

RE-1™ *Restore Eubiosis* Product Fact Sheet

RE-1™ Eubiotic (3-in-1 Prebiotic + Probiotic + Postbiotic)

RE-1™ is a medical-grade (500 Billion CFU) 3-in-1 prebiotic + probiotic + postbiotic, containing 4.5g prebiotic fiber (*GOS & Inulin*), 7 live probiotics and 1 immunogenic postbiotic (*Human Origin Strains HOSt™*). A 7-day microbiome reset clinically shown to reduce the effects of gut-stress and improve energy, mood & immunity*.

Ideal Customers and Associated Problems

Adults with Digestive Disorders:

- Suffering from IBS, bloating, SIBO, constipation, and reflux.
- Seeking to restore eubiosis and improve digestive function.

Individuals with Weakened Immune Systems:

- Prone to intolerances, allergies, infections or immune-related issues.
- Looking for enhanced protection for immune system resilience.

Mothers - Pregnant, Postpartum and Breastfeeding:

- To improve gut health, immunity and nutrient absorption for both mother and developing baby.
- To restore eubiosis after birth & antibiotics, reduce postpartum discomfort, promote healthy weight & support the infant's microbiome.

Children (Age 0+) with Digestive or Immune Concerns:

- Experiencing digestive discomfort or weak immune responses.
- Needing safe, age-appropriate gut and immune health solutions.

Patients Undergoing Antibiotic Therapy:

- At risk of antibiotic-induced gut imbalances.
- Wanting to prevent disruptions and maintain digestive health.

Individuals with Skin Conditions:

- Dealing with eczema, acne, or other skin issues linked to gut health.
- Seeking improvements in skin health through a balanced microbiome.

Patients with Mental Health and Mood Issues:

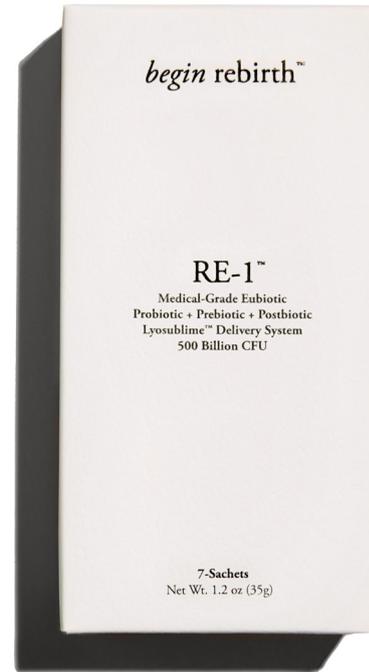
- Experiencing anxiety, stress, or depression.
- Looking to support gut-brain axis to improve mood and cognition.

Health-Conscious Consumers:

- Interested in maintaining optimal gut and immune health.
- Focused on holistic digestive, immune, and mental wellness.

Contraindications & Cautions

- None



Directions for Use

For adults & children from 3 years: Take 1 sachet with water daily in the morning on an empty stomach. Or as directed by your healthcare professional.

Ingredients (Proprietary Formula) 500 Billion CFU

Bioidentical Live Probiotic Human Origin Strains (HOSt™) 480mg
Bifidobacterium longum BR-BB536, Bifidobacterium breve BR-M16V, Bifidobacterium infantis BR-M63, Bifidobacterium breve BR-B3, Lactobacillus gasseri BR-LAC-343, Bacillus coagulans BR-LACRIS-S, Lactobacillus helveticus BR-MCC1848

Fiber-Based Prebiotic Complex 4.5g

Galactooligosaccharide (GOS), Inulin (Low Molecular Weight LMW)

Immunogenic Postbiotic Human Origin Strain (HOSt™) 20mg

Lactobacillus paracasei BR-MCC1849

Lyosublime™ Superpowder Delivery System

Nutrition Facts	Amount/serving	% DV	Amount/serving	% DV
	Total Fat 0g	0%	Total Carb. 4.7g	5%
7 Servings	Sat. Fat 0g	0%	Fiber 5g	20%
	Trans Fat 0g		Total Sugars 0g	
Serving size 1 Sachet (5g)	Cholesterol 0mg	0%	Incl. 0g Added Sugars	0%
Calories per serving 20	Sodium 5mg	0%	Protein 0g	
Vitamin D 0% • Calcium 0% • Iron 0% • Potassium 0%				

* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

RE-1™ *Restore Eubiosis* 7-Day Microbiome Reset Practitioner Fact Sheet

Restore Eubiosis

Formulated to rapidly establish eubiosis to the microbiome and deliver targeted protection missing from the immune-system. RE-1™ supports gut, skin, oral, mental, and immune health for both children and adults (ages 3+). Targeted to address complex digestive issues such as reflux, IBS, bloating, SIBO, and constipation, it promotes optimal gut function and strengthens immune defences, safeguarding against disruptions.

Medical-Grade Potency - 500 Billion CFU

Research-derived, biologically active doses for superior potency, RE-1™ ensures the highest verified CFU per serving, ensuring maximum potency to deliver optimum benefits.

4.5G Prebiotic Fiber (GOS + Inulin)

4.5g of fiber per serve, with polyphenols which are biotransformed by gut bacteria to produce beneficial metabolites for optimal digestion and immune defence.

Human Origin Strains (HOSt™)

A proprietary formula of 7 live human probiotics + 1 immunogenic postbiotic, bioidentical to those received at birth, selected for genomic diversity and strengthening of humoral immunity.

HOSt™ Probiotic Advantages

Not all probiotic strains are equal and beneficial for humans. Some probiotics naturally reside in the human intestines - Human Origin Strains (HOSt™) and others do not. Human Origin Strains (HOSt™) are the natural residents of the human microbiome and exhibit superior physiological functions to restore and maintain eubiosis. Several different species of bifidobacterium have been isolated from the guts of a variety of animals, ranging from insects to mammals and are the natural inhabitants of animal intestines, sewage, or foods. These are defined as non-HOSt™. Among the pool of commercially available probiotics, only a handful of them are HOSt™ strains that have a natural history with the human host.

Lyosublime™ Delivery System

RE-1™ requires no breakdown of a capsule barrier, ensuring fastest absorption throughout the gastrointestinal tract, engineered for maximum CFU of live human microbes across the entire digestive system—mouth, stomach, intestines, and colon.



50 + Years Research + 200 Studies

Our world-class scientists in Japan spent 50 + years in clinical research and RE-1™ stands on over 200 + scientific studies on strains, clinically validated by academic institutions in Switzerland, Italy, and USA.

3rd-Party Tested

Each batch of RE-1™ is quality and safety tested for identity, purity, potency and composition, so you can be sure what's on the label is what's inside each Sachet.

Vegan, Rigorously Monitored & Free from

Rigorously Monitored to meet the European Food & Safety Authority (EFSA). Free from: Dairy, gluten, GMOs, sugar, lactose, corn, soy, salt, sesame, nuts, binders and preservatives. Vegan—No refrigeration necessary.

Our Commitment to You

RE-1™ is scientifically formulated with rigorous 3rd-party testing, so you and your patients can thrive. If you or your clients aren't satisfied within 30 days, contact us for a full refund or exchange.

RE-1™ HOS^t™ BR-BB536 *Bifidobacterium longum*

Genus

Bifidobacterium bifidum

Species

Bifidobacterium longum BR-BB536

Human Origin Strain HOS^t™

Isolated from the human gastrointestinal tract.

Human Resident Habitat

- Digestive system (oral microbiome, large intestine).
- Immune system.
- Nervous system (gut-brain axis).
- Respiratory system.
- Urogenital system.

Evidence-Based Safety

- Genomic, toxicological, and clinical studies.
- Nonpathogenic, nontoxicogenic and non-invasive.
- Devoid of transmissible antibiotic resistance genes.
- Demonstrated acid and bile tolerance.
- Long History of Safety for more than 40 years.

Scientifically Backed Probiotic for All Age Groups

- 50+ years of clinical research and safety in over 30 countries.
- Supported by more than 260+ scientific studies [as of March 2024].

Regulatory Approved

- 1996 - Japan FOSHU status.
- 2009 - FDA notified GRAS status for foods.
- 2019 - FDA notified GRAS status for infants.

Quality Assured

FSSC22000, GMP, HALAL, Kosher.

History

- Evolutionary analysis has shown that bifidobacteria have co-speciated with humans over the last 15 million years.
- Bifidobacteria are among the first microbes to colonize the infant gut.



Clinical Uses and Benefits

- Clinically effective, proprietary, evidence-based, room-temperature stable, multifunctional probiotic strain recognized for its safety, history, and robust body of clinical evidence.

Mechanism of Action

- Bifidobacterial colonization early in life contributes to maintaining the balance of gut microbiota and inhibits the growth of harmful bacteria by competitive exclusion, maintaining a healthy immune system helping to fight infections and diseases.
- *Bifidobacterium longum* BR-BB536 supports multiple systems, primarily by improving gut health, strengthening immune responses, and possibly impacting brain function through the gut-brain axis.
- Superior in providing a consistent beneficial effect in maintaining balanced human mind-body health—*eubiosis*.

Synergy with other RE-1™ Ingredients

- *Bifidobacterium longum* BR-BB536 is a key gut determinant, reinforcing healthy gut microbiota with RE-1™ proprietary formulation.
- *Bifidobacterium longum* BR-BB536 is synergistic with prebiotics GOS, inulin and postbiotics such as *Lactobacillus paracasei* BR-MCC1849.
- Clinical evidence of *Bifidobacterium longum* BR-BB536 in combination with *Bifidobacterium breve* BR-M16V in reducing the risk of allergies.
- * It's important to note that not all probiotics are beneficial for histamine intolerance. Some strains, like *Lactobacillus casei* and *Lactobacillus bulgaricus*, can produce histamine and may worsen symptoms in histamine-intolerant individuals.

RE-1™ HOS^t™ BR-BB536 *Bifidobacterium longum*

Clinical Studies and Applications I

Restores Optimal Bowel Movements

In 168 patients aged >65 years, consumption of *Bifidobacterium longum* BR-BB536 for 16 weeks better improved the bowel movements of patients with infrequent defecation (≤4 times/week) as compared to the placebo control.

[Wong, C.B., Odamaki, T. and Xiao, J.Z. Beneficial effects of *Bifidobacterium longum* subsp. *longum* BB536 on human health: Modulation of gut microbiome as the principal action. *Journal of Functional Foods*, 2019.](#)

IBS

Assessment of the effect of *Bifidobacterium longum* BR-BB536 on IBS severity and quality of life in a real-life setting. It has shown efficacy in improving irritable bowel syndrome (IBS) symptoms compared with placebo in double-blind randomized studies on 278 patients after a 30 day treatment period.

[Sabaté JM, Iglicki F. Effect of *Bifidobacterium longum* 35624 on disease severity and quality of life in patients with irritable bowel syndrome. *World J Gastroenterol*. 2022.](#)

Obesity I

In an exploratory, block-randomised, parallel, double-blind, single-centre, placebo-controlled superiority study of 220 Bulgarian participants, 30 to 65 years old, received *bifidobacteria* and *lactobacilli* or a matched placebo for 6 months. Significant between-group decreases in body weight, BMI, waist circumference, and waist-to-height ratio were in favour of the probiotic.

