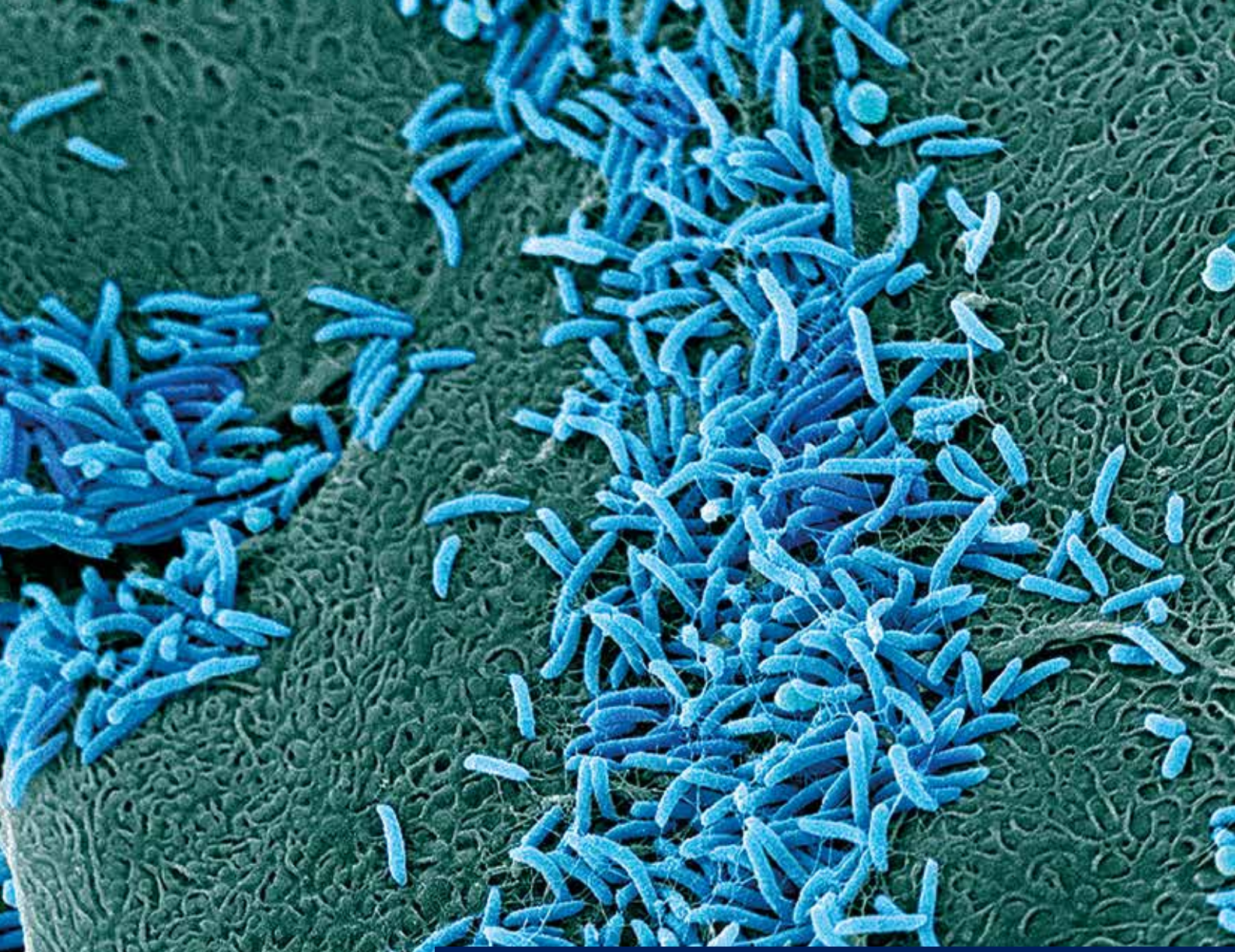
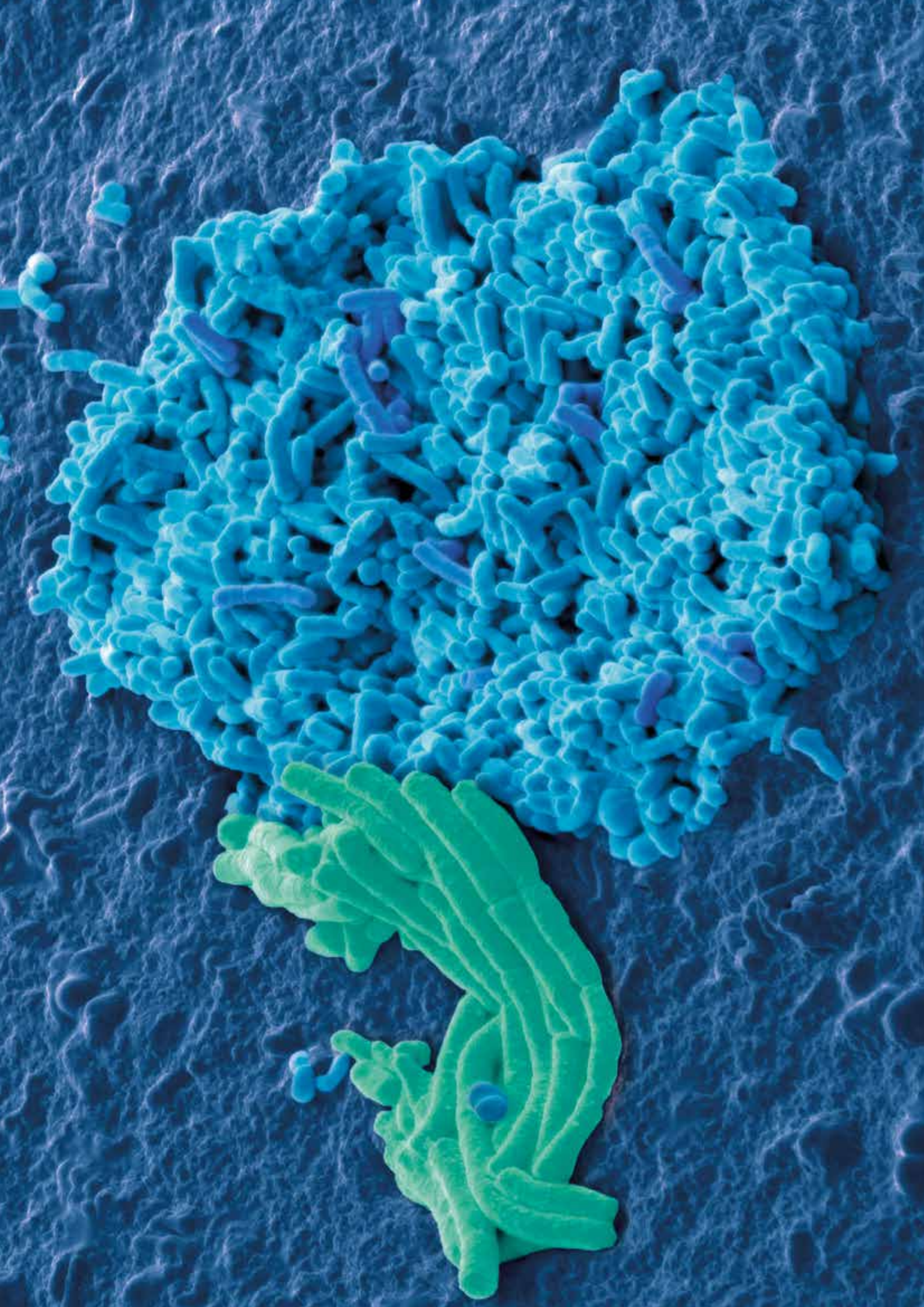


