# Galacto-Oligosaccharides (GOS) Benefits



Vitality Through Nutrition<sup>™</sup>





#### What is GOS?

Galacto-oligosaccharides (GOS) are non-digestible carbohydrates produced from lactose, the sugar naturally found in milk. They are considered dietary fibers and/or prebiotics in many countries.

#### **Gut Bacteria and Health**

Gut bacteria play a key role in human health by exercising several functions, such as contributing to the gut defense system and helping to maintain normal intestinal function [1]. *Bifidobacterium* species are among the first to colonize the intestine and play an essential role in the maturation of the immune system and use of dietary components in infants [2]. A number of members of the gut microbiota, especially bifidobacteria, are able to ferment GOS resulting in the stimulation of their growth and/or activity [3].

## **Bifidogenic Bacteria**

Infants fed formula enriched with GOS have been shown to have increased bifidobacteria levels compared to those that received formula without GOS [4]. In adults, the consumption of GOS has also been found to have an impact on gut microbiota [5].

## **Gut Transit**

Constipation is a common problem in childhood [6]. In infants, the consumption of infant formula supplemented with GOS has been shown to help with stool frequency and consistency [4]. The positive impact of GOS on bowel movement is primarily attributed to their action as soluble fibers [7].



#### **Immune Function**

The immune system is a complex interconnected network of cells, lymphoid organs, humoral factors and cytokines that play a role in protecting the host [8].

GOS have been suggested to have an impact on the immune system by positively affecting some markers of immune function [9].

# **Calcium Absorption**

The consumption of GOS has been suggested to help increase calcium absorption, which may be mediated by the gut microbiota, specifically bifidobacteria [10].



## **GOS Applications**



#### REFERENCES

- [1] Zhang Y-J, Li S, Gan R-Y, Zhou T, Xu D-P, Li HB. Impacts of gut bacteria on human health and diseases. Int J Mol Sci 2015; 16: 7493–7510.
- [2] Hidalgo-Cantabrana C, Delgado S, Ruiz L, Ruas-Madiedo P, Sánchez B, Margolles A. Bifidobacteria and their health-promoting effects. Microbiol Spectrum 2017; 5(3), doi:10.1128/microbiolspec.BAD-0010-2016.
- [3] Maathuis AJH, van den Heuvel EG, Schoterman MHC, Venema K. Galactooligosaccharides have a prebiotic activity in a dynamic in vitro colon model using a 13C-labeling technique. J Nutr 2012; 142(7): 1205–1212.
- [4] Sierra C, Bernal M-J, Blasco J, Martínez R, Dalmau J, et al. Prebiotic effect during the first year of life in healthy infants fed formula containing GOS as the only prebiotic: a multicenter, randomized, double-blind and placebo-controlled trial. Eur J Nutr 2015; 54(1): 89–99.
- [5] Davis LMG, Martínez I, Walter J, Hutkins R. A dose dependent impact of prebiotic galactooligosaccharides on the intestinal microbiota of healthy adults. Int J Food Microbiol 2010; 144(2): 285–292.

- [6] van den Berg MM, Benninga MA, Di Lorenzo D. Epidemiology of childhood constipation: a systematic review. Am J Gastroenterol 2006; 101(10): 2401–2409.
- [7] Niittynen L, Kajander K, Korpela R. Galactooligosaccharides and bowel function. Scand J Food Nutr. 2007; 51(2): 62-66.
- [8] Parkin J, Cohen B. An overview of the immune system. Lancet 2001; 357(9270): 1777–1789.
- [9] Vulevic J, Juric A, Tzortzis G, Gibson GR. A mixture of *trans*-galactooligosaccharides reduces markers of metabolic syndrome and modulates the fecal microbiota and immune function of overweight adults. J Nutr 2013; 143(3): 324–331.
- [10] Cardelle-Cobas A, Fernández M, Salazar N, Martínez- Villaluenga C, Villamiel M, et al. Bifidogenic effect and stimulation of short chain fatty acid production in human faecal slurry cultures by oligosaccharides derived from lactose and lactulose. J Dairy Res 2009; 76(3): 317-325.

We are a Canadian company headquartered in Abbotsford, BC. Based on our core values of care, integrity and expertise, we have grown from a small, family-owned business to a trusted international supplier of specialty ingredients for large-scale processors and top-tier brands.

3911 Mount Lehman Road Abbotsford BC, V2T 5W5 604-857-9080 information@vitalus.com www.vitalus.com



**Disclaimer:** The information contained herein is meant for business to business customers and is not meant for general public. This information does not indicate any product claims. As regulatory requirements vary in every country, claims for any ingredients must be verified with local regulatory authorities' requirements.