[Michael, D.R., Jack, A.A., Masetti, G. et al. A randomised controlled study shows supplementation of overweight and obese adults with lactobacilli and bifidobacteria reduces body weight and improves well-being. *Sci Rep*. 2020.](#)

Obesity II

The human gut microbiota has emerged as a key factor in the development of obesity. In the human intervention trial, participants received *Bifidobacterium longum* BR-BB536 or placebo supplementation for 12 weeks. *Bifidobacterium longum* BR-BB536 shows a promising potential to be developed as a valuable supplement in reducing specific markers of obesity.

[Allen, A. P., et al. A probiotic *Bifidobacterium longum* counteracts the negative effects of chronic stress on behavior and intestinal barrier function in mice. *Neurogastroenterology & Motility*. 2017.](#)

[Harriët Schellekens, et al. *Bifidobacterium longum* counters the effects of obesity: Partial successful translation from rodent to human. *EBioMedicine*. 2021.](#)

[Araj, S., et al. Effect of *Bifidobacterium longum* on glycemic control and body fat reduction in type 2 diabetes: a randomized, double-blind, placebo-controlled trial. *Diabetes Care*. 2024](#)

Improves Intestinal Microenvironment

It has been reported that the toxin-producing bacteria, enterotoxigenic *Bacteroides fragilis* (ETBF), are associated with acute and persistent diarrheal disease and the development of colorectal cancer. In subjects receiving *Bifidobacterium longum* BR-BB536 it was observed a significant decrease in the cell numbers of ETBF as compared to baseline values. However, when the subjects ceased the consumption of *Bifidobacterium longum* BR-BB536, the number of ETBF returned to the baseline level. These results suggest that continuous ingestion of *Bifidobacterium longum* BR-BB536 could eliminate the opportunistic ETBF pathogens in the intestinal microenvironment.

[Wu, S., Rhee, K.J., Albesiano, E., Rabizadeh, S., Wu, X., Yen, H.R., Huso, D.L., Brancati, F.L., Wick, E., McAllister, F. and Housseau, F. A human colonic commensal promotes colon tumorigenesis via activation of T helper type 17 T cell responses. *Nature Medicine*. 2009.](#)

Immunomodulation

Key clinical findings point out that *Bifidobacterium longum* BR-BB536 could act as a microbiome modulator to orchestrate the physiological activities of gut communities. Specifically, *Bifidobacterium longum* BR-BB536 modulates luminal metabolism, stabilizes gut microbiota and ultimately drives a fine-tuned homeostatic balance within the host-microbiome interaction.

[Chyn Boon Wong, et al. Beneficial effects of *Bifidobacterium longum* subsp. *longum* BB536 on human health: Modulation of gut microbiome as the principal action. *Journal of Functional Foods*. 2019.](#)

RE-1™ HOS^t™ BR-BB536 *Bifidobacterium longum*

Clinical Studies and Applications II

Immunomodulation in Colorectal Cancer Surgery

Sixty patients undergoing colorectal resection were randomized to two groups prior to resection. One group (n=31) received a probiotic supplement, HOS^t™ *Bifidobacterium longum*, preoperatively for 7–14 days and postoperatively for 14 days. In the subgroup of patients who received preoperative chemoradiotherapy treatment, the duration of hospital stay was significantly shortened upon probiotic intervention. These results suggest that perioperative oral administration of bifidobacteria may contribute to a balanced intestinal microbiota and attenuated postoperative inflammatory responses, which may subsequently promote a healthy recovery after colorectal resection.

[Minoru MIZUTA, et al. Perioperative supplementation with bifidobacteria improves postoperative nutritional recovery, inflammatory response, and fecal microbiota in patients undergoing colorectal surgery: a prospective, randomized clinical trial. JStage Bioscience. 2016.](#)

Inflammatory Bowel Disease

IBD is generally associated with a change of the immune system and gut microbiota, and conventional treatments usually result in some side effects. *Bifidobacterium longum* BR-BB536, as colonizing bacteria in the intestine, has been demonstrated to be capable of relieving colitis in mice and can be employed as an alternative or auxiliary way for treating IBD. This review will serve as a basis for future research on IBD treatment.

[Yao S, Zhao Z, Wang W, Liu X. Bifidobacterium Longum: Protection against Inflammatory Bowel Disease. J Immunol Res. 2021.](#)

Anticancer Activity

Probiotics have been employed to prevent and treat cancers for decades where *Bifidobacteria* can effectively inhibit cancers in animal models. Dietary supplementation of *Bifidobacterium longum* BR-BB536 significantly inhibits the 2-amino-3-methylimidazo [4,5-f]quinoline (IQ)-induced incidence of the colon (100% inhibition) and liver (80% inhibition) tumors in male rats and suppresses the IQ-induced mammary carcinogenesis (50% inhibition) and liver carcinogenesis (27% inhibition) of female rats. These findings suggest that *Bifidobacterium* supplements in the diet inhibit IQ-induced colon and liver tumors and to a lesser extent mammary tumors in animal models.

[Reddy, B.S. and Rivenson, A. Inhibitory effect of Bifidobacterium longum on colon, mammary, and liver carcinogenesis induced by 2-amino-3-methylimidazo \[4, 5-f\] quinoline, a food mutagen. Cancer research. 1993.](#)

Eczema

This was a parallel, double-blind placebo-controlled trial of 241 mother-infant pairs. Mothers with allergic disease and atopic sensitization were randomly assigned to receive *L. rhamnosus* and *B. longum*, (2) HOS^t™ *L. paracasei* and HOS^t™ *Bifidobacterium longum*, or (3) placebo, beginning 2 months before delivery and during the first 2 months of breast-feeding. The infants were followed until the age of 24 months. Skin prick tests were performed at the ages of 6, 12, and 24 months.

The risk of developing eczema during the first 24 months of life was significantly reduced in infants of mothers receiving treatment HOS^t™ *L. paracasei* and HOS^t™ *Bifidobacterium longum* compared to the first group and placebo group. No adverse effects were related to the use of probiotics.

[Rautava S, Kainonen E, Salminen S, Isolauri E. Maternal probiotic supplementation during pregnancy and breast-feeding reduces the risk of eczema in the infant. Journal Allergy Clinical Immunology. 2012.](#)

RE-1™ HOS^t™ BR-BB536 *Bifidobacterium longum*

Clinical Studies and Applications III

Chronic Constipation

In a randomized, double-blind placebo-controlled, parallel-group superiority trial in Japan (UMIN 000033031) of 80 older adults diagnosed with chronic constipation were randomly assigned (1:1) to receive either probiotics (*Bifidobacterium longum* BR-BB536, 5×10^{10} colony-forming unit, $n = 39$) or placebo ($n = 41$) once daily for up to 4 weeks. The severity of constipation was evaluated using the Constipation Scoring System. The result shows a significant improvement ($P < 0.01$) in the *Bifidobacterium longum* BR-BB536 group from baseline to week 4, and there were no significant changes in the placebo group. Few adverse events related to the probiotics were observed.

[Takeda, Tsutomu MD, PhD, et al. Usefulness of Bifidobacterium longum BB536 in Elderly Individuals With Chronic Constipation: A Randomized Controlled Trial. The American Journal of Gastroenterology. 2023.](#)

Exercise Performance

Seventeen National Collegiate Athletic Association female swimmers participated in this two-group matched, double-blind, placebo-controlled design. Pre, mid, and post-training, all participants completed exercise performance testing (aerobic/anaerobic swim time trials and force plate vertical jump) as well as provided serum (cytokine and gastrointestinal inflammatory markers) and salivary immunoglobulin A samples. Data were analyzed by analysis of covariance (ANCOVA) by time point with the respective baseline values of each dependent variable being the covariate. Recovery-Stress Questionnaire for Athletes (RESTQ-sport) values in the *Bifidobacterium longum* BR-BB536 group had significantly higher values in sport recovery (weeks five and six) than placebo.

[Carbuhn, A.F. et al. Effects of Probiotic \(Bifidobacterium longum 35624\) Supplementation on Exercise Performance, Immune Modulation, and Cognitive Outlook in Division I Female Swimmers. Sports Journal. 2018.](#)

Stress Management

There is a strong correlation between depression and the imbalance of gut microbiota. A previous study has found that the abundance of Bifidobacteria and Lactobacilli in patients with major depressive disorder (MDD) was significantly decreased.

The mechanisms underlying its antidepressant effects might include anti-inflammation and regulation of tryptophan metabolism, 5-hydroxytryptamine synthesis, and the hypothalamus-pituitary-adrenal axis. Bifidobacterium-related drug preparations may be used as a new adjuvant therapy to prevent the occurrence and development of depression.

RE-1's™ proprietary formula of Human Origin Strains HOS^t™ B.longum, B.breve, B. infantis, L. helveticus are superior combinations for stress management.

[Li Jiayu, et al. Bifidobacterium: a probiotic for the prevention and treatment of depression. Front Microbiol. 2023.](#)

Strain Safety

In a randomized, double-blind control trial, we investigated the effects of *Bifidobacterium longum* BR-BB536 supplementation on intestinal microbiota composition and the immune response in term infants. A total of 264 infants completed the study. Conclusion: *Bifidobacterium longum* BR-BB536 has positive effects on establishing a healthy intestinal microbiota early in life, and it also plays an important role in improving the Th1 immune response.

[Wu BB, Yang Y, Xu X, Wang WP. Effects of Bifidobacterium supplementation on intestinal microbiota composition and the immune response in healthy infants. World J Pediatr. 2016.](#)

Combinations of *Bifidobacterium longum* BR-BB536 and *L. rhamnosus* during early feeding, via the mother or incorporated in early formula-feeding, mold the intestinal microbiota composition in infants in Germany and Finland. Gut microbiota were analyzed by FCM-FISH and qPCR methods.

[Grześkowiak Ł, Grönlund MM, Beckmann C, Salminen S, von Berg A, Isolauri E. The impact of perinatal probiotic intervention on gut microbiota: double-blind placebo-controlled trials in Finland and Germany. Anaerobe. 2012.](#)

RE-1™ HOS_t™ BR-M16V

Bifidobacterium breve

Genus

Bifidobacterium bifidum

Species

Bifidobacterium breve BR-M16V

Human Origin Strain HOS_t™

Isolated from the human gastrointestinal tract.

Human Resident Habitat

- Digestive system (oral microbiome, large intestine).
- Respiratory system.
- Immune system.

Evidence-Based Safety

- Genomic, toxicological, and clinical studies.
- Nonpathogenic, nontoxicogenic and non-invasive.
- Devoid of transmissible antibiotic resistance genes.
- Demonstrated acid and bile tolerance.
- Long History of Safety in Infants for more than 40 years.

Scientifically Backed Probiotic for Infant Use

Supported by more than 90 scientific studies.

