1 Product card

GastroCare capsules – Complete Biotics

Targeted symbiotic treatment for a healthy gut, stronger immunity, and oral hygiene.

Short description:

Patented probiotics with 10 selected strains and 15 billion colony forming bacteria (CFU) that promote gut microbial diversity and balance, strengthen the gut barrier, and reduce the risk of caries. With added inulin as prebiotic to enhance the growth of healthy bacteria.

Ingredients:

1. BIO-I 10S patented 10-strain probiotic blend (Lactobacilii & Bifidobacteria) from the pioneer and leading probiotic manufacturer (CSL, Sacco system) with $15x10^9$ CFU.
2. Inulin.
3. Gastro-resistant capsule for targeted delivery directly to the gut.

Problem statement:

Modern lifestyle and stress, global travel, antibiotic and other treatments (e.g. chemotherapy), emotional and psychological disorders all affect human gut.[1] 80% of immune cells are found in the gut, so gut health is important for immunity.

Current probiotics on the market compete with increasingly higher numbers of different types of bacteria and higher CFU numbers. However, specific strains have specific effects on the gut and so probiotic treatments should focus not on numbers easily communicable to patients but on optimality of strain mixtures given the specific issue at hand.[2]

Furthermore, probiotics without sufficient nurturing substances cannot develop. Probiotics combined with prebiotics (to form synbiotics) are more efficient.

Finally, stomach acid kills bacteria in probiotoics. A targetted delivery enhances probiotic effects.

Intended use:

Synbiotic (probiotic and prebiotic) supplementation.

Benefits:

1. Optimal mix of different bacterial strains for intended use.
2. Gastro-resistant capsule.
3. Gut microbial diversity and balance.
4. Strengthening of gut barrier.
5. Immunity enhancement.
6. Oral health.
7. Skin health.
8. Complement to certain therapies affected by or affecting or in close connection with the gut (e.g. antibiotic treatments).
9. Treating GI issues related to psychological distress.

Main target populations:

1. Persons with gastro-intestinal issues.
2. Persons with affected state of immunity.
3. Treatment of helicobacter pilori infection (in conjunction with antacids like GastroCare AcidoStop drink 131).
4. Persons undergoing certain therapies (e.g. antibiotic treatment).
5. Travellers to foreign countries.
6. Older persons.
7. Persons experiencing GI issues due to psychological distress.

[1] Trush, E. A., Poluektova, E. A., Beniashvilli, A. G., Shifrin, O. S., Poluektov, Y. M., Ivashkin, V. T., The Evolution of Human Probiotics: Challenges and Prospects, Probiotics and Antimicrobial Proteins, Vol. 12, Issue 4 (2020), pp. 1291-1299.

[2] De Simone, C., The Unregulated Probiotic Market, Clinical Gastroenterology and Hepatology, Vol. 17, Issue 5 (2019), pp. 809-817.

SCIENTIFIC NOTE and DISCLAIMER

Please note that effectively no study on any type of probiotic or prebiotic is very conclusive and that European Food Safery Agency (EFSA) does not allow any health claim for any type of pro- or pre-biotic. The terms prebiotic, probiotic, synbiotic are forbidden for marketing purposes.
Herba Medica, d.o.o. therefore uses the term complete biotics, making reference to the type of content (bacteria) but not its effectiveness in treating any health issues (such as probiotic, prebiotic, synbiotic).
To ensure the optimality of the supplement, we use the mixture from the leading probiotic manufacturer CSL, Sacco System with over 70 years of experience in the field.

2 Longer product description

Synbiotic mix with a patented probiotic blend CSL BIO-I 10® from the world's pioneering and leading probiotic manufacturer CSL Sacco System with over 70 years of experience. The blend contains 10 selected strains from 2 geni:

- 3 strains of Bifidobacteria:
  - Bifidobacterium animalis subspecies lactis BLC1
  - Bifidobacterium animalis subspecies lactis Bi1
  - Bifidobacterium breve Bbr8
- 7 strains of Lactobacili:
  - Lactobacillus acidophilus LA1
  - Lactobacillus acidophilus LA3
  - Lactobacillus plantarum 14D
  - Lactobacillus rhamnosus LB21
  - Lactobacillus rhamnosus SP1
  - Lactobacillus rhamnosus CRL1505
  - Lactobacillus reuteri LR92

The probiotic blend contains 15 billion colony forming bacteria (CFU) that promote gut microbial diversity and balance.

Inulin is added as pre-biotic, i.e. to provide nutrition to healthy bacteria. It is a polysaccharide and the world's most used pre-biotic.

The mix is encapsulated in a gastro-resistant capsule for targeted delivery avoiding stomach acid and straight into the gut.

The mix can be used for reinforcing gut barrier, treat diarrhea (from unbalanced diet, turista-traveler's diarrhea, viral, bacterial, antibiotic-induced diarrhea, or diarrhea induced by special treatments like chemotherapy), increase natural immunity (over 80% of immune cells are in the gut) or help immuno-deficient patients, help with irritable bowel syndrome (IBS), decrease helicobacter pilori charge as a complement to antibiotic treatment, help with constipation and gastrointestinal issues of elderly people at home or in nursing homes, and alleviate gastric distress due to psychological disorders.

