Product information
Leaflet

GLYCARE® DFL

Human Milk Oligosaccharides brought to you by dsm-firmenich, at the forefront of HMO innovation

Early life nutrition innovation from dsm-firmenich

Providing the best infant nutrition is vital for all families. That's why dsm-firmenich is proud to offer GLYCARE® HMOs. These compounds are developed with science-backed quality and safety at their core. As a fully integrated manufacturer with one of the broadest HMO offerings, dsm-firmenich can reliably provide ease-of-scale no matter the size of your business. Partner with us to get your products one step closer to what nature intended.

Partner with dsm-firmenich for access to our broad portfolio of products, customized solutions, and expert services aimed at supporting your entire product life cycle, from concept to consumption.

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Human Milk Oligosaccharides (HMOs): delivering the benefits nature intended

Uniquely human

- HMOs are complex carbohydrates found in human breastmilk
- No other mammal has near the concentration and complexity of structures in their milk[1-6]

Abundance and diversity in human milk

- 3rd largest component of human milk[7]
- >200 different HMOs identified in human milk, a diversity not seen in other animal milks[4-6]
- Variation occurs over lactation period, by maternal genetics, geographic region, and ethnicity[8,9]

Complex structures with potential functional benefits

- Help establish a balanced early-life microbiota[10,11]
- Growing evidence suggests a link between the gut microbiota and the immune sysem[12,13]
- Contribute to immune system support[14-18]

Difucosyllactose (DFL): A fucosylated HMO that appears in breastmilk[19]

- Data suggest a possible role in helping support immunity[20-22]
- May offer gut health benefits by supporting a favorable microbiome[23,24]

HMO functionality is structure-specific: not all HMOs serve the same purpose[25,26]

Potential functional benefits of GLYCARE® 2FL/DFL, as demonstrated primarily in pre-clinical studies

- May offer immune support and gut health benefits by supporting a favorable microbiome[20-24]

- In preclinical studies, DFL deflected undesirable microbes from adhering to cell walls[21]
- May help support a normal immune response[20-22]

- Stimulates the growth of beneficial bacteria, including Bifidobacterium and Lactobacillus[24]

Breastmilk – the gold standard

Breastmilk provides nutrients that are vital for an infant's growth and development and sets the standard in infant feeding.[27,28] Human milk oligosaccharides (HMOs) are the third largest solid component of human milk after lipids and lactose and a key differentiating feature between human milk and cow's milk. The unique structure, concentration, and variety of oligosaccharides in human milk sets them apart from those found in cow's milk.[29,30] Differences in health outcomes between breastfed and formula-fed infants may partly be explained by these features.[8,29,31,32]

Macronutrient composition in human milk

(g/l)	Human	Cow
Protein	8	32
Fat	41	37
Lactose	70	48
Oligosaccharides	5.15	0.05

Glycobiology. 2012 Sep 1;22(9):1147-62.

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HMOs may support gut health

Emerging evidence suggests HMOs may support gut health through a variety of functions including **modifying the intestinal microbiota and positively impacting the gut barrier.**

HMOs are a type of prebiotic found in breastmilk.[33,34] Prebiotics are types of carbohydrates the body cannot digest and serve as food for potentially helpful gut bacteria.[33]

- In preclinical studies, HMOs have been found to increase the amount of helpful bacteria in the gut, like bifidobacteria.[24,35,36]

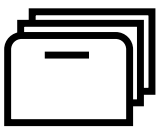
Preclinical data suggests HMOs might also promote gut health by supporting the mucosal barrier by:

- Production of short-chain fatty acids, which lowers intestinal pH, an important element of gut barrier function.[24,37,38]
- Aiding in tight junction protein expression, which strengthens the intestinal epithelium, a barrier that helps to support the immune system.[37,39,40]

GLYCARE® DFL product information

- 5 years of shelf life from production date
- Purity levels for combined 2'FL and DFL range from 96-99%
- White to off-white, homogenous, amorphous powder with a neutral to slightly sweet to sweet taste
- Contains up to 10% lactose
- Manufactured without contact to latex, bisphenol A, or phthalates
- This product is free from: Animal derived ingredients (ADI), Allergens (except milk),§ Genetically modified organisms (GMO)¥

§ according to EC regulation 1169/2011 annex II
¥ according to EC regulation 1829/2003 and 1830/2003



Broad product portfolio and a leading HMO innovator

Proven, reliable supply that scales with you

Highest safety and quality standards

Largest global market access: 160+ countries*

* We are continuously expanding our global approval footprint across application areas. For more details, please ask for our Regulatory Overview.

For more information, get in touch with your dsm-firmenich representative, or visit our website www.dsm.com/human-nutrition

dsm-firmenich GLYCARE® HMOs are produced to the highest quality of certifications, approvals, and procedures

ISO 9001:2015

FSSC 22000

SMETA

Halal

Kosher

The full GLYCARE® HMO portfolio

- GLYCARE® 2FL
- GLYCARE® LNnT
- GLYCARE® 2FL/DFL
- GLYCARE® 6SL
- GLYCARE® 3SL
- GLYCARE® LNT
- GLYCARE® 3FL
- GLYCARE® LNFP I

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