

Prebiotic Oligosaccharides

Tech ID: 34458 / UC Case 2009-110-0

ABSTRACT

Researchers at the University of California, Davis have developed alacto-oligosaccharide (GOS) formulations selectively promote growth of beneficial Bifidobacteria species by tailoring oligosaccharide chain lengths.

FULL DESCRIPTION

This technology provides specialized galacto-oligosaccharide (GOS) compositions enriched for specific degrees of polymerization (DP) that preferentially stimulate growth of target Bifidobacterium species in the gastrointestinal tract. By adjusting the distribution of oligosaccharide chain lengths (e.g., DP3, DP4-5, DP6-8) and reducing undesired mono- and disaccharides, these purified GOS preparations enhance colonization of beneficial gut bacteria such as B. breve, B. longum subspecies infantis and longum, and B. adolescentis. The compositions can be incorporated into diverse food and dietary supplement products, including infant formula, follow-on formula, toddler beverages, and probiotics, thereby supporting gut health, immunity, and potentially alleviating gastrointestinal disorders.

APPLICATIONS

- ▶ Prebiotic dietary supplements targeting gut microbiome optimization.
- ▶ Infant nutrition products, including enhanced infant and follow-on formulas.
- ▶ Toddler beverages and pediatric nutrition supplements.
- ▶ Functional foods and nutraceuticals for adult and elderly gut health.
- ▶ Pharmaceutical formulations addressing gastrointestinal diseases and immune support.
- ▶ Animal feed additives for improved digestive health and microbiota management.
- ▶ Probiotic-prebiotic combination formulations for synbiotic therapies.

FEATURES/BENEFITS

- ▶ Selectively stimulates specific Bifidobacteria species by tailoring GOS chain lengths.
- ▶ Reduces monosaccharide and lactose content to enhance bifidogenic efficacy.
- ▶ Increases thermal and pH stability for versatile food applications.
- ▶ Enables synergistic gut flora modulation through compatibility with probiotic co-formulation.
- ▶ Employs scalable enzymatic synthesis and purification for consistent production quality.
- ▶ Serves infants, adults, elderly, and animals with varied microbiome needs.
- ▶ Supports management of gastrointestinal conditions like IBS, colitis, Crohn's disease, and colon cancer prevention.
- ▶ Enables selective enrichment of beneficial bifidobacteria within complex microbiota.

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OTHER INFORMATION

KEYWORDS

bifidobacteria, dietary supplement, galacto-oligosaccharides, infant formula, prebiotic, probiotics, selective fermentation, gastrointestinal health, microbial metabolism, MALDI-FTICR

CATEGORIZED AS

- ▶ **Biotechnology**
- ▶ Food

- ▶ Overcomes limitations of existing GOS products with non-optimized oligosaccharide profiles.
- ▶ Reduces competing monosaccharide content found in conventional formulations.
- ▶ Provides tailored prebiotic compositions to address age-specific microbiome requirements.
- ▶ Addresses challenges in analyzing GOS fermentation and bacterial substrate preferences.
- ▶ Improves prebiotic efficacy by regulating oligosaccharide size distribution.

- ▶ [Genomics](#)
- ▶ [Health](#)

RELATED CASES

2009-110-0, 2013-877-0, 2015-193-0, 2012-346-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,633,461	04/25/2023	2012-346
United States Of America	Issued Patent	11,285,182	03/29/2022	2015-193
United States Of America	Issued Patent	11,000,576	05/11/2021	2012-346
United States Of America	Issued Patent	10,780,136	09/22/2020	2015-193
United States Of America	Issued Patent	10,688,160	06/23/2020	2012-346
United States Of America	Issued Patent	10,639,357	05/05/2020	2012-346
United States Of America	Issued Patent	10,471,134	11/12/2019	2012-346
United States Of America	Issued Patent	10,350,249	07/16/2019	2015-193
United States Of America	Issued Patent	10,165,788	01/01/2019	2013-877
United States Of America	Issued Patent	10,071,142	09/11/2018	2012-346
United States Of America	Issued Patent	9,327,016	05/03/2016	2012-346
United States Of America	Issued Patent	8,425,930	04/23/2013	2009-110

RELATED TECHNOLOGIES

- ▶ [Reducing Free Milk Glycan Monomers Generated by the Neonate Gut Microbiota Eliminates Colonization by Dysbiotic Microbiome Members](#)
- ▶ [Glycoprotein Cleaving Enzyme Isolated from Bifidobacteria](#)
- ▶ [Additional Glycosyl Hydrolase is Critical to Bacteria’s Ability to Consume HMOs](#)

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Diagnosis and Treatment of Inflammatory Disease by Glycan Profiling of High Density Lipoprotein \(HDL\)](#)
- ▶ [Bifidobacterial Probiotics for Nursing and Weaning](#)
- ▶ [Reducing Free Milk Glycan Monomers Generated by the Neonate Gut Microbiota Eliminates Colonization by Dysbiotic Microbiome Members](#)
- ▶ [Additional Glycosyl Hydrolase is Critical to Bacteria’s Ability to Consume HMOs](#)
- ▶ [Bifidobacterial Probiotic Supplements for Infants](#)
- ▶ [Increased Microorganism Alcohol Tolerance Via Transformation of its pntAB Locus](#)
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- ▶ [Breast Milk as a Source, Incubation/Storage Medium, and Delivery System for Infant Mucosal Immunity Bacteriophage](#)

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