

Bio.Me™ Prebio GOS

Clinically-researched galactooligosaccharides to support microbial diversity

DISCLAIMER: THIS INFORMATION IS PROVIDED FOR THE USE OF PHYSICIANS AND OTHER LICENSED HEALTH CARE PRACTITIONERS ONLY. THIS INFORMATION IS NOT FOR USE BY CONSUMERS. THE INFORMATION AND OR PRODUCTS ARE NOT INTENDED FOR USE BY CONSUMERS OR PHYSICIANS AS A MEANS TO CURE, TREAT, PREVENT, DIAGNOSE OR MITIGATE ANY DISEASE OR OTHER MEDICAL CONDITION. THE INFORMATION CONTAINED IN THIS DOCUMENT IS IN NO WAY TO BE TAKEN AS PRESCRIPTIVE NOR TO REPLACE THE PHYSICIANS DUTY OF CARE AND PERSONALISED CARE PRACTICES.

Nutritional Information	Per Dose
Active	2g (0.5 tsp)
NeoGos P70 (Galactooligosaccharides) (milk)	2g
Allergens: see ingredients in bold	

GMO-free | Gluten-free | Heat-stable | Vegetarian
Halal | Safe during pregnancy & breastfeeding

Directions:

Mix 2g (0.5 tsp) daily into 200ml of water or other beverage of choice. Stir and take on an empty stomach.

If new to taking this product, it is advisable to start with 1g dosage and slowly increase to 2g dosage to prevent abdominal discomfort.

Do not exceed the recommended dose, unless advised by your healthcare professional.

Galactooligosaccharides (GOS) are small chain polysaccharides made of repeating units of galactose and glucose, made from lactose in cow's milk. The bonds that hold the monosaccharides together consist of linkages that are indigestible by human digestive enzymes, so they are the preferred source for bacterial fermentation, especially *Bifidobacterium*. This means that GOS is classed as a prebiotic soluble fibre.

GOS belongs to a class of prebiotics known as human milk oligosaccharides (HMOs) which are found in human breast milk. Over 150 different oligosaccharides have been identified in human milk, each playing an important prebiotic role for the infant, namely encouraging *Bifidobacterium* and *Lactobacilli* growth in the infant gut. The metabolites have also been shown to be important for maturation and protection of the gut barrier, and reduction of pathogen invasion¹.

Bio.Me™ Prebio GOS uses NeoGOS P70, a standardised galactooligosaccharides with a specific profile in the HMOs. It contains galactosyl lactose, which is found in the colostrum of mothers, among other oligosaccharides. *Bifidobacterium* possess the enzyme β -galactosidase which can process the bonds in GOS².

The major physiological actions of GOS occurs through its ability to feed and increase *Bifidobacterium* and *Lactobacilli* in the human bowel, altering the composition of the human microbiome.

Increasing levels of *Bifidobacterium* with GOS supplementation has been shown to:

- Have immunomodulatory effects (*Bifidobacterium* has a role in increasing sIgA)¹
- Decrease the risk of allergic conditions – especially when given in combination with probiotics in pregnant mothers or in infants³
- Play a role in healthy colonisation of the infant gut microbiota, healthy barrier maturation and inhibiting pathogen colonisation²
- Increased mineral absorption (especially iron, calcium, magnesium)^{2,4}
- Improve short chain fatty acid production (SCFA) which is protective of the epithelial cells of the gut lining
- Have a regulatory effect on stool consistency, bloating and flatulences

Microbial composition

In a study of 44 elderly volunteers, GOS supplementation was given for 10 weeks with daily doses of 5.5g per day. GOS consumption led to increases in *Bacteroides* and *Bifidobacterium* with higher anti-inflammatory IL-10, IL-8, natural killer (NK) cell activity and lower C-reactive protein and IL-1b.⁶ This study showed that GOS administration led to a significant decreases in the numbers of the less beneficial bacteria in the *Bacteroides* class, as well as *C. perfringens*, *Desulfovibrio spp.* and *E. coli*.⁶

IBS

In a human RCT of patients with irritable bowel syndrome (IBS), patients in the treatment groups were either allocated 3.5g or 7g of GOS per day vs placebo. Those taking GOS had a significant increase in faecal *bifidobacteria* levels, in both doses. Scores of bloating, flatulence, stool consistency and a composite score of symptoms all improved in both treatment groups. In the higher dose treatment group, there was also an improvement in anxiety and overall global subjectivity scores⁵.

GOS supplementation has also been shown to reduce beta-glucuronidase activity in rats with a human bacterial stool composition, as well as changing the composition of the microbiota.⁷

SIBO

In a small human study, 10g of GOS given twice a day was shown to reduce breath hydrogen levels (often associated with SIBO) and increase faecal *Bifidobacterium* levels⁸.

Allergies

In a large RCT with 1,223 pregnant women who had atopy in the family, supplementation of a probiotic strain plus GOS was given for 2-4 weeks before delivery. The infants were given the same probiotic and GOS for 6 months. Stool samples were collected during treatment and also at 2 years of age. Overall, the treatment showed no effect on the incidence of all allergic diseases by age 2 years, but significantly prevented eczema and especially atopic eczema³.

Autism

A clinical trial with 30 autistic children on a casein and gluten free diet were given a 6-week intervention of GOS at a dose of 1.8g per day, standardised to 80% GOS content. The results showed that children on exclusion diets plus GOS reported significantly lower scores of abdominal pain and bowel movements, as well as a lower abundance of *Bifidobacterium* spp. and *Veillonellaceae* family, but higher presence of *Faecalibacterium prausnitzii* and *Bacteroides* spp⁹.

References

1. Macfarlane, G. T., Steed, H. & Macfarlane, S. Bacterial metabolism and health-related effects of galacto-oligosaccharides and other prebiotics. *J. Appl. Microbiol.* **104**, 305–344 (2008).
2. Tzortzis, G. & Vulevic, J. Galacto-oligosaccharide Prebiotics. in *Prebiotics and Probiotics Science and Technology* 207–243 (2009). doi:10.1007/978-0-387-79058-9
3. Kukkonen, K. *et al.* Probiotics and prebiotic galacto-oligosaccharides in the prevention of allergic diseases: A randomized, double-blind, placebo-controlled trial. *J. Allergy Clin. Immunol.* **119**, 192–198 (2007).
4. Drakesmith, H. & Allen, S. J. Improving iron supplements: Cooking with GOS. *Gut* **66**, 1881–1882 (2017).
5. Silk, D. B. A., Davis, A., Vulevic, J., Tzortzis, G. & Gibson, G. R. Clinical trial: the effects of a trans-galactooligosaccharide prebiotic on faecal microbiota and symptoms in irritable bowel syndrome. *Aliment. Pharmacol. Ther.* **29**, 508–518 (2009).
6. Vulevic, J. *et al.* Influence of galacto-oligosaccharide mixture (B-GOS) on gut microbiota, immune parameters and metabolomics in elderly persons. *Br. J. Nutr.* **114**, 586–595 (2015).
7. Rowland, I. R. & Tanaka, R. The effects of transgalactosylated oligosaccharides on gut flora metabolism in rats associated with a human faecal microflora. *J. Appl. Bacteriol.* **74**, 667–674 (1993).
8. Bouhnik, Y. *et al.* Administration of Transgalacto-Oligosaccharides Increases Faecal Bifidobacteria and Modifies Colonic Fermentation Metabolism in Healthy Humans 1. *J. Nutr.* **127**, 444–448 (1997).
9. Grimaldi, R. *et al.* A prebiotic intervention study in children with autism spectrum disorders (ASDs). doi:10.1186/s40168-018-0523-3