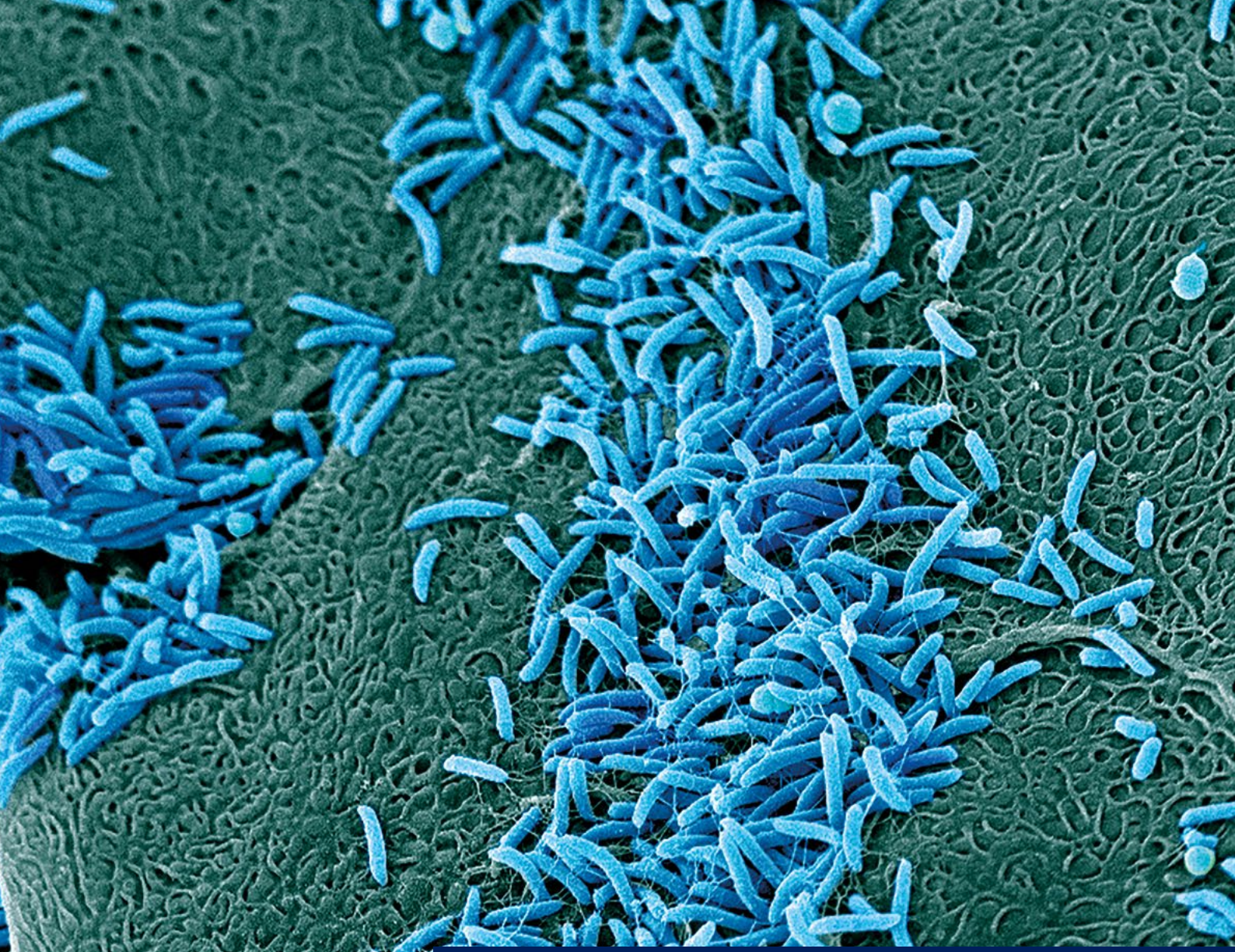
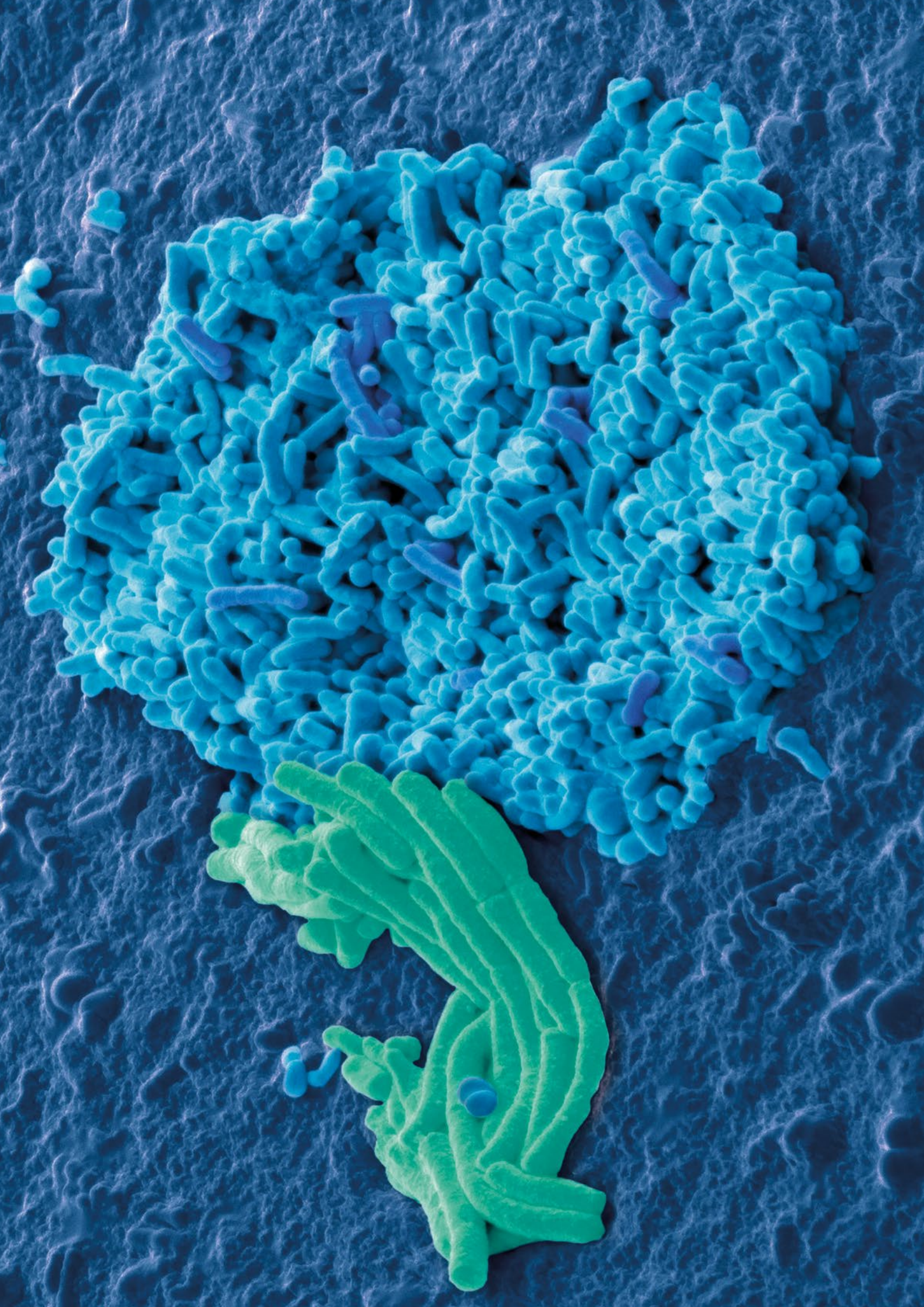


Strains Catalogue

Our probiotic strains, ready for your health

PROBIOTICAL



WE OFFER A WIDE RANGE OF PROBIOTIC STRAINS AT VARIOUS CONCENTRATIONS BOTH AS RAW MATERIAL AND FINISHED PRODUCT FOR APPLICATIONS IN THE FOOD, NUTRACEUTICAL AND PHARMACEUTICAL SECTORS.

Just like a tailor, **we develop and manufacture exclusive probiotic and symbiotic formulations** following the specific needs of each customer. Our customers become our partners, and **together we create tailor-made products**, which are the result of a complete collaboration, starting from the concept/idea, to the manufacturing strategies, up to the realization of the packaging.

THERAPEUTIC INDEX

STRAINS & BLENDS INDEX

Bifidobacterium

Bifidobacterium

Lactobacillus

Lactobacillus

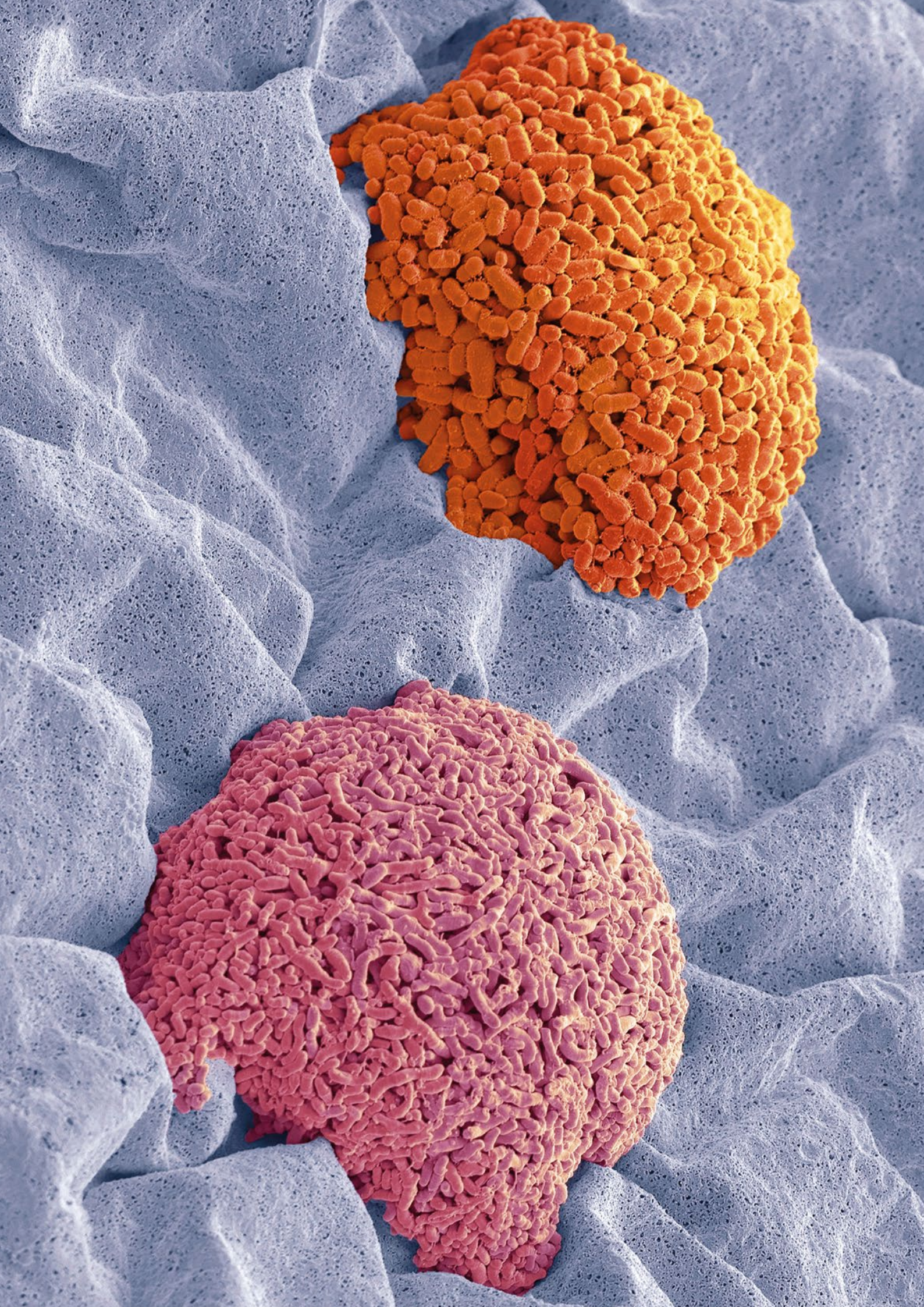
Lactobacillus

Streptococcus

About DAILY DOSAGE IN CLINICAL STUDY:

- Anytime you will find "CFU/AFU" it refers to uncoated bacterial cells
- Anytime you will find "cells" it refers to microencapsulated bacterial cells

LEGENDA



Baby colic

Bifidobacterium breve BR03™ (DSM 16604)

Bifidobacterium breve B632™ (DSM 24706)

BLEND

Finished dosage form

Daily dosage in clinical studies

1, 2, 3) BR03 100 million CFU
+ B632 100 million CFU

Functionality

- **Gaseous colic**
- **Prevention of gastrointestinal symptoms**
- **Rebalance of the intestinal microbiota in children and in infants**
- **Inhibition of *Enterobacteriaceae* and other coliforms isolated from colicky infants**

Scientific support

CLINICAL STUDIES

1) Bona G. et al. The association of BR03 and B632 is effective to prevent colics in bottle-fed infants: a pilot, controlled, randomized and double blind study. Published in J Clin Gastroenterol, 2016.
2) Aloisio I. et al. Three-Month Feeding Integration With *Bifidobacterium* Strains Prevents Gastrointestinal Symptoms in Healthy Newborns. Frontiers in Nutrition, May 2018, art. 39.
3) Mogna L. et al. Capability of the Two Microorganisms *Bifidobacterium breve* B632 and *Bifidobacterium breve* BR03 to Colonize the Intestinal Microbiota of Children J Clin Gastroenterol, 2014. Suppl. 1, November/December, Vol. 48.

