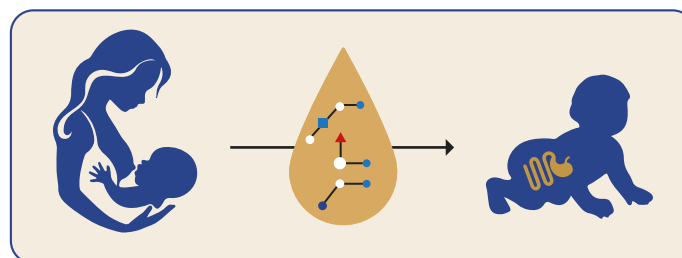


Evaluating the Safety and Benefits of Prebiotic HMOs in Infant Nutrition

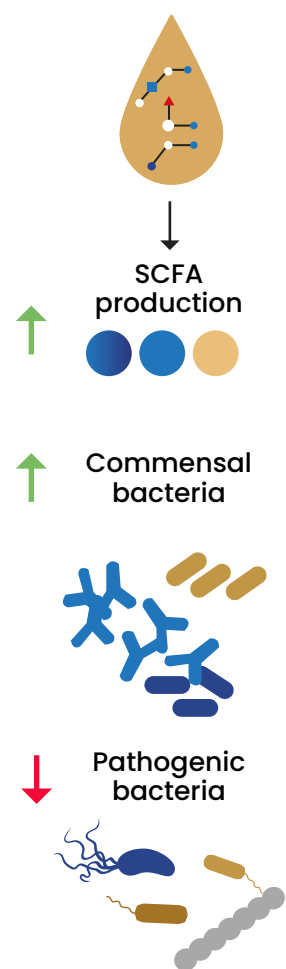


Physiological health benefits of HMOs¹

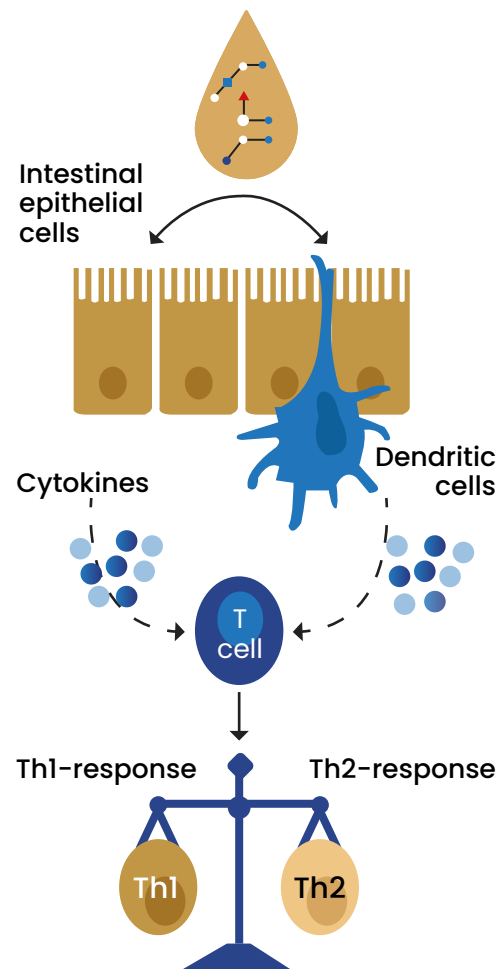
Human milk oligosaccharides offer various health benefits to infants.