Strains Catalogue

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

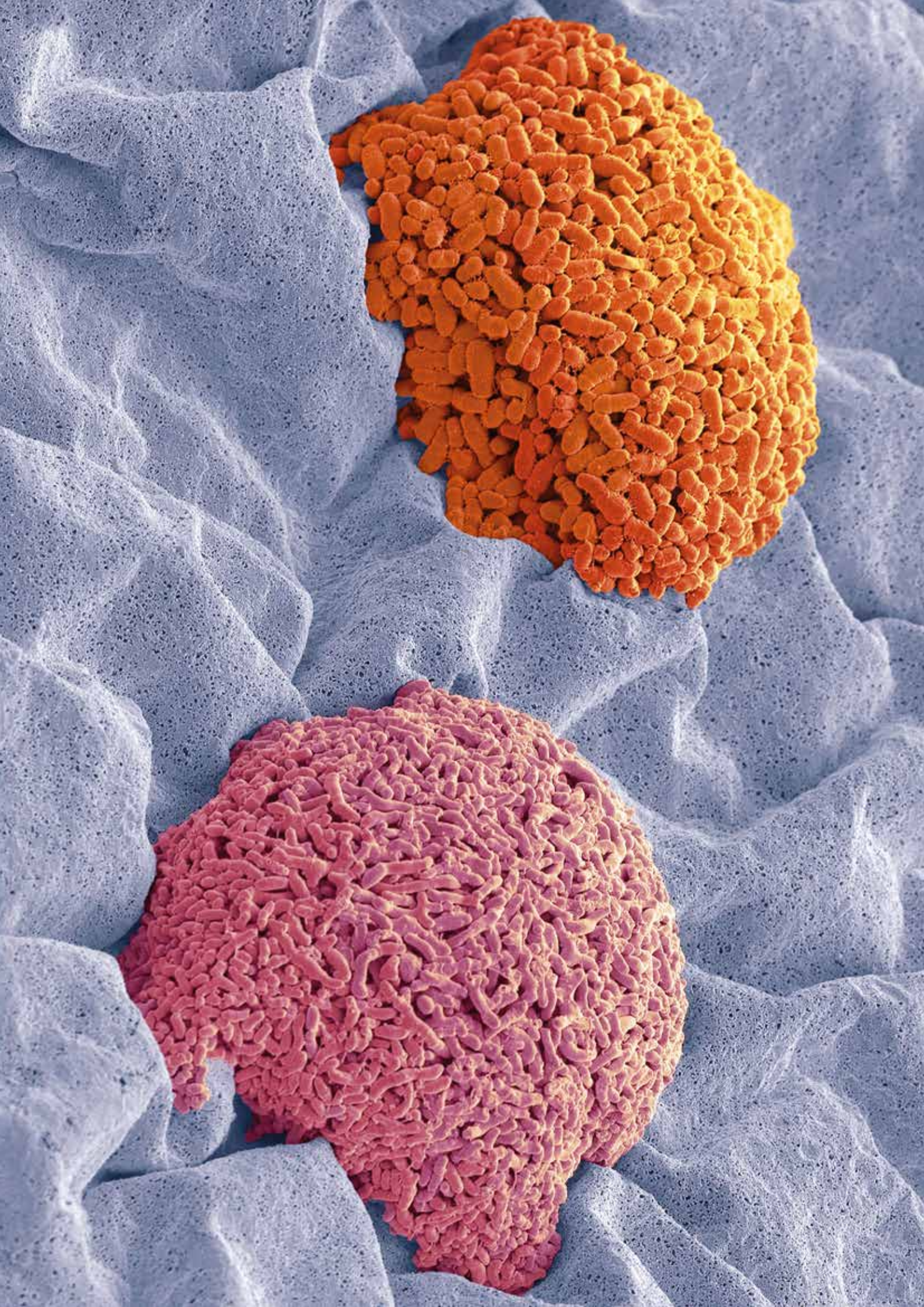
Lactobacillus

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)

BIFIBABY®

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**

Daily dosage in clinical studies

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

Available

Blend

Finished dosage form

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 and pag. 44 for combination in pediatric obesity and insulin resistance

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)

Functionality

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

Available

Blend

Finished dosage form

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.

d) Savino F, et al. Antagonistic effect of *Lactobacillus* strains against gas-producing coliforms isolated from colicky infants. BMC Microbiol. 2011 Jun 30;11:157.

Celiac disease

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

CELIAFLORA™ JUNIOR

Functionality

- **To decrease gut inflammation and ER stress in celiac disease**

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

Available

Blend

Finished dosage form

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 colic and pag. 44 for combination in pediatric obesity and insulin resistance

IN VITRO AND ANIMAL STUDIES

5) 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.
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) 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*)

CELIAFLORA™ ADULTS

Functionality

- **To decrease inflammation and ER stress in celiac disease**

Available

Blend

Finished dosage form

Scientific support

Internal data on membrane integrity available on request

IN VITRO AND ANIMAL STUDIES

a) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216
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) 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.
d) 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)

FLOR-EN® ADULTS

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**

Daily dosage in clinical studies

1, 2, 3) LP01 1 billion cells + LLC02 800 million cells + LLD01 200 million cells

Available

Blend

Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

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.

For studies on pharyngotonsillitis, laryngotracheitis, rhinosinusitis, upper respiratory diseases, and otitis refer to page 29.

IBD / Intestinal inflammation

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

CELIAFLORA™ IBD ADULTS

Functionality

- **To decrease inflammation and ER stress**
- **To increase and restore the expression of tight junction proteins**
- **To counteract both the apoptotic and the ferroptotic cell death in IBD**

Available

Blend

Finished dosage form

Scientific support

IN VITRO AND ANIMAL STUDIES

Internal data on membrane integrity available on request

a) Monzani R, et al. The Gut-Ex-Vivo System (GEVS) Is a Dynamic and Versatile Tool for the Study of DNBS-Induced IBD in BALB/C and C57BL/6 Mice, Highlighting the Protective Role of Probiotics. Biology (Basel). 2022 Oct 27;11(11):1574

See pag. 11 for studies published in celiac disease

IBS / Constipation

Lactiplantibacillus plantarum LPO1™ (LMG P-21021) (formerly Lactobacillus plantarum)

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

Daily dosage in clinical studies
1) 10 billion CFU

Available
- Single strain
- Blend
- Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

d) 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.