See next page for other studies on this combination in celiac disease

IN VITRO STUDIES

a) Simone M. et al. The Probiotic *Bifidobacterium breve* B632 Inhibited the Growth of *Enterobacteriaceae* within Colicky Infant Microbiota Cultures. BioMed Research International 1-6, 2014.
b) Aloisio I. et al. Characterization of *Bifidobacterium spp.* strains for the treatment of enteric disorders in newborns. Appl Microbiol Biotechnol 2012, 96:1561–1576.
c) Nicola S. et al. Interaction between probiotics and human immune cells: the prospective anti-inflammatory activity of *Bifidobacterium breve* BR03. AgroFOOD, 2010; 21(2):S44-47.
d) Mogna L. et al. Assessment of the In Vitro Inhibitory Activity of Specific Probiotic Bacteria Against Different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl.S29-32.
e) Del Piano M. et al. In Vitro Sensitivity of Probiotics to Human Pancreatic Juice. J Clin Gastroenterol. Vol 42, Suppl. 3, Part 2, Sept. 2008. (DSM 20074 was re-deposited as 22106).

Lactobacillus delbrueckii subsp. *delbrueckii* LDD01 (DSM 22106)

Only available in blend and finished dosage form

Functionality

- **Gaseous colic**
- **Inhibition of *E. coli*, including toxinogenic O157:H7**
- **Inhibition of *Klebsiella pneumoniae* and different coliforms isolated from colicky infants**

Scientific support

IN VITRO STUDIES

a) Savino F. et al. Antagonistic effect of *Lactobacillus* strains against gasproducing coliforms isolated from colicky infants. BMC Microbiology 2011, 11:157.
b) Mogna L. et al. Assessment of the In Vitro Inhibitory Activity of Specific Probiotic Bacteria Against Different *Escherichia coli* strains. J Clin Gastroenterol. 2012;46 Suppl.S29-32.
c) Mogna L. et al. In Vitro Inhibition of *Klebsiella pneumoniae* by *Lactobacillus delbrueckii* subsp. *delbrueckii* LDD01 (DSM 22106): An Innovative Strategy to Possibly Counteract Such Infections in Humans? J Clin Gastroenterol. 2016 Nov/Dec;50 Suppl 2, Proceedings from the 8th Probiotics, Prebiotics & New Foods for Microbiota and Human Health meeting held in Rome, Italy on September 13-15, 2015:S136-S139.

Celiac disease

Bifidobacterium breve BR03™ (DSM 16604)
Bifidobacterium breve B632™ (DSM 24706)

BLEND

Finished dosage form

Daily dosage in clinical studies

1) BR03 100 million cells + B632 100 million cells

2, 3, 4) BR03 1 billion CFU + B632 1 billion CFU

Functionality

- To decrease gut inflammation and ER stress in celiac disease

Scientific support

CLINICAL STUDIES

1) Mogna L. et al. Capability of the two microorganisms B632 and BR03 to colonize the intestinal microbiota of children. J Clin Gastroenterol. 2014; 48 Suppl:S37-39.
2) Klemenak M. et al. Administration of decreases the production of TNF-α in children with celiac disease. Dig Dis Sci (2015).
3) Quagliariello A. et al. Effect of *Bifidobacterium breve* on the Intestinal Microbiota of Coeliac Children on a Gluten Free Diet: A Pilot Study. Nutrients. 2016 Oct 22;8(10). pii:E660.
4) Primec M. et al. Clinical intervention using *Bifidobacterium* strains in celiac disease children reveals novel microbial modulators of TNF-α and short-chain fatty acids. Clinical Nutrition 2018, 1-9.

See previous page for studies in infant colics

IN VITRO AND ANIMAL STUDIES

a) Ferrari E, et al. Probiotics Supplements Reduce ER Stress and Gut Inflammation Associated with Gliadin Intake in a Mouse Model of Gluten Sensitivity. Nutrients. 2021 Apr 7;13(4):1221

Lactiplantibacillus plantarum LP14 (DSM 33401) (formerly *Lactobacillus plantarum*)
Lacticaseibacillus paracasei LPC09 (DSM 24243) (formerly *Lactobacillus paracasei*)
Lacticaseibacillus rhamnosus LR04 (DSM 16605) (formerly *Lactobacillus rhamnosus*)

BLEND

Raw material

Finished dosage form

Functionality

- To decrease inflammation and ER stress in celiac disease

Scientific support

IN VITRO AND ANIMAL STUDIES

a) Ferrari E, et al. Probiotics Supplements Reduce ER Stress and Gut Inflammation Associated with Gliadin Intake in a Mouse Model of Gluten Sensitivity. Nutrients. 2021 Apr 7;13(4):1221.

IBD / Abdominal surgery / Bowel preparation

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

Lactococcus lactis LLC02
(DSM 29536)

Lactobacillus delbrueckii subsp. *delbrueckii* LDD01
(DSM 22106)

BLEND

Finished dosage form

Daily dosage in clinical studies
1, 2, 3) LP01 1 billion cells
+ LLC02 800 million cells
+ LLD01 200 million cells

Functionality
- **Opposing dysbiosis and improving symptoms such as abdominal pain and bloating in patients with Inflammatory Bowel Diseases, in patients having undergone abdominal surgery and in patients after colonoscopy**

Scientific support

CLINICAL STUDIES

1) Bonavina L, Arini A, Ficano L, Iannuzziello D, Pasquale L, Aragona SE, Ciprandi G, On Digestive Disorders ISG. Abincol® (*Lactobacillus plantarum* LP01, *Lactobacillus lactis subspecies cremoris* LLC02, *Lactobacillus delbrueckii* LDD01), an oral nutraceutical, pragmatic use in patients with chronic intestinal disorders. Acta Biomed. 2019 Jul 10;90(7-S):8-12.

2) Bonavina L, Arini A, Ficano L, Iannuzziello D, Pasquale L, Aragona SE, Ciprandi G, On Digestive Disorders ISG. Post-surgical intestinal dysbiosis: use of an innovative mixture (*Lactobacillus plantarum* LP01, *Lactobacillus lactis subspecies cremoris* LLC02, *Lactobacillus delbrueckii* LDD01). Acta Biomed. 2019 Jul 10;90(7-S):18-23.

3) Bonavina L, Ariani A, Ficano L, Iannuzziello D, Pasquale L, Aragona SE, Drago L, Ciprandi G, On Digestive Disorders ISG. *Lactobacillus plantarum* LP01, *Lactobacillus lactis subspecies cremoris* LLC02, and *Lactobacillus delbrueckii* LDD01) in patients undergoing bowel preparation. Acta Biomed. 2019 Jul 10;90(7-S):13-17.

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the In Vitro Inhibitory Activity of Specific Probiotic Bacteria Against Different *Escherichia coli* strains. J Clin Gastroenterol. 2012;46 Suppl.S29-32.

b) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health.

IBS / Constipation

Lactiplantibacillus plantarum LP01™
(LMG P-21021) **(formerly *Lactobacillus plantarum*)**

Raw material

Finished dosage form

Daily dosage in clinical studies
1) 10 billion CFU

Functionality
- **Constipation**
- **Intestinal transit**
- **Leaky gut**
- **Inhibition of *E. coli* and other pathogens**

Scientific support

CLINICAL STUDIES

1) Del Piano M. et al. The use of probiotics in the treatment of constipation in the elderly. CIBUS, 2005; 1(1):23-30.

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

b) Del Piano M. et al. In Vitro Sensitivity of Probiotics to Human Pancreatic Juice. J Clin Gastroenterol. Vol 42, Suppl. 3, Part 2, Sept. 2008.

c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216.

Further internal data on anti-inflammatory activity and intestinal barrier are available upon request

Bifidobacterium animalis subsp. *lactis* BS01™
(LMG P-21384)

Raw material

Finished dosage form

Daily dosage in clinical studies
1) 5 billion CFU
2) 10 billion CFU
3) 5 billion CFU
4) 5 billion CFU or 1 billion cells

Functionality
- **Constipation**
- **Intestinal transit**
- **Reduction of gastrointestinal discomfort**
- **Leaky gut**

Scientific support

CLINICAL STUDIES

1) Del Piano M. et al. The use of probiotics in healthy volunteers with evacuation disorders and hard stools. A double blind, randomized, placebocontrolled study. J Clin Gastroenterol, 2010; 44(8):S30-34.

2) Del Piano M. et al. The use of probiotics in the treatment of constipation in the elderly. CIBUS, 2005; 1(1):23-30.

3) Dimidi E. et al. The effect of probiotics on functional constipation in adults: a systematic review and meta-analysis of randomized controlled trials. Am J Clin Nutr 2014;100:1075–84.

4) Del Piano M. et al. Comparison of the Kinetics of Intestinal Colonization by Associating 5 Probiotic Bacteria Assumed Either in Microencapsulated or in a Traditional, Uncoated Form. J Clin Gastroenterol 2012;46:S85-S92.

IBS / Constipation

Bifidobacterium breve BR03™
(DSM 16604)

Raw material

Finished dosage form

Daily dosage in clinical studies
1) 10 billion CFU
2) 5 billion CFU or 1 billion cells

Functionality
- Constipation
- Intestinal transit
- Anti-inflammatory
- Reduction of gastro-intestinal discomfort
- Inhibition of pathogenic *E. coli*

Scientific support

CLINICAL STUDIES

1) Del Piano M. et al. The use of probiotics in the treatment of constipation in the elderly CIBUS, 2005; 1(1):23-30.
2) Del Piano M. et al. Evaluation of the intestinal colonization by microencapsulated probiotic bacteria in comparison with the same uncoated strains. J Clin Gastroenterol. 2010; 44 Suppl 1:S42-6.

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the In Vitro Inhibitory Activity of Specific Probiotic Bacteria Against Different *Escherichia coli* strains. J Clin Gastroenterol. 2012;46 Suppl.S29-32.
b) Nicola S. et al. Interaction between probiotics and human immune cells: the prospective anti-inflammatory activity of *Bifidobacterium breve* BR03. AgroFOOD, 2010; 21(2):S44-47.
c) Del Piano M. et al. In Vitro Sensitivity of Probiotics to Human Pancreatic Juice. J Clin Gastroenterol. Vol 42, Suppl. 3, Part 2, Sept. 2008. (DSM 20074 was re-deposited as 22106).

Bifidobacterium longum BL03
(DSM 16603)

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

Bifidobacterium animalis subsp. *lactis* BS01™
(LMG P-21384)

Bifidobacterium adolescentis BA02
(DSM 18351, formerly ALB 1)

Bifidobacterium breve BR03™
(DSM 16604)

Raw material

Finished dosage form

Daily dosage in clinical studies
1) 10 billion CFU

Functionality
- Constipation
- Intestinal transit

Scientific support

CLINICAL STUDIES

1) Del Piano M. et al. The use of probiotics in the treatment of constipation in the elderly (BL03, LP01, BS01, LR05, BA02 and BR03 seperately). CIBUS, 2005; 1(1):23-30.

IN VITRO STUDIES

a) Del Piano M. et al. In Vitro Sensitivity of Probiotics to Human Pancreatic Juice (LA02, LPC00, LP01, LR04, BR03, BL03 and BA02). J Clin Gastroenterol. Vol 42, Suppl. 3, Part 2, Sept. 2008.
b) Rossi M. et al. fermentation of fructooligosaccharides and inulin by *Bifidobacteria*: a comparative study of pure and fecal cultures (BA02). Applied and Environmental Microbiology, 2005;71(10):6150-6158.
c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216. (LP01)

IBS / Constipation

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)
Bifidobacterium breve BR03™
(DSM 16604)

BLEND

Raw material

Finished dosage form

Daily dosage in clinical studies
1) LP01 5 billion CFU
+ BR03 5 billion CFU
2) LP01 5 billion CFU/strain
vs. BR03 1 billion cells/strain
3, 4) LP01 2.5 billion CFU
+ BR03 2.5 billion CFU
5) 10 billion CFU

Functionality
- **IBS**
- **Constipation**
- **Intestinal transit**
- **Reduction of gastro-intestinal discomfort**
- **Reduction of inflammation**
- **Inhibition of *E. coli*, including toxinogenic O157:H7 and other pathogens**

Scientific support

CLINICAL STUDIES

1) Saggioro A. Probiotics in the treatment of Irritable Bowel Syndrome. J Clin Gastroenterol, 2004; 38(8): S104-106.
2) Del Piano et al. Evaluation of the intestinal colonization by microencapsulated probiotic bacteria in comparison to the same uncoated strains. J Clin Gastroenterol, 2010; 44(8):S42-46.
3) Del Piano M. et al. The use of probiotics in healthy volunteers with evacuation disorders and hard stools. A double blind, randomized, placebocontrolled study. J Clin Gastroenterol, 2010; 44(8): S30-34.
4) Dimidi E. et al. The effect of probiotics on functional constipation in adults: a systematic review and meta-analysis of randomized controlled trials. Am J Clin Nutr 2014;100:1075–84.
5) Del Piano M. et al. The use of probiotics in the treatment of constipation in the elderly (BL03, LP01, BS01, LR05, BA02 and BR03 seperately). CIBUS, 2005; 1(1):23-30.

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.
b) Nicola S. et al. Interaction between probiotics and human immune cells: the prospective anti-inflammatory activity of *Bifidobacterium breve* BR03. AgroFOOD, 2010; 21(2):S44-47.
c) Amoruso A. et al. (2019) A Systematic Evaluation of the Immunomodulatory and Functional Properties of Probiotic *Bifidobacterium Breve* BR03 (DSM 16604) *Lactobacillus plantarum* LP01 (LMG P-21021). J Prob Health. 7:214.
d) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 (LP01).

