>L. acidophilus</i> , <i>L. salivarius</i> , <i>L. plantarum</i> , <i>L. johnsonii</i> , <i>L. helveticus</i> , <i>L. paracasei</i> , <i>L. lactis</i>	Colostrum, inulin, arabinogalactan, xylooligosaccharides and vitamin C	GPS™	<ul style="list-style-type: none"> Intestinal inflammatory disease Ulcerative colitis Crohn's disease Hypercholesterolemia Diabetes mellitus Digestive support Radiotherapy and chemotherapy-associated diarrhoea 	1-2 capsules daily
AcidophilusUltra (11 strains)	11 billion CFU	<i>L. acidophilus</i> , <i>L. helveticus</i> , <i>L. plantarum</i> , <i>L. casei</i> , <i>B. longum</i> , <i>B. infantis</i> , <i>B. breve</i> , <i>L. rhamnosus</i> (2 strains), <i>L. bulgaricus</i> , <i>S. thermophilus</i>	Inulin, arabinogalactan and vitamin C	PH5D	<ul style="list-style-type: none"> Maintenance of healthy intestinal flora Regulation of the immune system Pregnancy and breastfeeding Irritable bowel syndrome Peptic ulcer 	1-2 capsules daily
IBS-Urgency (5 strains)	12 billion CFU	<i>B. infantis</i> , <i>B. longum</i> , <i>L. plantarum</i> , <i>L. acidophilus</i> , <i>L. rhamnosus</i>	Colostrum, inulin, arabinogalactan and vitamin C	PH5D	<ul style="list-style-type: none"> Irritable bowel syndrome 	2 capsules daily
Children's Pro (12 strains)	10 billion CFU	<i>L. rhamnosus</i> (2 strains), <i>L. casei</i> , <i>B. infantis</i> , <i>B. breve</i> , <i>B. longum</i> , <i>L. acidophilus</i> , <i>L. plantarum</i> , <i>L. reuteri</i> , <i>L. helveticus</i> , <i>L. paracasei</i> , <i>L. johnsonii</i>	Inulin, arabinogalactan and vitamin C	No	<ul style="list-style-type: none"> Antibiotic-associated diarrhoea Lactose intolerance Eczema, asthma, allergies 	2 scoops daily

QUANTITY CHART OF PROBIOTIC STRAINS PER PRODUCT (in CFU per capsule or 2 scoops (Children's Pro))

