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Summary of Science

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Overview of Human Research on Bimuno® Prebiotic Supplements

Bimuno products are prebiotic supplements resulting from over 20 years of scientific research and developed in collaboration with world renowned universities, including the University of Reading, King's College London and Oxford University.

Studies have demonstrated that beneficial bacteria such as bifidobacteria are selectively grown in the large intestine as a result of Bimuno® GOS supplementation. Bimuno® (also referred to as GOS in published studies) stimulates proliferation of good gut bacteria in healthy adult populations (Depeint et al., 2008, Vulevic et al., 2008 and 2015), individuals with functional gut disorders such as Irritable Bowel Syndrome (Silk et al., 2009, Huaman et al., 2018) and overweight adults (Vulevic et al., 2013).

The efficacy and safety of Bimuno is supported by over 110 scientific publications, including more than 20 independent trials. The supplement has been clinically shown to improve gastrointestinal health and associated quality of life, strengthen anti-pathogenic activity, support immune function, as well as strengthen cognitive and mental wellbeing (stress, mood and anxiety).

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Digestive Discomfort

Bloating, Flatulence and associated abdominal pain

Bimuno® has been shown to reduce the physical effects of **digestive discomfort.**

Clinical research with Bimuno has shown that it **relieves flatulence, bloating and abdominal pain in individuals who experience gastrointestinal discomfort** (Silk et al., 2009, Vulevic et al., 2018, Huaman et al., 2018, Wilson et al., 2020) and leads to a significant reduction in urgency (Vulevic et al., 2018). In addition, Bimuno also has a positive effect on **improving bowel habits in individuals with IBS and Ulcerative Colitis** (Wilson et al., 2021). Furthermore, Bimuno has been shown to reduce incidence and severity of gastrointestinal symptoms in elite athletes (Parker et al., 2023).

It's important to note that by specifically targetting bifidobacteria (which do not contribute to gas production), **Bimuno does not lead to increased gas** (Mego et al., 2017), which could be a concern for some individuals.

People who experience digestive discomfort are often advised by nutrition professionals to temporarily follow a restrictive diet which avoids fermentable (FODMAP) foods. Whilst this approach often yields short term benefits, a low FODMAP diet has a number of challenges as it can alter the gut microbiota in ways that may not be beneficial as well as impact nutrient intake and diet quality. It requires the patient to be adequately supported to follow the diet accurately and safely, despite this, not all patients respond to the diet[1].

However, for some patients experiencing gastrointestinal discomfort, following a low FODMAP diet supplemented with Bimuno® GOS may result in increased likelihood of responding and hence experiencing symptom relief than following a low FODMAP diet alone (Wilson et al., 2023; subsequent analysis of data from Wilson et al., 2020).

Travellers' Diarrhoea

Studies have shown that Bimuno **reduces the adhesion of pathogens** to gut cells and **increases anti-inflammatory cytokines** to prevent invasion of pathogens. This strongly suggests a positive effect by Bimuno on the **innate immune system.** This effect is reflected in studies (Drakoularakou et al.,2010, Hasle et al., 2017) where Bimuno was shown to **reduce incidence of diarrhoea** caused by pathogens.

Immune Function

Immunity can be affected by lifestyle, stress, poor nutrition and it also changes as people age. Particularly with ageing, the decline of immune function — so called immunosenescence — may start to play a bigger role and can affect all parts of the immune system making a person more prone to getting ill. Bimuno provides diverse benefits to the immune system by increasing Natural Killer Cell activity and reducing levels of pro-inflammatory cytokines whilst increasing production of anti-inflammatory cytokines. As such, Bimuno has been shown to **improve immune resilience** in older adults (Vulevic et al., 2008, 2015) as well as **reduce low-grade chronic inflammation** in overweight individuals at risk of metabolic syndrome (Vulevic et al., 2013).

Furthermore, supplementation with Bimuno can **reduce the duration of upper respiratory tract infections** in elite athletes (Parker et al., 2023) and may attenuate the severity of exercise-induced bronchoconstriction (Williams et al., 2016). In addition, typically many athletes follow a high-protein, low-fibre diet and supplementation with Bimuno could help bridge the fibre gap.

Behaviour, Mood & Cognition

Research has demonstrated that modulation of the gut microbiota can affect behaviour, mood and cognition through the microbiota-gut-brain axis. Bimuno supplementation has been shown to **decrease waking cortisol levels** in healthy individuals whilst also having a beneficial effect on the attentional processing of emotional information, and may therefore help to **maintain a normal stress response**
hypothalamic-pituitary-adrenal axis (Schmidt et al., 2015)

In another study involving autistic children, supplementation with Bimuno led to significant **improvements in social skills** (Grimaldi et al., 2018).