Regulatory Approved

- 2013 - FDA notified GRAS status for foods and infant use.
- 2016 - Authorised probiotic strains for infant food in China.

Quality Assured

FSSC22000, GMP, HALAL, Kosher.

History

- One of the best-studied, clinically effective probiotic strains that exert positive effects in humans, particularly infants.
- 1994 approved to be used in neonatal intensive care units (NICUs) hospitals in Japan.
- 2012 approved to be used in neonatal intensive care units (NICUs) of the affiliated hospitals in Australia under the supervision of doctors.
- 2013 granted the GRAS (Generally Recognized As Safe) status for foods and infant use from the U.S. FDA.



Clinical Uses and Benefits

- Especially suitable for humans born via C-Section to help emulate the gut environment observed in vaginally-delivered infants.
- *Bifidobacterium breve* BR-M16V has the potential to modulate the autonomic nervous system in adults. It is shown to improve mood and sleep in high anxiety level people through metabolizing the GABA-like substance pipecolic acid. Pipecolic acid is produced mainly by healthy intestinal bacteria and is not derived from dietary sources.
- *Bifidobacterium breve* BR-M16V is a suitable probiotic strain for routine use in preterm infants in order to control the gut microbiota colonization and shift it towards a healthy profile.
- Superior in providing a consistent beneficial effect in maintaining balanced human mind-body health—eubiosis.

Mechanism of Action

- Oral administration of *Bifidobacterium breve* BR-M16V significantly reduced the serum levels of total IgE, OVA-specific IgE and OVA-specific IgG1 and ex vivo production of IL-4 by the splenocytes that reduce allergy.
- *Bifidobacterium breve* BR-M16V and a GOS mixture is protective against the development of symptoms in mice orally sensitized with whey through increasing the cecal content of propionic and butyric acid, determined an increase of IL-22 expression, which plays an antimicrobial role in the innate immunity response and of the anti-inflammatory cytokine IL-10 in the Peyer's patches. The increase of IL-10-producing CD4+ T cells in the large intestine of murine models and an increased production of acetic acid. Acetic acid plays an important role in the metabolism of fats and carbohydrates in the human body.

RE-1™ HOS_t™ BR-M16V *Bifidobacterium breve*

Specialized Clinical Uses and Benefits Mothers (Pregnant, Postpartum and Breastfeeding) and Infants

- Vertical transmission of beneficial bacteria from mother to child happens during healthy vaginal birth delivery.
- The intestinal microbiota is formed in the first 1000 days of life, when it is particularly sensitive to various factors, such as the composition of the mother's microbiota and type of delivery.
- Breastfeeding and vaginal birth favourably affect the formation of an infant's intestinal microbiota and protect against allergy development.
- The intestinal microbiota of these infants is characterized by an early dominance of Bifidobacterium, which has a significant impact on the development of immune tolerance.
- Prematurity, prolonged hospitalization, immunodeficiency, antibiotics use and delayed enteral feeding are challenging ways to begin life for preterm infants.
- Babies born via C-section often present with an immature gut and exhibit delayed gut colonization with beneficial commensal bacteria such as Bifidobacterium. Instead they are more susceptible to colonization by Enterobacteriaceae and Enterococcus.
- Bifidobacterium breve BR-M16V + Human Milk Oligosaccharide (HMOs) is a superior choice for microbiota restoration for those who were born via C-Section.
- Supplementation with mixture of Bifidobacterium breve BR-M16V and BR-BB536 during pregnancy modulates both maternal and neonatal gut microbiota for prevention of allergies in infants later in life.
- While the pathogenesis of allergic diseases is likely to be multifactorial, deviations in gut colonization during early life are possible major factors promoting abnormal postnatal immune maturation.
- Modulation of gut microbiota during early life through Bifidobacterium breve BR-M16V intervention has emerged as a potential measure to prevent allergic disorders in infants.

RE-1™ HOS^t™ BR-M16V *Bifidobacterium breve*

Clinical Studies and Applications I

C-Sections

The researchers studied the effect of short-chain galacto-oligosaccharides (scGOS), and *Bifidobacterium breve* BR-M16V on the gut microbiota of 153 c-section-born infants. Infants were randomized to receive a standard non hydrolyzed cow's milk-based formula; or the same formula supplemented with *Galactooligosaccharides* (GOS); or the identical prebiotic formula additionally supplemented with *Bifidobacterium breve* BR-M16V (synbiotic formula) from birth (1-3 days at the latest) until 16 weeks of age. A reference group of 30 non-randomized infants born vaginally was also included.

Synbiotic supplementation led to a higher proportion of bifidobacteria-total fecal bifidobacteria was the primary outcome- from day 3/5 until week 8, and a reduction of Enterobacteriaceae from day 3/5 until week 12, compared to controls.

These results show that supplementation with *Bifidobacterium breve* BR-M16V plus *Galactooligosaccharide* may compensate for the delayed *Bifidobacterium* colonization in c-section-delivered infants. Besides this, the synbiotic was also able to decrease fecal pH (acidification of the gut) from day 3/5 until week 4, which could be explained by the increased fecal acetate levels. It is hypothesized that the reduced abundance of Enterobacteriaceae in the synbiotic formula group was likely due to the increase of acetate induced by the synbiotic. Both the reduction of Enterobacteriaceae and the increase of acetate have been previously reported as markers of a healthy gut ecosystem.

In conclusion, this study demonstrates that gut microbiota manipulation early in life in c-section-born infants may help emulate the gut physiological environment observed in vaginally-delivered infants.

[Chua MC, Ben-Amor K, Lay C, et al. Effect of synbiotic on the gut microbiota of cesarean delivered infants: a randomized, double-blind, multicenter study. J Pediatr Gastroenterol Nutr. 2017.](#)

Lactose Intolerance

In 10 infants (aged 5.0 ± 18.5 months) with cow's milk allergies and atopic dermatitis who had a *Bifidobacterium*-deficit gut microbiota. Administration of *Bifidobacterium breve* BR-M16V for one month significantly improved the symptoms of atopic dermatitis, increased the proportion of *Bifidobacterium* and decreased the levels of total aerobes in infants.

[Taniuchi S, et al. Administration of Bifidobacterium to infants with atopic dermatitis: Changes in fecal microflora and clinical symptoms. J Applied Res. 2005.](#)

Strains of *Lactobacillus* and *Bifidobacterium* produce β -galactosidase, and metabolize lactose very efficiently through releasing glucose and galactose from lactose and then further fermenting these monosaccharides. Unlike other bacteria, *Lactobacillus* and *Bifidobacterium* do not produce gas during lactose fermentation, which helps decrease bloating and flatulence.

[Mysore Saiprasad S, Moreno OG, Savaiano DA. A Narrative Review of Human Clinical Trials to Improve Lactose Digestion and Tolerance by Feeding Bifidobacteria or Galacto-Oligosaccharides. Nutrients. 2023.](#)

[Niu, Q., et al. The effect of Bifidobacterium breve M16V on the gut microbiota, immune function, and serum cytokine levels in healthy adult women. Journal of Clinical Biochemistry and Nutrition. 2013.](#)

Asthma

In a double-blind, placebo-controlled multicentre trial, 90 infants with Atopic Dermatitis (AD), age <7 months, were randomized to receive *Bifidobacterium breve* BR-M16V and a *galacto/fructooligosaccharide* during 12 weeks. After 1 year, the prevalence of respiratory symptoms and asthma medication use was evaluated. Total serum IgE and specific IgE against aeroallergens were determined. The results suggest that this synbiotic mixture prevents asthma-like symptoms in infants with AD.

[L. B. van der Aa, et al. Synbiotics prevent asthma-like symptoms in infants with atopic dermatitis. European Journal of Allergy and Clinical Immunology. 2011.](#)

RE-1™ HOS_t™ BR-M16V *Bifidobacterium breve*

Clinical Studies and Applications II

Eczema (Atopic Dermatitis)

In an open trial administration of *HOS_t B.breve* in combination with *HOS_t B. longum* during pregnancy as well as in the postnatal period is tied to lower the risk of developing allergic disorders in infants. The study involved 130 mothers who were provided with a daily powder formulation one month before the expected date of delivery and postnatally to their infants (one sachet daily) for six months. Another 36 mother-infant pairs who did not receive the bifidobacterial supplementation were served as the control.

Prenatal and postnatal supplementation with the *HOS_t*™ mixture significantly reduced the risk of developing eczema and atopic dermatitis in infants during the first 18 months of life as compared to the control group. These findings implicate supplementation with *Bifidobacterium breve BR-M16V* and *Bifidobacterium longum BR-BB536* during pregnancy may prevent allergies in infants later in life.

[Enomoto, T., Sowa, M., et al. Effects of bifidobacterial supplementation to pregnant women and infants in the prevention of allergy development in infants and on fecal microbiota. Allergology International. 2014.](#)

Strain Stability

A gold standard trial in 2014, assessed *Bifidobacterium breve BR-M16V* for its safety and ability to boost fecal *B. breve* counts in 159 preterm newborns (33 weeks or younger). They received either 3 billion colony forming units (CFU) of the probiotic or a placebo. They continued taking their respective supplements until 37 weeks old. No adverse events were noted in the probiotic group during the trial period. *Bifidobacterium breve BR-M16V* counts significantly increased in stools of the probiotic group. This result gives strong evidence of the strain's survival through the gastro-intestinal tract.

[Patole S, et al. Effect of Bifidobacterium breve M-16V supplementation on fecal bifidobacteria in preterm neonates--a randomised double blind placebo controlled trial. National Center for Biotechnology Information. 2014.](#)

Gut-Brain Axis

This study was a randomized, double-blind, placebo-controlled, parallel-group clinical trial to investigate the effects of *Bifidobacterium breve BR-M16V* on mood state. Participants underwent a 6-week intervention period and were given *Bifidobacterium breve BR-M16V* 20 billion CFU/day. *Bifidobacterium breve BR-M16V* significantly decreased the heart rate under stress and tended to decrease resting heart rate. These results suggest that *Bifidobacterium breve BR-M16V* restored the balance of autonomic nervous system activity.

There are increased levels of the GABA-like substance pipercolic acid in stool samples. These results suggest that *Bifidobacterium breve BR-M16V* affects the metabolites of the gut microbiota and has the potential to improve mood and sleep in participants with high anxiety levels.

[Natsumi Mutoh, et al. Bifidobacterium breve M16V regulates the autonomic nervous system via the intestinal environment: A double-blind, placebo-controlled study. Behavioral Brain Research. 2024.](#)

[Trial Registry UMIN000045231](#)

Strain Safety

A meta-analysis conducted in 2017 analyzed nine clinical trials (n=4840) regarding the use of *Bifidobacterium breve BR-M16V* in preterm infants. The review found no adverse events through the use of the probiotic strain.

[Athalye-Jape G, Rao S, Simmer K, Patole S. Bifidobacterium breve M-16V as a Probiotic for Preterm Infants: A Strain-Specific Systematic Review. JPEN American Society for Parenteral and Enteral Nutrition. 2018.](#)

A total of 159 neonates (Probiotic: 79, Placebo: 80) were enrolled. Maternal and neonatal demographic characteristics were comparable between the groups. The proportion of neonates with detectable *B. breve* increased significantly post-intervention. Conclusion: *Bifidobacterium breve BR-M16V* is a suitable probiotic strain for routine use in preterm neonates.