STRAINS	Origin	Femina Flora Oral	Pro-Recovery	Pro-Urgency	HumanBiota	Pro-Boulardii Plus	Pro-Intensity	AcidophilusUltra	IBS-Urgency	Children's Pro
<i>B. animalis</i> ssp <i>lactis</i> UB3963	H		1 billion CFU				1,427 billion CFU			
<i>B. animalis</i> ssp <i>lactis</i> HN19	D		200 million CFU							
<i>Bifidobacterium bifidum</i> UB4280	H	2 billion CFU	4 billion CFU	1 billion CFU	42 million CFU		951 million CFU			
<i>Bifidobacterium breve</i> R0070	H					338 million CFU		330 million CFU		
<i>Bifidobacterium breve</i> UB8674	H	2 billion CFU	4 billion CFU	1 billion CFU	42 million CFU		315 million CFU			214 million CFU
<i>Bifidobacterium lactis</i> UB3963	H				105 million CFU					
<i>B. longum</i> ssp <i>infantis</i> R0033	H					338 million CFU		330 million CFU	4 billion CFU	
<i>B. longum</i> ssp <i>infantis</i> UB9214	H		4 billion CFU	1 billion CFU	105 million CFU		315 million CFU			1,040 billion CFU
<i>B. longum</i> ssp <i>longum</i> R0175	H					338 million CFU		330 million CFU	4 billion CFU	
<i>B. longum</i> ssp <i>longum</i> UB7691	H	2 billion CFU	4 billion CFU	9 billion CFU	42 million CFU		315 million CFU			214 million CFU
<i>Lactobacillus acidophilus</i> LA-14	H	300 million CFU	200 million CFU		37,8 million CFU					
<i>Lactobacillus acidophilus</i> R0418	H					619 million CFU		605 million CFU	1,333 billion CFU	
<i>Lactobacillus acidophilus</i> UB5997	H	5,25 billion CFU	2,2 billion CFU	1 billion CFU	1,68 billion CFU		26 million CFU			18 million CFU
<i>Lactobacillus brevis</i> UB1214	P		200 million CFU							
<i>Lactobacillus casei</i> LC-11	D	300 million CFU								
<i>Lactobacillus casei</i> R0215	D					450 million CFU		440 million CFU		
<i>Lactobacillus casei</i> UB1499	H	12 billion CFU	20 billion CFU	9 billion CFU	8,324 billion CFU		1,887 billion CFU			1,284 billion CFU
<i>Lactobacillus crispatus</i> UB4719	H	750 million CFU	200 million CFU		42 million CFU		1,903 billion CFU			
<i>L. delbrueckii</i> ssp <i>bulgaricus</i> R9001	D					56 million CFU		55 million CFU		
<i>Lactobacillus fermentum</i> UB9735	H		200 million CFU							
<i>Lactobacillus gasseri</i> UB8141	H	750 million CFU	200 million CFU		42 million CFU		1,427 billion CFU			
<i>Lactobacillus helveticus</i> R0052	D					563 million CFU		550 million CFU		
<i>Lactobacillus helveticus</i> UB7229	D	500 million CFU	200 million CFU	9 billion CFU			539 million CFU			43 million CFU
<i>Lactobacillus johnsonii</i> UB3394	D	750 million CFU	200 million CFU				1,903 billion CFU			9 million CFU
<i>Lactobacillus paracasei</i> UB1978	D	600 million CFU	8,3 billion CFU	1 billion CFU			52 million CFU			36 million CFU
<i>Lactobacillus plantarum</i> R1012	P					450 million CFU		440 million CFU	1,333 billion CFU	
<i>Lactobacillus plantarum</i> UB2783	P	8 billion CFU	40 billion CFU	9 billion CFU			73 million CFU			50 million CFU
<i>Lactobacillus reuteri</i> UB2419	D	500 million CFU	700 million CFU							351 million CFU
<i>Lactobacillus rhamnosus</i> CG	H	300 million CFU	200 million CFU		37,8 million CFU					1 billion CFU
<i>Lactobacillus rhamnosus</i> R0011	D					4,5 billion CFU		4,4 billion CFU	1,333 billion CFU	
<i>Lactobacillus rhamnosus</i> R1039	D					3,375 billion CFU		3,3 billion CFU		
<i>Lactobacillus rhamnosus</i> UB5115	H	19 billion CFU	30 billion CFU	9 billion CFU	31,5 billion CFU		7,427 billion CFU			6,629 billion CFU
<i>Lactobacillus salivarius</i> UB4198	H						1,427 billion CFU			
<i>Lactobacillus lactis</i> LL-23	D						13 million CFU			
<i>Saccharomyces boulardii</i>	P					10 billion CFU				
<i>S. salivarius</i> ssp <i>thermophilus</i> R0083	D					225 million CFU		220 million CFU		

Origin: H: Human P: Plant D: Dairy

Guide to probiotic strains

Bifidobacterium animalis ssp. *lactis*

Helps reduce constipation and bloating in children and adolescents with irritable bowel syndrome⁽¹⁾. Boosts the immune system by increasing levels of NK (natural killer) cells and polymorphonuclear leukocytes⁽²⁾. Helps repair the permeability of the intestinal barrier by improving apical junction proteins and goblet cell population⁽³⁾. It reduces abdominal visceral fat in overweight people with metabolic disorders, having beneficial effects on weight control and metabolic health^(4,5). In animals, it also improves glucose intolerance⁽⁶⁾.

Bifidobacterium bifidum

These are found in the mucosal lining of the last part of the small intestine and are the predominant strains to colonize the large intestine in order to support intestinal health, cleanliness and function. They reduce serum cholesterol and dissolve bile salts^(7,8). *B. bifidum* has been shown to possess antibacterial activity against *Helicobacter pylori*^(9,10), reduce apoptosis in the intestinal epithelium in children with necrotizing enterocolitis⁽¹¹⁾, modulate immune response⁽¹²⁻¹⁴⁾, reduce the duration and severity of colds⁽¹³⁾, possess anti-inflammatory activity in chronic dysfunction of the large intestine such as irritable bowel^(15,16), and reduce the incidence of radiotherapy-associated diarrhoea in patients with cervical cancer⁽¹⁷⁾.