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

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

BIFIFIBER®

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

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

Available
- Single strain
- Blend
- Finished dosage form

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)

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

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

Available
- Single strain
- Blend
- Finished dosage form

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).
d) 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.
e) 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.

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)

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

Daily dosage in clinical studies
1) 10 billion CFU

Available
- Single strain
- Blend
- Finished dosage form

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. J Clin Gastroenterol. Vol 42, Suppl. 3, Part 2, Sept. 2008. (DSM 20074 was re-deposited as 22106).
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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.
d) 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.
e) 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.
f) 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.

IBS / Constipation

Lactiplantibacillus plantarum LPO1™ (LMG P-21021) (formerly *Lactobacillus plantarum*)
Bifidobacterium breve BRO3™ (DSM 16604)

BIFICOL®

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

Daily dosage in clinical studies
1) LPO1 5 billion CFU + BRO3 5 billion CFU
2) LPO1 5 billion CFU/strain vs. BRO3 1 billion cells/strain
3, 4) LPO1 2.5 billion CFU + BRO3 2.5 billion CFU
5) 10 billion CFU

Available
Single strain

Blend

Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

Internal data in vitro on gut permeability avaliable upon request

Lactiplantibacillus plantarum LPO1™ (LMG P-21021) (formerly *Lactobacillus plantarum*)
Lactobacillus acidophilus LAO2 (DSM 21717)

PROBIAL® Flat Belly

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

Daily dosage in clinical studies
1) LPO1 5 billion CFU + LAO2 5 billion CFU

Available
Single strain

Blend

Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.
b) 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.
c) 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 in vitro on gut permeability and anti-inflammatory activity available upon request

IBS / SUDD / Constipation

Bifidobacterium longum W11 (LMG P-21586)

BIFIFOS®

Functionality

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

Daily dosage in clinical studies

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

Available

Single strain

Blend

Finished dosage form

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 LRO4 (DSM 16605) (formerly *Lactobacillus rhamnosus*)

LACTARRHEA®

Functionality

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

Daily dosage in clinical studies

1) 10 billion CFU
2) 5 billion CFU or 1 billion cells

Available

- Single strain
- Blend
- Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 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*)

Functionality

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

Available

- Single strain
- Blend
- Finished dosage form

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 LRO4
(DSM 16605) (formerly Lactobacillus rhamnosus)
Limosilactobacillus reuteri LREO2
(DSM 23878) (formerly Lactobacillus reuteri)

FLOR-EN® Baby

Functionality
- **Prevention of antibiotic-associated diarrhea**

Daily dosage in clinical studies
1) LRO4 1 billion cells + LREO2 200 million cells

Available
- Single strain
- Blend
- Finished dosage form

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* LREO2-*Lacticaseibacillus rhamnosus* LRO4 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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 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 (LRO4).

Short Bowel Syndrome / D-lactic acidosis

Lacticaseibacillus rhamnosus GG
(ATCC 53103) (formerly *Lactobacillus rhamnosus*)
Bifidobacterium animalis subsp. *lactis* BSO1™
(LMG P-21384)
Bifidobacterium breve BRO3™
(DSM 16604)
Bifidobacterium longum BLO3
(DSM 16603)

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

Daily dosage in clinical studies
1) GG 25 billion CFU + BSO1 15 billion CFU + BRO3 5 billion CFU + BLO3 5 billion CFU

Available
- Single strain
- Blend
- Finished dosage form

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)

GASTROBARRIER®

Functionality

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

Daily dosage in clinical studies

1) LR06 3 billion AFU + LPS01 3 billion AFU + LP01 3 billion AFU + LDD01 1 billion AFU + NAC
2) LR06 3 billion AFU + LPS01 3 billion AFU+ LDD01 1 billion AFU
3) LR06, LPS01, LP01 1.5 billion AFU + LDD01 0.5 billion AFU

Available

Blend

Finished dosage form

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 2012;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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

d) 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.

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)

Functionality
- **Rebalance of intestinal microbiota**

Available
- Single strain
- Blend
- Finished dosage form

Scientific support

IN VITRO STUDIES

1) 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)

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

Daily dosage in clinical studies
1) 1 billion CFU + tara gum

Available
- Blend
- Finished dosage form

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.

Intestinal balance in elderly people

Lactiplantibacillus plantarum LPO1™ (LMG P-21021) (formerly *Lactobacillus plantarum*)

Bifidobacterium animalis subs. *lactis* BSO5 (DSM 23032)

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

PROBIAL® Age

Functionality

- **A safe and easy to administer probiotic blend in elderly treated with home enteral nutrition**

Daily dosage in clinical studies

1) BSO5 1 billion cells + LPO1 1 billion cells + Lb26 20mg + Zinc + Selenium

Available

Blend

Finished dosage form

Scientific support

CLINICAL STUDIES

1) Orlandoni P, et al. Safety and Efficacy of Probiotic Supplementation in Reducing the Incidence of Infections and Modulating Inflammation in the Elderly with Feeding Tubes: A Pilot, Double-Blind, Placebo-Controlled Study, "IntegPRO". Nutrients. 2021 Jan 27;13(2):391.

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 Semetabolizing *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.

Functional dyspepsia

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

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

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

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

PROBIAL® Stomach

Functionality

- **Reduce postprandial distress syndrome symptoms, alone or combined with standard pharmacological therapy**

Daily dosage in clinical studies

1) LP01 3 billion cell
+ LR04 1 billion cell
+ LPS01 0.8 billion cell
+ LDD01 0.2 billion cell
+ NAC

Available

Blend

Finished dosage form

Scientific support

CLINICAL STUDIES

1) Orlandoni P, et al. Safety and Efficacy of Probiotic Supplementation in Reducing the Incidence of Infections and Modulating Inflammation in the Elderly with Feeding Tubes: A Pilot, Double-Blind, Placebo-Controlled Study, "IntegPRO". Nutrients. 2021 Jan 27;13(2):391.