Internal data in vitro on gut permeability avaliable upon request

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)
Lactobacillus acidophilus LA02
(DSM 21717)

BLEND

Raw material

Finished dosage form

Daily dosage in clinical studies
1) LP01 5 billion CFU
+ LA02 5 billion CFU

Functionality
- **IBS**
- **Reduction of gastro-intestinal discomfort**
- **Reduction of inflammation**
- **Anti-pathogen activity**

Scientific support

CLINICAL STUDIES

1) Saggioro A. Probiotics in the treatment of Irritable Bowel Syndrome. J Clin Gastroenterol, 2004; 38(8): S104-106.

IN VITRO STUDIES

a) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216.

Internal data in vitro on gut permeability and anti-inflammatory activity available upon request

IBS / SUDD / Constipation

Bifidobacterium longum W11
(LMG P-21586)

Raw material

Finished dosage form

Daily dosage in clinical studies

1, 2, 3, 4, 5, 6, 7) 5 billion CFU + FOS
8) 10 billion AFU

Functionality

- **Reduction of gastro-intestinal discomfort related to IBS**
- **Rebalance of intestinal microbiota**
- **Non-transmissible rifamycins resistance**
- **Production of Exopolysaccharides**

Scientific support

CLINICAL STUDIES

1) Amenta M. et al. Diet and chronic constipation. Benefits of oral supplementation with symbiotic zir fos (*Bifidobacterium longum* W11 + FOS Actilight). Acta Biomed 2006; 77(3):157-62.
2) Colecchia A. et al. Effect of a symbiotic preparation on the clinical manifestations of irritable bowel syndrome, constipation-variant. Results of an open, uncontrolled multicenter study. Minerva Gastroenterol Dietol 2006; 52(4):349-58.
3) Fanigliulo L. et al. Role of gut microflora and probiotic effects in the irritable bowel syndrome. Acta Biomed 2006; 77(2):85-9.
4) Sarnelli G. et al. Effects of oral supplementation with the symbiotic (*Bifidobacterium longum* W11 + FOS Actilight) on IBS with constipation: a randomized, dose finding trial, versus fibers. Digestive and Liver Disease 2008; 40(1):S141.
5) Malaguarnera M. et al. *Bifidobacterium longum* with fructo-oligosaccharides (FOS) treatment in minimal hepatic encephalopathy: a randomized, double-blind, placebo-controlled study. Dig Dis Sci 2007; 52:3259-3265.
6) Dughera L. et al. Effects of symbiotic preparation on constipated irritable bowel syndrome symptoms. Acta Biomed 2007; 78:111-116.
7) Del Piano M. et al. Clinical Experience With Probiotics in the Elderly on Total Enteral Nutrition. J Clin Gastroenterol 2004;38:S111-S114.
8) Di Pierro F. et al. Effects of rifaximin-resistant *Bifidobacterium longum* W11 in subjects with symptomatic uncomplicated diverticular disease treated with rifaximin. Minerva Gastroenterol Dietol. 2019 Dec; 65(4):259-264.

IN VITRO STUDIES

a) Graziano T. et al. The possible innovative use of *Bifidobacterium longum* W11 in association with rifaximin: a new horizon for combined approach? J Clin Gastroenterol. 2016 Nov/Dec;50 Suppl 2, Proceedings from the 8th Probiotics, Prebiotics & New Foods for Microbiota and Human Health meeting held in Rome, Italy on September 13-15, 2015:S153-S156.
b) Inturri R. et al. Complete Genome Sequence of *Bifidobacterium longum* W11 (LMG P-21586), Used as a Probiotic Strain. Genome Announc. 2017 Mar 9;5(10). pii: e01659-16. doi: 10.1128/genome A.01659-16.
c) Inturri R. et al. Chemical and biological properties of the novel exopolysaccharide produced by a probiotic strain of *Bifidobacterium longum*, Carbohydrate polymers / Elsevier 2017.
d) Medina et al. Differential immunomodulatory properties of *Bifidobacterium longum* strains: relevance to probiotic selection and clinical applications, Clinical and Experimental Immunology, 2007.
e) Izquierdo E. et al. Resistance to Simulated Gastrointestinal Conditions and Adhesion to Mucus as Probiotic Criteria for *B. longum* strains. Curr Microbiol 2008, 56:613-618.
f) Interri R. et al. Scanning Electro Microscopy Observation of Adhesion Properties of *B. longum* W11 and Chromatographic Analysis of Its Exopolysaccharide 2014, Food and Nutrition Sciences 1787-1792.
g) Interri R. et al. Immunomodulatory Effects of *B. longum* W11 Produced Exopolysaccharide on Cytokine Production. 2017, Current Pharmaceutical Biotechnology.
h) *B. longum* W11, an antibiotic resistant probiotic, Di Pierro 2018, CEC online article: https://www.nutrafoods.eu/index.php/nutra/article/view/93

Diarrhea

Lacticaseibacillus rhamnosus LR04
(DSM 16605) (formerly *Lactobacillus rhamnosus*)

Raw material

Finished dosage form

Daily dosage in clinical studies
1) 10 billion CFU
2) 5 billion CFU or 1 billion cells

Functionality
- **Diarrhea**
- **Inhibition of *E. coli*, including enterohemorrhagic O157:H7 and other pathogens**

Scientific support

CLINICAL STUDIES

1) Dezi A. et al. Probiotics and chronic diarrhea in the elderly. CIBUS, 2004; 8(2):58-64.
2) Del Piano M. et al. Comparison of the Kinetics of Intestinal Colonization by Associating 5 Probiotic Bacteria Assumed Either in Microencapsulated or in a Traditional, Uncoated Form. J Clin Gastroenterol 2012;46:S85-S92.

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.
b) Del Piano M. et al. In Vitro Sensitivity of Probiotics to Human Pancreatic Juice. J Clin Gastroenterol. Vol 42, Suppl. 3, Part 2, Sept. 2008.
c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216.
d) Chamignon C et al. Evaluation of the Probiotic Properties and the Capacity to Form Biofilms of Various *Lactobacillus* Strains. Microorganisms. 2020 Jul 15;8(7):1053.

Lacticaseibacillus rhamnosus GG
(ATCC 53103) (formerly *Lactobacillus rhamnosus*)

Raw material

Finished dosage form

Functionality
- **Diarrhea**
- **Rotaviral diarrhea**
- **Gastroenteritis**
- **Allergy, including cow's milk allergy**
- **ADHD and autism prevention**
- **NEC**
- **Respiratory diseases, URTI**
- **Oral health, caries**

Scientific support
One of the most recognized probiotic strains in the world, with special regard to pediatric diarrhea, with over 1000 publications and 300 clinical studies from preterm infants to elderly population and pregnant women.

Also available as Active Pharmaceutical Ingredient (API)

Diarrhea

Lacticaseibacillus rhamnosus LR04
(DSM 16605) (formerly *Lactobacillus rhamnosus*)

Limosilactobacillus reuteri LRE02
(DSM 23878) (formerly *Lactobacillus reuteri*)

BLEND

Raw material

Finished dosage form

Daily dosage in clinical studies

1) LR04 1 billion cells
+ LRE02 200 million cells

Functionality

- **Prevention of antibiotic-associated diarrhea**

Scientific support

CLINICAL STUDIES

1) Drago L, Meroni G, Chiaretti A, Laforgia N, Cucchiara S, Baldassarre ME, On Behalf Of The Surveyflor Group. Effect of *LimosiLactobacillus reuteri* LRE02-*Lacticaseibacillus rhamnosus* LR04 Combination on Antibiotic-Associated Diarrhea in a Pediatric Population: A National Survey. J Clin Med. 2020 Sep 24;9(10):E3080.

IN VITRO STUDIES

a) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216.

b) Chamignon C et al. Evaluation of the Probiotic Properties and the Capacity to Form Biofilms of Various *Lactobacillus* Strains. Microorganisms. 2020 Jul 15;8(7):1053 (LR04)..

Short Bowel Syndrome / Acidosis

Lacticaseibacillus rhamnosus GG
(ATCC 53103) (formerly *Lactobacillus rhamnosus*)

Bifidobacterium animalis subsp. *lactis* BS01™
(LMG P-21384)

Bifidobacterium breve BR03™
(DSM 16604)

Bifidobacterium longum BL03
(DSM 16603)

BLEND

Raw material

Finished dosage form

Daily dosage in clinical studies

1) GG 25 billion CFU + BS01 15 billion CFU + BR03 5 billion CFU + BL03 5 billion CFU

Functionality

- **Constipation**
- **Intestinal transit**

Scientific support

CLINICAL STUDIES

1) Yilmaz B, Schibli S, Macpherson AJ, et al. D-lactic Acidosis: Successful Suppression of D-lactate–Producing *Lactobacillus* by Probiotics. Pediatrics. 2018;142(3):e20180337.

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the In Vitro Inhibitory Activity of Specific Probiotic Bacteria Against Different *Escherichia coli* strains. J Clin Gastroenterol. 2012;46 Suppl.S29-32.

Gastrointestinal discomfort / PPI

Lacticaseibacillus rhamnosus LR06
(DSM 21981) (formerly *Lactobacillus rhamnosus*)

Lactiplantibacillus pentosus LPS01
(DSM 21980) (formerly *Lactobacillus pentosus*)

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

Lactobacillus delbrueckii subsp. *delbrueckii* LDD01
(DSM 22106)

BLEND

Finished dosage form

Daily dosage in clinical studies

1, 2) LR06 3 billion CFU + LPS01 3 billion CFU + LP01 3 billion CFU + LDD01 1 billion CFU

3) LR06, LPS01, LP01 1.5 billion CFU/strain + LDD01 500 million CFU

Functionality

- **Gastric barrier function**
- **Improvement of the incidence and severity of bad breath (halitosis)** – see section Oral Care

Scientific support

CLINICAL STUDIES

1) Del Piano M. et al. The Innovative Potential of *Lactobacillus rhamnosus* LR06, *Lactobacillus pentosus* LPS01, *Lactobacillus plantarum* LP01 and *Lactobacillus delbrueckii* subsp. *delbrueckii* LDD01 to Restore the Gastric Barrier Effect" in Patients Chronically Treated with PPIs – a Pilot Study. J Clin Gastroenterol 2010;46:S18-S26.

2) Del Piano M. et al. Correlation Between Chronic Treatment With Proton Pump Inhibitors (PPIs) and Bacterial Overgrowth in the Stomach – Any Possible Beneficial Role for Selected *Lactobacilli*? J Clin Gastroenterol 2014;48:S40-S46.

3) Del Piano M. et al. Correlation Between Specific Bacterial Groups in the Oral Cavity and the Severity of Halitosis: any Possible Beneficial Role for Selected *Lactobacilli*? J Gastroint Dig Syst, 2014; 4:197.

IN VITRO STUDIES

a) Mogna L. et al. In Vitro Inhibition of *Klebsiella pneumoniae* by *Lactobacillus delbrueckii* subsp. *delbrueckii* LDD01 (DSM 22106): An Innovative Strategy to Possibly Counteract Such Infections in Humans? J Clin Gastroenterol. 2016 Nov/Dec;50 Suppl 2, Proceedings from the 8th Probiotics, Prebiotics & New Foods for Microbiota and Human Health meeting held in Rome, Italy on September 13-15, 2015:S136-S139.

b) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 (LP01).

Intestinal balance

Bifidobacterium bifidum BB01
(DSM 22892)

Lacticaseibacillus casei LC03
(DSM 27537) (formerly *Lactobacillus casei*)

Lactobacillus delbrueckii subsp. *bulgaricus* LDB01
(DSM 16606)

Streptococcus thermophilus YO8
(DSM 17843)

Raw material

Finished dosage form

Functionality
- Rebalance of intestinal microbiota

Scientific support

IN VITRO STUDIES

a) Chamignon C, Guéneau V, Medina S, Deschamps J, Gil-Izquierdo A, Briandet R, Mousset PY, Langella P, Lafay S, Bermúdez-Humarán LG. Evaluation of the Probiotic Properties and the Capacity to Form Biofilms of Various *Lactobacillus* Strains. Microorganisms. 2020 Jul 15;8(7):1053 (LC03).

These strains are proposed without specific scientific literature, in quality of recognized probiotic species

Streptococcus thermophilus ST10
(DSM 25246)

Only available in blend and finished dosage form

Daily dosage in clinical studies

1) 1 billion CFU + tara gum

Functionality
- Production of exopolysaccharides (EPS) in the gut
- Restoration of a physiological intestinal barrier

Scientific support

CLINICAL STUDIES

1) Del Piano M. et al. Assessment of the Capability of a Gelling Complex Made of Tara Gum and the Exopolysaccharides Produced by the Microorganism *Streptococcus thermophilus* ST10 to Prospectively Restore the Gut Physiological Barrier. A Pilot Study. J. Clin Gastroenterol, Volume 48, Supp. 1, November/December 2014.

Antipathogen activity

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

Lactiplantibacillus plantarum LP02
(LMG P-21020) (formerly *Lactobacillus plantarum*)

Lacticaseibacillus rhamnosus LR04
(DSM 16605) (formerly *Lactobacillus rhamnosus*)

Lacticaseibacillus rhamnosus LR06
(DSM 21981) (formerly *Lactobacillus rhamnosus*)

Lactiplantibacillus pentosus LPS01
(DSM 21980) (formerly *Lactobacillus pentosus*)

Bifidobacterium breve BR03™
(DSM 16604)

Raw material

Finished dosage form

Functionality
- Inhibition of *E. coli*

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

b) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 (LP01, LR04).