Together with other probiotics, its prenatal supplementation is effective at preventing the development of eczema in babies with a high risk of allergy during the first year of life⁽¹⁸⁾. Together with other probiotics, it prevents diarrhoea induced by chemotherapy (irinotecan) in colorectal cancer⁽¹⁹⁾. It reduces the symptoms of stress-associated diarrhoea as well as stress itself⁽²⁰⁾. It decreases the duration and severity of upper respiratory tract infections such as colds and the flu⁽²¹⁾.

Bifidobacterium breve

It maintains colon homeostasis, reducing inflammation through the induction of Tr1 cells which produce intestinal IL-10⁽²²⁾. It protects colon function, relieves constipation and reduces gas, abdominal distension and diarrhoea^(22,23). It improves the symptoms of ulcerative colitis⁽²⁴⁾. Additionally, it stimulates the immune system^(22,25), inhibits *Escherichia coli*⁽²⁶⁾ and suppresses the yeast *Candida*⁽²⁷⁾.

It reduces fat, improves hepatic function and reduces systemic inflammation in people who are prone to obesity⁽²⁸⁾. It improves gastrointestinal problems in newborns, stabilizing intestinal flora⁽²⁹⁾ and reducing the incidence of necrotizing enterocolitis⁽³⁰⁾. In children with Celiac disease it reduces pro-inflammatory cytokine TNF- α ⁽³¹⁾.

In patients undergoing chemotherapy it improves adverse effects such as fever, infections and intestinal disorders⁽³²⁾.

- *Bifidobacterium breve* R0070

It possesses high inhibitory activity against *Clostridium difficile* in vitro⁽³³⁾. It also possesses anti-inflammatory activity and, synergically with other probiotics, antiproliferative activity on adenocarcinoma cells of the colon (HT-29); this effect increases with prebiotics (glucooligosaccharides)⁽³⁴⁾.

Bifidobacterium lactis

It has an immunoregulatory effect, mitigating allergic rhinitis⁽³⁵⁾, strengthens the immune system⁽³⁶⁻³⁸⁾, can help prevent eczema in children⁽³⁹⁾, improves symptoms of Irritable Bowel Syndrome⁽⁴⁰⁾, can help dental health⁽⁴¹⁾, intestinal transit⁽⁴²⁾ and in children helps balance intestinal flora⁽⁴³⁾, strengthens the immune response in newborns⁽⁴⁴⁾ and reduces symptoms of acute diarrhoea⁽⁴⁵⁾.

It can also help regulate lipids and inflammation in patients with metabolic syndrome and obesity^(46,47).

Bifidobacterium longum ssp. *infantis*

It's the dominant probiotic that inhabits the distal end of the small intestine and colon. It's one of the first to colonize the intestinal tract of infants⁽⁴⁸⁾ and is critical for intestinal health and proper immune function in adults⁽⁴⁹⁾. It survives stomach and bile acids⁽⁵⁰⁾, and is generally capable of adhering to intestinal tissue⁽⁵¹⁾. It pro-

duces acetic acid and inhibits pathogenic bacteria⁽⁵²⁾.

It produces bacteriokines with activity against *Salmonella*, *Shigella* and *Escherichia coli*^(53,54). It relieves many symptoms of Irritable Bowel Syndrome (IBS) such as pain and bloating, and regulates intestinal transit and the IL-10/IL-12 ratio⁽⁵⁵⁻⁵⁷⁾. It reduces systemic pro-inflammatory biomarkers in chronic diseases such as ulcerative colitis, chronic fatigue syndrome and psoriasis, indicating that the immune modulating effects of the microbiota are not limited to the mucosa, rather they are extended to the systemic immune system⁽⁵⁸⁾.

Together with *L. acidophilus* it can be an effective treatment for acute infant diarrhoea, in 2 days it significantly reduces the duration of diarrhoea⁽⁵⁹⁾ as well as the incidence and severity of necrotizing enterocolitis⁽⁶⁰⁾. It can relieve the symptoms of untreated Celiac disease⁽⁶¹⁾.

- *Bifidobacterium infantis* R0033

Together with other probiotics it can reduce the risk of common infections in children such as colds, the flu and gastrointestinal infections⁽⁶²⁾. The use of *B. infantis* R0033 is safe and well tolerated in healthy infants between 3 and 12 months of age⁽⁶³⁾.