3 Explanation of ingredients and their benefits

<table>
<tr><th colspan="2">CSL BIO-I 10S® Probiotic blend</th></tr>
<tr><td colspan="2">1. Optimal mix of different bacterial strains for intended use.</td></tr>
<tr><td colspan="2">3 strains of Bifidobacteria</td></tr>
<tr><td>Bifidobacterium animalis subspecies lactis BLC1
- Closely related and isogenic nature of all Bifidobacterium animalis subspecies lactis, in particular with Bifidobacterium animalis subspecies lactis BB12 (99,9%), a patented probiotic from a competitor that is the most widely studied probiotic.[3]
- BB12 showed protective effects against diarrhea, reduced antibiotic-associated diarrhea and increased resistance to common respiratory infections and reduced the incidence of acute respiratory tract infections.[4]</td><td>Bifidobacterium animalis subspecies lactis Bi1
- Together with Lactobacillus plantarum, Bifidobacterium breve Bbr8 and Bifidobacterium breve Bl10 proved effective in improving the severity of Irritable Bowel Syndrome-type symptoms in Celiac Disease patients.[5]

Bifidobacterium breve Bbr8
- Proved effective against childhood constipation.[6]
- Significantly decreased rotavirus shedding.[7]
- Together with Lactobacillus plantarum, Bifidobacterium animalis subsp. lactis Bi1, and Bifidobacterium breve Bl10 proved effective in improving the severity of Irritable Bowel Syndrome-type symptoms, in Celiac Disease patients.[8]</td></tr>
<tr><td colspan="2">7 strains of Lactobacilii</td></tr>
<tr><td>Lactobacillus acidophilus LA1
- Exerts a "barrier effect" against pathogenic bacteria by preventing their</td><td>Lactobacillus acidophilus LA3
- Showed inhibitory halos for certain bacteria, such as</td></tr>
</table>

[3] Bottacini, F., Dal Bello, F., Turroni, F., Milani, C., Duranti, S., Foroni, E., Viappiani, A., Strati, F., Mora, D., Van Sinderen, D., Ventura, M., Complete Genome Sequence of Bifidobacterium animalis subsp. lactis BLC1, Journal of Bacteriology, Vol. 193, No. 22 (2011).

[4] Jungersen, M., Wind, A., Johansen, E., Christensen, J. E., Stuer-Lauridsen, B., Eskesen, D., The Science behind the Probiotic Strain Bifidobacterium animalis subsp. lactis BB-12(®), Microorganisms, Vol. 2, Number2 (2014), pp. 92-110.

[5] Francavilla, R., Piccolo, M., Francavilla, A., Polimeno, L., Semeraro, F., Cristofori, F., Castellaneta, S., Barone, M., Indrio, F., Gobbetti, M., De Angelis, M., Clinical and Microbiological Effect of a Multispecies Probiotic Supplementation in Celiac Patients With Persistent IBS-type Symptoms: A Randomized, Double-Blind, Placebo-controlled, Multicenter Trial, Journal of Clinical Gastroenterology, Vol. 53, Issue 3, (2019), art. e117-e125.

[6] Tabbers, M. M., de Milliano, I., Roseboom, M. G., Benninga, M. A., Is Bifidobacterium breve effective in the treatment of childhood constipation? Results from a pilot study, Nutrition Journal, Vol. 10 (2011), art. 19.

[7] Araki, K., Shinozaki, T., Irie, Y., Miyazawa, Y., Trial of oral administration of Bifidobacterium breve for the prevention of rotavirus infections (in japanese), Kansenshogaku Zasshi, Vol. 73, Issue 4 (1999), pp. 305-310.

[8] Francavilla, R., Piccolo, M., Francavilla, A., Polimeno, L., Semeraro, F., Cristofori, F., Castellaneta, S., Barone, M., Indrio, F., Gobbetti, M., De Angelis, M., Clinical and Microbiological Effect of a Multispecies Probiotic Supplementation in Celiac Patients With Persistent IBS-type Symptoms: A Randomized, Double-Blind, Placebo-controlled, Multicenter Trial, Journal of Clinical Gastroenterology, Vol. 53, Issue 3, (2019), art. e117-e125.

attachment on intestinal mucosa.[9] - **Improves intestinal tight junction barrier** and helps with inflammatory bowel disease.[10] - Showed **preventive effects against Salmonella infection**.[11] - Cells and cell free supernatants showed clear antifungal effects against oral *Candida* species.[12] - Showed **antibacterial** effects.[13] - Improved nutritional status and incidence of infection in hospitalised elderly.[14]	Salmonella spp., Escherichia coli, Staphylococcus sp., and Listeria monocytogenes.[15] - Showed **hydrophobicity**, the ability to attach to intetinal mucosal cells, which helps **to strengthen the gut barrier.**[16] - Showed **resistance to antibiotics** erythromycin and clindamycin used for various infections such as Legionella and pneumonia.[17]
Lactobacillus plantarum 14D - Strengthens the gut barrier.[18] - **Prevents GI issues during antibiotic treatment**.[19] - Cells and cell free supernatants (residual components of cells) showed clear **antifungal effects** against oral *Candida* species.[20] - Together with Bifidobacterium animalis subsp. lactis Bi1, Bifidobacterium breve Bbr8 and Bifidobacterium breve Bl10 **proved effective in improving the severity of Irritable Bowel Syndrome-type symptoms**, in Celiac Disease patients.[21]	
Lactobacillus rhamnosus LB21 - Had **inhibiting effect on caries** (Streptococcus mutans) and on the composition of bacterial biofilms **in vitro**	