In an IBS cohort, beneficial effects on anxiety and quality of life were evident following supplementation with Bimuno (Silk et al., 2009).

1 Wilson et al., 2020. Challenges of the low FODMAP diet for managing irritable bowel syndrome and approaches to their minimisation and mitigation. The Nutrition Society Winter Meeting, Royal Society of Medicine, London, 2-4 December 2019, doi:10.1017/S0029665120006990

The tables show a full reference of the preclinical and clinical research undertaken on Bimuno®

Key:


Digestive Discomfort

Immune Function


Behaviour, Mood & Cognition


Prebiotic Effect


Travellers' Diarrhoea

1	Depeint F, Tzortzis G, Vulevic J, I'anson K, Gibson GR. 2008. Prebiotic evaluation of a novel galactooligosaccharide mixture produced by the enzymatic activity of Bifidobacterium bifidum NCIMB 41171, in healthy humans: a randomized, doubleblind, crossover, placebo-controlled intervention study. Am J Clin Nutr. 87(3):785-91. DOI:10.1093/ajcn/87.3.785	
2	Drakoularakou A, Tzortzis G, Rastall RA, Gibson GR. 2010. A double-blind, placebo-controlled, randomized human study assessing the capacity of a novel galactooligosaccharide mixture in reducing travellers' diarrhoea. Eur J Clin Nutr.64(2):146-52. DOI:10.1038/ejcn.2009.120	
3	Grimaldi R, Gibson GR, Vulevic J, Giallourou N, Castro-Mejía JL, et al. 2018. A prebiotic intervention study in children with autism spectrum disorders (ASDs). Microbiome;6(1):133. DOI:10.1186/s40168-018-0523-3	
4	Hasle G, Raastad R, Bjune, G, Jenum PA, Heier L. 2017. Can a galacto-oligosaccharide reduce the risk of traveller's diarrhoea? A placebo-controlled, randomized, double-blind study. J Travel Med 24(5);1-9. DOI:10.1093/jtm/tax057	
5	Huaman JW, Mego M, Manichanh Ch et al. 2018. Effects Of Prebiotics Vs A Diet Low In Fodmaps In Patients With Functional Gut Disorder. Gastroenterology. 155(4):1004-1007. DOI:10.1053/j.gastro.2018.06.045	
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7	Mego M, Accarino A, Tzortzis G, Vulevic J, Gibson G, Guarner F, Azpiroz F. 2017 in press. Colonic gas homeostasis: Mechanisms of adaptation following HOST-G904 galactooligosaccharide use in humans. Neurogastroenterol Motil. DOI:10.1111/nmo.13080.	
8	Mego M, Manichanh C, Accarino A, Campos D, Pozuelo M, Varela E, Vulevic J, Tzortzis G, Gibson G, Guarner F, Azpiroz F. 2017. Metabolic adaptation of colonic microbiota to galactooligosaccharides: a proof-of-concept-study. Aliment Pharmacol Ther. 45(5):670-680. DOI:10.1111/apt.13931	
9	Schmidt K, Cowen PJ, Harmer CJ, Tzortzis G, Errington S, Burnet PW. 2015. Prebiotic intake reduces the waking cortisol response and alters emotional bias in healthy volunteers. Psychopharmacology (Berl). 232(10):1793-801. DOI:10.1007/s00213-014-3810-0	
10	Sergeev IN, Aljutaily T, Walton G, Huarte E. 2020 Effects of Synbiotic Supplement on Human Gut Microbiota, Body Composition and Weight Loss in Obesity. Nutrients.;12(1). pii: E222. DOI:10.3390/nu12010222.	

11 Silk DB, Davis A, Vulevic J, Tzortzis G, Gibson GR. 2009. Clinical trial: the effects of a trans-galactooligosaccharide prebiotic on faecal microbiota and symptoms in irritable bowel syndrome. Aliment Pharmacol Ther. 1;29(5):508-18. DOI:10.1111/j.1365-2036.2008.03911.x

12 Vulevic J, Drakoularakou A, Yaqoob P, Tzortzis G, Gibson GR. 2008. Modulation of the fecal microflora profile and immune function by a novel trans-galactooligosaccharide mixture (GOS) in healthy elderly volunteers. Am J Clin Nutr. 88(5):1438-46. DOI:10.3945/ajcn.2008.26242

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19 Parker C, Hunter KA, Johnson MA, Sharpe GR, Gibson GR, Walton GE, Poveda C, Cousins B & Williams NC. 2023. Effects of 24-week prebiotic intervention on self-reported upper respiratory symptoms, gastrointestinal symptoms, and markers of immunity in elite rugby union players. European Journal of Sport Science;1-8. DOI:10.1080/17461391.2023.2216-657.