Bifidobacterium longum ssp. *longum*

A protein factor produced by *B. longum* inhibits adhesion of the enterotoxigenic strain of *Escherichia coli*⁽⁶⁴⁾. It has anti-inflammatory properties and is indicated for gastrointestinal discomfort like ulcerative colitis⁽⁶⁵⁾, antibiotic-associated diarrhoea^(66,67), Irritable Bowel Syndrome⁽⁶⁸⁾ and seasonal allergies^(69,70). It aids in the formation of lactic and formic acid, decreasing intestinal pH, preventing the proliferation of harmful bacteria⁽⁷¹⁾. It is also an important producer of the B group vitamins⁽⁷²⁾.

- *Bifidobacterium longum* ssp. *longum* R0175

The combination of *B. longum* R0175 and *L. helveticus* R0052 interferes with the development of depressive behaviour after myocardial infarction, and restores the integrity of the intestinal barrier in rats⁽⁷³⁾; it also has an anxiolytic effect on rats, and beneficial psychological effects on healthy volunteers^(74,75).

Lactobacillus acidophilus

It improves overall symptoms in patients with Irritable Bowel Syndrome⁽⁷⁶⁾. It helps maintain an acidic environment in the intestinal tract, preventing the growth of harmful bacteria, and it improves Antibiotic-Associated Diarrhoea⁽⁷⁷⁾. It reduces total plasma cholesterol and low density lipoprotein (LDL)^(78,79). It helps improve digestive health by maintaining the intestinal barrier, restoring intestinal flora, improving digestion, reinforcing the immune system and helping beneficial bacteria to proliferate in the colon⁽⁸⁰⁾. It helps improve the symptoms of allergic rhinitis⁽⁸¹⁾, pollen allergy⁽⁸²⁾ and atopic dermatitis⁽⁸³⁾. It is effective (vaginally administered) in cases of bacterial vaginosis, and preventive oral administration is of help in cases of recurrence⁽⁸⁴⁻⁸⁷⁾. Together with other probiotics, its pre- and post-natal supplementation is effective at preventing the development of eczema in babies with a high risk of allergy in the first year of life⁽⁸⁸⁾. Together with *B. bifidum* it reduces the incidence of radiotherapy-associated diarrhoea in patients with cervical cancer⁽⁸⁹⁾.

The administration of *L. acidophilus* is able to reduce colonization and infection in vaginal candidiasis^(90,91).

- *Lactobacillus acidophilus* LA-14

It is well known for its effects on the vagina, which helps maintain proper vaginal health. The joint use of two *Lactobacillus* strains was investigated: *Lactobacillus*: *L. acidophilus* LA-14 and *L. rhamnosus* HN001. After one week of oral consumption they colonise the vagina and are detected in the vaginal flora, which helps to improve the balance of bacteria present and promotes vaginal health⁽⁹²⁾. They also have microbicidal activity against various pathogens responsible for bacterial vaginosis and aerobic vaginitis⁽⁹³⁾. Preliminary studies also indicate that it may promote kidney health⁽⁹⁴⁾.

Lactobacillus brevis

It is a probiotic that resists gastric juices well, stimulates the immune system⁽⁹⁵⁾ and improves intestinal health⁽⁹⁶⁾. It also reduces intestinal inflammation⁽⁹⁷⁾, may reduce the incidence of influenza in children⁽⁹⁸⁾ and has antimicrobial activity⁽⁹⁹⁾. It is one of the predominant bacteria in the vaginal flora⁽¹⁰⁰⁾ and among others is responsible for the prevention of genitourinary diseases. Its efficacy in defence against pathogens is due to its ability to produce bactericidal compounds such as hydrogen peroxide and to inhibit the adhesion of pathogens⁽¹⁰¹⁾.

Lactobacillus casei

It reduces the duration and incidence of infections such as bronchitis, pneumonia and rhino-pharyngitis⁽¹⁰²⁻¹⁰⁴⁾. In intestinal infections it improves immunity against bacterial infections such as *Escherichia coli* and viral infections such as the flu⁽¹⁰⁵⁻¹⁰⁸⁾. In children it improves the symptoms of allergic rhinitis⁽¹⁰⁹⁾, and together with antibiotic therapy it improves the eradication of *Helicobacter pylori*⁽¹¹⁰⁾, it's effective in cases of viral diarrhoea⁽¹¹¹⁾ and improves the general incidence of infection⁽¹¹²⁾.

- *Lactobacillus casei* LC-11

Together with other probiotics, it reduces abdominal adiposity and increases enzymatic antioxidant activity⁽¹¹³⁾, and in patients with rheumatoid arthritis it reduces inflammatory biomarkers⁽¹¹⁴⁾.