Antipathogen activity

Lactiplantibacillus plantarum LPO1™ (LMG P-21021) (formerly *Lactobacillus plantarum*)

Lactiplantibacillus plantarum LPO2 (LMG P-21020) (formerly *Lactobacillus plantarum*)

Lacticaseibacillus rhamnosus LRO4 (DSM 16605) (formerly *Lactobacillus rhamnosus*)

Lacticaseibacillus rhamnosus LRO6 (DSM 21981) (formerly *Lactobacillus rhamnosus*)

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

Bifidobacterium breve BRO3™ (DSM 16604)

Functionality

- **Inhibition of *E. coli***

Available

- Single strain
- Blend
- Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

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

Functionality

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

Available

- Blend
- Finished dosage form

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)*
Lacticaseibacillus rhamnosus LR04 (DSM 16605) *(formerly Lactobacillus rhamnosus)*
Lactobacillus acidophilus LA02 (DSM 21717)
Limosilactobacillus reuteri LRE02

Available

Single strain

Blend

Finished dosage form

Lactiplantibacillus plantarum LP14 (DSM 33401) *(formerly Lactobacillus plantarum)*
Limosilactobacillus fermentum LF26 (DSM 33402) *(formerly Lactobacillus fermentum)*
Lacticaseibacillus casei LC04 (DSM 33400) *(formerly Lactobacillus casei)*
Ligilactobacillus salivarius LS01™ (DSM 22775) *(formerly Lactobacillus salivarius)*
Lacticaseibacillus paracasei LPC09 (DSM 24243) *(formerly Lactobacillus paracasei)*

Available

Blend

Finished dosage form

Functionality

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

Scientific support

IN VITRO STUDIES

1) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

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

Functionality

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

Available

Single strain

Blend

Finished dosage form

Scientific support

Internal data available upon request

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

IN VITRO STUDIES

a) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

Antipathogen activity

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

Functionality
- Anti-pathogen activity

Available
- Single strain
- Blend
- Finished dosage form

Scientific support

Internal data available upon request

Bifidobacterium breve BR03™
(DSM 16604)

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

Available
- Single strain
- Blend
- Finished dosage form

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.

d) 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.

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*)

Functionality
- Inhibition of pathogenic *Candida* species

Available
- Blend
- Finished dosage form

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

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

Available
- Single strain
- Blend
- Finished dosage form

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 LRO4
(DSM 16605) (formerly *Lactobacillus rhamnosus*)

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

Available
- Single strain
- Blend
- Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

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

Lacticaseibacillus rhamnosus LRO6
(DSM 21981) (formerly *Lactobacillus rhamnosus*)

Functionality
- Capability to counteract colonization of oxacillin- and meticillin- resistant *S. aureus*

Available
- Single strain
- Blend
- Finished dosage form

Scientific support

IN VITRO STUDIES

a) Squarzanti DF, et al. Il surnatante di *Lactobacillus johnsonii* LJ002 coltivato in un terreno vegetale contrasta la virulenza del patogeno opportunista *Staphylococcus aureus*. Poster from the XIX CONGRESSO NAZIONALE CSID, held in Novara on 1-2 October, 2022

Detoxification

Lactiplantibacillus plantarum LP14 (DSM 33401) (formerly *Lactobacillus plantarum*)
Lactobacillus acidophilus LA06 (DSM 23033)
Lactobacillus crispatus LCR04 (DSM 33487)

Available

Blend

Finished dosage form

Lactobacillus acidophilus LA02 (DSM 21717)
Lactiplantibacillus plantarum LP01™ (LMG P-21021) (formerly *Lactobacillus plantarum*)
Lactiplantibacillus plantarum LP02 (LMG P-21020) (formerly *Lactobacillus plantarum*)
Lactiplantibacillus pentosus LPS01 (DSM 21980) (formerly *Lactobacillus pentosus*)
Levilactobacillus brevis LBR01 (DSM 23034) (formerly *Lactobacillus brevis*)

Available

Single strain

Blend

Finished dosage form

Functionality

- Detoxification of biogenic amines, heavy metals and glyphosate

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Scientific support

IN VITRO STUDIES

a) Rapacioli S, et al. Innovative Perspectives on the detoxifying effects of *lactobacillus* probiotic strains. Poster from the 12th Probiotics, Prebiotics & New Foods, Nutraceutical and Botanicals for Nutrition & Human and Microbiota Health, held in Rome on 12-14 September 2021.

Immune stimulation / Respiratory tract infections

Lacticaseibacillus rhamnosus LRO4
(DSM 16605) (formerly *Lactobacillus rhamnosus*)

Lacticaseibacillus rhamnosus LRO5
(DSM 19739) (formerly *Lactobacillus rhamnosus*)

Lactiplantibacillus plantarum LPO1™
(LMG P-21021) (formerly *Lactobacillus plantarum*)

Lactiplantibacillus plantarum LPO2
(LMG P-21020) (formerly *Lactobacillus plantarum*)

Bifidobacterium animalis subsp. *lactis* BSO1™
(LMG P-21384)

BIFIVIR®

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

Daily dosage in clinical studies
1, 2) LRO4 2.5 billion CFU + LRO5 2.5 billion CFU + LPO1 2.5 billion CFU + LPO2 2.5 billion CFU + BSO1 5 billion CFU + FOS or GOS

Available
Single strain

Blend

Finished dosage form

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. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.
c) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.
d) 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.
e) Visciglia A. et al. Probiotics: a potential therapeutic strategy in respiratory infections. Poster from the 12th Probiotics, Prebiotics & New Foods, Nutraceutical and Botanicals for Nutrition & Human and Mirobiota Health, held in Rome on 12-14 September 2021

Immune stimulation / Respiratory tract infections

Bifidobacterium animalis subsp. *lactis* BSO1™ (LMG P-21384)

Lacticaseibacillus rhamnosus LRO4 (DSM 16605) (formerly *Lactobacillus rhamnosus*)

Lactiplantibacillus plantarum LPO2 (LMG P-21020) (formerly *Lactobacillus plantarum*)

BIFIMMUN®

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**

Daily dosage in clinical studies

1) BSO1 10 billion CFU + LRO4 10 billion CFU + LPO2 10 billion CFU + FOS

Available

Single strain

Blend

Finished dosage form

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* BSO1 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. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

c) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

d) respiratory infections. Poster from the 12th Probiotics, Prebiotics & New Foods, Nutraceutical and Botanicals for Nutrition & Human and Mirobiota Health, held in Rome on 12-14 September 2021 No: 216.