20 Wilson B, Kanno T, Slater R, Rossi M, Irving PM, Lomer MC, Probert C, Mason AJ, Whelan K. 2023. Faecal and urine metabolites, but not gut microbiota, may predict response to low FODMAP diet in irritable bowel syndrome. Alimentary Pharmacology & Therapeutics. DOI: 10.1111/apt.17609.

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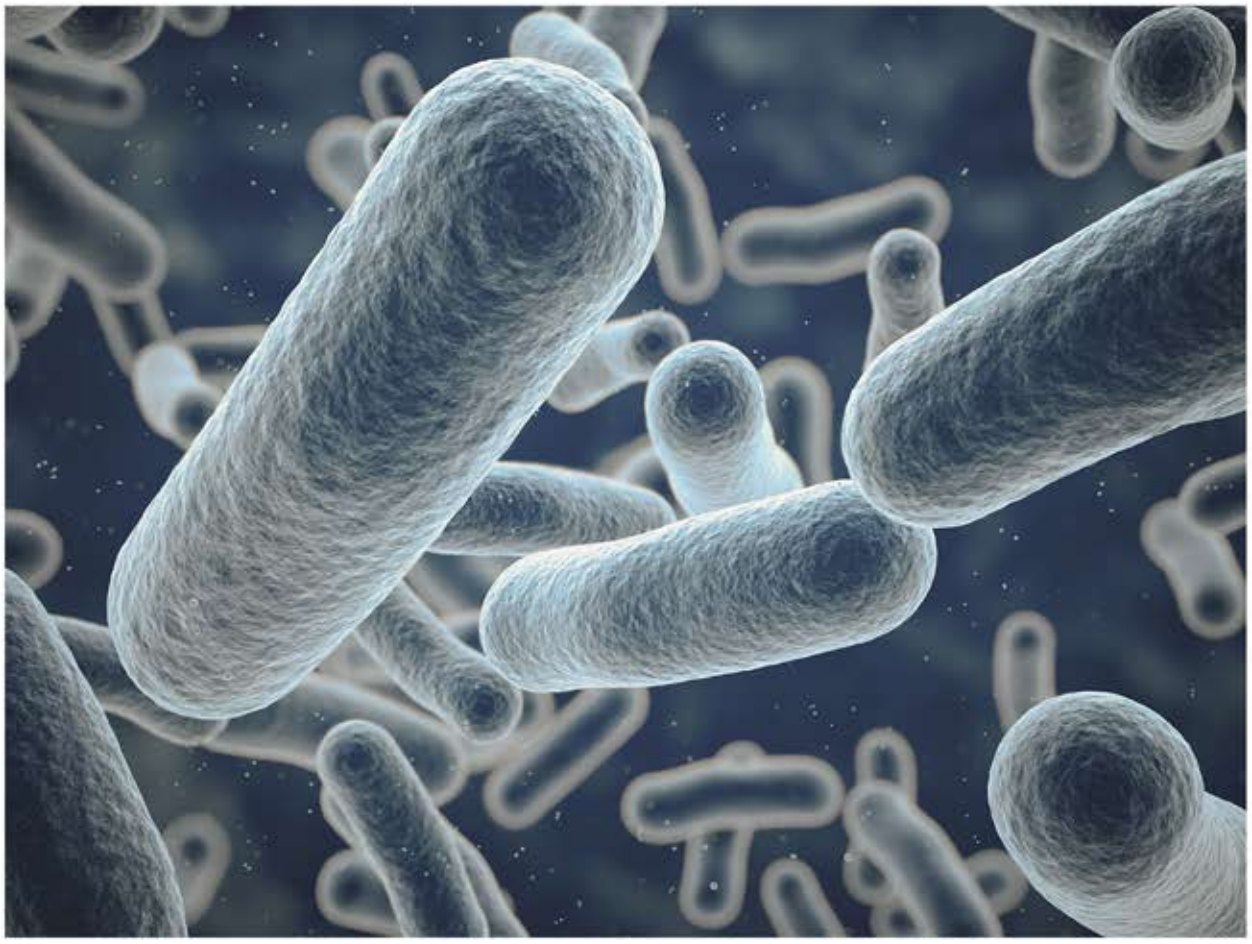

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