- *Lactobacillus casei* Ro215

It has shown an immune-modulating effect in the prevention of peanut allergy in an animal model⁽¹¹⁵⁾.

Lactobacillus crispatus

In women's vaginal flora, lactobacilli are the prevalent probiotics, of which *Lactobacillus crispatus* is the most abundant⁽¹¹⁶⁾. It helps prevent recurrent urinary tract infections as well as bacterial vaginosis^(117,118).

Lactobacillus delbrueckii ssp. bulgaricus

It improves immunity and cold and flu symptoms^(119,120), is capable of hydrolyzing lactose (lactose intolerance)⁽¹²¹⁾, reduces cholesterol^(122,123), decreases intestinal inflammation⁽¹²⁴⁾ and helps control intestinal infections (diarrhoea, AAD and infection by *Clostridium difficile*)^(125,126).

Lactobacillus fermentum

Combined oral use of *L. rhamnosus* and *L. fermentum* may reduce colonisation of the vaginal mucosa by pathogenic bacteria or fungi⁽¹²⁷⁻¹²⁹⁾. It is helpful in infectious mastitis during lactation, as well as its prevention^(130,131). It may be helpful in the treatment of cholesterol reduction⁽¹³²⁾, blood lipoproteins, oxidative stress and inflammatory profile⁽¹³³⁾.

Lactobacillus gasseri

It improves functional dyspepsia by improving gastric microbiota and helping to suppress *Helicobacter pylori* in the stomach⁽¹³⁴⁾. It is also a predominant species in the vaginal flora, inhibits the adherence of pathogenic bacteria and helps prevent and treat bacterial vaginosis⁽¹³⁵⁾. It has antimicrobial activity through the production of bacteriocins^(136,137), improves symptoms such as diarrhoea in Irritable Bowel Syndrome^(138,139), helps boost the immune system⁽¹⁴⁰⁾ and may help regulate allergic response⁽¹⁴¹⁾. In recent years, its effect on weight control has been studied. It has reducing effects on abdominal adiposity, body weight and other measures of obesity, helping to regulate blood lipids (triglycerides, cholesterol), suggesting its beneficial influence on metabolic disorders⁽¹⁴²⁻¹⁴⁴⁾.

Lactobacillus helveticus

It protects the gastrointestinal tract, strengthening the humoral and intestinal mucosal systemic immune response in elite athletes⁽¹⁴⁵⁾. It has been shown in animals that it has an anti-depressive effect, probably due to the connection with the gut-brain axis⁽¹⁴⁶⁾. Milk fermented with *L. helveticus* improves cognitive function⁽¹⁴⁷⁾ and reduces arterial blood pressure⁽¹⁴⁸⁾. In animals it increases bone density and bone mineral content⁽¹⁴⁹⁾, in post-menopausal women it has a positive effect on calcium metabolism⁽¹⁵⁰⁾. It controls undesired intestinal microorganisms and bacteria (*Salmonella enteritidis*, *Campylobacter jejuni*, *Escherichia coli*, *Candida albicans*,

etc.), it regulates immune response and reduces lactose intolerance⁽¹⁵⁴⁾.

- *Lactobacillus helveticus* Ro052

The combination of *L. helveticus* Ro052 and *B. longum* Ro175 interferes with the development of depressive behaviour after myocardial infarction and restores the integrity of the intestinal barrier in rats⁽¹⁵²⁾; it also has anxiolytic effects on rats and beneficial psychological effects on healthy volunteers^(153,154). The combination of *L. helveticus* Ro052 and *L. rhamnosus* Ro011 directly influences pathogen-host interaction and immune response, mainly by decreasing the pro-inflammatory response, and it also helps maintain the intestinal protective barrier. Diverse studies have shown that it can relieve the symptoms of antibiotic-associated diarrhoea, candidiasis, irritable bowel syndrome and lactose intolerance. As co-therapy for atopic dermatitis, it has been shown to have positive effects on immune response and dairy tolerance⁽¹⁵⁵⁾.

Lactobacillus johnsonii

It has several benefits such as in *Helicobacter pylori* gastritis⁽¹⁵⁶⁾, regulates immune response⁽¹⁵⁷⁾, may help in the control of diabetes⁽¹⁵⁸⁾, is helpful in vaginal infections⁽¹⁵⁹⁾ and improves allergic rhinitis in children⁽¹⁶⁰⁾.