Lactiplantibacillus plantarum LPO1™ (LMG P-21021) (formerly *Lactobacillus plantarum*)

Lactococcus lactis LLC02 (DSM 29536)

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

Functionality

- **Reduction of intensity of symptoms; frequency of clinical relapse additional medication in patients with laryngotracheitis, or acute and chronic rhinosinusitis, otitis media, or pharyngotonsillitis.**

Daily dosage in clinical studies

1, 2, 3) LPO1 1 billion cells + LLC02 800 million cells + LLD01 200 million cells

Available

Blend

Finished dosage form

Scientific support

CLINICAL STUDIES

1) Gelardi M, et al. A probiotic mixture in patients with upper respiratory diseases: the point of view of the otorhinolaringologist. J Biol Regul Homeost Agents. 2020 Nov-Dec;34(6 Suppl. 1):5-10

2) La Mantia I, et al. Probiotics in the add-on treatment of laryngotracheitis: a clinical experience. J Biol Regul Homeost Agents. 2020 Nov-Dec;34(6 Suppl. 1):35-40

3) La Mantia I, et al. Probiotics in the add-on treatment of pharyngotonsillitis: a clinical experience. J Biol Regul Homeost Agents. 2020 Nov-Dec;34(6 Suppl. 1):11-18

4) Gelardi M, et al. Probiotics in the add-on treatment of otitis media in clinical practice. J Biol Regul Homeost Agents. 2020 Nov-Dec;34(6 Suppl. 1):19-26

5) La Mantia I, et al. Probiotics in the add-on treatment of rhinosinusitis: a clinical experience. J Biol Regul Homeost Agents. 2020 Nov-Dec;34(6 Suppl. 1):27-34

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

c) Amoruso A. et al. (2019) A Systematic Evaluation of the Immunomodulatory and Functional Properties of Probiotic *Bifidobacterium Breve* BR03 (DSM 16604) *Lactobacillus plantarum* LPO1 (LMG P-21021). J Prob Health. 7:214.

Immune stimulation

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

Functionality
- **Strengthening of natural defences and natural immunity**

Available
- Single strain
- Blend
- Finished dosage form

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 LREO2 (DSM 23878) (formerly *Lactobacillus reuteri*)

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

Available
- Single strain
- Blend
- Finished dosage form

Scientific support

IN VITRO STUDIES

a) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

Internal data available on immune stimulation available upon request

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

Scientific support

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

Available
- Single strain
- Blend
- Finished dosage form

Immune stimulation

Lactobacillus crispatus LCR04 (DSM 33487)
Limosilactobacillus fermentum LF15 (DSM 26955) *(formerly Lactobacillus fermentum)*
Lactiplantibacillus plantarum LP14 *(DSM 33401)* *(formerly Lactobacillus plantarum)*
Limosilactobacillus reuteri LRE11 (DSM 33827) *(formerly Lactobacillus reuteri)*
Ligilactobacillus salivarius LS03 (DSM 22776) *(formerly Lactobacillus salivarius)*
Bifidobacterium bifidum BB10 (DSM33678)

Available

Blend

Finished dosage form

Bifidobacterium longum BL03 (DSM 16603)

Available

Single strain

Blend

Finished dosage form

Functionality

- **Strengthening of natural defences against respiratory diseases, particularly against coronavirus SARS-CoV-2**

Scientific support

IN VITRO STUDIES

a) Visciglia A. et al. Probiotics: a potential therapeutic strategy in respiratory infections. Poster from the 12th Probiotics, Prebiotics & New Foods, Nutraceutical and Botanicals for Nutrition & Human and Mirobiota Health, held in Rome on 12-14 September 2021

Asthma

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

BIFIASTHM®

Functionality

- **Immunomodulatory activity in asthmatic subjects**
- **Reduce frequency and severity of asthma exacerbations**

Daily dosage in clinical studies

1) LS01 1 billion CFU/AFU + B632 1 billion CFU/AFU

Available

Blend

Finished dosage form

Scientific support

CLINICAL STUDIES

1) Drago L, et al. The Probiotics in Pediatric Asthma Management (PROPAM) Study in the Primary Care Setting: A Randomized, Controlled, Double-Blind Trial with *Ligilactobacillus salivarius* LS01 (DSM 22775) and *Bifidobacterium breve* B632 (DSM 24706). J Immunol Res. 2022 Jan 17;2022:3837418.

2) Ciprandi G, et al. The Probiotics in Pediatric Asthma Management (PROPAM) study: A Post Hoc analysis in allergic children. Ann Allergy Asthma Immunol. 2022 Jul;129(1):111-113.

3) Ciprandi G, et al. The PRObiotics in Pediatric Asthma Management (PROPAM) study: A post hoc analysis in preschoolers. Pediatr Pulmonol. 2022 May;57(5):1355-1357.

4) Drago L, et al. A post hoc analysis on the effects of a probiotic mixture on asthma exacerbation frequency in schoolchildren. ERJ Open Res. 2022 May 9;8(2):00020-2022

5) Ciprandi G, Tosca MA. Probiotics in Children with Asthma. Children. 2022; 9(7):978

Internal data available on the immunomodulation capacities of the strains

Allergic rhinitis

Lactiplantibacillus plantarum LP01™ (LMG P-21021) (formerly *Lactobacillus plantarum*)
Lacticaseibacillus paracasei LPCO0 (LMG P-21380) (formerly *Lactobacillus paracasei*)

ALLERFLORA®

Functionality

- **Reduce total nasal symptoms**
- **Improve severity of allergic rhinitis**
- **Decrease administration of corticosteroids and antihistamine drugs**

Daily dosage in clinical studies

1) LP01 1 billion cells + LPCO0 1 billion cells + FOS

Available

Single strain

Blend

Finished dosage form

Scientific support

CLINICAL STUDIES

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. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

b) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

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.

Grass pollen allergy

Bifidobacterium animalis subsp. *lactis* BSO1™ (LMG P-21384)

Lacticaseibacillus rhamnosus LRO5 (DSM 19739) (formerly *Lactobacillus rhamnosus*)

Functionality

- **Immunomodulation**
- **IL-10 stimulation**
- **Downregulation of grass pollen extract-induced Th2 immune response**

Available

Single strain

Blend

Finished dosage form

Scientific support

IN VITRO STUDIES

a) Heldner A, et al. Ex Vivo Immunomodulatory Effects of *Lactobacillus*-, *Lacticaseibacillus*-, and *Bifidobacterium*-Containing Synbiotics on Human Peripheral Blood Mononuclear Cells and Monocyte-Derived Dendritic Cells in the Context of Grass Pollen Allergy. Probiotics Antimicrob Proteins. 2022 Feb 3.

Immunomodulation in vitro data available upon request

See next page fo for study on the combination in atopic dermatitis

Atopic dermatitis

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

FLORATOPIC®

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***

Daily dosage in clinical studies

1, 2, 3) 2 billion CFU
4) LS01 5 billion CFU
+ ST10 2 billion CFU
+ Tara gum

Available

Blend

Finished dosage form

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. J Clin Gastroenterol. 2018 May 18.
c) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 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*)

PROBIAL® Skin Atopic

Functionality

- **Improve AD severity**
- **Decrease administration of corticosteroids, antihistamine drugs and calcineurin inhibitors**

Daily dosage in clinical studies

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

Available

Single strain

Blend

Finished dosage form

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.

IN VITRO STUDIES

a) Heldner A, et al. Ex Vivo Immunomodulatory Effects of *Lactobacillus*-, *Lacticaseibacillus*-, and *Bifidobacterium*-Containing Synbiotics on Human Peripheral Blood Mononuclear Cells and Monocyte-Derived Dendritic Cells in the Context of Grass Pollen Allergy. Probiotics Antimicrob Proteins. 2022 Feb 3.