[9] Bernet, M. F., Brassart, D., Neeser, J. R., Servin, A. L., Lactobacillus acidophilus LA 1 binds to cultured human intestinal cell lines and inhibits cell attachment and cell invasion by enterovirulent bacteria, Gut Microbiota, Vol. 35 (1994), pp. 483-489.
[10] Al-Sadi, R., Nighot, P., Nighot, M., Haque, M., Rawat, M., Ma, T. Y., Lactobacillus acidophilus Induces a Strainspecific and Toll-Like Receptor 2e Dependent Enhancement of Intestinal Epithelial Tight Junction Barrier and Protection Against Intestinal Inflammation, The American Journal of Pathology, Vol. 191, No. 5 (2021), pp. 872-884.
[11] Kim, M. S., Yoon, Y. S., Seo, J. G., Lee, H. G., Chung, M. J., Yum, D. Y. A study on the prevention of salmonella infection by using the aggregation characteristics of lactic acid bacteria, Toxicology Research, Vol. 29 (2013), pp. 129–135.
[12] Salari, S., Ghasemi Nejad Almani, P., Antifungal effects of Lactobacillus acidophilus and Lactobacillus plantarum against different oral Candida species isolated from HIV/ AIDS patients: an in vitro study, Journal of Oral Microbiology, Vol. 12, Issue 1 (2020), art. 1769386.
[13] Karlsson, A. K., Bacteria inhibiting effect of Lactococcus lactis L1A, Agris Publikation-Sveriges Lantbruksuniversitet, Vol. 33 (1995).
[14] Fukushima, Y., Miyaguchi, S., Yamano, T., Kaburagi, T., Iino, H., Ushida, K., Sato, K., Improvement of nutritional status and incidence of infection in hospitalised, enterally fed elderly by feeding of fermented milk containing probiotic Lactobacillus johnsonii La1, British Journal of Nutrition, Vol. 98,Issue 5 (2007), pp. 969-977.
[15] Schmitt, J. D., Fariña, L. O. de, Simões, M. R., Kottwitz, L. B. M., Evaluation of the Probiotic Profile of the Lactobacillus Acidophilus Used in Pharmaceutical and Food Applications, *Acta Scientiarum/Health Sciences*, Vol. *40*, Issue 1, art. e36664.
[16] Ibid.
[17] Ibid.
[18] Ko, J. S., Yang, H. R., Chang, J. Y., Seo, J. K., Lactobacillus plantarum inhibits epithelial barrier dysfunction and interleukin-8 secretion induced by tumor necrosis factor-alpha, World Journal of Gastroenterology, Vol. 13, Issue 13 (2007), pp. 1962-1965.
[19] Lönnermark, E., Friman, V., Lappas, G., Sandberg, T., Berggren, A., Adlerberth, I., Intake of Lactobacillus plantarum reduces certain gastrointestinal symptoms during treatment with antibiotics, Journal of Clinical Gastroenterology, Vol. 44 (2010), pp. 106-112.
[20] Salari, S., Ghasemi Nejad Almani, P., Antifungal effects of Lactobacillus acidophilus and Lactobacillus plantarum against different oral Candida species isolated from HIV/ AIDS patients: an in vitro study, Journal of Oral Microbiology, Vol. 12, Issue 1 (2020), art. 1769386.
[21] Francavilla, R., Piccolo, M., Francavilla, A., Polimeno, L., Semeraro, F., Cristofori, F., Castellaneta, S., Barone, M., Indrio, F., Gobbetti, M., De Angelis, M., Clinical and Microbiological Effect of a Multispecies Probiotic Supplementation in Celiac Patients With Persistent IBS-type Symptoms: A Randomized, Double-Blind, Placebo-controlled, Multicenter Trial, Journal of Clinical Gastroenterology, Vol. 53, Issue 3, (2019), art. e117-e125.

(contested results in humans).[22]

- Co-aggregates with and **inhibits growth of streptococcus mutans** (contested results in humans).[23]

Lactobacillus rhamnosus SP1

- **Normalises skin** expression of genes involved in insulin signalling and improves the appearance of adult acne.[24]
- Significantly **reduces** the duration of **diarrhoea**-like defecations in healthy adults receiving antibiotics.[25]
- Statistically significant **reduction in periodontitis** (gum disease), indicating a reduced need for surgery, in contrast to the placebo group.[26]
- Regular long-term intake may **reduce caries development** in high-caries preschool children.[27]

Lactobacillus rhamnosus CRL1505

- An **immunobiotic strain** from goat milk extensively studied for its outstanding capacity to improve inate immunity through mucosal defenses in both immunocompetent and immunocompromised hosts against influenza[28] and pneumonia[29]. Even non-viable strains were effective, so non-live LbrCRL1505 are useful in cases when live bacteria might be dangerous.[30]
- **Significant decrease in the duration and severity of mucosal infections in children** (in a study on 200.000 children in Argentina. [31]
- Induced a significant **decrease in intestinal infection** (Salmonela typhimurium) with respect to the control.[32]

Lactobacillus reuteri LR92

[22] Although the results are still inconclusive for any probiotic strain acccording to other studies. Lin, X., Chen, X., Tu, Y., Wang, S., Chen, H., Effect of Probiotic Lactobacilli on the Growth of Streptococcus Mutans and Multispecies Biofilms Isolated from Children with Active Caries, Medical Science Monitor, Vol 23 (2017), pp. 4175-4181.