[Trial registration: Australia New Zealand Clinical Trial Registry ACTRN 12609000374268. Conflict of interest statement : The authors have declared that no competing interests exist.](#)

RE-1™ HOS_t™ BR-M63 *Bifidobacterium infantis*

Genus

Bifidobacterium bifidum

Species

Bifidobacterium infantis BR-M63

Human Origin Strain HOS_t™

Isolated from the human gastrointestinal tract.

Human Resident Habitat

- Digestive system (oral microbiome, large intestine).
- Immune system.
- Nervous system (gut-brain axis).

Evidence-Based Safety

- Genomic, toxicological, and clinical studies.
- Nonpathogenic, nontoxicogenic and non-invasive.
- Devoid of transmissible antibiotic resistance genes.
- Demonstrated acid and bile tolerance.

Scientifically Backed Probiotic for Human Use

Supported by scientific studies.

Regulatory Approved

2020 - Self-affirmed GRAS for foods and infant use.

Quality Assured

FSSC22000, GMP, HALAL, Kosher.

Clinical Uses and Benefits

- *Bifidobacterium infantis* BR-M63 has superior potential to colonize and adapt to the intestinal environment of humans, especially infants.
- Helps in the management and prevention of diarrhea, including antibiotic-associated diarrhea and acute gastroenteritis.
- Helps to boost mental health in adults with irritable bowel syndrome (IBS).
- Helps reduce the incidence and severity of eczema in infants and children.
- Enhances growth and development of children and adults by supporting better nutrient absorption.



Clinical Uses and Benefits (Continued)

- *Bifidobacterium infantis* BR-M63 is a suitable probiotic strain for routine use in preterm neonates.
- Has a unique capacity among gut bacteria in its immense capacity to utilize *Human Milk Oligosaccharide (HMOs)*, the component that is highly abundant in human breast milk. (HMOs offer no direct nutritive value for infants, but they function in shaping a better infant gut microbiota with life-long impacts.)
- Reduces the symptoms of colic in infants, leading to less crying and discomfort.
- Improves digestion in infants (and aids in the digestion of breast milk) by breaking down complex carbohydrates that infants might otherwise struggle to digest.
- A high abundance of bifidobacteria may contribute to improved health status and protect premature infants from diseases.
- Development and growth of the gastrointestinal tract particularly for epithelial barrier function and mucosal immunity.

Mechanism of Action

- Production of Short-Chain Fatty Acids (SCFAs): *Bifidobacterium infantis* BR-M63 produces SCFAs such as acetate, which lower the pH of the gut environment, inhibiting the growth of pathogenic bacteria.
- Enhances the production and stimulation of mucosal immunity - secretory IgA, an important antibody in the gut mucosa that helps neutralize pathogens.
- Produces bioactive compounds that reduce inflammatory responses in the gut.

[Ma, Z.F., et al. Bifidobacterium infantis M-63 improves mental health in victims with irritable bowel syndrome developed after a major flood disaster. Beneficial Microbes. 2019.](#)

RE-1™ HOS_t™ BR-M63 *Bifidobacterium infantis*

Clinical Studies and Applications I

Strain Efficacy

A meta-analysis was conducted using fixed-effect models to estimate the combined effect of *Bifidobacterium infantis* on primary outcomes, which included abdominal pain, bloating/distention, and bowel habit satisfaction. A systematic review was performed based on PubMed, Cochrane Library, and EMBASE databases to identify the randomized controlled trials comparing probiotic *B. infantis* with placebo in treating IBS symptoms, published up until 31 December 2016.

The single strain efficacy needs to be further validated by larger size clinical trials. The multi strains (*Bifidobacterium infantis* and other *Bifidobacterium*) is a more effective therapeutic option for IBS patients, which could significantly alleviate the symptoms of IBS without significant adverse effects.

[Yuan, F, et al. Efficacy of Bifidobacterium infantis 35624 in patients with irritable bowel syndrome: a meta-analysis. Current Medical Research and Opinion. 2017.](#)

RE-1™ HOS_t™ BR-B3 *Bifidobacterium breve*

Genus

Bifidobacterium bifidum

Species

Bifidobacterium breve BR-B3

Human Origin Strain HOS_t™

Isolated from the human gastrointestinal tract.

Human Resident Habitat

- Digestive system (oral microbiome, large intestine).
- Immune system.
- Nervous system (gut-brain axis).

Evidence-Based Safety

- Genomic, toxicological, and clinical studies.
- Nonpathogenic, nontoxic and non-invasive.
- Devoid of transmissible antibiotic resistance genes.
- Demonstrated acid and bile tolerance.

Scientifically Backed Probiotic for Human Use

Supported by scientific studies.

Quality Assured

FSSC22000, GMP, HALAL, Kosher.

History

- History of use for the prevention of side-effects during antibiotic treatments or chemotherapy.

Clinical Uses and Benefits

- Superior strain that has high gastric transit survival and gastrointestinal persistence and superior therapeutic efficacy.
- Epidemiological data have shown the predisposition of neonates born by cesarean section to develop obesity later in life.
- *Bifidobacterium breve BR-B3* supplementation in infants born by cesarean section resulted in a lower catch-up growth in weight, due to the protective effect of this specific probiotic strain against the risk of developing metabolic disturbance later in life.
- *Bifidobacterium breve BR-B3* was found to exhibit an anti-obesity effect, as gut microbiota composition and barrier function plays a crucial role as well in causing obesity and metabolic complications.



Clinical Uses and Benefits (Continued)

- Reduced the rate of change in body fat mass and body fat percentage as compared to the placebo group.
- Continuous intake of *Bifidobacterium breve BR-B3* may improve gut microbial balance and stimulate fat metabolism.
- *Bifidobacterium breve BR-B3* may influence the gut-brain axis, potentially improving mood and cognitive function.
- *Bifidobacterium breve BR-B3* may improve metabolic disorders.
- Enhances gut barrier function, preventing the translocation of harmful bacteria and toxins into the bloodstream.
- Shown to help relieve constipation.
- Offsets the side-effects of antibiotic treatment and chemotherapy.

Mechanism of Action

- Accumulating evidence indicates that obesity is associated with a state of chronic, low-grade inflammation, suggesting that inflammation may be a potential mechanism by which obesity leads to insulin resistance. An increase in plasma Lipopolysaccharides (LPS) induced by a high-fat diet suggests metabolic endotoxemia, considered to trigger the development of obesity, inflammation, insulin resistance, and type 2 diabetes.
- *Bifidobacterium breve BR-B3* can induce prolonged dendritic cell survival, with oppositional action on the maturation—apoptosis programme induced by LPS. *Bifidobacterium breve BR-B3* induced the development of IL-10-producing Tr1 cells in the large intestine, which demonstrates that it prevents intestinal inflammation. Clinical evidence shows that a 12-week intake of *Bifidobacterium breve BR-B3* resulted in significantly decreased hCRP levels compared with the placebo group.
- *Bifidobacterium breve BR-B3* is capable of producing SCFA, such as acetic acid and lactic acid, and other bioactive components, such as conjugated linoleic acid and other fatty acid metabolites, which are possibly involved in the anti-metabolic syndrome effect.

RE-1™ HOS^t™ BR-B3 *Bifidobacterium breve*

Clinical Studies and Applications I

Body Fat Reduction

In a randomized, double-blind, placebo-controlled trial was conducted to evaluate the effect of the consumption of *Bifidobacterium breve* BR-B3 on body compositions and blood parameters in 52 adults with a tendency for obesity.

Participants were randomized to receive either a placebo or a *Bifidobacterium breve* BR-B3 capsule daily for 12 weeks.

A significantly lowered fat mass was observed in the *Bifidobacterium breve* BR-B3 group compared with the placebo group at week 12. Improvements were observed for some blood parameters related to liver functions and inflammation, such as γ -glutamyltranspeptidase and high-sensitivity C-reactive protein.

[Minami, J.I., et al. Oral administration of *Bifidobacterium breve* B3 modifies metabolic functions in adults with obese tendencies in a randomized controlled trial. *Journal of Nutritional Science*. 2015.](#)

In the double-blind, randomized clinical trial of 103 participants, aimed to evaluate the efficacy and safety of *Bifidobacterium breve* BR-B3 for reducing body fat. Dual-energy X-ray absorptiometry was used to evaluate body fat reduction objectively.

Body fat was significantly lower in the *Bifidobacterium breve* BR-B3 group than in the placebo group. In conclusion, ingesting *Bifidobacterium breve* BR-B3 significantly reduces body weight, waist circumference, and hip circumference. B3 did not cause any severe adverse reactions.

[Sung, H.K.; et al. Body Fat Reduction Effect of *Bifidobacterium breve* B-3: A Randomized, Double-Blind, Placebo Comparative Clinical Trial. *Nutrients*. 2023.](#)

Oral Health

Oral administration of *Bifidobacterium breve* BR-B3 reduced oral mucosal inflammation and promoted wound healing via intestinal dendritic cells (DCs)-derived IL-10. IL-10 reversed cellular senescence caused by sunitinib in Oral Mucosa Stem Cells, and IL-10 neutralizing antibody blocked the ameliorative effect of *Bifidobacterium breve* BR-B3 on oral mucosal wound healing under sunitinib treatment conditions.

[Qingxiang Li, et al. Oral administration of *Bifidobacterium breve* improves anti-angiogenic drugs-derived oral mucosal wound healing impairment via upregulation of interleukin-10. *International Journal of Oral Science*. 2023.](#)

Colitis (Inflammation on the Lining of the Colon)

Results showed that *Bifidobacterium breve* BR-B3 effectively colonized the intestinal tract and alleviated colitis symptoms by reducing the disease activity index. *Bifidobacterium breve* BR-B3 mitigated intestinal epithelial cell damage, inhibited the pro-inflammatory factors, and upregulated tight junction (TJ)-proteins. Gut microbiota and metabolome analysis found that *Bifidobacterium breve* BR-B3 boosted bile acid-regulating genera (such as *Bifidobacterium* and *Clostridium*), which promoted bile acid deconjugation in the intestine. Notably, cholic acid (CA) was closely associated with the expression levels of inflammatory factors and TJ-proteins ($p < 0.05$). In the in vitro cell experiments further confirmed that CA (20.24 ± 4.53 pg/mL) contributed to the inhibition of lipopolysaccharide-induced tumour necrosis factor- α expression (49.32 ± 5.27 pg/mL) and enhanced the expression of TJ-proteins (Occludin and Claudin-1) and MUC2. This study suggested that *B. breve* could have a positive effect on colitis.

