

BIOTECHNOLOGY
NOURISHES LIFE

Introduction to HMOs

Human milk oligosaccharides (HMOs), are diversely-structured carbohydrates or glycoconjugates existing in human milk in high concentrations. They are the third most plentiful solid ingredient in human milk and the second only to fat and lactose. In natural human milk, fucosyllactose (FL) accounts for above 30% or so of the ingredients of HMOs. Sialylated HMOs, accounting for 12%-14% of the total of HMOs, are mainly 6'-Sialyllactose (6'-SL). 2'-Fucosyllactose (2'-FL) is the most abundant HMO in human milk and the most adequate HMO for scientific research. It supports the healthy development of babies at their earliest stage of life.

A lot of research-based evidence has proved each HMO has its own structure, function, use and health benefit. HMOs exhibit antimicrobial and antiviral properties, immunoregulatory effects, as well as promoting brain development. In especial, they are of great importance in promoting the growth, development, and regulation of gut flora in infants and young children.

Product Advantages:

- *Antibacterial and antiviral properties*
- *Maintain a balanced immune system*
- *Promote infant's cognitive and brain development*
- *Regulate gut flora*



Main Functions of HMOs:

Support Immunity



As immune modulators, HMOs can balance an inflammatory response by regulating the interaction between immune cells through surface-expressed acceptor molecules ^[1].

Brain Development & Cognition



HMOs serve as a source of sialic acid, an essential nutrient for the formation of gangliosides and myelin sheaths. Sialic acid plays a key role in neuronal growth, synaptic connections and memory formation ^[2].

Intestinal Health



- As a substrate for the development of infant gut microbiota, HMOs contain prebiotics that regulate gut flora and help support infant gut development.
- Some HMOs can act as anti-adhesive agents and soluble decoy receptors to directly reduce the risk of microbial infection by preventing the adhesion of pathogens ^[3].
- HMOs are good for intestinal development. HMOs can directly interfere with the response of their host, the enterocytes, inducing their differentiation and apoptosis ^[4].

HMOs: Support health needs for the whole lifecycle



For children, HMOs promise to be applied in children's food products for its many functions, e.g. immunity enhancement, promoting probiotic growth, inhibiting harmful bacterial adhesion, and maintaining the intestinal microbial balance. Today, 2'-FL and lacto-N-tetraose (LNnT) have been approved as nutritional fortification substances for children-intended milk powder in China market.

HMOs: Play coordinated roles with its multiform and multicomponent nutrients

SA forms a basic glycogen of HMOs. HMOs are also the principal form of SA existing in human milk. Documentation shows sialylated HMOs to be effective in promoting infant immunity and development, cognitive development, intestinal development, and microbial growth.

As for brain development and neural development, Feihe's in vitro study has shown the composition of 2'-FL, OPN and DHA to coordinate the formation of myelin sheaths of in-vitro oligodendrocyte progenitor cells [6].

NeoHMOs™ Product Specification

Product Description

Sourced from E. coli and rich in 2'-FL.

Physical Properties

Color: White to off-white
State: Homogeneous powder
Smell: No special smell

Physical and Chemical Indicators

Item	Unit	Target Value	Test Method
2'-Fucosyllactose	%	≥94.0	Refer to Announcement No.8 of the Health Commission 2023 2'-Fucosyllactose
D-Lactose	%	≤3.0	
Difucosyllactose	%	≤2.0	
Residual protein content	mg/kg	≤100	
Endotoxin	EU/mg	≤10	
Water content	%	≤9.0	GB 5009.3
Total ash	%	≤0.5	GB 5009.4
Arsenic	mg/kg	≤0.2	GB 5009.11
Pb	mg/kg	≤0.05	GB 5009.12

Microbiological Indicators

Item	Unit	Target Value	Test Method
TPC	CFU/g	≤500	GB 4789.2
Enterobacteriaceae	CFU/g	< 10	GB 4789.41
Salmonella	/25g	Not detected	GB 4789.4



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