[23] Although the results are still inconclusive for any probiotic strain acccording to other studies. Twetman, L., Larsen, U., Fiehn, N. E., Stecksen-Blicks, C., Twetman, S., Coaggregation between probiotic bacteria and caries-associated strains: an in vitro study, Acta Odontologica Scandinavica, Vol. 67, pp. 1-5.

[24] Fabbrocini, G., Bertona, M., Picazo, Ó., Pareja-Galeano, H., Monfrecola, G., Emanuele, E., Supplementation with Lactobacillus rhamnosus SP1 normalises skin expression of genes implicated in insulin signalling and improves adult acne, Beneficial Microbes, Vol. 7, Issue 5 (2016), pp. 625-630.

[25] Evans, M., Salewski, R. P., Christman, M. C., Girard, S. A., Tompkins, T. A., Effectiveness of Lactobacillus helveticus and Lactobacillus rhamnosus for the management of antibiotic-associated diarrhoea in healthy adults: a randomised, double-blind, placebo-controlled trial, British Journal of Nutrition, Vol. 116, Issue 1 (2016), pp. 94-103.

[26] Morales, A., Carvajal, P., Silva, N., Hernandez, M., Godoy, C., Rodriguez, G., Cabello, R., Garcia-Sesnich, J., Hoare, A., Diaz, P. I., Gamonal, J., Clinical Effects of Lactobacillus rhamnosus in Non-Surgical Treatment of Chronic Periodontitis: A Randomized Placebo-Controlled Trial With 1-Year Follow-Up, Journal of Periodontology,Vol. 87, Issue 8 (2016), pp. 944-952.

[27] Rodríguez, G., Ruiz, B., Faleiros, S., Vistoso, A., Marró, M. L., Sánchez, J., Urzúa, I., Cabello, R., Probiotic Compared with Standard Milk for High-caries Children: A Cluster Randomized Trial, Journal of Dental Research, Vol. 95, Issue 4 (2016), pp. 402-407.

[28] Zelaya, H., Alvarez, S., Kitazawa, H., Villena, J., Respiratory Antiviral Immunity and Immunobiotics: Beneficial Effects on Inflammation-Coagulation Interaction during Influenza Virus Infection, Frontiers in Immunology, Vol. 7 (2016), art. 633.

[29] Herrera, M., Salva, S., Villena, J., Barbieri, N., Marranzino, G., Alvarez, S., Dietary supplementation with Lactobacilli improves emergency granulopoiesis in protein-malnourished mice and enhances respiratory innate immune response, PLoS One, Vol. 9, Issue 4 (2014), art. e90227.

[30] Kolling, Y., Salva, S., Villena, J., Marranzino, G., Alvarez, S., Non-viable immunobiotic Lactobacillus rhamnosus CRL1505 and its peptidoglycan improve systemic and respiratory innate immune response during recovery of immunocompromised-malnourished mice, International Immunopharmacology, Vol. 25, Issue 2 (2015), pp. 474-484.

[31] Villena, J., Salva, S., Núñez, M., Corzo, J., Tolaba, R., Faedda, J., Font, G., Alvarez, S., Probiotics for Everyone! The Novel Immunobiotic Lactobacillus rhamnosus CRL1505 and the Beginning of Social Probiotic Programs in Argentina, International Journal of Biotechnology for Wellness Industries, Vol. 1, Number 3 (2012), pp. 189-198.

[32] Salva, S., Villena, J., Alvarez, S., Immunomodulatory activity of Lactobacillus rhamnosus strains isolated from goat milk: Impact on intestinal and respiratory infections, International Journal of Food Microbiology, Vol. 141, Issues 1–2 (2010), pp. 82-89.

- Combination of Lb rhamnosus and reuteri **reduced the duration of diarrhea** in children[33] and in children with **rotavirus**.[34] - Reduced the duration of **diarrhea and fever** in children.[35] **Attenuated the development of colitis** in mice.[36]
2. Inulin
Inulin is a long saccharide that serves as pre-biotic, meaning that it provides nutrients for probiotic microorganisms.[37]
3. Gastro-resistant capsule
Stomach acid kills most of the bacteria in probiotoics. A targetted delivery enhances probiotic effects.[38]

4 Explanation of benefits for main target populations

1. Persons with gastro-intestinal issues.	Modern lifestyle, stress,[39] unbalanced diet[40], smoking,[41] lack of exercise[42] etc. Can all lead to gastrointestinal (GI) distress.
	Over 40% of orldwide population experiences functional gastrointestinal disorders such as constipation, food intolerance, gastroesophageal reflux disease (GERD), inflammatory bowel disease (IBD).[43]