[Yaqian Li, et al. *Bifidobacterium breve* Protects the Intestinal Epithelium and Mitigates Inflammation in Colitis via Regulating the Gut Microbiota-Cholic Acid Pathway. *Journal of Agricultural and Food Chemistry*. 2024.](#)

RE-1™ HOS_t™ BR-B3 *Bifidobacterium breve*

Clinical Studies and Applications II

IBD

The epithelium of the small intestine represents the first line of defence against the entry of bacteria into host tissues. When the epithelial cell is shed, a discontinuity in the villus epithelial monolayer is created, which potentially compromises the epithelial barrier. Delayed repair of epithelial defects caused by excessive cell shedding (TNF- α induces apoptosis) contributes to the development of macroscopic ulceration.

The studies with confocal endomicroscopy of patients with IBD in clinical remission have demonstrated that those patients with high rates of cell shedding are more likely to relapse than those with low shedding rates, demonstrating a causative link between barrier function and the inflammatory response.

The results in an in vivo experiment suggest a particular human isolated bifidobacterium strain *Bifidobacterium breve BR-B3* positively modulates the small intestinal cell shedding response via host MyD88- and bacterial EPS-dependent interactions which serve to significantly reduce apoptotic signaling in the epithelial compartment. These data identify a previously unknown mechanism by which *Bifidobacterium breve BR-B3* protects its host against pathological cell shedding. *Bifidobacterium breve BR-B3* appears to modulate epithelial integrity/survival during periods of inflammatory insult. These findings have important implications for the future design of therapeutic strategies in the context of intestinal diseases.

[K. R. Hughes, et al. Bifidobacterium breve reduces apoptotic epithelial cell shedding in an exopolysaccharide and MyD88-dependent manner. The Royal Society Publishing. 2017.](#)

Urogenital Infection

To explore potential vaginal microbiome biomarkers for high-grade squamous intraepithelial lesion (HSIL), and to find the best scheme to facilitate the current cervical cancer screening strategy. This study enrolled 272 women, including 83 confirmed with HSIL, 86 with HPV infection but without cervical neoplasm, and 103 without HPV infection as controls. *Bifidobacterium* being under 0.0116183% may be a good predictor for HSIL.

[Chao X, et al. Research of the Potential Vaginal Microbiome Biomarkers for High-Grade Squamous Intraepithelial Lesion. Front Med \(Lausanne\). 2021.](#)

SARS-CoV-2

This study aims to evaluate the role of oral probiotic *Bifidobacterium* on moderate/severe SARS-CoV-2 inpatients. This study aims to evaluate the role of oral probiotic *Bifidobacterium* on moderate/severe SARS-CoV-2 inpatients.

The result shows patients who were administered with oral booster-single strain probiotics were discharged with a median inpatient day of 7.6 days which were significantly shorter than those of patients without probiotic. There were significant differences in inpatient days, radiological improvement at day 6 and week 3, and reduction in interleukin-6 levels in those receiving oral probiotic therapy.

[Bozkurt HS, Bilen Ö. Oral booster probiotic bifidobacteria in SARS-COV-2 patients. Int J Immunopathol Pharmacol. 2021.](#)

RE-1™ HOS_t™ BR-LAC-343

Lactobacillus gasseri

Genus

Lactobacillus

Species

Lactobacillus gasseri BR-LAC-343

Human Origin Strain HOS_t™

Isolated from the human gastrointestinal tract.

Human Resident Habitat

- Digestive system (oral microbiome, small intestine).
- Urogenital system.

Evidence-Based Safety

- Genomic, toxicological, and clinical studies.
- Nonpathogenic, nontoxicogenic and non-invasive.
- Devoid of transmissible antibiotic resistance genes.
- Demonstrated acid and bile tolerance.

Scientifically Backed Probiotic for Human Use

Supported by scientific studies.

Quality Assured

FSSC22000, GMP, HALAL, Kosher.

Clinical Uses and Benefits

- Effective in preventing and managing bacterial vaginosis and other urogenital infections by maintaining a healthy vaginal microbiota.
- Reduction in abdominal fat
- Improve lipid profiles by lowering LDL cholesterol and increasing HDL cholesterol.
- Maintaining serum and kidney homeostasis
- Helps reduce gut inflammation, which is beneficial for conditions like inflammatory bowel disease (IBD).
- Help alleviate symptoms of IBS, such as bloating, abdominal pain, and irregular bowel movements.
- *Lactobacillus gasseri* BR-LAC-343 can enhance the immune system by modulating immune responses and increasing the production of anti-inflammatory cytokines.
- Adhesion to epithelial tissue.
- Transient persistence in the GIT.



Clinical Uses and Benefits (Continued)

- Produce antimicrobial substances and prevent infection.
- Positively influence metabolic activity.
- *Lactobacillus gasseri* BR-LAC-343 assists in ameliorating fatty liver progression.
- Has an effect in lowering serum cholesterol concentrations.
- Reduces concentration of cholesterol in the growth medium by 65% as compared with the initial concentration (measured spectrophotometrically).

Mechanism of Action

- It was shown that lactic acid induced an anti-inflammatory condition and inhibited inflammation elicited by toll-like receptor (TLR) agonists. Besides that, lactic acid triggers the interleukin (IL)-1 pathway through production of its antagonist IL-1 receptor antagonist (IL-1Ra).
- Vaginal health has been attributed to the presence of *Lactobacillus* H₂O₂-producing species/strains. One of the mechanisms of H₂O₂ production is the dismutation of O₂⁻ (produced by NADPH oxidase) into H₂O₂, which can occur spontaneously, optimally at pH 4.8, or catalyzed by SOD enzymes (superoxide dismutase). Additionally, lactic acid can inactivate BV-associated bacteria and *Chlamydia trachomatis*.
- *Lactobacillus gasseri* BR-LAC-343 produced amino acids and important amino acids metabolites when paired with Inulin through peptide metabolism.

RE-1™ HOS^t™ BR-LAC-343 *Lactobacillus gasseri*

Clinical Studies and Applications I

Cholesterol Lowering Effect

Cholesterol accumulation is considered to be one of the factors contributing to the development of fatty liver. Furthermore, recent studies have confirmed that a cholesterol-rich diet may cause liver inflammation. *Lactobacillus gasseri* reduced total and low-density lipoprotein (LDL) cholesterol as well as triglycerides.

[He T, Lykov N, Luo X, Wang H, Du Z, Chen Z, Chen S, Zhu L, Zhao Y, Tzeng C. Protective Effects of *Lactobacillus gasseri* against High-Cholesterol Diet-Induced Fatty Liver and Regulation of Host Gene Expression Profiles. Int J Mol Sci. 2023.](#)

Fatty Liver

One of the main contributors to the development of fatty liver is excessive intrahepatic triglyceride and lipid deposition. The number of intrahepatic triglycerides was related to the triglyceride content, increased ratio of saturated and unsaturated fatty acids and lipolysis. Lipolysis is an essential process for cell metabolism. The dysregulation of this process contributes significantly to the generation of Reactive Oxygen Species (ROS) and the progression of metabolic diseases, such as fatty liver. According to previous research, patients with fatty liver had 50% higher rates of lipolysis. The results obtained from our HCD zebrafish model also indicated increased rates of lipolysis, which corresponds to the previous reports. Additionally, it was detected a decreased expression of the cholesterol biosynthesis-related gene *hsd17b7*, which was partially relieved after *Lactobacillus gasseri* treatment.

[Aregger M., et al. Systematic mapping of genetic interactions for de novo fatty acid synthesis identifies C12orf49 as a regulator of lipid metabolism. Nat. Metab. 2020.](#)

Vaginal Homeostasis

To function at its best, the vagina needs to maintain stable, acidic pH levels. When pH levels rise above or drop below healthy pH levels, lactobacilli species struggle to flourish, and pathogenic bacteria can grow and thrive. Menstrual cycles and sexual activity can cause temporary instability in the microbiome. To prevent this, *Lactobacillus gasseri* cells secrete lactic acid and hydrogen peroxide, both of which help maintain an ideal vaginal pH. Eventhough *Lactobacillus crispatus* produces more lactic acid, vaginal communities dominated by *Lactobacillus gasseri* tend to be highly stable over time.

[Jimenez NR, Maarsingh JD, Łaniewski P, Herbst-Kralovetz MM. Commensal *Lactobacilli* Metabolically Contributes to Cervical Epithelial Homeostasis in a Species-Specific Manner. mSphere. 2023.](#)

Kidney Homeostasis

Lactobacillus gasseri BR-LAC-343 may have application in maintaining serum and kidney homeostasis through the metabolic capacity to degrade oxalate in the GIT. Oxalate is a toxic component in certain foods that is not metabolized by host mechanisms, but rather by oxalate-degrading bacteria in the GIT. Excessive or chronic intake of oxalate can result in kidney failure or disruption in the metabolism of calcium. *Lactobacillus gasseri* BR-LAC-343 encodes enzymes involved in oxalate catabolism, specifically formyl-coenzyme A transferase (*frc*) and oxalyl-coenzyme A decarboxylase (*oxc*). The results illustrated that HOS^t L. *gasseri* may be used to prophylactically or therapeutically lower oxalic acid toxicity or renal complications.

[Azcarate-Peril MA, Altermann E, Goh YJ et al. Analysis of the genome sequence of *Lactobacillus Gasseri* ATCC 33323 reveals the molecular basis of an autochthonous intestinal organism. Appl Environ Microbiol. 2008.](#)

Sleep Quality

Seven studies were included in the systematic literature review; six studies included data for meta-analysis to quantify the effect of HOS^t L. *gasseri* on sleep quality. The ingestion of *Lactobacillus gasseri* BR-LAC-343 resulted in significant improvement in the PSQI global score compared to control (−0.77, 95% CI: −1.37 to −0.16, P = 0.01). In the two studies that included electroencephalogram (EEG) data, output was significantly improved for at least half of the measured EEG outcomes after consumption of *Lactobacillus gasseri* BR-LAC-343. No serious concerns were found in the potential biases of included studies, indirectness of the included evidence, and other methodological issues.

[Chu Anna, Samman S, Galland B, Foster M. Daily consumption of *Lactobacillus gasseri* CP2305 improves quality of sleep in adults – A systematic literature review and meta-analysis. Clinical Nutrition. 2023.](#)

RE-1™ HOS_t™ BR-LACRIS-S *Bacillus coagulans*

Genus

Lactobacillus

Species

Bacillus coagulans BR-LACRIS-S

Human Origin Strain HOS_t™

Isolated from the human gastrointestinal tract.

Human Resident Habitat

- Digestive system (oral microbiome, large intestine).
- Immune system.
- Musculoskeletal system.

Evidence-Based Safety

- Genomic, toxicological, and clinical studies.
- Nonpathogenic, nontoxicogenic and non-invasive.
- Devoid of transmissible antibiotic resistance genes.
- Demonstrated acid and bile tolerance.

Scientifically Backed Probiotic for Human Use

Supported by scientific studies.

Quality Assured

FSSC22000, GMP, HALAL, Kosher.

Clinical Uses and Benefits

- Improves digestion through promoting eubiosis in the microbiome.
- Relief from Irritable Bowel Syndrome (IBS).
- Reduction in gastrointestinal and respiratory tract infections.
- Blood sugar regulation.
- Rheumatoid arthritis management.
- *Bacillus coagulans* BR-LACRIS-S has antimicrobial properties that help antibiotic-associated diarrhea by fighting off harmful pathogens and maintaining gut flora in challenging environments.