Lactobacillus delbrueckii subsp. *delbrueckii* LDD01
(DSM 22106)

Only available in blend and finished dosage form

Functionality
- Inhibition of *E. coli*, including enterohemorrhagic O157:H7
- Inhibition of *Klebsiella pneumoniae* and of different coliforms isolated from colicky infants

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

b) Mogna L. et al. In Vitro Inhibition of *Klebsiella pneumoniae* by *Lactobacillus delbrueckii* subsp. *delbrueckii* LDD01 (DSM 22106): An Innovative Strategy to Possibly Counteract Such Infections in Humans? J. Clin Gastroenterol. 2016 Nov/Dec; 50 Suppl 2.

c) Savino F. et al. Antagonistic effect of *Lactobacillus* strains against gas-producing coliforms isolated from colicky infants. BMC Microbiology 2011, 11:157.

Antipathogen activity

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

Lactiplantibacillus plantarum LP14
(DSM 33401) (formerly *Lactobacillus plantarum*)

Limosilactobacillus fermentum LF26
(DSM 33402) (formerly *Lactobacillus fermentum*)

Lacticaseibacillus casei LC04
(DSM 33400) (formerly *Lactobacillus casei*)

Lacticaseibacillus rhamnosus LR04
(DSM 16605) (formerly *Lactobacillus rhamnosus*)

Lactobacillus acidophilus LA02
(DSM 21717)

Limosilactobacillus reuteri LRE02
(DSM 23878) (formerly *Lactobacillus reuteri*)

Raw material

Finished dosage form

Ligilactobacillus salivarius LS01™
(DSM 22775) (formerly *Lactobacillus salivarius*)

Lacticaseibacillus paracasei LPC09
(DSM 24243) (formerly *Lactobacillus paracasei*)

Only available in blend and finished dosage form

Functionality

- inhibition of pathogenic *E. coli, E. faecalis, K. Pneumoniae, S. aureus* and/or *P. aeruginosa*

Scientific support

IN VITRO STUDIES

a) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. 8:216

Limosilactobacillus reuteri LRE02
(DSM 23878) (formerly *Lactobacillus reuteri*)

Raw material

Finished dosage form

Functionality

- Production of reuterin and vitamin B12
- Anti-pathogen activity and immunostimulation
- Diarrhea

Scientific support

IN VITRO STUDIES

Internal data available upon request

Refer to the section on diarrhea for a published clinical trial including this strain

a) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216.

Antipathogen activity

Lactiplantibacillus plantarum LP09 (DSM 25710) (formerly *Lactobacillus plantarum*)

Raw material

Finished dosage form

Functionality
- Anti-pathogen activity

Scientific support

Internal data available upon request

Bifidobacterium breve BR03™ (DSM 16604)

Raw material

Finished dosage form

Functionality
- Gaseous colic
- Inhibition of pathogenic *E. coli*
- Inhibition of Enterobacteriaceae and of other coliforms isolated from colicky infants

Scientific support

IN VITRO STUDIES

a) Aloisio I. et al. Characterization of *Bifidobacterium spp.* strains for the treatment of enteric disorders in newborns. Appl Microbiol Biotechnol 2012, 96:1561–1576.

b) Mogna L. et al. Assessment of the In Vitro Inhibitory Activity of Specific Probiotic Bacteria Against Different *Escherichia coli* strains. J. Clin. Gastroenterol. 2012;46 Suppl.S29-32.

c) Del Piano M. et al. In Vitro Sensitivity of Probiotics to Human Pancreatic Juice. J. Clin. Gastroenterol. Vol 42, Suppl. 3, Part 2, Sept. 2008.

Refer to the section on baby colics and on celiac disease for published clinical trials

Limosilactobacillus fermentum LF5 (CNCM I-789) (formerly *Lactobacillus fermentum*)

Limosilactobacillus fermentum LF09 (DSM 18298) (formerly *Lactobacillus fermentum*)

Limosilactobacillus fermentum LF10 (DSM 19187) (formerly *Lactobacillus fermentum*)

Limosilactobacillus fermentum LF11 (DSM 19188) (formerly *Lactobacillus fermentum*)

Only available in blend and finished dosage form

Functionality
- Inhibition of pathogenic *Candida* species

Scientific support

IN VITRO STUDIES

a) Deidda F. et al. The In Vitro Effectiveness of *Lactobacillus fermentum* Against Different *Candida* Species Compared With Broadly Used Azoles. 2016 J Clin Gastroenterol 50:S171-S174.

Antipathogen activity

Ligilactobacillus salivarius CRL1328
(DSM 24441) **(formerly *Lactobacillus salivarius*)**

under worldwide exclusive license from the CEntro de REferencia para LActobacilos, Argentina

Raw material

Finished dosage form

Functionality
- Inhibition of *Enterococcus faecalis*, *Enterococcus faecium* and *Neisseria gonorrhoeae*

Scientific support

IN VITRO STUDIES

a) Ocana V. et al. Characterization of a bacteriocin like substance produced by a vaginal *Lactobacillus salivarius* strain. Applied and Environmental Microbiology, 1999; 65(12):5631-5635

Lacticaseibacillus rhamnosus LR04
(DSM 16605) **(formerly *Lactobacillus rhamnosus*)**

Raw material

Finished dosage form

Functionality
- Inhibition of *Klebsiella pneumoniae* and *E. coli*

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. In Vitro Inhibition of *Klebsiella pneumoniae* by *Lactobacillus delbrueckii* subsp. *delbrueckii* LDD01 (DSM 22106). An Innovative Strategy to Possibly Counteract Such Infections in Humans? J Clin Gastroenterol, Vol 50, Supp. 2, November/December 2016.

b) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216

Internal data on immune stimulation and anti-pathogen activity available upon request for certain strains

Immune stimulation

Lacticaseibacillus rhamnosus LR04
(DSM 16605) (formerly *Lactobacillus rhamnosus*)

Lacticaseibacillus rhamnosus LR05
(DSM 19739) (formerly *Lactobacillus rhamnosus*)

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

Lactiplantibacillus plantarum LP02
(LMG P-21020) (formerly *Lactobacillus plantarum*)

Bifidobacterium animalis subsp. *lactis* BS01™
(LMG P-21384)

BLEND

Finished dosage form

Daily dosage in clinical studies

1, 2) LR04 2.5 billion CFU + LR05 2.5 billion CFU + LP01 2.5 billion CFU + LP02 2.5 billion CFU + BS01 5 billion CFU + FOS or GOS

Functionality

- **Reinforcement of the natural defences**
- **Reduction of the intestinal discomfort**
- **Rebalance of the intestinal microbiota**
- **Inhibition of intestinal and respiratory pathogens**

Scientific support

CLINICAL STUDIES

1) Pregliasco F. et al. A New Chance of Preventing Winter Diseases by the Administration of Symbiotic Formulations. Journal of Clinical Gastroenterology, 2008; 42(2): 224-233.

2) Belcaro G. et al. Prevention of flu episodes with colostrum and Bifivir compared with vaccination: an epidemiological, registry study. Panminerva Medica 2010;52:269-75.

Internal data on immune stimulation and anti-pathogen activity available upon request for certain strain.

IN VITRO STUDIES

a) Mogna L. et al. Micronized Cells of the Probiotic Strain *Bifidobacterium lactis* BS01 Activate Monocyte Polarization: A New Approach. J Clin Gastroenterol. 2018;52:S57-S61.

b) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains (LP01, LP02, LR04). J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216.

Immune stimulation

Bifidobacterium animalis subsp. *lactis* BS01™ (LMG P-21384)

Lacticaseibacillus rhamnosus LR04 (DSM 16605) (formerly *Lactobacillus rhamnosus*)

Lactiplantibacillus plantarum LP02 (LMG P-21020) (formerly *Lactobacillus plantarum*)

BLEND

Raw material

Finished dosage form

Daily dosage in clinical studies

1) BS01 10 billion CFU + LR04 10 billion CFU + LP02 10 billion CFU + FOS

Functionality

- **Reinforcement of the natural defences**
- **Reduction of the incidence, severity and duration of Acute Respiratory Infections (ARI) during the cold season**
- **Inhibition of intestinal and respiratory pathogens**

Scientific support

CLINICAL STUDIES

1) Pregliasco F. et al. A New Chance of Preventing Winter Diseases by the Administration of Symbiotic Formulations. Journal of Clinical Gastroenterology, 2008; 42(2): 224-233.

Internal data on immune stimulation and anti-pathogen activity available upon request for certain strains.

IN VITRO STUDIES

a) Mogna L. et al. Micronized Cells of the Probiotic Strain *Bifidobacterium lactis* BS01 Activate Monocyte Polarization: A New Approach. J Clin Gastroenterol. 2018;52:S57-S61.

b) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains (LP02, LR04). J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 LR04).

Lacticaseibacillus rhamnosus GG (ATCC 53103) (formerly *Lactobacillus rhamnosus*)

Raw material

Finished dosage form

Scientific support

The most studied probiotic strain in the world, over 1000 publications available, including immune support, anti-pathogen activity and digestive health

Immune stimulation

Bifidobacterium animalis subsp. *lactis* BS01™ (LMG P-21384)

Raw material

Finished dosage form

Functionality
- Strengthening of natural defences and natural immunity

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. Micronized Cells of the Probiotic Strain *Bifidobacterium lactis* BS01 Activate Monocyte Polarization: A New Approach. J Clin Gastroenterol. 2018;52:S57-S61.

Refer to precedent page for clinical data

Internal data on immune stimulation available upon request

Limosilactobacillus reuteri LRE02 (DSM 23878) (formerly *Lactobacillus reuteri*)

Raw material

Finished dosage form

Functionality
- Production of reuterin and vitamin B12
- Anti-Pathogen activity
- Diarrhea

Scientific support

IN VITRO STUDIES

a) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216.

Internal data available on immune stimulation available upon request

Asthma

Ligilactobacillus salivarius LS01™ (DSM 22775) (formerly *Lactobacillus salivarius*)
Bifidobacterium breve B632™ (DSM 24706)

BLEND

Finished dosage form

Functionality
- **Immunomodulatory activity in asthmatic subjects**

Scientific support

CLINICAL STUDIES

Clinical study on-going on asthma

Internal data available on the immunomodulation capacities of the strains

Allergic rhinitis

Lactiplantibacillus plantarum LP01™ (LMG P-21021) (formerly *Lactobacillus plantarum*)
Lacticaseibacillus paracasei LPC00 (LMG P-21380) (formerly *Lactobacillus paracasei*)

BLEND

Raw material

Finished dosage form

Daily dosage in clinical studies

1) LP01 1 billion cells + LPC00 1 billion cells + FOS

Functionality
- **Allergic rhinitis**

Scientific support

CLINICAL STUDIES AND REVIEW

1) Manzotti G. et al. Multi-strain Symbiotic Preparations as a Novel Adjuvant Approach to Allergic Rhinitis. Journal of Contemporary Immunology, Vol. 1 No.2 pp. 67-80, 2014.

2) Fassio F. House dust mite-related respiratory allergies and probiotics: a narrative review. Clin Mol Allergy, 2018,16:15.

Internal data on immunomodulation available upon request

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains (LP01). J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

b) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 (LP01).

Atopic dermatitis

Ligilactobacillus salivarius LS01™ (DSM 22775) (formerly *Lactobacillus salivarius*)

Only available in blend and finished dosage form

Daily dosage in clinical studies

1, 2, 3) 2 billion CFU

4) LS01 5 billion CFU + ST10 2 billion CFU + Tara gum

Functionality

- **Treatment of atopic dermatitis**
- **Improvement of the Quality of Life in subjects with Atopic Dermatitis**
- **Skin health**
- **Inhibition of *C. acnes* (formerly classified as *P. acnes*) induced IL-8 release**
- **Inhibition of *S. aureus***

Scientific support

CLINICAL STUDIES

1) Drago L. et al. Effects of *Lactobacillus salivarius* LS01 (DSM 22775) treatment on adult atopic dermatitis: a randomized placebo-controlled study. Int J Immunopathol Pharmacol. 2011; 24(4):1037-48.

2) Drago L. et al. Changing of fecal flora and clinical effect of *L. salivarius* LS01 in adults with atopic dermatitis. J Clin Gastroenterol. 2012; 46 Suppl:S56-63.

3) Niccoli A. et al. Preliminary results on clinical effects of probiotic *Lactobacillus salivarius* LS01 in children affected by atopic dermatitis. J Clin Gastroenterol. 2014; 48 Suppl:S34-36.

4) Drago L. et al. Treatment of atopic dermatitis eczema with a high concentration of *Lactobacillus salivarius* LS01 associated with an innovative gelling complex. J Clin Gastroenterol. 2014; 48 Suppl:S47-511.

IN VITRO STUDIES

a) Drago L. et al. Strain-dependent release of cytokines modulated by *Lactobacillus salivarius* human isolates in an in vitro model. BMC Res Notes. 2010; 3:44.

b) Deidda F. et al. New Approach in Acne Therapy, A Specific Bacteriocin Activity and a Targeted Anti IL-8 Property in Just 1 Probiotic Strain, the *L. salivarius* LS03. (LS01, LS02, LS03) J Clin Gastroenterol 2018;52:S78-S81.

c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216.