[33] Rosenfeldt, V., Michaelsen, K. F., Jakobsen, M., et al. Effect of probiotic Lactobacillus strains on acute diarrhea in a cohort of nonhospitalized children attending day-care centers, Pediatric Infectious Disease Journal, Vol. 21 (2002), pp. 417-419.
[34] Shornikova, A. V., Casas, I. A., Mykkanen, H., Salo, E., Vesikari, T., Bacterotherapy with Lactobacillus reuteri in rotavirus Gastroenteritis, Pediatric Infectious Disease Journal, Vol. 16 (1997), pp. 1103-1107.
[35] Salari, P., Nikfar, S., Abdollahi, M., A meta-analysis and systematic review on the effect of probiotics in acute diarrhea, Inflamm Allergy Drug Targets 2012; 11:3-14.
[36] Madsen, K. L., Doyle, J. S., Jewell, L.D., Taverini, M. M., Fedorak, R. N., *Lactobacillus* species prevents colitis in interleukin-10 gene-deficient mice, Gastroenterology, Vol. 116 (1999), pp. 1107-1114.
[37] Guarino, M.P.L., Altomare, A., Emerenziani, S., Di Rosa, C., Ribolsi, M., Balestrieri, P., Iovino, P., Rocchi, G., Cicala, M., Mechanisms of Action of Prebiotics and Their Effects on Gastro-Intestinal Disorders in Adults, Nutrients, Vol. 12 (2020), art. 1037.
[38] Yoha, K. S., Nida, S., Dutta, S. et al., Targeted Delivery of Probiotics: Perspectives on Research and Commercialization, Probiotics and Antimicrobial Proteins, Vol. 14 (2022), pp. 15-48.
[39] Konturek, P. C., Brzozowski, T., Konturek, S. J., Stress and the gut: pathophysiology, clinical consequences, diagnostic approach and treatment options, Journal of Physiology and Pharmacology, Vol. 62, Issue 6 (2011), pp. 591-599.
[40] Scott, K. P., Gratz, S. W., Sheridan, P. O., Flint, H. J., Duncan, S. H., The influence of diet on the gut microbiota, Pharmacological Research, Vol. 69, Issue 1 (2013), pp. 52-60.
[41] Biedermann, L., Zeitz, J., Mwinyi, J., Sutter-Minder, E., Rehman, A., Ott, S. J., et al., Smoking Cessation Induces Profound Changes in the Composition of the Intestinal Microbiota in Humans, PLoS ONE Vol. 8, Issue 3 (2013), art. e59260.
[42] Clarke, S. F., Murphy, E. F., O'Sullivan, O., et al., Exercise and associated dietary extremes impact on gut microbial diversity, Gut Microbiota, Vol. 63 (2014), pp. 1913-1920.
[43] Sperber, A. D., Bangdiwala, S. I., Drossman, D. A., et al., Worldwide Prevalence and Burden of Functional Gastrointestinal Disorders, Results of Rome Foundation Global Study, Gastroenterology, Vol. 160, Issue 1 (2021), pp. 99-114.e3.

2. Persons with affected state of immunity.	Probiotics showed therapeutic potential for diseases, including several immune response-related diseases, such as allergy, eczema, viral infection, and potentiating vaccination responses.[44]
3. Treatment of helicobacter pilori infection (in conjunction with antacids like GastroCare AcidoStop drink 131).	*L. acidophilus*, *L. Plantarum*, and *L. Rhamnosus* could be useful in the reduction of *H. Pylori* infection in the mouse model.[45] Can diminish the bacterial load in humans, but not completely eradicate the H. pylori bacteria.[46]
4. Persons undergoing certain therapies (e.g. antibiotic treatment).	Antibiotic and other treatments (like chemotherapy) significantly disrupt gut microbiota.[47]
5. Travellers to foreign countries.	Global travel exposes people to bacteria unknown to their bodies and pathogenic bacteria and diseases can cause diarrhea.[48]
6. Older persons	Probiotics and prebiotics may be helpful in malnutrition, particularly in lactose intolerance and calcium absorption, and in constipation. Probiotics have been shown clearly to boost immunity in the elderly. Encouraging results but further large scale studies needed.[49]
7. Persons experiencing GI issues due to psychological distress.	Although causal relationship is hard to establish, it has been shown that disruption of the gut microbiome correlates with emotional disorders.[50] In any case, probiotics can alleviate GI issues.