Mechanism of Action

- *Bacillus coagulans* BR-LACRIS-S is a unique type of probiotic known for its ability to form spores.



Mechanism of Action (Continued)

- Spore-forming probiotics can withstand the harsh conditions of the digestive system, including stomach acid and bile. Their spore coat acts as a protective shield, allowing them to survive the journey through the stomach and reach the intestines intact.
- The spore-forming ability of these probiotics enhances their survival, efficacy, and practicality, making them an important tool for maintaining gut health, especially in challenging situations such as during antibiotic use.
- Spore-forming probiotics are more resistant to antibiotics compared to non-spore-forming ones.
- Once spore-forming probiotics reach the gut, they can “activate” and germinate, returning to their active, vegetative state and colonizing the intestines. This ensures they become active only in the appropriate environment, maximizing their potential benefits.
- Spore-forming probiotics, such as *Bacillus coagulans* BR-LACRIS-S have been shown to interact with the immune system, helping to enhance immune response, stimulating the production of regulatory cells and compounds that support immune function, and help in reducing inflammation in the gut.
- Supports the immune system by interacting with immune cells, such as macrophages, and boosting their activity.
- Enhances the body’s natural defence mechanisms, making it beneficial for preventing infections and supporting overall immune health.
- Can reduce and eliminate lactose intolerance, aiding in the breakdown of lactose, and associated symptoms such as bloating, gas and diarrhea.
- *Bacillus coagulans* BR-LACRIS-S may reduce pain and inflammation in individuals with rheumatoid arthritis (RA). Its anti-inflammatory properties help decrease joint discomfort and improve quality of life in people with autoimmune conditions like RA.

RE-1™ HOS^t™ BR-LACRIS-S *Bacillus coagulans*

Clinical Studies and Applications I

IBS

In a randomized, double-blind, parallel-group, placebo-controlled clinical trial involving 44 subjects who received either placebo or HOS^t™ *Bacillus coagulans* once a day for 8 weeks. Self-assessments of the severity of IBS symptoms (abdominal pain and bloating) were recorded every day for 8 weeks. Because baseline values were significantly different between the 2 study groups, within-group analysis was conducted.

Results: Improvements from baseline abdominal pain and bloating scores in the HOS^t™ *Bacillus coagulans* group were statistically significant for all 7 weekly comparisons. No treatment-related adverse events or serious adverse events were reported during the 8-week study period.

[Hun L. Bacillus coagulans significantly improved abdominal pain and bloating in patients with IBS. Postgrad Med. 2009.](#)

Antibiotic-Associated Diarrhea

Antibiotic-associated diarrhea (AAD) occurs in approximately 25% of patients receiving antibiotics. In the largest meta-analysis to date analyzing 25 randomized controlled trials of probiotics for the prevention of AAD including 2810 subjects and in the pediatric AAD, including 10 randomized trials testing 1986 children.

More than half of the trials demonstrated efficacy of the probiotic. *Lactobacillus GG*, HOS^t™ *Bacillus coagulans*, and *Saccharomyces boulardii* appeared to be most effective.

[Doron SI, Hibberd PL, Gorbach SL. Probiotics for prevention of antibiotic-associated diarrhea. J Clin Gastroenterol. 2008.](#)

Intestinal Discomfort Post Meal in Healthy Adults

In the double-blind, placebo-controlled clinical study randomized 61 subjects into two groups : receiving probiotic supplements HOS^t™ *Bacillus coagulans* or placebo.

The *Bacillus coagulans*-based probiotic product showed superior numerical scores to placebo in efficacy. Within this study population, the HOS^t™ *Bacillus coagulans*-based probiotic product was effective and safe for abating symptoms of gastrointestinal distress, particularly abdominal pain and distention in the postprandial period. ClinicalTrials.gov Identifier: NCT00881322

[Kalman DS, Schwartz HI, Alvarez P, Feldman S, Pezzullo JC, Krieger DR. A prospective, randomized, double-blind, placebo-controlled parallel-group dual site trial to evaluate the effects of a Bacillus coagulans-based product on functional intestinal gas symptoms. BMC Gastroenterol. 2009.](#)

Rheumatoid Arthritis

In the randomized, double-blind, placebo-controlled, parallel-design, clinical pilot trial was conducted to evaluate the effects of the LAB probiotic preparation, HOS^t™ *Bacillus coagulans* on symptoms and measures of functional capacity in patients with rheumatoid arthritis (RA) in combination with pharmacological anti-arthritis medications.

Compared with placebo, HOS^t™ *Bacillus coagulans* treatment resulted in greater improvement in patient global assessment and self-assessed disability; reduction in CRP; as well as the ability to walk 2 miles, reach, and participate in daily activities. There were no treatment-related adverse events reported throughout this study.

Trial registration: ACTRN12609000435280.

[Mandel DR, Eichas K, Holmes J. Bacillus coagulans: a viable adjunct therapy for relieving symptoms of rheumatoid arthritis according to a randomized, controlled trial. BMC Complement Altern Med. 2010.](#)

RE-1™ HOSt™ BR-MCC1848

Lactobacillus helveticus

Genus

Lactobacillus

Species

Lactobacillus helveticus BR-MCC1848

Human Origin Strain HOSt™

Isolated from the human gastrointestinal tract.

Human Resident Habitat

- Digestive system (oral microbiome, gastrointestinal tract).
- Immune system.
- Nervous system (gut-brain axis).
- Skeletal system.

Evidence-Based Safety

- Genomic, toxicological, and clinical studies.
- Nonpathogenic, nontoxicogenic and non-invasive.
- Devoid of transmissible antibiotic resistance genes.
- Demonstrated acid and bile tolerance.

Scientifically Backed Probiotic for Human Use

Supported by scientific studies.

Quality Assured

FSSC22000, GMP, HALAL, Kosher.

Clinical Uses and Benefits

- *Lactobacillus helveticus* BR-MCC1848 is highly resilient, surviving through the acidic environment of the stomach and bile to reach the intestines where it can colonize and provide its benefits, such as:
 - Reduction in allergic reactions particularly in individuals with mild allergies.
 - Reduction of anxiety and depression.
 - Enhanced calcium absorption and bone health.
 - Has an effect on lowering blood pressure in hypertensive patients
 - Restores eubiosis through balancing the composition of gut microbiome.
 - Enhances immune response by increasing the activity of natural killer cells and the production of antibodies.
 - Reduction of skin Inflammation and improve symptoms of conditions like atopic dermatitis.



Mechanism of Action

- *Lactobacillus helveticus* BR-MCC1848 has potential benefits for mental health through the gut-brain axis.
- Happy strain psychobiotics - clinically proven to help regulate mood.
- Reduces stress and anxiety - Studies indicate that *Lactobacillus helveticus* BR-MCC1848 in particular may help modulate the production of neurotransmitters like serotonin and GABA (gamma-aminobutyric acid), which are crucial for mood regulation.
- Helps reduce symptoms of depression and enhances overall well-being.
- Consumption of *Lactobacillus helveticus* BR-MCC1848 significantly increased the antibody titers against all of types A/H1N1, A/H3N2, and B influenza antigens in elderly subjects aged 85 years or older after influenza vaccination as compared to those before vaccination. (*As individuals age, immunosenescence impairs the ability to fend off infections. Which results in greater morbidity and mortality compared to younger adults. And the capacity to respond to vaccination is also lower in older people.)

RE-1™ HOS^t™ BR-MCC1848 *Lactobacillus helveticus*

Clinical Studies and Applications I

Calcium Absorption

A starter containing a HOS^t™ *Lactobacillus helveticus* strain has been reported to produce bioactive peptides. Milk peptide activities include binding to opioid receptors, inhibition of angiotensin-converting enzyme (ACE),⁶ and modification of antithrombotic and immune responses. Phosphopeptides formed from casein may enhance the absorption of minerals, especially calcium, from the digestive tract into the circulation.

[Nakamura Y, et al. Purification and characterization of angiotensin I-converting enzyme inhibitors from sour milk. J Dairy Sci. 1995.](#)

Cardiovascular Benefit

Lactobacillus helveticus BR-MCC1848 fermented milk containing Ile-Pro-Pro and Val-Pro-Pro tripeptide has been shown to decrease systolic and diastolic blood pressure in hypertensive subjects. In the long-term clinical study (21 wk), systolic and diastolic blood pressure were decreased more in the *Lactobacillus helveticus* BR-MCC1848 fermented milk group than in the control group.

[Seppo L, Jauhiainen T, Poussa T, Korpela R. A fermented milk high in bioactive peptides has a blood pressure lowering effect in hypertensive subjects. Am J Clin Nutr. 2003.](#)

Daily Mood States

58 Young adult participants were randomized to receive heat-killed *Lactobacillus helveticus* BR-MCC1848 powder or placebo powder for 4 weeks. Four weeks of heat-killed *Lactobacillus helveticus* BR-MCC1848 intake, compared to placebo, significantly improved the shortened version of the POMS 2 'friendliness' and the VAS 'relaxed' scores, which are two indicators of positive mood states. No adverse effects were observed. These results suggest that daily consumption of heat-killed *Lactobacillus helveticus* BR-MCC1848 is safe and has the potential to improve positive mood states.

UMIN Clinical Trial Registry: UMIN000043697.

[Mutoh N, et al. Heat-killed *Lactobacillus helveticus* improves mood states: a randomised, double-blind, placebo-controlled study. Benef Microbes. 2023.](#)

Resilience to Anxiety and Depression

The gut microbiota is involved in the pathogenesis of stress-related disorders. Probiotics can benefit the central nervous system via the microbiota-gut-brain axis, which raises the possibility that probiotics are effective in managing depression.

The gene expression profile analysis of the nucleus accumbens, which plays an important role in stress resilience, indicated that *Lactobacillus helveticus* BR-MCC1848 ameliorated sCSDS-induced gene expression alterations in signal transduction or nervous system development. These findings suggest that *Lactobacillus helveticus* BR-MCC1848 supplementation is useful as a preventive strategy for chronic stress-induced depression.

[Maehata H, et al. Heat-killed *L. helveticus* strain MCC1848 confers resilience to anxiety or depression-like symptoms caused by subchronic social defeat stress in mice. Biosci Biotechnol Biochem. 2019.](#)

RE-1™ HOS^t™ BR-MCC1849

Lactobacillus paracasei

Genus

Lactobacillus

Species

Lactobacillus paracasei BR-MCC1849

Human Origin- train HOS^t™

Isolated from the human gastrointestinal tract.

Human Resident Habitat

- Digestive system (oral microbiome, gastrointestinal tract).
- Immune system.
- Respiratory system.
- Nervous system (gut-brain axis).