Immunomodulation in vitro data available upon request

Rosacea / Chronic urticaria

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

Bifidobacterium breve BR03™ (DSM 16604)

BIFIDERM®

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**

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

Available

Blend

Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

d) 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.

e) 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.

Skin remediation and wound healing

Lactobacillus acidophilus LA02
DSM 21717)

Levilactobacillus brevis LBR01
(DSM 23034) (formerly *Lactobacillus brevis*)

Available

Single strain

Lactobacillus acidophilus LA06
(DSM 23033)

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

Limosilactobacillus reuteri LRE11
(DSM33827) (formerly *Lactobacillus reuteri*)

Available

Blend

Finished dosage form

Functionality

- **Capability of the strains (either live or inactivated form) to positively affect skin restoration process**

Scientific support

IN VITRO STUDIES

a) Amoruso A, et al. Viable and Heat-Inactivated Probiotic Strains Modulate Cytokine Profile in Wound-Healing. Poster from the 15th International Scientific Conference on Probiotics, Prebiotics, Gut Microbiota and Health – IPC2022, held in Bratislava on 27-30 June 2022

Acne

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

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

Available

Blend

Finished dosage form

Scientific support

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.

Ligilactobacillus salivarius LS03
(DSM 22776) (formerly *Lactobacillus salivarius*)
Bifidobacterium breve BR03™
(DSM 16604)
Lacticaseibacillus casei LC03
(DSM 27537) (formerly *Lactobacillus casei*)

BIFIACNEL®

Functionality
- Inhibition of C. acnes and its induction of IL-8
- IL-8 inhibition
- Anti-inflammatory activity (IL-10)

Daily dosage in clinical studies

1) LS03 1 billion CFU/AFU+ BR03 0.5 billion CFU/AFU + LC03 0.5 billion CFU/AFU

Available

Blend

Finished dosage form

Scientific support

CLINICAL STUDIES

1) Rinaldi F, et al. Facial Acne: A Randomized, Double-Blind, Placebo-Controlled Study on the Clinical Efficacy of a Symbiotic Dietary Supplement. Dermatol Ther (Heidelb). 2022 Feb;12(2):577-589.

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.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.

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.

Antioxidant

Bifidobacterium animalis subsp. *lactis* BS05
(DSM 23032)
Lactobacillus acidophilus LA06
(DSM 23033)

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

Available

Blend

Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

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

Available

Blend

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)

Available

Single strain

Blend

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. J Clin Gastroenterol. 2012; 46 Suppl.S29-32.

c) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

d) 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.

e) 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.

Antioxidant

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

under worldwide exclusive license from BIOMAN for nutraceutical and pharma applications

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**

Available

Single strain

Blend

Finished dosage form

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

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**

Available

Single strain

Blend

Finished dosage form

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)

Functionality

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

Available

Blend

Finished dosage form

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.

Healthy mineral status

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

Lactobacillus acidophilus LA02 (DSM 21717)

PROBIAL® BONE

Functionality

- **Maintain a healthy mineral status**
- **Increasing hair content of Ca, Mg and Fe**
- **Reduce Cu hair content**

Daily dosage in clinical studies

1) BS01 2 billion CFU + LA02 2 billion CFU

Available

- Single strain
- Blend
- Finished dosage form

Scientific support

CLINICAL STUDIES

1) Czajeczny D, et al. Effects of *Bifidobacterium Lactis* BS01 and *Lactobacillus Acidophilus* LA02 on cognitive functioning in healthy women. Appl Neuropsychol Adult. 2021 Sep 7:1-9.

Cholesterol management

Bifidobacterium lactis MB2409 (DSM 23733)
Bifidobacterium bifidum MB109 (DSM 23731)
Bifidobacterium longum O4 (DSM 23233)

BIFISTEROL® Junior

Functionality
- Cardiovascular health
- Cholesterol lowering

Daily dosage in clinical studies
1 billion CFU/strain

Available
- Blend
- Finished dosage form

Scientific support

CLINICAL STUDIES

1) 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.

b) De Prisco A. et al. An interesting Mechanism of Cholesterol Reduction by Probiotic Strains. Poster from the 15th International Scientific Conference on Probiotics, Prebiotics, Gut Microbiota and Health – IPC2022, held in Bratislava on 27-30 June 2022

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

Functionality
- Cardiovascular health
- Cholesterol lowering

Available
- Blend
- Finished dosage form

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)

Functionality
- Cardiovascular health
- Cholesterol lowering

Available
- Single strain
- Blend
- Finished dosage form

Scientific support

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

Weight management

Bifidobacterium breve BR03™ (DSM 16604)
Bifidobacterium adolescentis BA02 (DSM 18351) (formerly ALB 1)

Available

Single strain

Lactiplantibacillus plantarum LP14 (DSM 33401) (formerly *Lactobacillus plantarum*)
Limosilactobacillus reuteri LRE11 (DSM33827) (formerly *Lactobacillus reuteri*)
Bifidobacterium longum O4 (DSM 23233)
Bifidobacterium bifidum MB109 (DSM 23731)

Available

Blend

Finished dosage form

Functionality

- Cardiovascular health
- Cholesterol lowering

Scientific support

IN VITRO STUDIES

a) De Prisco A. et al. An interesting Mechanism of Cholesterol Reduction by Probiotic Strains. Poster from the 15th International Scientific Conference on Probiotics, Prebiotics, Gut Microbiota and Health – IPC2022, held in Bratislava on 27-30 June 2022

Weight management

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

BIFISLIM® Junior

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

Available

Blend

Finished dosage form

Scientific support

CLINICAL STUDIES

1) 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.

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.

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) 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.

e) De Prisco A. et al. An interesting Mechanism of Cholesterol Reduction by Probiotic Strains. Poster from the 15th International Scientific Conference on Probiotics, Prebiotics, Gut Microbiota and Health – IPC2022, held in Bratislava on 27-30 June 2022

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

Bifidobacterium longum O4 (DSM 23233)

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

Daily dosage in clinical studies

1) 1 billion CFU

Available

Blend

Finished dosage form

Scientific support

CLINICAL STUDIES

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

IN VITRO STUDIES

a) De Prisco A. et al. An interesting Mechanism of Cholesterol Reduction by Probiotic Strains. Poster from the 15th International Scientific Conference on Probiotics, Prebiotics, Gut Microbiota and Health – IPC2022, held in Bratislava on 27-30 June 2022

Internal data available upon request

Lactobacillus gasseri LGS06 (DSM 32405)

Functionality
- Weight management

Available

Single strain

Blend

Finished dosage form

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*)**

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

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

Available
- **Blend**
- **Finished dosage form**

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*)**

Functionality
- **Inhibition of *Candida* strains**

Available
- **Single strain**
- **Blend**
- **Finished dosage form**

Scientific support

Internal vitro data, available upon request

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

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

Available
- **Blend**
- **Finished dosage form**

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*)**

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

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

Available
- **Blend**
- **Finished dosage form**

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*)**

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

Available
- **Blend**
- **Finished dosage form**

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*)**

Functionality
- **Vaginal health**
- **Inhibition of *Candida* growth**

Available
- **Blend**
- **Finished dosage form**

Scientific support.