Lactobacillus paracasei

It significantly increases specific immune response in healthy people who have received the flu vaccine⁽¹⁶¹⁾. It improves digestive function⁽¹⁶²⁾, and symptoms (especially ocular) in patients with allergic rhinitis treated with oral antihistamines⁽¹⁶³⁾. It is also useful for combating infection by *Staphylococcus aureus*, *Escherichia coli* and *Salmonella*⁽¹⁶⁴⁻¹⁶⁶⁾. It relieves the symptoms as well as the frequency and duration of acute infant diarrhoea⁽¹⁶⁷⁾. In patients with chronic fatigue syndrome, when combined with other probiotics, it improves neurocognitive function⁽¹⁶⁸⁾.

Lactobacillus plantarum

It acts upon undesired bacteria, improving the symptoms of Irritable Bowel Syndrome such as excessive gas, bloating and abdominal discomfort⁽¹⁶⁹⁻¹⁷³⁾, as well as ulcerative colitis^(174,175). It regulates immune response and is beneficial in the treatment of atopic dermatitis in children⁽¹⁷⁶⁾. It has an immune-stimulating effect in the elderly, reducing the number of infections⁽¹⁷⁷⁾. It improves gastrointestinal symptoms during antibiotic treatment⁽¹⁷⁸⁾. It reduces the risk factors for cardiovascular disease and could be useful as a protective agent in the primary prevention of atherosclerosis in smokers⁽¹⁷⁹⁾. In adults with hypercholesterolemia, it reduces cholesterol and high arterial blood pressure, therefore reducing the risk of cardiovascular diseases⁽¹⁸⁰⁾. It improves the symptoms of lactose intolerance such as diarrhoea and flatulence when combined with another probiotic⁽¹⁸¹⁾. Together with other *Lactobacillus* species it is capable of restoring the vaginal flora by improving dl pH and the diagnosis of bacterial vaginosis when administered orally⁽¹⁸²⁾.

- *Lactobacillus plantarum* R1012

It exercises antiinflammatory activity on adenocarcinoma cells of the colon (Ht-29)⁽¹⁸³⁾.

Lactobacillus reuteri

It prevents necrotizing enterocolitis in newborns⁽¹⁸⁴⁾, improves the symptoms of baby colic^(185,186), increases digestive health in children, is effective for acute infant diarrhoea⁽¹⁸⁷⁾ and antibiotic-associated diarrhoea⁽¹⁸⁸⁾, it's capable of reducing the adverse effects of treatment for *Helicobacter pylori* in children⁽¹⁸⁹⁾ and is effective for infant constipation⁽¹⁹⁰⁾.

In adults it decreases the side effects of antibiotic-associated diarrhoea⁽¹⁹¹⁾, reduces cholesterol due to its action on intestinal absorption⁽¹⁹²⁾, improves intestinal transit in adults with constipation⁽¹⁹³⁾ and is effective for inflammatory diseases such as gingivitis⁽¹⁹⁴⁾ and periodontitis⁽¹⁹⁵⁾. It decreases the activity of pathogenic bacteria such as *Helicobacter pylori* without altering the balance of the microflora^(196,197).

L. reuteri together with *L. rhamnosus* can restore the vaginal mucosa by oral administration⁽¹⁹⁸⁾ and together with antibiotic therapy (metronidazole) improves outcomes in bacterial vaginosis⁽¹⁹⁹⁾.

Lactobacillus rhamnosus

It colonizes within the intestinal membranes, exercising numerous benefits for health: it increases lactic acid production, actively suppressing the growth of harmful bacteria such as *Salmonella* (200), and it's effective at preventing antibiotic-associated diarrhoea (201) and diarrhoea from *Clostridium difficile* (202). It strengthens the immune system and is a good adjuvant therapy for the flu vaccine (203); it improves the function of the intestinal barrier which relieves the symptoms of autoimmune diseases such as arthritis (204) and allergies (205). It improves the blood lipid profile (206) and reduces cholesterol (207). It can prevent or improve the symptoms of post-partum depression and anxiety (208); regenerate vaginal flora in women, reducing colonization by bacteria and yeast via oral administration (209) and reduce the prevalence of gestational diabetes mellitus (210). In children it reduces the frequency and duration of diarrhoea and vomiting (211), diarrhoea caused by rotavirus (212) and antibiotic-associated diarrhoea (213). It reduces the incidence of atopic dermatitis (214,215). Ingesting milk supplemented with *L. rhamnosus* reduces the risk of caries in children (216).