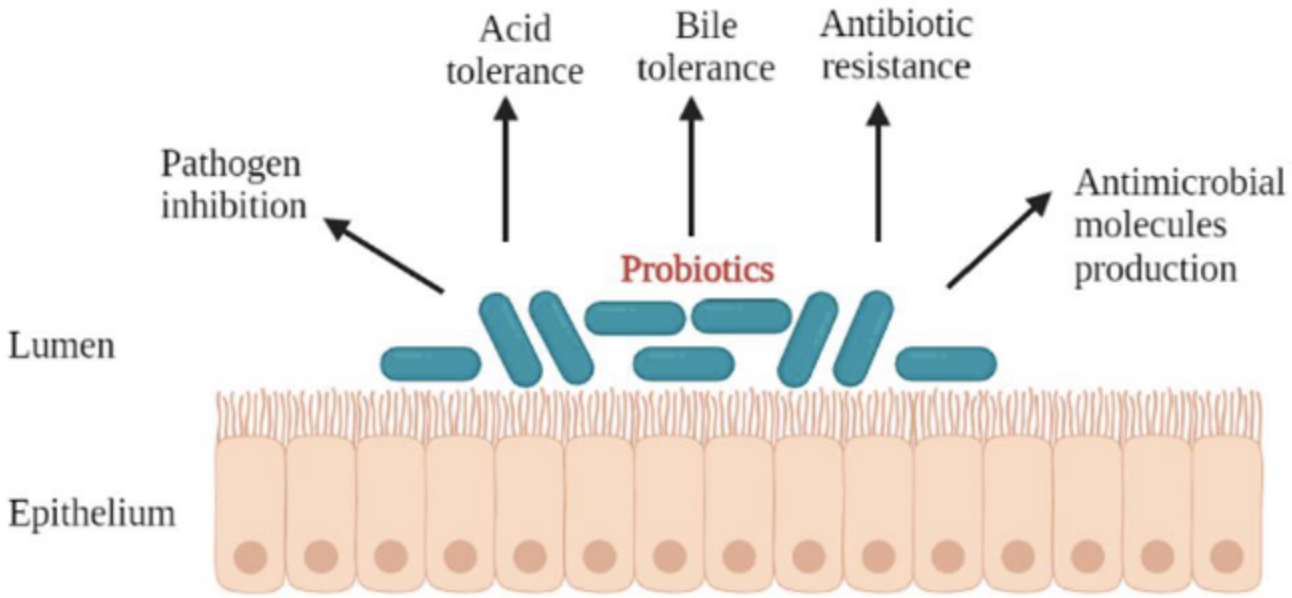
[44] Yan, F., Polk, D. B., Probiotics and immune health, Current Opinions in Gastroenterology, Vol. 27, Issue 6 (2011), pp. 496-501.
[45] Asgari, B., Kermanian, F., Hedayat Yaghoobi, M., Vaezi, A., Soleimanifar, F., Yaslianifard, S., The Anti-Helicobacter pylori Effects of Lactobacillus acidophilus, L. plantarum, and L. Rhamnosus in Stomach Tissue of C57BL/6 Mice, Visceral Medicine,Vol. 36 (2020), pp. 137-143.
[46] Homan, M., Orel, R., Are probiotics useful in Helicobacter pylori eradication?, World Journal of Gastroenterology, Vol. 21, Issue 37 (2015), pp. 10644-10653.
[47] *Ibid.*
[48] De Vrese, M., Marteau, P. R., Probiotics and Prebiotics: Effects on Diarrhea, The Journal of Nutrition, Vol. 137, Issue 3 (2007), pp. 803S-811S.
[49] Hamilton-Miller, J. M., Probiotics and prebiotics in the elderly, Postgraduate Medicine Journal,Vol. 80, Issue 946 (2004), pp. 447-451.
[50] Bailey, M. T., Cryan, J. F., (2017) The microbiome as a key regulator of brain, behavior and immunity: commentary on the 2017 named series. Brain Behav Immun 66:18–22

SUMMARY of **Studied effects per strain**[51]	**Gastrointestinal effects**					**Effects on infections**			**Other**	
	Gut barrier strength	**Effects on IBS (irritable bowel)**	**Constipation**	**Diarrhea**	**Antibiotic-induced diarrhea**	**Effects on respiratory infections**	**Anti-microbial / Anti-viral**	**Anti-fungal**	**Oral health**	**Skin**
Bifidobacterium animalis subspecies lactis BLC1										
Bifidobacterium animalis subspecies lactis Bi1										
Bifidobacterium breve Bbr8										
Lactobacillus acidophilus LA1										
Lactobacillus acidophilus LA3					Some resistance to antibiotics					
Lactobacillus plantarum 14D										
Lactobacillus rhamnosus LB21									Caries: Effective in vitro, not proven in vivo	
Lactobacillus rhamnosus SP1									Periodontitis Caries	Acne
Lactobacillus rhamnosus CRL1505							Pneumonia Influenza			

[51] Note that effectively no studies on any type of probiotic are very conclusive and that EFSA does not allow any health claims for any type of probiotic. The term probiotic is itself forbidden. Herba Medica, d.o.o. therefore uses the term complete biotics, making reference to the type of content (bacteria) but not its effectiveness in treating any health issues (such as probiotic, prebiotic, synbiotic).