Evidence-Based Safety

- Genomic, toxicological, and clinical studies.
- Nonpathogenic, nontoxicogenic and non-invasive.
- Devoid of transmissible antibiotic resistance genes.
- No Infection Risk: Sterilized *Lactobacillus paracasei* BR-MCC1849
- Eliminates risk of negative interactions in immunocompromised individuals.
- Granted qualified presumption of safety status by the European Food Safety Authority.

Scientifically Backed Probiotic for Human Use

Supported by scientific studies.

Quality Assured

FSSC22000, GMP, HALAL, Kosher.

Clinical Uses and Benefits

- *Lactobacillus paracasei* BR-MCC1849 promotes skin health by reducing inflammation, enhancing barrier function, and inhibiting the growth of pathogenic bacteria on the skin.
- Protects against the common cold and improves Influenza vaccine response particularly in population with reduced immunity (aging population).
- Influence energy homeostasis, glucose metabolism, and lipid metabolism, potentially aiding in the management of conditions like obesity and type 2 diabetes.
- Prominent Immune Function : Proven effective in clinical studies.



Mechanism of Action

- *Lactobacillus paracasei* BR-MCC1849 is a precious immunogenic postbiotic strain that increases IgA levels in the serum and lungs, indicating that it modulates not only gut mucosal immunity but also respiratory and systemic immunity.
- Contributes to the integrity of the gut barrier by enhancing the production of mucins and tight junction proteins. This helps prevent the translocation of harmful bacteria and toxins from the gut into the bloodstream.
- *Lactobacillus paracasei* BR-MCC1849 does not need to survive digestion or colonize the gut to be effective. The bioactive compounds (postbiotic) are absorbed and used directly by the body.
- It greatly surpasses the other lactic acid bacteria in immune activity through its high ability to induce the production of interleukin-12 (IL-12) – a cytokine with important regulatory functions bridging innate and adaptive immunity.
- IL-12 is a cytokine released from antigen-presenting cells that acts on naïve T cells to promote differentiation into Th1 cells and follicular helper T (T_{fh}) precursor cells. Th1 cells activate various immune cells, including natural killer (NK) cells and macrophages, that are responsible for innate immunity and removing pathogenic bacteria, viruses, and infected cells. T_{fh} cells play an important role in acquired immunity by promoting B cell maturation, thereby facilitating antigen-specific antibody responses to viral, bacterial, parasite, and fungal infections.
- Strengthens the natural defence system through IgA production in intestinal tissue and activates humoral immunity.
(*Humoral immunity primarily involves the production of antibodies by B cells and the role of these antibodies in neutralizing pathogens such as bacteria and viruses that are present in body fluids (hence the term “humoral,” which refers to body fluids). Humoral immunity is particularly effective against extracellular pathogens, such as bacteria and viruses in the blood and other body fluids.)

RE-1™ HOSt™ BR-MCC1849 *Lactobacillus paracasei*

Clinical Studies and Applications I

Immune Function in Elderly

42 participants over 65 years of age were randomized to receive heat-killed *Lactobacillus paracasei* BR-MCC1849 (LP group) or a placebo group for 6 weeks. Three weeks after beginning of intake, all subjects received an influenza vaccination (A/H1N1, A/H2N3 and B). Blood samples were collected before and after the treatment period. In the subgroup of the oldest old, defined as ≥ 85 years of age, the antibody responses to the A/H1N1 and B antigens, which were impaired in the placebo group, were improved in the LP group. No significant effects of non-viable *Lactobacillus paracasei* BR-MCC1849 were observed in the elderly. *Lactobacillus paracasei* BR-MCC1849 intake may affect responsiveness to vaccinations, particularly in populations with reduced immunity.

[Maruyama M, Abe R, Shimono T, Iwabuchi N, Abe F, Xiao JZ. The effects of non-viable *Lactobacillus* on immune function in the elderly: a randomised, double-blind, placebo-controlled study. *Int J Food Sci Nutr*. 2016.](#)

Common Cold and Mood in Young Adults

A total of 241 participants were randomised to receive heat-killed *Lactobacillus paracasei* BR-MCC1849 postbiotic powder or placebo powder once daily for 12 weeks based on the incidence of the common cold in the previous year, so that the risk of the incidence was equal among the groups. Salivary secretory immunoglobulin A concentrations and saliva flow rates were analysed at 0 and 6 weeks.

In a prespecified subgroup of subjects who had the common cold in the previous year, the incidence, total number of days of symptoms, and symptom scores of the common cold significantly improved in the postbiotic group than in the placebo group. The level of deterioration in the positive mood state caused by stress was less in the *Lactobacillus paracasei* BR-MCC1849-intake group than in the placebo group. These results indicate that *Lactobacillus paracasei* BR-MCC1849 has the potential to improve resistance to common cold infections in susceptible subjects and maintain a desirable mood state, even under mental stress conditions.

[Murata M, et al. Effects of paraprobiotic *Lactobacillus paracasei* MCC1849 supplementation on symptoms of the common cold and mood states in healthy adults. *Benef Microbes*. 2018.](#)

Strain Safety

The safety of a new lactobacillus strain, *Lactobacillus paracasei* BR-MCC1849, was evaluated by single-dose and 90-day repeated-dose oral toxicity tests using rats. Single dose of *Lactobacillus paracasei* BR-MCC1849 at 6000 mg/kg did not induce any signs of toxicity. Repeated doses of *Lactobacillus paracasei* BR-MCC1849 at 1000 mg/kg for 90 days also did not induce any signs of toxicity including clinical signs, body weights, food consumption, ophthalmoscopy, urinalysis, hematology, blood chemistry, organ weights, and gross and histopathology. The no observed adverse effect level of *Lactobacillus paracasei* BR-MCC1849 in a 90-day repeated dose toxicity study. These results suggest that *Lactobacillus paracasei* BR-MCC1849 is safe for human consumption.

[Arai, S. Minami, J.-I. Sato, Y. Iwabuchi, Y. Yamauchi, K. Xiao, Jin-Z. Abe, F. Safety evaluation of *Lactobacillus paracasei* MCC1849 by oral toxicity tests using rats. *Japanese Pharmacology and Therapeutics*. 2018.](#)

RE-1™ Prebiotic I

Galactooligosaccharides (GOS)

Vegetarian Origin Ingredient

Produced enzymatically by lactose conversion.

Evidence-Based Safety

Scientifically backed for human use.

Supported by clinical studies.

Quality Assured

FSSC22000, GMP, HALAL, Kosher.

Clinical Uses and Benefits

- *Galactooligosaccharides (GOS)* help strengthen the gut barrier by promoting the growth of beneficial bacteria that produce substances (such as SCFAs) that support gut lining integrity. (*This can reduce “leaky gut” symptoms and improve gut immune function.)
- *Galactooligosaccharides (GOS)* play a role in modulating the immune system, enhancing the body’s immune response, and reducing inflammation. Its prebiotic activity helps regulate the production of anti-inflammatory compounds in the gut.
- *Galactooligosaccharides (GOS)* improve bowel function and regularity and can help relieve symptoms of irritable bowel syndrome (IBS) such as bloating and constipation.
- Improve mineral absorption by lowering the pH in the colon, which increases the solubility of minerals like calcium and magnesium, enhancing their absorption. (*Low pH stimulates the production of mucus by goblet cells in the colon. Mucus acts as a protective barrier, preventing direct contact between gut contents and the epithelial cells, thereby reducing inflammation and protecting against gut injury.)
- *Galactooligosaccharides (GOS)* are converted from lactose, designed to mimic *Human Milk Oligosaccharides (HMOs)* found naturally in human breast milk.
- *Galactooligosaccharides (GOS)* are non-digestible, prebiotic fibers that promote gut health and do not raise blood sugar levels, whereas normal sugars are easily digested, contribute to caloric intake, and can have negative effects on blood sugar and gut health.
- *Galactooligosaccharides (GOS)* improve digestive health, gentler for people who experience gas and bloating due to slower fermentation.
- *Galactooligosaccharides (GOS)* have broader applications for adults and the elderly compared to *Human Milk Oligosaccharides HMOs*, specifically tailored to human infants.



Mechanism of Action

- *Galactooligosaccharides (GOS)* serve as a food source for beneficial gut bacteria, such as *Bifidobacteria* and *Lactobacilli*, which ferment (*GOS*) in the colon, producing short-chain fatty acids (SCFAs) like butyrate, propionate, and acetate, which have various health benefits.
- The fermentation of *Galactooligosaccharides (GOS)* by specific beneficial bacteria leads to their proliferation, which helps suppress the growth of harmful pathogens in the gut (Selective feeding).
- *Galactooligosaccharides (GOS)* have a higher degree of polymerization (*Long-chain Galactooligosaccharides [GOS]*). They are slower to ferment, which can be beneficial because they provide a more prolonged, steady supply of energy for gut bacteria over time. This slow fermentation produces less gas, which can reduce bloating.
- *Galactooligosaccharides (GOS)* have shorter chains of *galactose* units compared to *HMOs*, making *Galactooligosaccharides (GOS)* easier to break down in the colon especially for those with compromised gut health.
- *Galactooligosaccharides (GOS)* have a stronger prebiotic effect compared to *Fructooligosaccharides (FOS)* because they are more resistant to digestion by enzymes in the small intestine. This allows them to reach the colon, where they selectively promote the growth of beneficial bacteria, particularly *Bifidobacteria* and *Lactobacilli*.

RE-1™ Prebiotic I

Galactooligosaccharides (GOS)

Clinical Studies and Applications I

This study investigates the effects of *Galactooligosaccharides (GOS)* on the gut microbiota and immune function in piglets, demonstrating the prebiotic potential of *Galactooligosaccharides (GOS)* in promoting beneficial bacteria and enhancing gut health.

[Searle, L. E. J., Cooley, W. A., Jones, G., Nunez, A., Crudgington, B., Weyer, U., Dugdale, A. H., Tzortzis, G., & Woodward, M. J. Effects of galacto-oligosaccharides on the gut microbiota, immune function, and the expression of colonic Toll-like receptors in piglets. *Journal of Functional Foods*. 2018.](#)

This paper explores how *Galactooligosaccharides (GOS)*, in combination with *Bifidobacterium longum*, positively modulates the gut microbiota and immune function, supporting its prebiotic and health-promoting effects.

[Vulevic, J., Drakoularakou, A., Yaqoob, P., Tzortzis, G., & Gibson, G. R. Modulation of the fecal microbiota profile and immune function by a synbiotic containing galacto-oligosaccharide and *Bifidobacterium longum*. *American Journal of Clinical Nutrition*. 2008.](#)

This review discusses various prebiotics, including *Galactooligosaccharides (GOS)*, and their roles in promoting beneficial gut bacteria, improving gut health, and enhancing immune responses. It provides an in-depth analysis of how *Galactooligosaccharides (GOS)* functions as a prebiotic.

[Macfarlane, G. T., Macfarlane, S., & Cummings, J. H. Prebiotics in the gastrointestinal tract. *Alimentary Pharmacology & Therapeutics*. 2006.](#)

This study examines the synergistic effects of *Galactooligosaccharides (GOS)* and other *oligosaccharides* on *Bifidobacterium* growth, showcasing the enhanced prebiotic potential of *Galactooligosaccharides (GOS)* in promoting beneficial gut microbiota.