Refer to next page for further studies on LS01 associated with B. breve BR03

Bifidobacterium animalis subsp. *lactis* BS01™ (LMG P-21384)

Lacticaseibacillus rhamnosus LR05 (DSM 19739) (formerly *Lactobacillus rhamnosus*)

BLEND

Raw material

Finished dosage form

Daily dosage in clinical studies

1) BS01 1 billion cells + LR05 1 billion cells + FOS

Functionality

- **Atopic dermatitis**

Scientific support

CLINICAL STUDIES

1) Manzotti G. et al. Probiotics as a Novel Adjuvant Approach to Atopic Dermatitis. Journal of Contemporary Immunology (2014) Vol. 1 No. 2 pp. 57-66.

Immunomodulation in vitro data available upon request

Rosacea / Chronic urticaria

Ligilactobacillus salivarius LS01™ (DSM 22775) (formerly *Lactobacillus salivarius*)
Bifidobacterium breve BR03™ (DSM 16604)

BLEND

Finished dosage form

Daily dosage in clinical studies

1, 3, 4) LS01 2 billion CFU
+ BR03 2 billion CFU

2) LS01 1 billion CFU
+ BR03 1 billion CFU

Functionality

- **Reduce frequency, duration and intensity of Atopic Dermatitis symptoms**
- **Improvement of the Quality of Life in subjects with Atopic Dermatitis (AD)**
- **Rosacea**
- **Chronic urticaria**
- **Skin health**

Scientific support

CLINICAL STUDIES

1) Iemoli E. et al. Probiotics reduce gut microbial translocation and improve adult atopic dermatitis. J Clin Gastroenterol. 2012; 46 Suppl:S33-40.
2) Licari A. et al. Efficacia clinica di *Lactobacillus salivarius* LS01 e *Bifidobacterium breve* BR03 in pazienti pediatrici affetti da dermatite atopica. Il medico pediatra 2016;38-42.
3) Nettis E. et al. Probiotics and refractory chronic spontaneous urticaria. Eur Ann Allergy Immunol 2016, Vol 48, N 5, 182-187.
4) Fortuna M. C. et al. A case of Scalp Rosacea treated with low dose doxycycline and probiotic therapy and literature review on therapeutic options. Dermatologic Therapy ISSN 1396-0296.

Refer to precedent page for additional studies on LS01 alone in atopic dermatitis

IN VITRO STUDIES

a) Deidda F. et al. New Approach in Acne Therapy: A Specific Bacteriocin Activity and a Targeted Anti IL-8 Property in Just 1 Probiotic Strain, the *L. salivarius* LS03. J Clin Gastroenterol. 2018 May 18.
b) Drago L. Immunomodulatory Effects of *Lactobacillus salivarius* LS01 and *Bifidobacterium breve* BR03, alone and in combination, on Peripheral Blood Mononuclear Cells of Allergic Asthmatics. Allergy Asthma Immunol Res. 2015 July; 7(4):409-413.
c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 (LS01).

Acne

Ligilactobacillus salivarius LS03 (DSM 22776) (formerly *Lactobacillus salivarius*)

Raw material

Finished dosage form

Functionality

- **Acne - Anti-pathogen activity: inhibition of *C. acnes* (formerly classified as *P. acnes*) and its induction of IL-8**
- **Immunomodulation**
- **Strong adhesion to the intestinal mucosa**

Scientific support

IN VITRO STUDY

a) Deidda F. et al. New Approach in Acne Therapy: A Specific Bacteriocin Activity and a Targeted Anti IL-8 Property in Just 1 Probiotic Strain, the *L. salivarius* LS03. J Clin Gastroenterol. 2018 May 18..

Antioxidant

Bifidobacterium animalis subsp. *lactis* BS05
(DSM 23032)

Lactobacillus acidophilus LA06
(DSM 23033)

Only available in blend and finished dosage form

Functionality
- Antioxidant activity
- Reduced glutathione (GSH) and increased superoxide dismutase production

Scientific support

IN VITRO AND ANIMAL STUDIES

a) Amaretti A. et al. Antioxidant properties of potentially probiotic bacteria: in vitro and in vivo activities. Appl Microbiol Biotechnol. 2013; 97(2):809-17.

b) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 (LA06).

Ligilactobacillus salivarius LS01™
(DSM 22775) (formerly *Lactobacillus salivarius*)

Only available in blend and finished dosage form

Lactobacillus acidophilus LA02
(DSM 21717)

Bifidobacterium breve BR03™
(DSM 16604)

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly Lactobacillus plantarum)

Lacticaseibacillus rhamnosus LR06
(DSM 21981) (formerly Lactobacillus rhamnosus)

Bifidobacterium animalis subsp. *lactis* BS01™
(LMG P-21384)

Raw material

Finished dosage form

Functionality
- Antioxidant activity
- Reduced glutathione (GSH) and increased superoxide dismutase production
- Anti-pathogen activity

Scientific support

IN VITRO STUDIES

a) Magistrelli L et al. (2019) Probiotics May Have Beneficial Effects in Parkinson's Disease: In vitro Evidence. Front. Immunol. 10:969.

b) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains (LP01, LP02, LR04, LR06, LPS01, LDD01, BR03, B632). J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 (LA02 LS01, LP01).

Antioxidant

Limosilactobacillus reuteri Lb26
(DSM 16341) (formerly *Lactobacillus reuteri*)

under worldwide exclusive license from BIOMAN for nutraceutical and pharma applications

Raw material

Finished dosage form

Functionality

- **Carrier of selenium with high bioavailability**
- **Organic selenium from probiotic strain allergen free with High Bioavailability: Protection of DNA, proteins and lipids from oxidative damage**

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. Selenium and zinc internalized by *Lactobacillus buchneri* Lb26 (DSM 16341) and *Bifidobacterium lactis* Bb1 (DSM 17850): improved bioavailability using a new biological approach. J Clin Gastroenterol. 2012; 46 Suppl:S41-5.

b) Mangiapane E. et al. An integrated proteomic and physiological approach to understand the adhesion mechanism of the probiotic *Lactobacillus reuteri* Lb26 DSM16341. Journal of integrated Omics, 2013.

c) Galano E. et al. Privileged Incorporation of Selenium as Selenocysteine in *Lactobacillus reuteri* Proteins Demonstrated by Selenium-specific Imaging and Proteomics. Molecular & Cellular Proteomics 12.8, 2013.

d) Mangiapane E. et al. Selenium effects on the metabolism of a Se-metabolizing *Lactobacillus reuteri*: analysis of envelope-enriched and extracellular proteomes. The Royal Society of Chemistry, 2014.

e) Mangiapane E. et al. Selenium and Selenoproteins: An Overview on Different Biological Systems. Current Protein and Peptide Science, 2014, 15, 598-607.

Bifidobacterium animalis subsp. *lactis* Bb1
(DSM 17850)

under worldwide exclusive license from BIOMAN for nutraceutical and pharma applications

Raw material

Finished dosage form

Functionality

- **Carrier of zinc with High Bioavailability:**
- **Normal function of the immune system**
- **Normal DNA synthesis and cell division**
- **Protection of DNA, proteins and lipids from oxidative damage**
- **Maintenance of normal bone**
- **Normal cognitive function**
- **Fertility and reproduction**

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. Selenium and zinc internalized by *Lactobacillus buchneri* Lb26 (DSM 16341) and *Bifidobacterium lactis* Bb1 (DSM 17850): improved bioavailability using a new biological approach. J Clin Gastroenterol. 2012; 46 Suppl:S41-5.

Immunomodulation

Bifidobacterium longum DLBL07 (DSM25669)

Bifidobacterium longum DLBL08 (DSM 25670)

Bifidobacterium longum DLBL09 (DSM 25671)

Bifidobacterium longum DLBL10 (DSM 25672)

Bifidobacterium longum DLBL11 (DSM 25673)

BLEND

Finished dosage form

Functionality

- **Strains isolated from centenarians with immunomodulation properties**

Scientific support

CLINICAL STUDIES

1) Drago L. Cultivable and Pyrosequenced Fecal Microflora in Centenarians and Young Subjects. J Clin Gastroenterol/ Volume 46, Supp. 1, October 2012.

2) Ghini V. et al. Effects of Probiotics Administration on Human Metabolic Phenotype. Metabolites. 2020 Oct 7;10(10):E396.

3) De Mauri A. et al. Probiotics-addicted low-protein diet for microbiota modulation in patients with advanced chronic kidney disease (Pro-LowCKD): A protocol of placebo-controlled randomized trial. Journal of Functional Foods (2020) 104133

IN VITRO STUDIES

a) Nicola S. et al. Searching for the Perfect Homeostasis Five Strains of *Bifidobacterium longum* From Centenarians Have a Similar Behavior in the Production of Cytokines. J Clin Gastroenterol Volume 50, Supp. 2, November/December 2016.

Cholesterol management

Bifidobacterium lactis MB2409 (DSM 23733)
Bifidobacterium bifidum MB109 (DSM 23731)
Bifidobacterium longum 04 (DSM 23233)

BLEND

Finished dosage form

Daily dosage in clinical studies

1) 1 billion CFU/strain

Functionality

- Cardiovascular health
- Cholesterol lowering

Scientific support

CLINICAL STUDIES

1) Drago L. Cultivable and Pyrosequenced Fecal Microflora in Centenarians and Young Subjects. J Clin Guardamagna O. et al. *Bifidobacteria* supplementation: effects on plasma lipid profile in dyslipidemic children. Nutrition (2014), doi: 10.1016/ j.nut. 2014.01.014.

IN VITRO AND ANIMAL STUDIES

a) Bordoni et al. Cholesterol-lowering probiotics: in vitro selection and in vivo testing of *Bifidobacteria*. Appl. Microbiol. Biotechnol. 2013. 97:8273-8281.

Bifidobacterium breve MB113 (DSM 23732)
Bifidobacterium animalis subsp. *lactis* MB2409 (DSM 23733)
Bifidobacterium bifidum MB109 (DSM 23731)
Bifidobacterium bifidum BB06 (DSM 24688, formerly MB 107)
Bifidobacterium animalis subsp. *lactis* BS07 (DSM 24690, formerly MB 243)

Only available in blend and finished dosage form

Functionality

- Cardiovascular health
- Cholesterol lowering

Scientific support

IN VITRO AND ANIMAL STUDIES

a) Bordoni et al. Cholesterol-lowering probiotics: in vitro selection and in vivo testing of *Bifidobacteria*. Appl. Microbiol. Biotechnol. 2013. 97:8273-8281.

Bifidobacterium infantis BI02 (DSM 24687, formerly MB287)

Raw material

Finished dosage form

Functionality

- Cardiovascular health
- Cholesterol lowering

Scientific support

Internal in vitro data on Bile Salt Hydrolase (BSH) production available upon request

Weight management

Bifidobacterium breve BR03™ (DSM 16604)
Bifidobacterium breve B632™ (DSM 24706)

BLEND

Finished dosage form

Functionality
- Restoration of a better dietary ω-6/ω-3 balance
- Conjugated linoleic acids (CLA) production
- Prospective use in the treatment of obesity
- Improving insulin sensitivity at fasting and during an OGTT
- Supporting weight loss

Scientific support

IN VITRO STUDIES

a) Nicola S. et al. Interaction between probiotics and human immune cells: the prospective anti-inflammatory activity of *Bifidobacterium breve* BR03. AgroFOOD, 2010; 21(2):S44-47.

b) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

Internal data available upon request on CLA production and protection of gut epithelial barrier with BR03 (TEER)

Solito A, et al. Supplementation with *Bifidobacterium breve* BR03 and B632 strains improved insulin sensitivity in children and adolescents with obesity in a cross-over, randomized double-blind placebo-controlled trial. Clin Nutr. 2021 Jul.40(7):4585-4594

Bifidobacterium longum 04 (DSM 23233)

Only available in blend and finished dosage form

Daily dosage in clinical studies

1) 1 billion CFU

Functionality
- Restoration of a better dietary ω-6/ω-3 balance
- Conjugated linoleic acids (CLA) production
- Prospective use in the treatment of obesity
- Cholesterol management

Scientific support

CLINICAL STUDIES

1) Guardamagna O. et al. *Bifidobacteria* supplementation: effects on plasma lipid profile in dyslipidemic children. Nutrition (2014).

Internal data available upon request

Lactobacillus gasseri LGS06 (DSM 32405)

Raw material

Finished dosage form

Functionality
- Weight management

Scientific support

Scientific publications are available on gasseri strains on weight loss and reduction of visceral fats

Candida

Limosilactobacillus fermentum LF5
(CNCM I-789) **(API) (formerly *Lactobacillus fermentum*)**

Only available in blend and finished dosage form

Daily dosage in clinical studies
1, 2, 3, 4) 1 billion CFU

Functionality
- Vaginal health
- Inhibition of *Candida* strains
- Treatment of vulvovaginal candidiasis (VVC)

Scientific support

CLINICAL STUDIES

1) Presidio Ospedaliero Delmati, Divisione di Ostetricia - Ginecologia. LF5 - LAB: studio di tollerabilità locale e di attività in pazienti affette da *Candida albicans*. 1992.
2) Centro di ricerca: USSL Lombardia 55 - Presidio Ospedaliero Delmati, S. Angelo Lodigiano, Divisione di Ostetricia-Ginecologia, Primario: Dott. Francesco Rovere. LF5 (IAB): Studio di dose range finding in pazienti affette da *Candida albicans*. 1992.
3) Donini G. Studio clinico sull'efficacia e la tollerabilità di LF5 (LAB) capsule vaginali in confronto a placebo in pazienti affette da *Candida Albicans*. Ospedale S. Salvatore, Divisione Ostetrico-Ginecologica, Pesaro. 1992.
4) Rovere F. Local tolerability and activity study in patients suffering from *Candida albicans* ("Delmati2 Hospital, Italy, 1992).