Internal vitro data, available upon request

Candida

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

ACTICAND®

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

Daily dosage in clinical studies

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

Available

Blend

Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

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

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

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

Available

Single strain

Blend

Finished dosage form

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.

Bacterial vaginosis

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

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

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

Available
- Blend
- Finished dosage form

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*)

ACTIVAG®

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

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

Available
- Blend
- Finished dosage form

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*)

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

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

Available
- Blend
- Finished dosage form

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* BAO5 (DSM 18352)

Functionality
- **Production of folic acid**
- **Rebalance of intestinal microbiota**

Daily dosage in clinical studies
1) 5 billion CFU

Available
- **Blend**
- **Finished dosage form**

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) 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.

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

under worldwide exclusive license from BIOMAN for nutraceutical and pharma applications

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

Available
- **Single strain**
- **Blend**
- **Finished dosage form**

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 LREO2 (DSM 23878) (formerly *Lactobacillus reuteri*)

Functionality
- **Production of vitamin B12**
- **Antipathogen activity**

Available
- **Single strain**
- **Blend**
- **Finished dosage form**

Scientific support

IN VITRO STUDIES

a) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

Internal in vitro data available upon request

Pregnancy and Vaginal health

Lactobacillus crispatus LCR01 (DSM 24619)

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

Available
- Single strain
- Blend
- Finished dosage form

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)

Functionality
- Vaginal health
- Rebalance of a healthy vaginal microbiota

Available
- Single strain
- Blend
- Finished dosage form

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*.

Antipathogen activity

Lactobacillus acidophilus LA02 (DSM 21717)

Available

Single strain

Lactobacillus crispatus LCR04 (DSM 33487)

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

Available

Blend

Finished dosage form

Functionality

- **Capability of the strains (either live or inactivated form) to counteract *Candida albicans* and *G. vaginalis* and their related detrimental effects on vaginal epithelium and mucosa**

Scientific support

IN VITRO STUDIES

1) Amoruso A. et al. Probiotics as a Valid Strategy for Vaginal Application. Poster from the 15th International Scientific Conference on Probiotics, Prebiotics, Gut Microbiota and Health – IPC2022, held in Bratislava on 27-30 June 2022

UTI

Lactiplantibacillus plantarum LPO1™ (LMG P-21021) (formerly *Lactobacillus plantarum*)
Lacticaseibacillus paracasei LPC09 (DSM 24243) (formerly *Lactobacillus paracasei*)
Streptococcus thermophilus ST10 (DSM 25246)

BIFICIST®

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

Daily dosage in clinical studies

1) LPO1 2.5 billion cells + LPC09 1 billion cells + ST10 1 billion cells + tara gum + cranberry extract + D-mannose

Available

Blend

Finished dosage form

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.

c) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

d) 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.

Lactiplantibacillus plantarum LPO1™ (LMG P-21021) (formerly *Lactobacillus plantarum*)
Lactiplantibacillus plantarum LPO2 (LMG P-21020) (formerly *Lactobacillus plantarum*)
Lacticaseibacillus rhamnosus LRO4 (DSM 16605) (formerly *Lactobacillus rhamnosus*)
Lacticaseibacillus rhamnosus LRO6 (DSM 21981) (formerly *Lactobacillus rhamnosus*)
Lactiplantibacillus pentosus LPS01 (DSM 21980) (formerly *Lactobacillus pentosus*)
Bifidobacterium breve BRO3™ (DSM 16604)

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

Available

Single strain

Blend

Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

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) 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.

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

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

Functionality

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

Available

Blend

Finished dosage form

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)

Functionality

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

Available

Blend

Finished dosage form

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

Functionality

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

Available

Single strain

Blend

Finished dosage form

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.

Prostate Health

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

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

BIFIPROST®

Functionality

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

Daily dosage in clinical studies

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

Available

Blend

Finished dosage form

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 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.

d) 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.

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

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**

Available

Single strain

Blend

Finished dosage form

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 Semetabolizing *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.

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

Kidney Stones

Available

Blend

Finished dosage form

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

Available

Single strain

Blend

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)

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. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

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) 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.

e) 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 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*)

BIFIZEN®

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

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

Available
- **Blend**
- **Finished dosage form**

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. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.
b) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.
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) Visciglia A., et al. Probiotics and Gut-Brain Axis: Insights on local and systemic mechanisms of action. Poster form the 12th Probiotics, Prebiotics & New Foods, Nutraceutical and Botanicaks for Nutrition & Human and Microbiota Health, held in Rome on 12-14 September 2021.
e) De Prisco A. et al. Strain-specific Production of GABA by Lactobacilli and Bifidobacteria Probiotics. Poster from the 15th International Scientific Conference on Probiotics, Prebiotics, Gut Microbiota and Health – IPC2022, held in Bratislava on 27-30 June 2022

Neurotransmitters production

Levilactobacillus brevis LBR01
(DSM 23034) (formerly *Lactobacillus brevis*)

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

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

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

Bifidobacterium adolescentis BA02
(DSM 18351) (formerly ALB 1)

Available

Single strain

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

Limosilactobacillus reuteri LRE03
(DSM 23879) (formerly *Lactobacillus plantarum*)

Limosilactobacillus reuteri LRE11
(DSM 33827) (formerly *Lactobacillus reuteri*)

Bifidobacterium longum DLBL09
(DSM 25671)

Available

Blend

Finished dosage form

Functionality

- **Strain-specific ability of GABA production**

Scientific support

IN VITRO STUDIES

a) De Prisco A. et al. Strain-specific Production of GABA by Lactobacilli and Bifidobacteria Probiotics. Poster from the 15th International Scientific Conference on Probiotics, Prebiotics, Gut Microbiota and Health – IPC2022, held in Bratislava on 27-30 June 2022.

Parkinson Disease

Available

Blend

Finished dosage form

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

Available

Single strain

Blend

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)

Functionality
- Modulate the release of cytokines and ROS in immune cells from Parkinson disease's suffering patients
- Restore epithelial damage
- Inhibit *E. coli* and *K. pneumoniae* overgrowth

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) 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.

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.

Autism / ADHD

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

Functionality
- Autism and ADHD prevention

Daily dosage in clinical studies
1) 10 billion CFU

Available

Single strain

Blend

Finished dosage form

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*)
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)

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

Available

Blend

Finished dosage form

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.