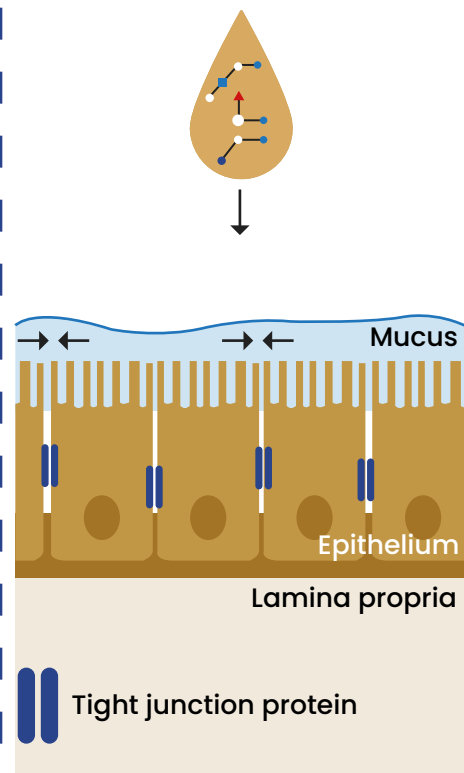
Prebiotic effects



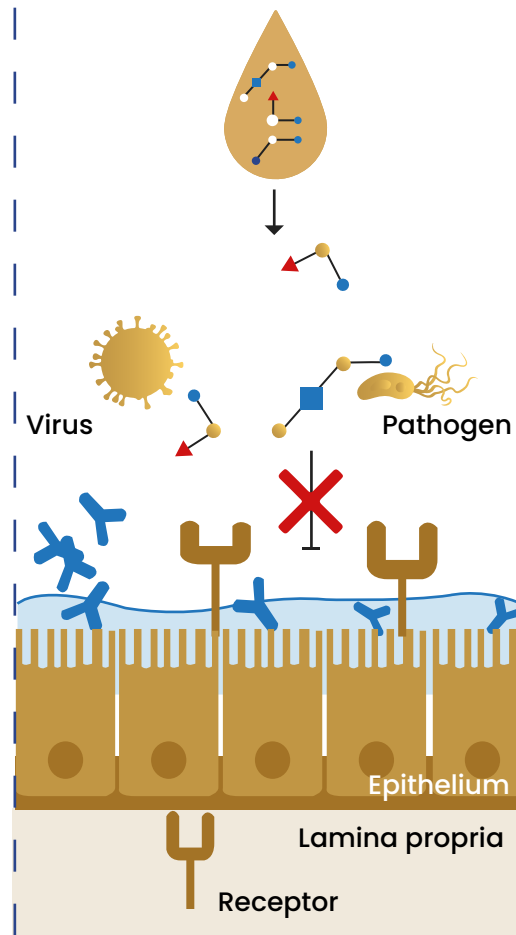
Immunomodulation



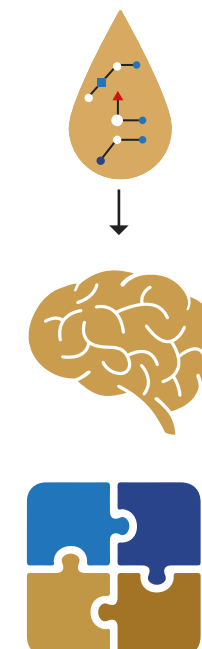
Barrier function



Anti-adhesion



Neurodevelopment





ESPGHAN Committee consensus statement (2011) on efficacy of Prebiotic HMOs²



Growth and safety

- No adverse effects on growth in healthy term infants²
- Modest impact on improved growth²



Impact on fecal pH

- Potential to reduce fecal pH²



Stool frequency and softening

- Increases stool frequency²
- Potential to soften stools²



Microbiome enhancement

- Higher stool colony counts of bifidobacteria²
- Potential to increase fecal lactobacilli count²



Effect of follow-on infant feed

- Increases fecal bifidobacteria counts with FOS and GOS²
- FOS supplementation can soften stools²



AAP consensus statement on efficacy of Prebiotic HMOs

- » Prebiotic HMOs produced in human breastmilk have a slightly different structural makeup compared to Prebiotic scGOS and lcfOS.²
- » Given the commercial difficulties in manufacturing HMOs, scGOS/lcfOS were used as alternatives since 2002.
- » scGOS/lcfOS in a 9:1 ratio mimics over 100 different short-and long-chain oligosaccharide structures in human milk, bringing it closer to breastmilk even in diversity.
- » Addition of scGOS/lcfOS is a practical and economical technique to add prebiotic oligosaccharides to infant feed, which ultimately results in an improvement in the infant feed's overall quality.²



AAP consensus statement on safety of Prebiotic HMOs

It has been agreed upon by the AAP that the addition of prebitics to infant feed does not appear to be hazardous to infants who are otherwise healthy.²



Key takeaways

- ☰ AAP and ESPGHAN acknowledge the safety of Prebiotic HMOs in infant feed, with a consensus that these prebiotics are valuable in mimicking the benefits of human milk in infant nutrition.^{2,3}
- ☰ Prebiotic HMOs are beneficial for developing a healthy gut microbiota, boosting the immune system, and potentially reducing the risk of infections and allergies.^{2,4}

Abbreviations

AAP: American Academy of Pediatrics; **ESPGHAN:** The European Society for Paediatric Gastroenterology Hepatology and Nutrition; **FOS:** Fructo-oligosaccharides; **GOS:** Galacto-oligosaccharides; **HMOs:** Human milk oligosaccharides

References

1. Kiely LJ, Busca K, Lane JA, van Sinderen D, Hickey RM. Molecular strategies for the utilisation of human milk oligosaccharides by infant gut-associated bacteria. *FEMS Microbiol Rev.* 2023 Nov 1;47(6):fuad056.
2. Braegger C, Chmielewska A, Decsi T, et al. Supplementation of infant formula with probiotics and/or prebiotics: a systematic review and comment by the ESPGHAN committee on nutrition. *J Pediatr Gastroenterol Nutr.* 2011;52(2):238-250.
3. Selvamani S, Kapoor N, Ajmera A, et al. Prebiotics in New-Born and Children's Health. *Microorganisms.* 2023;11(10):2453.
4. Okburan G, Kiziler S. Human milk oligosaccharides as prebiotics. *Pediatrics & Neonatology.* 2023;64(3):231-238.