IN VITRO STUDIES

a) Deidda F. et al. The In Vitro Effectiveness of *Lactobacillus fermentum* Against Different *Candida* Species Compared With Broadly Used Azoles. J Clin Gastroenterol, Vol 50, Supp. 2, November/December 2016.
b) Deidda F. et al. In Vitro Activity of *Lactobacillus fermentum* LF5 Against Different *Candida* Species and *Gardnerella vaginalis* A New Perspective to Approach Mixed Vaginal Infections? J Clin Gastroenterol Volume 50, Supp. 2, November/December 2016.

Limosilactobacillus fermentum LF08
(DSM 18297) **(formerly *Lactobacillus fermentum*)**

Raw material

Finished dosage form

Functionality
- Inhibition of *Candida* strains

Scientific support

Internal vitro data, available upon request

Limosilactobacillus fermentum LF09
(DSM 18298) **(formerly *Lactobacillus fermentum*)**

Only available in blend and finished dosage form

Functionality
- Restoration of a physiological gut barrier
- Inhibition of *Candida* growth
- Strain from brushing of the gut mucosa

Scientific support

IN VITRO STUDIES

a) Deidda F. et al. The In Vitro Effectiveness of *Lactobacillus fermentum* Against Different *Candida* Species Compared With Broadly Used Azoles. J Clin Gastroenterol. 2016 Nov/Dec;50 Suppl 2, S171-S174.

Candida

Limosilactobacillus fermentum LF10
(DSM 19187) (formerly *Lactobacillus fermentum*)

Only available in blend and finished dosage form

Daily dosage in clinical studies
1, 2) 400 million CFU

Functionality
- Vaginal health
- Inhibition of *Candida* strains
- Counteraction of vulvovaginal candidiasis (VVC)

Scientific support

CLINICAL STUDIES

1) Vicariotto F. et al. Effectiveness of the association of 2 probiotic strains formulated in a slow release vaginal product, in women affected by *vulvovaginal candidiasis*: a pilot study. J Clin Gastroenterol. 2012; 46 Suppl:S73-80.
2) Murina F et al. Can *Lactobacillus fermentum* LF10 and *Lactobacillus acidophilus* LA02 in a Slow-release Vaginal Product be Useful for Prevention of Recurrent *Vulvovaginal Candidiasis*? A Clinical Study. J Clin Gastroenterol 2014;48:S102-S105.).

IN VITRO STUDIES

a) Deidda F. et al. In vitro effectiveness of *Lactobacillus fermentum* against different *Candida* species compared with broadly used azoles. Journal of Clinical Gastroenterology, 2016;50:S171-S174.

Limosilactobacillus fermentum LF11
(DSM 19188) (formerly *Lactobacillus fermentum*)

Only available in blend and finished dosage form

Functionality
- Vaginal health
- Inhibition of *Candida* strains
- Counteraction of vulvovaginal candidiasis (VVC)

Scientific support

IN VITRO STUDIES

a) Deidda F. et al. In vitro effectiveness of *Lactobacillus fermentum* against different *Candida* species compared with broadly used azoles. Journal of Clinical Gastroenterology, 2016;50:S171-S174.

Limosilactobacillus fermentum LF16
(DSM 26856) (formerly *Lactobacillus fermentum*)

Only available in blend and finished dosage form

Functionality
- Vaginal health
- Inhibition of *Candida* growth

Scientific support

Internal vitro data, available upon request

Candida

Lactobacillus acidophilus LA02
(DSM 21717)
Limosilactobacillus fermentum LF10
(DSM 19187) **(formerly *Lactobacillus fermentum*)**

BLEND

Finished dosage form

Daily dosage in clinical studies

1, 2) LA02 400 million CFU + LF10 400 million CFU + Carbon dioxide + FOS + Arabinogalactan

Functionality

- **Vaginal health**
- **Inhibition of *Candida* strains**
- **Innovative effervescent slow release tablet for enhanced delivery and activity of lactobacilli**
- **Counteraction of *Candida* vulvovaginitis**

Scientific support

CLINICAL STUDIES

1) Vicariotto F. et al. Effectiveness of the association of 2 probiotic strains formulated in a slow release vaginal product, in women affected by *vulvovaginal candidiasis*: a pilot study. J Clin Gastroenterol. 2012; 46 Suppl:S73-80.
2) Murina F. et al. Can *Lactobacillus fermentum* LF10 and *Lactobacillus acidophilus* LA02 in a Slow-release Vaginal Product be Useful for Prevention of Recurrent *Vulvovaginal Candidiasis*? J Clin Gastroenterol. 2014; 48:S102-105

IN VITRO STUDIES

a) Deidda F. et al. The In Vitro Effectiveness of *Lactobacillus fermentum* Against Different *Candida* Species Compared With Broadly Used Azoles. J Clin Gastroenterol. 2016; 50:S171-S174 (LF10).
b) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 (LA02).

Lactobacillus gasseri CRL1259
(DSM 24512)

under worldwide exclusive license from the CEntro de REferencia para LActobacilos, Argentina

Only available in blend and finished dosage form

Functionality

- **Vaginal health and inhibition of urogenital pathogens**

Scientific support

IN VITRO STUDIES

a) Tomas MSJ. Et al. Growth and lactic acid production by vaginal *Lactobacillus acidophilus* CRL 1259, and inhibition of uropathogenic *Escherichia coli*, Journal of Medical Microbiology, 2003;52-1-8.
b) Ocana V. and Nader-Macias ME. Adhesion of *Lactobacillus* vaginal strains with probiotic properties to vaginal epithelial cells. Biocell, 2001;25(3):265-273;
c) Tomas MSJ. Et al. Characterization of potentially probiotic vaginal *Lactobacilli* isolated from Argentinean women. British Journal of Biomedical Science, 2005; 62(4).
d) Zàrate G. and Nader-Macias ME. Influence of probiotic vaginal *Lactobacilli* on in vitro adhesion of urogenital pathogens to vaginal epithelial cells. Letters in Applied Microbiology ISSN 0266-8254.

Candida

Ligilactobacillus salivarius CRL1328
(DSM 24441) **(formerly *Lactobacillus salivarius*)**

under worldwide exclusive license from the CEntro de REferencia para LActobacilos, Argentina

Raw material

Finished dosage form

Functionality
- Vaginal health
- Prevention of urogenital infections
- Inhibition of *Candida* and Gonorrhoeae

Scientific support

IN VITRO STUDIES

a) Ocana V. et al. Characterization of a bacteriocin like substance produced by a vaginal *Lactobacillus salivarius* strain. Applied and Environmental Microbiology, 1999; 65(12):5631-5635.

b) Ocana V. et al. Surface characteristics of *Lactobacilli* isolated from human vagina. J. Gen. Appl. Microbiol., 1999; 45:203-212.

c) Tomas MSJ. et al. Influence of pH, temperature and culture media on the growth and bacteriocin production by vaginal *Lactobacillus salivarius* CRL 1328. Journal of Applied Microbiology, 2002; 93: 714-724.

d) Gillor O. et al. The dual role of bacteriocins as anti- and probiotics. Appl Microbiol Biotechnol. 2008 December; 81(4): 591–606.

e) Dover S.E. et al. Natural antimicrobials and their role in vaginal health: a short review. Int J Probiotics Prebiotics. 2008 ; 3(4): 219–230.

f) Juárez Tomás M.S. et al. Viability of vaginal probiotic *Lactobacilli* during refrigerated and frozen storage. Anaerobe, Vol 10, Issue 1, February 2004, 1-5.

g) Zàrate G. and Nader-Macias ME. Influence of probiotic vaginal *Lactobacilli* on in vitro adhesion of urogenital pathogens to vaginal epithelial cells. Letters in Applied Microbiology ISSN 0266-8254.

h) Ocana V and Nader-Macias ME. Adhesion of *Lactobacillus* Vaginal Strains with Probiotic Properties to Vaginal Epithelial Cells, 2011, Biocell 25(3):265-273.

i) Ocana V and Nader-Macias ME. Vaginal *Lactobacilli*: self and coaggregating ability, British Journal of Biomedical Science 2002, 59(4).

j) Tomas MSJ et al. Characterization of potentially probiotic vaginal *Lactobacilli* isolated from Argentinean women. British Journal of Biomedical Science 2005 62(4).

k) Vera Pingitore E. et al. Characterization of salivaricin CRL 1328, a twopeptide bacteriocin produced by *Lactobacillus salivarius* CRL 1328 isolated from the human vagina. Res Microbiol. 2009;160(6):401-408.

l) Vera Pingitore E. et al. Influence of vitamins and osmolites on growth and bacteriocin production by *Lactobacillus salivarius* CRL 1328 in a chemically defined medium. Can J Microbiol. 2009;55(3):304-310.

m) Vera Pingitore E. et al. Design of novel urogenital pharmabiotic formulations containing *Lactobacilli*, salivaricin CRL 1328 and non-microbial compounds with different functionalities. Drug Dev Ind Pharm. 2015;41(6):942-952.

n) Vera Pingitore E. et al. Effect of lyophilization and storage temperature on the activity of salivaricin CRL 1328, a potential bioactive ingredient of a urogenital probiotic product. J Gen Appl Microbiol. 2012;58(2):71-81.

Vaginal health

Lactobacillus acidophilus CRL1294
(DSM 24513)

under worldwide exclusive license from the CEntro de REferencia para LActobacilos, Argentina

Only available in blend and finished dosage form

Functionality
- Vaginal health

Lactobacillus crispatus CRL1251
(DSM 24438)

under worldwide exclusive license from the CEntro de REferencia para LActobacilos, Argentina

Only available in blend and finished dosage form

Functionality
- Vaginal health

Vaginal health

Lactobacillus crispatus CRL1266
(DSM 24439)

under worldwide exclusive license from the CEntro de REferencia para LActobacilos, Argentina

Only available in blend and finished dosage form

Functionality
- Vaginal health
- Inhibition of urogenital pathogens
- Production of hydrogen peroxide

Scientific support

IN VITRO STUDIES

a) Ocana V. and Nader-Macias ME. Adhesion of *Lactobacillus* vaginal strains with probiotic properties to vaginal epithelial cells. Biocell, 2001;25(3):265-273;

b) Zàrate G. and Nader-Macias ME. Influence of probiotic vaginal *Lactobacilli* on in vitro adhesion of urogenital pathogens to vaginal epithelial cells. Letters in Applied Microbiology ISSN 0266-8254;

c) Tomas MSJ. Et al. Comparison of the growth and hydrogen peroxide production by vaginal probiotic *Lactobacilli* under different culture conditions, Am J Obstet Gynecol, 2003; 188(1):35-44;

d) Ocana VS. et al. Selection of vaginal H2O2-generating *Lactobacillus* species for probiotic use. Current Microbiology, 1999; 38:279-84.

Lacticaseibacillus paracasei subsp. *paracasei* CRL1289
(DSM 24440) **(formerly *Lactobacillus paracasei*)**

under worldwide exclusive license from the CEntro de REferencia para LActobacilos, Argentina

Only available in blend and finished dosage form

Functionality
- Vaginal health
- Inhibition of urogenital pathogens including Staphylococcus aureus
- Production of hydrogen peroxide

Scientific support

IN VITRO AND ANIMAL STUDIES

a) Ocana VS. et al. Selection of vaginal H2O2-generating *Lactobacillus* species for probiotic use. Current Microbiology, 1999; 38:279-84.

b) Zàrate G. and Nader-Macias ME. Influence of probiotic vaginal *Lactobacilli* on in vitro adhesion of urogenital pathogens to vaginal epithelial cells. Letters in Applied Microbiology ISSN 0266-8254;

c) Ocana VS. et al. Growth inhibition of *Staphylococcus aureus* by H2O2-producing *Lactobacillus paracasei* subsp. *paracasei* isolated from the human vagina. FEMS Immunology and Medical Microbiology, 1999:23:87-92.

d) Zarate G. et al. Protective Effect of Vaginal Lactobacillus paracasei CRL 1289 against Urogenital Infection Produced by Staphylococcus aureus in a Mouse Animal Model. Infect Dis Obstet Gynecol. 2009:48358.

Bacterial vaginosis

Limosilactobacillus fermentum LF5
(CNCM I-789) (formerly *Lactobacillus fermentum*)

Only available in blend and finished dosage form

Daily dosage in clinical studies
1, 2, 3, 4) 1 billion CFU

Functionality
- Vaginal health
- Inhibition of *Candida* strains
- Treatment of vulvovaginal candidiasis (VVC)

Scientific support

CLINICAL STUDIES

For the clinical studies on LF5 in *Candida*, please refer to the prior section on *Candida*

IN VITRO STUDIES

a) Deidda F. et al. In Vitro Activity of *Lactobacillus fermentum* LF5 Against Different *Candida* Species and *Gardnerella vaginalis*: A New Perspective to Approach Mixed Vaginal Infections? J Clin Gastroenterol. 2016; 50:S168-S170.

Limosilactobacillus fermentum LF15
(DSM 26955) (formerly *Lactobacillus fermentum*)
Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

BLEND

Finished dosage form

Daily dosage in clinical studies
1) LF15 400 million CFU
+ LP01 400 million CFU + Tara gum
+ FOS + Arabinogalactan

Functionality
- Vaginal health
- Inhibition of *Gardnerella vaginalis*
- Counteraction of Bacterial Vaginosis (BV)

Scientific support

CLINICAL STUDIES

1) Vicariotto F. et al. Effectiveness of the two microorganisms *L. fermentum* LF15 and *L. plantarum* LP01, formulated in slow release vaginal tablets, in women affected by *Bacterial Vaginosis*: a pilot study. J Clin Gastroenterol. 2014; 48 Suppl:S106-112.