IN VITRO STUDIES

a) 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.

Encephalopathy

Bifidobacterium longum W11 (LMG P-21586)

Functionality

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

Daily dosage in clinical studies

1) 5 billion CFU + FOS

Available

Single strain

Blend

Finished dosage form

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)

Functionality

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

Daily dosage in clinical studies

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

Available

- Single strain
- Blend
- Finished dosage form

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.

IN VITRO STUDIES

a) 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.

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.

Autism Spectrum Disorders (ASD)

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

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

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

Bifidobacterium longum DLBL07
(DSM25669)

Bifidobacterium longum DLBL08
(DSM 25670)

Bifidobacterium longum DLBL09
(DSM 25671)

Bifidobacterium longum DLBL10
(DSM 25672)

Bifidobacterium longum DLBL11
(DSM 25673)

PROBIAL® ASD

Functionality

- To reduce the severity of behavioural and GI symptoms in ASD patients
- To tackle Candida and coliforms colonization
- To regulate the immune system, counteracting increased inflammation and oxidative stress
- To protect and restore intestinal permeability

Daily dosage in clinical studies

1) LF10 4 billion CFU/AFU + LS03 2 billion CFU/AFU + LP01 2 billion CFU/AFU + DLBL mix 2 billion CFU/AFU

Available

Blend

Finished dosage form

Scientific support

CLINICAL STUDIES

1) Guidetti C, et al. Randomized Double-Blind Crossover Study for Evaluating a Probiotic Mixture on Gastrointestinal and Behavioral Symptoms of Autistic Children. J Clin Med. 2022 Sep 6;11(18):5263.

Chalaziosis

Streptococcus thermophilus ST10 (DSM 25246)
Lactococcus lactis LLC02 (DSM 29536)
Lactobacillus delbrueckii subsp. *bulgaricus* LDB01 (DSM 16606)

PROBIAL® CHALAT

Functionality

- **Help reduce time for complete resolution of chalazia**
- **Clinically tested in children and adults**

Daily dosage in clinical studies

1) 1 billion CFU/AFU ST10 + 1 billion CFU/AFU LLC02 + 1 billion CFU/AFU LDB01

Available

Blend

Finished dosage form

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.

2) Filippelli M, et al. Effectiveness of oral probiotics supplementation in the treatment of adult small chalazion. Int J Ophthalmol. 2022 Jan 18;15(1):40-44.

Uveitis

Bifidobacterium longum O4 (DSM 23233)
Bifidobacterium bifidum BB01 (DSM 22892)
Bifidobacterium breve BR03™ (DSM 16604)

PROBIAL® Vision UVEA

Functionality

- **Recurrent acute anterior uveitis**

Daily dosage in clinical studies

1) 1 billion CFU *B. longum* O4 + 1 billion CFU BB01 + 1 billion CFU BR03

Available

Blend

Finished dosage form

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.

IN VITRO STUDIES

a) 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.

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.

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*)

PROBIAL® Vision Dry

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

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

Available
- **Blend**
- **Finished dosage form**

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)

BIFISPORT®

Functionality
- **Immune response improving**
- **Performance enhancing**

Daily dosage in clinical studies

1) BR03 5 billion cell + FP4 5 billion cell

Available

Single strain

Blend

Finished dosage form

Scientific support

CLINICAL STUDIES

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. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

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) Ciprandi G, et al. The Probiotics in Pediatric Asthma Management (PROPAM) study: A Post Hoc analysis in allergic children. Ann Allergy Asthma Immunol. 2022 Jul;129(1):111-113.

e) Ciprandi G, et al. The PRObiotics in Pediatric Asthma Management (PROPAM) study: A post hoc analysis in preschoolers. Pediatr Pulmonol. 2022 May;57(5):1355-1357.

f) Drago L, et al. A post hoc analysis on the effects of a probiotic mixture on asthma exacerbation frequency in schoolchildren. ERJ Open Res. 2022 May 9;8(2):00020-2022

g) Ciprandi G, Tosca MA. Probiotics in Children with Asthma. Children. 2022; 9(7):978

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)

ALITOLACTIS®

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**

Daily dosage in clinical studies

1) LR06 1.5 billion AFU + LPS01 1.5 billion AFU + LP01 1.5 billion AFU + LDD01 0.5 billion AFU

Available

Blend

Finished dosage form

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. J Clin Gastroenterol. 2012; 46 Suppl:S29-32.

c) Deidda F, et al. How Probiotics may Kill Harmful Bacteria: The in vitro Activity against Some Haemolytic Strains. J Prob Health, 2020. Vol. 8 Iss.2 No: 216.

Caries

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

Functionality

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

Daily dosage in clinical studies

1) 5 billion CFU + 1 billion cells

Available

Single strain

Blend

Finished dosage form

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.

Oral pathogens inhibition

***Levilactobacillus brevis* LBRO1**
(DSM 23034) (formerly Lactobacillus brevis)
***Lacticaseibacillus rhamnosus* LRO4**
(DSM 16605) (formerly Lactobacillus rhamnosus)

Available

Single strain

***Lacticaseibacillus casei* LCO4**
(DSM 33400) (formerly Lactobacillus casei)
***Limosilactobacillus fermentum* LF26**
(DSM 33402) (formerly Lactobacillus fermentum)
***Limosilactobacillus reuteri* LRE11**
(DSM33827) (formerly Lactobacillus reuteri)
***Ligilactobacillus salivarius* LSO3**
(DSM 22776) (formerly Lactobacillus salivarius)
***Bifidobacterium breve* B632™**
(DSM 24706)
***Bifidobacterium longum* O4**
(DSM 23233)

Available

Blend

Finished dosage form

Functionality

- **Anti-pathogenic activity against the main pathogens involved in oral dysbiosis**

Scientific support

IN VITRO STUDIES

a) Zanetta P, et al. Selection of Probiotic Strains for Oral Health. Poster from the XIX CONGRESSO NAZIONALE CSID, held in Novara on 1-2 October, 2022

b) Zanetta P, et al. In Vitro Selection of Lactobacillus and Bifidobacterium Probiotic Strains for the Management of Oral Pathobiont Infections Associated to Systemic Diseases. Int J Mol Sci. 2022 Dec 18;23(24):16163

c) Zanetta P, et al . Growth Conditions Influence Lactobacillus Cell-Free Supernatant Impact on Viability, Biofilm Formation, and Co-Aggregation of the Oral Periodontopathogens Fusobacterium nucleatum and Porphyromonas gingivalis. Biomedicines. 2023 Mar 11;11(3):859

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.

MICROBAC

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

FLOW CYTOMETRY

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

ALLERGEN FREE

Surfing together
the Probiotic Galaxy

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support@probiotical.com

東洋サイエンス
Making Science , Growing Together

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