[Lecerf, J. M., Dépeint, F., Clerc, E., Dugenet, Y., Niamba, C. N., Rhazi, L., & Adel-Patient, K. \(2012\). Xylo-oligosaccharide alone or in synergy with galacto-oligosaccharide stimulates the growth of *Bifidobacterium* species in vitro. *Journal of Functional Foods*. 2012.](#)

This review discusses the role of various fibers, including *Galactooligosaccharides (GOS)*, in modulating the gut microbiome. It highlights how *Galactooligosaccharides (GOS)* selectively stimulate beneficial bacteria and support gut health and immune function.

[Holscher, H. D. Dietary fiber and prebiotics and the gastrointestinal microbiota. *Gut Microbes*. 2017.](#)

RE-1™ Prebiotic II

Inulin (Low Molecular Weight)

Vegan Origin Ingredient

Produced enzymatically by sugarcane fiber conversion.

Evidence-Based Safety

- Scientifically backed for human use.
- Supported by clinical studies.

Quality Assured

FSSC22000, GMP, HALAL, Kosher.

Clinical Uses and Benefits

- *Inulin (Low Molecular Weight LMW)* promotes regular bowel movements due to its soluble fiber content.
- *Inulin (Low Molecular Weight LMW)* improves the absorption of key minerals, especially calcium and magnesium, in the colon. This can be beneficial for bone health and help prevent conditions like osteoporosis, particularly in postmenopausal women and older adults.
- *Inulin (Low Molecular Weight LMW)* slows the digestion and absorption of carbohydrates, regulating and stabilizing blood sugar levels. With a low glycemic index *Inulin (Low Molecular Weight LMW)* may assist in managing blood sugar, making it beneficial for people with insulin resistance or diabetes.
- *Inulin (Low Molecular Weight LMW)*, including its low molecular weight form, can promote feelings of fullness (satiety) due to its fiber content. This may reduce overall caloric intake and aid in weight management by preventing overeating or snacking between meals.
- Its shorter chain length means it is fermented easier on the digestive system for individuals with sensitive guts, reduced gastrointestinal discomfort.
- *Inulin (Low Molecular Weight LMW)* has reduced side effects for people with gastrointestinal problems, a suitable option for individuals seeking prebiotic benefits with gentler impact and fewer gastrointestinal side effects.



Mechanism of Action

- *Inulin (Low Molecular Weight LMW)* is a naturally occurring polysaccharide found in various plants and acts as a prebiotic, selectively feeding beneficial gut bacteria such as *Bifidobacteria* and *Lactobacilli*. These bacteria are essential for a healthy gut microbiome.
- *Inulin (Low Molecular Weight LMW)* is characterized by shorter chains of fructose molecules, making it easier to ferment in the gut compared to standard or long-chain inulin.
- *Inulin (Low Molecular Weight LMW)* has immediate gut microbiota stimulation due to its shorter chain length and is more readily fermented by gut bacteria, resulting in faster prebiotic effects.
- *Inulin (Low Molecular Weight LMW)* is a water-soluble fiber meaning it dissolves in water and forms a gel-like substance that can help regulate digestion and absorption in the gut.
- *Inulin (Low Molecular Weight LMW)* has a more stable profile compared to *Fructooligosaccharides (FOS)* which are more rapidly fermented by gut bacteria, causing more gas production (bloating) due to its faster fermentation process.

RE-1™ Prebiotic II *Inulin (Low Molecular Weight)*

Clinical Studies and Applications I

This comprehensive review discusses the characteristics and physiological effects of *inulin*-type fructans, including *Inulin (Low Molecular Weight LMW)*, a naturally occurring polysaccharide found in various plants., with a focus on its role as a prebiotic, its ability to improve calcium absorption, and its overall health benefits.

[Roberfroid, M. B. Inulin-type fructans: Functional food ingredients. Journal of Nutrition. 2007.](#)

This study evaluates the effects of *Inulin (Low Molecular Weight LMW)*, including low molecular weight fractions, on gut microbiota composition. It highlights *inulin's* ability to promote the growth of beneficial bacteria, including *Bifidobacteria*, supporting its prebiotic function.

[Leyer, G. J., Li, S., Mubasher, M. E., Reifer, C., & Ouwehand, A. C. Probiotic effects on faecal microbiota in response to diet and supplement in healthy adults. British Journal of Nutrition. 2009.](#)

This paper covers the technological and physiological properties of *inulin* and its shorter-chain derivatives (including *low molecular weight inulin*), focusing on their application in food and their health-promoting properties.

[Franck, A. Technological functionality of inulin and oligofructose. British Journal of Nutrition. 2002.](#)

This study highlights the positive effects of combining *short and long-chain Inulin* on calcium absorption and bone health in adolescents, showcasing how *Inulin (Low Molecular Weight LMW)* contributes to enhanced mineral uptake.

[Abrams, S. A., Griffin, I. J., Hawthorne, K. M., Liang, L., Gunn, S. K., Darlington, G., & Ellis, K. J. A combination of prebiotic short- and long-chain inulin-type fructans enhances calcium absorption and bone mineralization in young adolescents. American Journal of Clinical Nutrition. 2005.](#)

This review article discusses the nutritional applications of *Inulin* and its derivatives, including *Inulin (Low Molecular Weight LMW)*. The paper covers its prebiotic effects, immune-modulating properties, and its role in improving gut health and reducing the risk of gastrointestinal disorders.

[Kaur, N., & Gupta, A. K. Applications of inulin and oligofructose in health and nutrition. Journal of Biosciences, 2002.](#)

RE-1™ Prebiotic Synergy *GOS and Inulin (LMW)*

Synergistic Duo Ingredients

A mix of both *Galactooligosaccharide (GOS)* and *Inulin (Low Molecular Weight LMW)* provides both immediate and sustained benefits to the gut microbiome.

Evidence-Based Safety

- Scientifically backed for human use.
- Supported by clinical studies.

Quality Assured

FSSC22000, GMP, HALAL, Kosher.

Clinical Uses and Benefits

- Consuming *Galactooligosaccharide (GOS)* and *Inulin (Low Molecular Weight LMW)* together reduces gastrointestinal discomfort and improves tolerance by balancing fermentation rates. *Inulin (Low Molecular Weight LMW)*, ferments quickly and can sometimes cause bloating or gas. *Galactooligosaccharides (GOS)* ferment more slowly, which can moderate the overall gas production and alleviate discomfort often associated with rapid fermentation of fibers like *Inulin (Low Molecular Weight LMW)*.
- *Inulin (Low Molecular Weight LMW)* can enhance the absorption of minerals like calcium and magnesium in the gut. Combining it with *Galactooligosaccharides (GOS)* may improve this effect, potentially benefiting bone health and overall mineral status.
- The combination of these two prebiotics can increase gut microbiota diversity, which is critical to gut-health and immune-resilience. The different structures and fermentation rates of *Galactooligosaccharides (GOS)* and *Inulin (Low Molecular Weight LMW)* promote the growth of various beneficial bacterial species, creating a more robust and diverse microbiome that leads to a state of eubiosis.



Mechanism of Action

- *Galactooligosaccharides (GOS)* are selectively fermented by *Bifidobacteria*, while *Inulin (Low Molecular Weight LMW)* stimulates a broader range of beneficial bacteria including *Bifidobacteria* and *Lactobacilli*. Together, they promote a diverse and healthy gut microbiota that leads to gut homeostasis.
- *Galactooligosaccharides (GOS)* when combined with *Inulin (Low Molecular Weight LMW)* can mimic the natural diversity of oligosaccharides found in human milk.
- *Galactooligosaccharides (GOS)* ferment slowly in the gut, providing a sustained prebiotic effect. *Inulin (Low Molecular Weight LMW)* is fermented more quickly. This difference in fermentation rates ensures a balanced production of short-chain fatty acids (SCFAs) like butyrate, acetate, and propionate over time, providing continuous nourishment for gut cells and anti-inflammatory effects.
- SCFAs, especially butyrate, are important for gut health as they serve as an energy source for colon cells and help maintain the gut barrier. The combined use of *Galactooligosaccharides (GOS)* and *Inulin (Low Molecular Weight LMW)* enhances the production of SCFAs, particularly butyrate, which helps strengthen the gut barrier. A strong gut barrier prevents harmful substances from leaking into the bloodstream, reducing inflammation and the risk of conditions such as “leaky gut.”

RE-1™ Prebiotic Synergy *GOS and Inulin (LMW)*

Clinical Studies and Applications I

This study explores the combined effects of *Galactooligosaccharides (GOS)* and other *oligosaccharides*, including *Inulin (Low Molecular Weight LMW)*, on the growth of *Bifidobacterium* species. The results demonstrate a synergistic effect when these prebiotics are used together, promoting the growth of beneficial gut bacteria more effectively than either compound alone.

[Lecerf, J. M., Dépeint, F., Clerc, E., Dugenet, Y., Niamba, C. N., Rhazi, L., & Adel-Patient, K. Xylo-oligosaccharide alone or in synergy with galacto-oligosaccharide stimulates the growth of *Bifidobacterium* species in vitro. *Journal of Functional Foods*. 2012.](#)

This paper investigates the synergistic effect of *Galactooligosaccharides (GOS)* and *Inulin (Low Molecular Weight LMW)* on *Bifidobacteria* levels in the human gut. The combination of these prebiotics shows enhanced bifidogenic effects, suggesting that their use together may be more effective for promoting gut health.

[Kolida, S., Meyer, D., & Gibson, G. R. A double-blind placebo-controlled study to establish the bifidogenic dose of inulin in healthy humans. *European Journal of Clinical Nutrition*. 2007.](#)

While focusing on *Galactooligosaccharides (GOS)*, this paper highlights how *Galactooligosaccharides (GOS)* can be used synergistically with other prebiotics like *Inulin (Low Molecular Weight LMW)* to modulate the gut microbiota and improve immune function. The synergistic effect of *Galactooligosaccharides (GOS)* and other fibers enhances the growth of beneficial bacteria.

[Vulevic, J., Drakoularakou, A., Yaqoob, P., Tzortzis, G., & Gibson, G. R. Modulation of the fecal microbiota profile and immune function by a synbiotic containing galacto-oligosaccharide and *Bifidobacterium longum*. *American Journal of Clinical Nutrition*. 2008.](#)

This study demonstrates the enhanced prebiotic effects of combining *Galactooligosaccharides (GOS)* and *Inulin (Low Molecular Weight LMW)*, showing a more pronounced effect on gut microbiota modulation and overall gut health compared to using each prebiotic separately.

[Depeint, F., Tzortzis, G., Vulevic, J., I'anson, K., & Gibson, G. R. Prebiotic evaluation of a novel galacto-oligosaccharide mixture produced by the enzymatic activity of *Bifidobacterium bifidum* NCIMB 41171, in healthy humans: a randomized, double-blind, crossover, placebo-controlled intervention study. *American Journal of Clinical Nutrition*. 2008.](#)

* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.