Further study available on the anti-pathogen activity of LP01 against *E. coli* and other pathogens section (gastroenterology).

Lactiplantibacillus plantarum LP02
(LMG P-21020) (formerly *Lactobacillus plantarum*)
Limosilactobacillus fermentum LF10
(DSM 19187) (formerly *Lactobacillus fermentum*)

BLEND

Finished dosage form

Daily dosage in clinical studies
1) LP02 500 million CFU
+ LF10 500 million CFU + GOS

Functionality
- Vaginal health
- Counteraction of *Candida* vulvovaginitis
- Counteraction of *Candida* vulvovaginitis including recurrences

Scientific support

CLINICAL STUDIES

1) Murina F. et al. Thymol, eugenol and *Lactobacilli* in a medical device for the treatment of *bacterial vaginosis* and *vulvovaginal candidiasis*. New Microbiologica, 41,3, 220-224, 2018, ISN 1121-7138.

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains (LP02). J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

Pregnancy

Bifidobacterium animalis subsp. *lactis* BA05
(DSM 18352)

Only available in blend and finished dosage form

Daily dosage in clinical studies
1) 5 billion CFU

Functionality
- Production of folic acid
- Rebalance of intestinal microbiota

Scientific support

CLINICAL STUDIES

1) Strozzi GP. and Mogna L. Quantification of *folic acid* in human faeces after administration of *Bifidobacterium* probiotic strains. Journal of Clinical Gastroenterology, 2008; 42:S179-S184.

ANIMAL MODEL STUDY

I) Pompei A. et al. Administration of Folate-Producing *Bifidobacteria* Enhances Folate Status in Wistar Rats. Journal of Nutrition, 2007; 137:2742-2746.

IN VITRO STUDIES

a) Pompei A. et al. Folate production by *Bifidobacteria* as a potential probiotic property. Applied and Environmental Microbiology, 2007; 73(1):179-185.

Bifidobacterium animalis subsp. *lactis* Bb1
(DSM 17850)

under worldwide exclusive license from BIOMAN for nutraceutical and pharma applications

Raw material

Finished dosage form

Functionality
- Organic zinc from probiotic strain allergen free with High Bioavailability

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. Selenium and zinc internalized by *Lactobacillus buchneri* Lb26 (DSM 16341) and *Bifidobacterium lactis* Bb1 (DSM 17850): improved bioavailability using a new biological approach. J Clin Gastroenterol. 2012; 46 Suppl:S41-5.

Limosilactobacillus reuteri LRE02
(DSM 23878) **(formerly *Lactobacillus reuteri*)**

Raw material

Finished dosage form

Functionality
- Production of vitamin B12
- Antipathogen activity

Scientific support

IN VITRO STUDIES

a) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216.

Internal in vitro data available upon request

Pregnancy and Vaginal health

Lactobacillus crispatus LCR01 (DSM 24619)

Raw material

Finished dosage form

Functionality

- Vaginal health
- Rebalance of a healthy vaginal microbiota
- Inhibition of *Candida*

Scientific support

L. crispatus is a species naturally predominant in the healthy vaginal ecosystem. A body of literature shows that women with a vaginal ecosystem dominated by *L. crispatus* are less at risk of *bacterial vaginosis*, miscarriage, preterm birth and sexually transmissible diseases

Lactobacillus gasseri LGS06 (DSM 32405)

Raw material

Finished dosage form

Functionality

- Vaginal health
- Rebalance of a healthy vaginal microbiota

Scientific support

L. gasseri is a species naturally predominant in the healthy vaginal ecosystem. Literature shows that gasseri is associated with a decreased risk of early preterm birth and strains of gasseri have been found to present antagonistic activity against vaginal pathogens such as *Candida albicans*, *Neisseria gonorrhea* and *Trichomonas vaginalis*

UTI

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)
Lacticaseibacillus paracasei LPC09
(DSM 24243) (formerly *Lactobacillus paracasei*)
Streptococcus thermophilus ST10
(DSM 25246)

BLEND

Finished dosage form

Daily dosage in clinical studies

1) LP01 2.5 billion cells + LPC09 1 billion cells + ST10 1 billion cells + tara gum + cranberry extract + D-mannose

Functionality

- **Cystitis**
- **Inhibition of *E. coli***
- **Metabolization of oxalates, prevention of kidney stones**

Scientific support

CLINICAL STUDIES

1) Vicariotto F. Effectiveness of An Association of a Cranberry Dry Extract, D-Mannose, and the 2 Microorganisms *Lactobacillus plantarum* LP01 and *Lactobacillus paracasei* LPC09 in Women Affected by Cystitis. Journal of Clin Gastroenterol 2014;48:S96-S101

Internal data on anti-inflammatory and anti-oxidant properties available upon request

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

b) Mogna L. et al. Screening of different probiotic strains for their in vitro ability to metabolise oxalates: any prospective use in humans? J Clin Gastroenterol. 2014; 48 Suppl:S91-95 (LPC09, LP01).

c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)
Lactiplantibacillus plantarum LP02
(LMG P-21020) (formerly *Lactobacillus plantarum*)
Lacticaseibacillus rhamnosus LR04
(DSM 16605) (formerly *Lactobacillus rhamnosus*)
Lacticaseibacillus rhamnosus LR06
(DSM 21981) (formerly *Lactobacillus rhamnosus*)
Lactiplantibacillus pentosus LPS01
(DSM 21980) (formerly *Lactobacillus pentosus*)
Bifidobacterium breve BR03™
(DSM 16604)

Raw material

Finished dosage form

Functionality

- **Cystitis**
- **Inhibition of *E. coli*, *E. faecalis* and *K. pneumoniae* among other**

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains (LP01, LP02, LR04, LR06, LPS01, LDD01, BR03, B632). J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

b) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 (LP01, LR04).

Internal data on anti-inflammatory and anti-oxidant properties available upon request for some of these strains

UTI

Lactobacillus delbrueckii subsp. *delbrueckii* LDD01 (DSM 22106)

Only available in blend and finished dosage form

Functionality

- Inhibition of pathoagens *E. coli*, *Klebsiella* and gas-producing coliforms

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

b) Savino F. et al. Antagonistic effect of *Lactobacillus* strains against gasproducing coliforms isolated from colicky infants. BMC Microbiology 2011, 11:157.

c) Mogna L. et al. In Vitro Inhibition of *Klebsiella pneumoniae* by *Lactobacillus delbrueckii* subsp. *delbrueckii* LDD01 (DSM 22106): An Innovative Strategy to Possibly Counteract Such Infections in Humans? J Clin Gastroenterol. 2016 Nov/Dec;50 Suppl 2, Proceedings from the 8th Probiotics, Prebiotics & New Foods for Microbiota and Human Health meeting held in Rome, Italy on September 13-15, 2015:S136-S139.

Bifidobacterium breve B632™ (DSM 24706)

Only available in blend and finished dosage form

Functionality

- Inhibition of pathogens *E. coli* and *Enterobacteriaceae*

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains (LP01, LP02, LR04, LR06, LPS01, LDD01, BR03, B632). J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

b) Simone M. et al. The Probiotic *Bifidobacterium breve* B632 Inhibited the Growth of *Enterobacteriaceae* within Colicky Infant Microbiota Cultures. BioMed Research International 1-6, 2014.

Ligilactobacillus salivarius CRL 1328 (DSM 24441) (formerly *Lactobacillus salivarius*)

Raw material

Finished dosage form

Functionality

- Prevention of urogenital infections
- Inhibition of *Enterococcus faecalis*, *Enterococcus faecium* and *Neisseria gonorrhea*
- Inhibition of *Candida*

Scientific support

IN VITRO STUDIES

a) Ocana V. et al. Characterization of a bacteriocin like substance produced by a vaginal *Lactobacillus salivarius* strain. Applied and Environmental Microbiology, 1999; 65(12):5631-5635.

b) Ocana V. et al. Surface characteristics of *Lactobacilli* isolated from human vagina. J. Gen. Appl. Microbiol., 1999; 45:203-212.

c) Tomas MSJ. et al. Influence of pH, temperature and culture media on the growth and bacteriocin production by vaginal *Lactobacillus salivarius* CRL 1328. Journal of Applied Microbiology, 2002; 93: 714-724.

d) Rovere F. Local tolerability and activity study in patients suffering from *Candida albicans* (Delmati2 Hospital, Italy, 1992).

e) Gillor O. et al. The dual role of bacteriocins as anti- and probiotics. Appl Microbiol Biotechnol. 2008 December; 81(4): 591–606. doi: 10.1007/s00253-008-1726-5.

f) Dover S.E. et al. Natural antimicrobials and their role in vaginal health: a short review. Int J Probiotics Prebiotics. 2008 ; 3(4): 219–230.

g) Juárez Tomás M.S. et al. Viability of vaginal probiotic *Lactobacilli* during refrigerated and frozen storage. Anaerobe, Vol 10, Issue 1, February 2004, 1-5.

Kidney Stones / Prostate Health

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

Lacticaseibacillus paracasei LPC09
(DSM 24243) (formerly *Lactobacillus paracasei*)

BLEND

Finished dosage form

Daily dosage in clinical studies

1) LP01 and LPC09 1 billion cells each + plant extracts and serenoa repens

Functionality

- Prevention of chronic bacterial prostatitis
- UTI
- Inhibition of *E. coli*
- Anti-inflammatory
- Metabolization of oxalates, prevention of kidney stones

Scientific support

CLINICAL STUDIES

1) Chiancone F. et al. The Use of a Combination of Vaccinium Macracarpon, Lycium barbarum L. and Probiotics (Bifiprost®) for the Prevention of Chronic Bacterial Prostatitis: A Double-Blind Randomized Study. Urologia Internationalis 2019.

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

b) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216.

c) Mogna L. et al. Screening of different probiotic strains for their in vitro ability to metabolise oxalates: any prospective use in humans? J Clin Gastroenterol. 2014; 48 Suppl:S91-95

Internal data on anti-inflammatory and anti-oxidant properties avai-lable upon request

Bifidobacterium animalis subsp. *lactis* Bb1
(DSM 17850)

Limosilactobacillus reuteri Lb26
(DSM 16341) (formerly *Lactobacillus reuteri*)

under worldwide exclusive license from BIOMAN for nutraceutical and pharma applications

Raw material

Finished dosage form

Functionality

- Organic zinc and selenium from probiotic strain allergen free with High Bioavailability:
- Normal function of the immune system
- Normal DNA synthesis and cell division
- Protection of DNA, proteins and lipids from oxidative damage
- Maintenance of normal bone
- Normal cognitive function

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. Selenium and zinc internalized by *Lactobacillus buchneri* Lb26 (DSM 16341) and *Bifidobacterium lactis* Bb1 (DSM 17850): improved bioavailability using a new biological approach. J Clin Gastroenterol. 2012; 46 Suppl:S41-5.

Further studies on the characterization of Lb26 and its metabolism of selenium available upon request

Prostate health

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

Lacticaseibacillus paracasei LPC09
(DSM 24243) (formerly *Lactobacillus paracasei*)

BLEND

Finished dosage form

Daily dosage in clinical studies

1) LP01 1 billion cells
+ LPC09 1 billion cells
+ plant extracts and Serenoa repens

Functionality

- **Prevention of chronic bacterial prostatitis**
- **Anti-pathogen activity**

Scientific support

CLINICAL STUDIES

1) Chiancone F, Carrino M, Meccariello C, Pucci L, Fedelini M, Fedelini P. The Use of a Combination of Vaccinium Macracarpon, Lycium barbarum L. and Probiotics (Bifiprost®) for the Prevention of Chronic Bacterial Prostatitis: A Double-Blind Randomized Study. Urol Int. 2019; 103(4):423-426..

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains (LP01, LP02, LR04, LR06, LPS01, LDD01, BR03, B632). J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

b) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216

Lacticaseibacillus paracasei LPC09
(DSM 24243) formerly *Lactobacillus paracasei*

Only available in blend and finished dosage form

Lactobacillus acidophilus LA02
(DSM 21717)

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly Lactobacillus plantarum)

Limosilactobacillus reuteri LRE02
(DSM 23878) (formerly Lactobacillus reuteri)

Bifidobacterium animalis subsp. *lactis* Bb1
(DSM 17850)

Bifidobacterium breve BR03™
(DSM 16604)

Bifidobacterium longum BL03
(DSM 16603)

Raw material

Finished dosage form

Functionality

- **Oxalate degradation**
- **Reduction of intestinal inflammation**
- **Potential reduction of kidney stones incidence**

Scientific support

IN VITRO STUDIES

a) Mogna L. et al. Screening of different probiotic strains for their in vitro ability to metabolise oxalates: any prospective use in humans? (LPC09, LA02, LP01, LRE02, BR03, BL03) J Clin Gastroenterol. 2014; 48 Suppl:S91-95.

b) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216. (LPC09, LA02, LP01, LRE02)

Internal data on anti-inflammatory and anti-oxidant properties available upon request on certain strains

Mood / Sleep quality

Bifidobacterium longum 04
(DSM 23233)

Limosilactobacillus fermentum LF16
(DSM 26856) (formerly *Lactobacillus fermentum*)

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

Lacticaseibacillus rhamnosus LR06
(DSM 21981) (formerly *Lactobacillus rhamnosus*)

BLEND

Finished dosage form

Daily dosage in clinical studies
1) 1 billion CFU/AFU per strain

Functionality
- Improvement of the quality of sleep
- Reduction of fatigue and anger
- Improvement of mood
- Inhibition of *E. coli* and *Candida*

Scientific support

CLINICAL STUDIES AND REVIEW

1) Marotta A. et al., Effects of Probiotics on Cognitive Reactivity, Mood, and Sleep Quality, 2019 Frontiers in Psychiatry.
2) Irwin C, et al. Effects of probiotics and paraprobiotics on subjective and objective sleep metrics: a systematic review and meta-analysis. Eur J Clin Nutr. 2020 Nov;74(11):1536-1549.
3) Calgaro M, et al. Metabarcoding analysis of gut microbiota of healthy individuals reveals impact of probiotic and maltodextrin consumption. Benef Microbes. 2021 Apr 12;12(2):121-136.