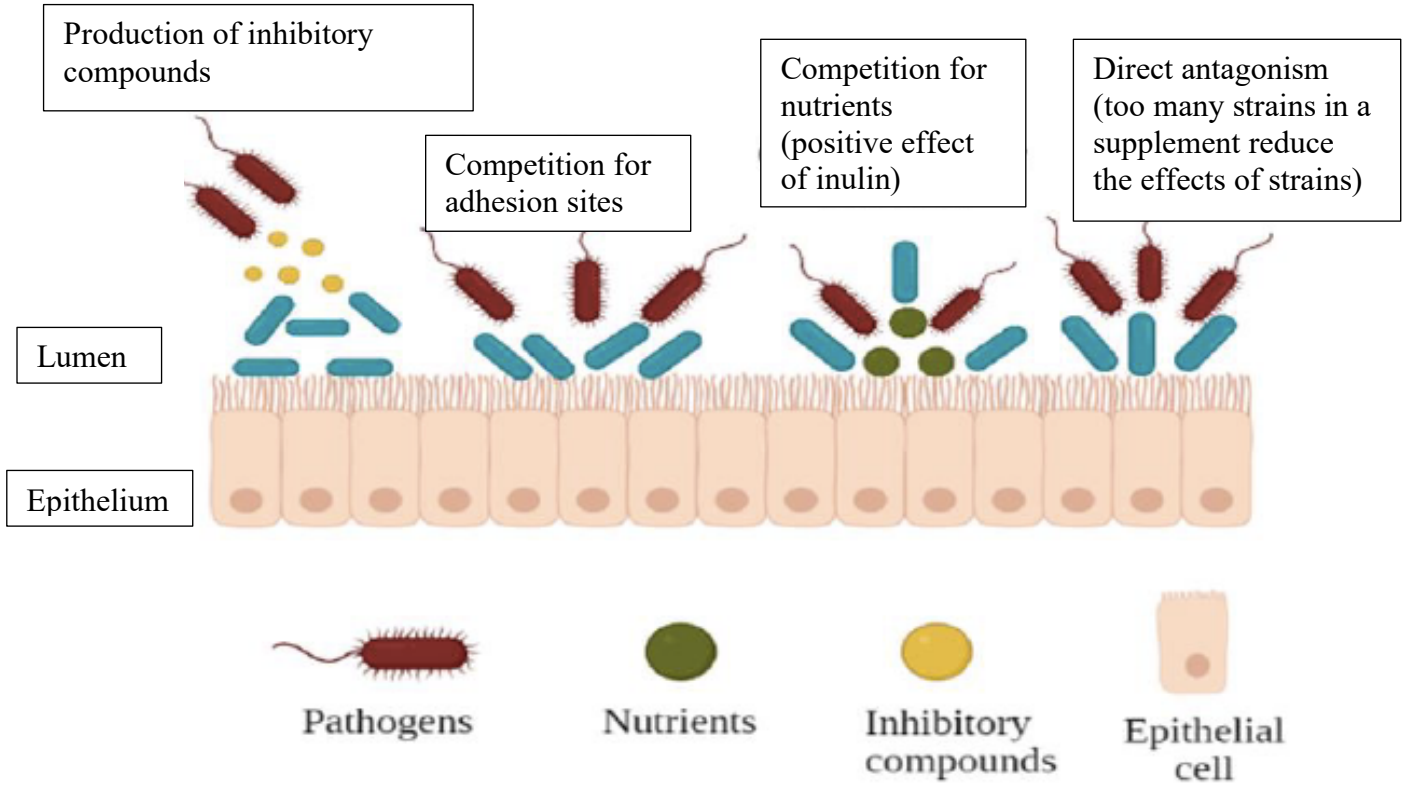
Lactobacillus reuteri LR92										

5 Desirable properties of probiotic microorganisms. Probiotics are defined according to these properties.[52]



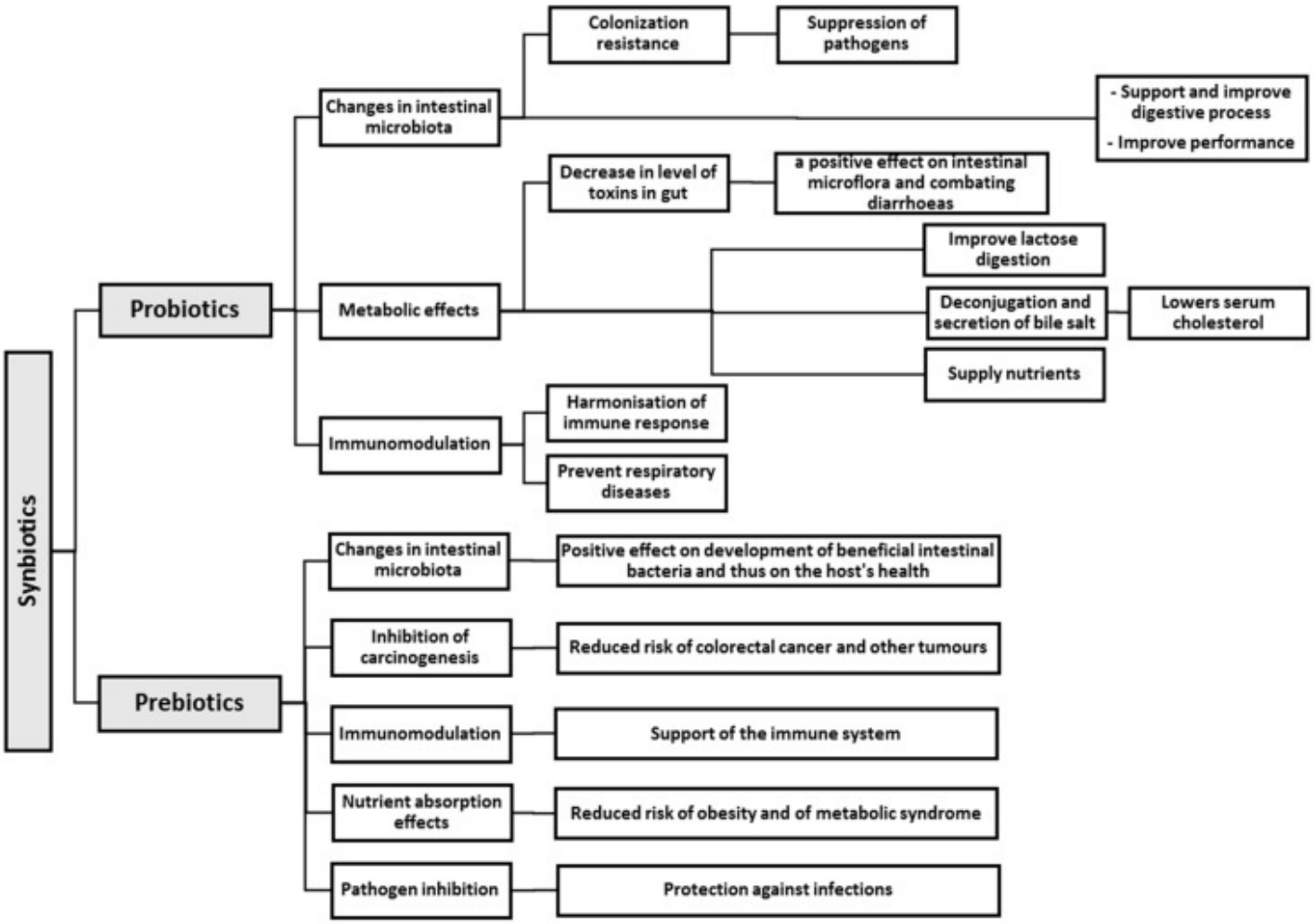
[52] Mathipa-Mdakane, M. G.,Thantsha, M. S., Lacticaseibacillus rhamnosus: A Suitable Candidate for the Construction of Novel Bioengineered Probiotic Strains for Targeted Pathogen Control, Foods, Vol. 11 (2022), art. 785, p. 3