Administered vaginally together with other probiotics, it's effective for bacterial vaginosis (217) and vaginal candidiasis (218,219). The oral administration of *L. rhamnosus* and *L. fermentum* can reduce the colonization of the vaginal flora by pathogenic bacteria and yeast (220-222). *L. rhamnosus* together with *L. reuteri* can restore the vaginal mucosa by oral administration (282) and together with antibiotic therapy (metronidazole) improves outcomes in bacterial vaginosis (183,223).

- **Lactobacillus rhamnosus GG**

It is one of the most studied probiotic strains in the world. Its benefit has been described in infantile diarrhoea (224), respiratory infections (225), antibiotic-associated diarrhoea (226), infectious diarrhoea associated with *Clostridium difficile* (227), inflammatory bowel diseases such as Irritable Bowel Syndrome (228), improves gastrointestinal function after pancreatic surgery (229).

- **Lactobacillus rhamnosus R1039**

It maintains the intestinal ecosystem and reduces the incidence of intestinal disorders such as antibiotic-associated diarrhoea (230).

Lactobacillus salivarius

It stops the growth and activity of harmful pathogenic bacteria, including *Helicobacter pylori* (231,232) and *Salmonella* (233). It helps break down undigested protein and deactivate toxins produced by intestinal putrefaction (234). It improves the lipid profile (cholesterol) and reduces inflammation, tumour necrosis factor and the total count of *Escherichia coli* (235). Together with prebiotics (fructooligosaccharides) it's effective at reducing the symptoms of atopic dermatitis in children (236) and adults (237).

Lactococcus lactis

It produces bacteriocins such as lactocins, nisins and lactococcins (238). Nisin is the best studied compound in the latter group. Nisin

is a so-called lantibiotic bacteriocin with a broad spectrum of antimicrobial activity and immunomodulatory effect (239). One of the most important properties of nisin is its activity against Gram-positive bacteria and bacterial spores such as *Clostridium bacteria* (240). *Lactococcus lactis* also enhances antiviral immunity by reducing cold and flu symptoms (241,242), it may help lower blood pressure (243), may help reduce intestinal inflammation (244), among other properties (245).

Lactococcus lactis LL-23

Together with other probiotics, it reduces inflammatory markers in people with rheumatoid arthritis (246). Together with other probiotics and diet it helps to significantly reduce abdominal fat and increases activity of antioxidant enzymes (247).

Saccharomyces boulardii

Non-pathogenic yeast that has beneficial effects in the human intestine, for example in Crohn's disease (248). *S. boulardii* stimulates enzymatic activity, synthesizes a serine protease that breaks down toxins and their respective receptors in the mucosa of the colon, and increases immune response in the intestinal mucosa, protecting the body against diarrhoea-causing pathogens such as *Escherichia coli* (increasing the level of IgA) (249,250).

Studies have confirmed its use for chronic treatments such as that of Crohn's disease, irritable bowel, HIV-related diarrhoea and for the prevention of recurring disease from *Clostridium difficile* (251). This yeast has a marked effect on reducing diarrhoea, even when administered with β -lactam antibiotics, whether administered alone or with other antibiotics, preventing Antibiotic-Associated Diarrhoea safely and effectively (252). It is of great help in safely and effectively preventing acute traveler's diarrhoea (253,254). Its efficacy against intestinal candidiasis has been proven (255,256).

Streptococcus salivarius ssp. thermophilus

It is known for its sensitivity to conditions of gastric acidity and for surviving the gastrointestinal tract and adhering to intestinal epithelial cells (257). It improves lactose digestion in intolerant people (258,259), produces antioxidants, stimulates the intestinal immune system and relieves the risk of ulcer and inflammation (260,261). It reduces cholesterol and arterial blood pressure (262).

In children, it has been shown that together with other probiotics, it has an effect on diarrhoea, enterocolitis in premature newborns, intestinal inflammatory disease and acute diarrhoea from rotavirus (263-265).

Administered vaginally together with other probiotics, it's effective for bacterial vaginosis (266) and vaginal candidiasis (267).

- **Streptococcus salivarius ssp. thermophilus Roo83**

It possesses high inhibitory activity against *Escherichia coli* "in vitro" (268). It also possesses anti-inflammatory activity (269).

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