Data is available upon request on the preclinical rationale of selection for these strains

IN VITRO STUDIES

a) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains (LP01, LP02, LR04, LR06, LPS01, LDD01, BR03, B632). J Clin Gastroenterol. 2012; 46 Suppl:S29-32.
b) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 (LP01).

Parkinson

Ligilactobacillus salivarius LS01™
(DSM 22775) (formerly *Lactobacillus salivarius*)

Only available in blend and finished dosage form

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly Lactobacillus plantarum)

Lactobacillus acidophilus LA02
(DSM 21717)

Lacticaseibacillus rhamnosus LR06
(DSM 21981) (formerly Lactobacillus rhamnosus)

Bifidobacterium animalis subsp. *lactis* BS01™
(LMG P-21384)

Bifidobacterium breve BR03™
(DSM 16604)

Raw material *Finished dosage form*

Scientific support

IN VITRO STUDIES

a) Magistrelli L et al. (2019) Probiotics May Have Beneficial Effects in Parkinson's Disease: In vitro Evidence. Front. Immunol. 10:969.

Autism / ADHD

Lacticaseibacillus rhamnosus GG
(ATCC 53103) (formerly *Lactobacillus rhamnosus*)

Raw material

Finished dosage form

Daily dosage in clinical studies

1) 10 billion CFU

Functionality

- Autism and ADHD prevention

Scientific support

CLINICAL STUDIES

1) Anna Pärtty et al. A possible link between early probiotics intervention and the risk of neuropsychiatric disorders later in childhood: a randomized trial. Pediatric Research, Volume 77, Number 6, June 2015.

SLA

Limosilactobacillus fermentum LF10
(DSM 19187) (formerly *Lactobacillus fermentum*)

BLEND

Lactobacillus delbrueckii subsp. *delbrueckii* LDD01
(DSM 22106)

Lactiplantibacillus plantarum LP01™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

Ligilactobacillus salivarius LS03
(DSM 22776) (formerly *Lactobacillus salivarius*)

Streptococcus thermophilus ST10
(DSM 25246)

Finished dosage form

Daily dosage in clinical studies

1, 2) LF10 4 billion CFU + LDD01 2 billion CFU + LP01 2 billion CFU + LS03 2 billion CFU + ST10 5 billion CFU

Scientific support

CLINICAL STUDIES

1) Mazzini L. et al. Potential Role of Gut Microbiota in ALS Pathogenesis and Possible Novel Therapeutic Strategies. J Clin Gastroenterol, Vol 00, N 00, 2018.

2) Di Gioia et al. A prospective longitudinal study on the microbiota composition in amyotrophic lateral sclerosis. BMC Med 2020 Jun 17;18(1):153.

Encephalopathy

Bifidobacterium longum W11
(LMG P-21586)

Raw material

Finished dosage form

Daily dosage in clinical studies

1) 5 billion CFU + FOS

Functionality

- Minimal hepatic encephalopathy
- Reduction of gastro-intestinal discomfort related to IBS
- Rebalance of intestinal microbiota
- Non-transmissible rifamycins resistance

Scientific support

CLINICAL STUDIES

1) Malaguarnera M. et al. *Bifidobacterium longum* with fructo-oligosaccharides (FOS) treatment in minimal hepatic encephalopathy: a randomized, double-blind, placebo-controlled study. Dig Dis Sci 2007; 52:3259-3265.

Chronic fatigue / Myalgic encephalomyelitis

Lacticaseibacillus rhamnosus GG
(ATCC 53103) (formerly *Lactobacillus rhamnosus*)

Bifidobacterium animalis subsp. *lactis* BS01™
(LMG P-21384)

Bifidobacterium breve BR03™
(DSM 16604)

Bifidobacterium longum BL03
(DSM 16603)

BLEND

Raw material

Finished dosage form

Daily dosage in clinical studies
1) GG 25 billion CFU + BS01 15 billion CFU + BR03 5 billion CFU + BL03 5 billion CFU

Functionality
- **Sleep improvement and cognitive symptoms improvement in patients with encephalomyelitis / chronic fatigue syndrome**

Scientific support
CLINICAL STUDIES

1) Wallis A. et al. Open-label pilot for treatment targeting gut dysbiosis in myalgic encephalomyelitis / chronic fatigue syndrome: neuropsychological symptoms and sex comparisons. J Transl Med 2018, 16:24.

Chalaziosis

Streptococcus thermophilus ST10 (DSM 25246)
Lactococcus lactis LCC02 (DSM 29536)
Lactobacillus delbrueckii subsp. *bulgaricus* LDB01 (DSM 16606)

Raw material

Finished dosage form

Daily dosage in clinical studies

1) 1 billion CFU/AFU ST10
+ 1 billion CFU/AFU LCC02
+ 1 billion CFU/AFU LDB01

Functionality

- **Help reduce time for complete resolution of chalazia**

Scientific support

CLINICAL STUDIES

1) Filippelli M, et al. Intestinal microbiome: a new target for chalaziosis treatment in children? Eur J Pediatr. 2021 Apr;180(4):1293-1298..

Uveitis

Bifidobacterium longum 04 (DSM 23233)
Bifidobacterium bifidum BB01 (DSM 22892)
Bifidobacterium breve BR03™ (DSM 16604)

Raw material

Finished dosage form

Daily dosage in clinical studies

1) 1 billion CFU *B. longum* 04
+ 1 billion CFU BB01
+ 1 billion CFU BR03

Functionality

- **Recurrent acute anterior uveitis**

Scientific support

CLINICAL STUDIES

1) Napolitano P, et al. Probiotic Supplementation Improved Acute Anterior Uveitis of 3-Year Duration: A Case Report. Am J Case Rep. 2021 Jul 17;22:e931321.

Dry Eye Disease

Bifidobacterium lactis BS01™
(LMG P-21384)

Lactobacillus acidophilus LA02
(DSM 21717)

Lacticaseibacillus paracasei LPC00
(LMG P-21380) (formerly *Lactobacillus paracasei*)

Lacticaseibacillus rhamnosus LR06
(DSM 21981) (formerly *Lactobacillus rhamnosus*)

Lactiplantibacillus plantarum LP02
(LMG P-210120) (formerly *Lactobacillus plantarum*)

Ligilactobacillus salivarius LS03
(DSM 22776) (formerly *Lactobacillus salivarius*)

+ *FOS*

BLEND

Raw material

Finished dosage form

Daily dosage in clinical studies

1) 1 billion CFU BS01 + 0.25 billion CFU/strain of LA02, LPC00, LR06, LP02 + 0.02 billion CFU LS03

Functionality

- **Strengthens the defense of the ocular surface system**

Scientific support

CLINICAL STUDIES

1) Chisari G et al. The coadministration of Lactobacillus and Bifidobacterium strains associated with short chain fructo-oligosaccharides reduces the damage of the ocular surface caused by dry eye syndrome. Minerva Oftalmol 2016 June;58(2):31-8.

Performance

Bifidobacterium breve BR03™ (DSM 16604)

Streptococcus thermophilus FP4 (DSM 18616)

BLEND

Raw material

Finished dosage form

Daily dosage in clinical studies

1) BR03 5 billion CFU + FP4 5 billion CFU

Functionality

- Immune response improving
- Performance enhancing

Scientific support

CLINICAL STUDIES

1) 1) Jäger R. et al. Probiotic *Streptococcus thermophilus* FP4 and *Bifidobacterium breve* BR03 Supplementation Attenuates Performance and Range-of-Motion Decrements Following Muscle Damaging Exercise. Nutrients. 2016 Oct 14;8(10). pii: E642.

2) Pane M. et al. Gut Microbiota, Probiotics, and Sport: From Clinical Evidence to Agonistic Performance. J Clin Gastroenterol, 2018;52:S46-S49.

IN VITRO STUDIES

a) Nicola S. et al. Interaction between probiotics and human immune cells: the prospective anti-inflammatory activity of *Bifidobacterium breve* BR03. AgroFOOD, 2010; 21(2):S44-47.

b) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains (BR03). J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

Internal data available upon request on CLA production and protection of gut epithelial barrier with BR03 (TEER)

Halitosis

Lacticaseibacillus rhamnosus LR06 (DSM 21981) (formerly *Lactobacillus rhamnosus*)

Lactiplantibacillus pentosus LPS01 (DSM 21980) (formerly *Lactobacillus pentosus*)

Lactiplantibacillus plantarum LP01™ (LMG P-21021) (formerly *Lactobacillus plantarum*)

Lactobacillus delbrueckii subsp. *delbrueckii* LDD01 (DSM 22106)

BLEND

Finished dosage form

Daily dosage in clinical studies

1) LR06 1.5 billion CFU + LPS01 1.5 billion CFU + LP01 1.5 billion CFU + LDD01 500 million CFU

Functionality

- Restoration of a healthy oral flora
- Improvement of the incidence and severity of bad breath (halitosis)
- Inhibition of pathogens and Volatile Sulphur Compounds producing bacteria

Scientific support

CLINICAL STUDIES

1) Del Piano M. et al. Correlation between specific bacterial groups in the oral cavity and the severity of halitosis: any possible beneficial role for selected *Lactobacilli*? J Gastroint Dig Syst, 2014; 4:197..

Refer to gastroenterology section for further clinical studies on this blend

Internal data on immunomodulation, anti-oxidant activity and epithelial barrier effect (TEER in Caco2 cells) available upon request for some of these strains

IN VITRO STUDIES

a) Mogna L. et al. In Vitro Inhibition of *Klebsiella pneumoniae* by *Lactobacillus delbrueckii* subsp. *delbrueckii* LDD01 (DSM 22106). An Innovative Strategy to Possibly Counteract Such Infections in Humans? J Clin Gastroenterol, Vol 50, Supp. 2, November/December 2016.

b) Mogna L. et al. Assessment of the in vitro inhibitory activity of specific probiotic bacteria against different *Escherichia coli* strains (LP01, LR06, LPS01, LDD01). J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

c) Deidda F. et al. (2020) How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J. Prob. Health 8:216 (LP01).

Caries

Lacticaseibacillus rhamnosus GG (ATCC 53103) (formerly *Lactobacillus rhamnosus*)

Raw material

Finished dosage form

Daily dosage in clinical studies

1) 5 billion CFU + 1 billion cells

Functionality

- Oral health
- Caries prevention
- Inhibition of *Streptococcus mutans*

Scientific support

One of the most recognized probiotic strains in the world, with over 1000 publications and 300 clinical trials including several demonstrated significant benefits in oral health and caries prevention

CLINICAL STUDIES

1) Ahola AJ, et al. Short-term consumption of probiotic-containing cheese and its effect on dental caries risk factors. Arch Oral Biol. 2002 Nov;47(11):799-804.

All our strains are available with the application of our proprietary technologies:

Microencapsulation

- **Protect the probiotics from gastric acid, human bile and pancreatic secretions.**
- **Improve stability in the Finished Dosage Form**

Scientific support

CLINICAL STUDIES

1) Del Piano M. et al. Comparison of the Kinetics of Intestinal Colonization by Associating 5 Probiotic Bacteria Assumed Either in Microencapsulated or in a Traditional, Uncoated Form. (LA02, LR04, GG, LR06, BS01) J Clin. Gastroenterol 2012;46:S85-S92.
2) Del Piano M. et al. Evaluation of the Intestinal Colonization by Microencapsulated Probiotic Bacteria in Comparison With the Same Uncoated Strains. (LP01, BR03) J Clin Gastroenterol, Vol 44, Supp. 1, September 2010.

COMMENT

Del Piano M. et al. Is microencapsulation the future of probiotic preparations? The increased efficacy of gastro-protected probiotics. Gut Microbes 2:2, 120 123 March April 2011.

Flow cytometry

- **Methodology of enumeration of live, microencapsulated and/or inactivated bacteria, with increased accuracy compared to plate count, and retrieving more information on the bacteria's status.**

Scientific support

1) Pane M. et al. Flow cytometry rapid quantification of probiotic bacteria in lyophilised cultures and commercial products. Nutrafoods, 2013, 12:N35-N37.
2) Pane M. et al. Flow Cytometry Evolution of Microbiological Methods for Probiotics Enumeration. J Clin Gastroenterol 2018;52:S41-S45.
3) Foglia C et al. New insights in enumeration methodologies of probiotic cells in finished products. J Microbiol Methods. 2020 Aug;175:105993.

Further publications and an ISO standard, ISO 19344 IDF 232, support the use of this method for enumeration of live bacteria

Allergen free

- **Allows an improved safety profile including for pediatric population, and probiotics that can be assumed by all.**

Scientific support

1) Mogna G. et al. Allergen-free Probiotics. J Clin Gastroenterol 2008; S201-S204.

Our probiotics can be produced in absence of all allergens listed in EU 1169/2011 Annex II

Surfing together
the Probiotic Galaxy

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support@probiotical.com