6 Mechanisms of effects of probiotics[53]



[53] Mathipa-Mdakane, M. G.,Thantsha, M. S., Lacticaseibacillus rhamnosus: A Suitable Candidate for the Construction of Novel Bioengineered Probiotic Strains for Targeted Pathogen Control, Foods, Vol. 11 (2022), art. 785, p. 4.

7 Classification of certain effects of pre- and pro-biotics[54]



[54] Cagnasso, P., Gandolfi, I., Merusi, P., Bandini, E., Vatteroni, C., Probiotics and prebiotics: A synergy of well-being (2002), pp. 242-247.

8 Probiotic mixture and gastrointestinal issues

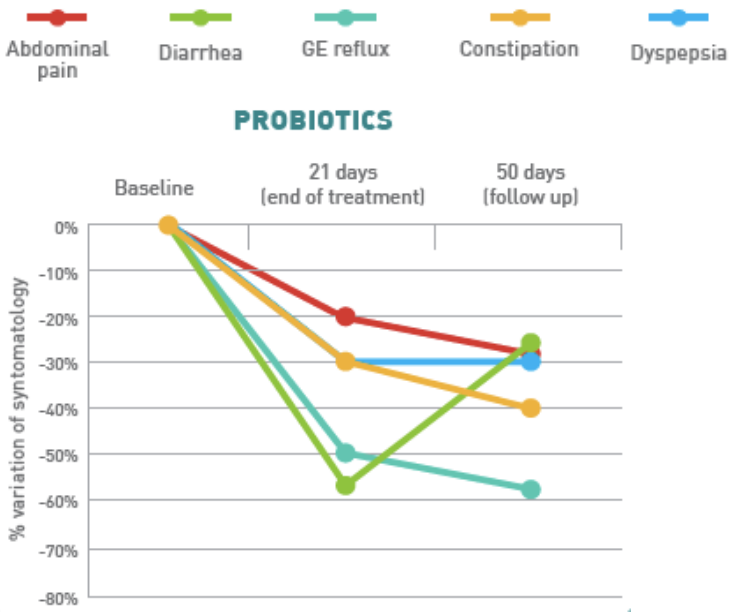
Results of a clinical study of CSL Sacco system probiotic mixture Pentabiocel® containing exactly the same strains as our probiotic mixture (which also has a few additional strains of the same species).[55]

Probiotic mixture under study:

L. paracasei 101/37
L. plantarum 14D
B. breve BL10
B. breve BBR8
B. animalis subsp lactis Bi1

CSL probiotic mixture induced a decrease in all gastrointestinal issues after 3 weeks.

After stopping the intake of the mixture, the issues continued but did not increase (except for diarrhea).



9 Clinical studies

Miremadi, F., Shaah, N. P., Applications of Inulin and probiotics in health and nutritions, International Food Research Journal, Vol 19, Issue 4 (2012), pp. 1337-1350 .

Villena, J., Salva, S., Nunez, M., Corzo, J., Tolaba, R., Faedda, J., Font, G., Alvarez, S., Probiotics for everyone! The Novel Immunobiotic *Lactobacillus rhamnosus* CRL1505 and the Beginning of Social Probiotic Programs in Argentina, International Journal of Biotechnology for wellness Industries, Vol 1 (2012), pp. 189-198.

De Giani, A., Sandionigi, A., Zampolli, J., Michelotti, A., Tursi, F., Labra, M., Di Gennaro, P., Effects of Inulin-Based Prebiotics Alone or in Combination with Probiotics on Human Gut Microbiota and Markers of Immune

[55] Francavilla, R., Piccolo, M., Francavilla, A., Polimeno, L., Semeraro, F., Cristofori, F., Castellaneta, S., Barone, M., Indrio, F., Gobbetti, M., De Angelis, M., Clinical and Microbiological Effect of a Multispecies Probiotic Supplementation in Celiac Patients With Persistent IBS-type Symptoms: A Randomized, Double-Blind, Placebo-controlled, Multicenter Trial, Journal of Clinical Gastroenterology, Vol. 53, Issue 3 (2019), pp. e117-e125.

System: A Randomized, Double-Blind, Placebo-Controlled Study in Healthy Subjects, Microorganisms, Vol 10 (2022), 1256.