

OligoTech®

Human milk oligosaccharides - HMOs

Elicityl is developing a unique offer of HMOs available at quantities and cost not seen before.

17 HMOs are offered in prepacks of 5 mg, 25 mg, 100 mg, 1 g and 5 g. Bulk quantities also available upon request such as 100's g scale.

- Each oligosaccharide results from a specific biological process of production developed by Elicityl
- Compounds available in Reagent Grade (purity >95%) or Technical Grade

Human milk oligosaccharides (HMOs) are recognized as natural molecules with high potential for nutritional and biomedical applications.

Multiple biological activities are attributed to HMOs. They have been described for their prebiotic effects, to act as receptors analogs to inhibit the adhesion of pathogens on epithelial surface and to interact directly with immune system. HMOs may also play a role in postnatal brain development.

Neutral human milk oligosaccharides

GLY031-3	2'-FL	2'Fucosyllactose (Blood group O/H antigen triaose type 5)
GLY060	3-FL	3 Fucosyllactose
GLY066	DF-L	Lactodifucotetraose / Difucosyllactose
GLY010	LNT	Lacto-N-tetraose (Core structure type 1)
GLY021	LNnT / neoLNT	Lacto-N-neotetraose (Core structure type 2)
GLY033-1	LNFP I	Lacto-N-fucopentaose I (Blood group H antigen pentaose type 1)
GLY055	LNDFH II	Lacto-N-difucohexaose II (Lewis ^a hexaose)
GLY051	LNnDFH II	Lacto-N-neodifucohexaose II (Lewis ^X hexaose/ LNDFH III)
GLY022	Para-LNnH	Para-Lacto-N-neohexaose
GLY023	LNnO	Lacto-N-neooctaose
GLY062	LNFP V	Lacto-N-fucopentaose V
GLY061	LNnFP V	Lacto-N-neofucopentaose V

Acidic human milk oligosaccharides

GLY063	F-SL	3'sialyl-3Fucosyllactose
GLY081	LSTa	LS-Tetrasaccharide a / Sialyl-lacto-N-tetraose a
GLY090	3'-SL	3'Sialyllactose (GM3 ganglioside oligosaccharide)

Minor human milk oligosaccharides

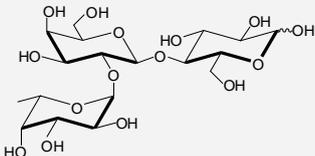
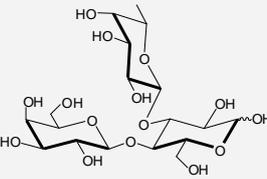
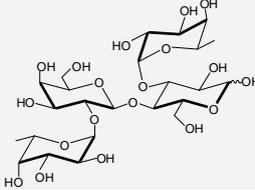
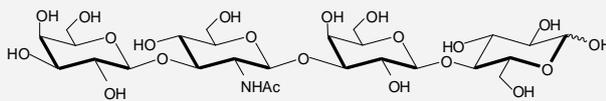
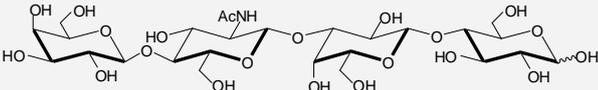
GLY035-3	P_I	Blood group A antigen tetraose type 5
GLY037-1	P_{II}	Blood group A antigen hexaose type 1

Quality control

All of the HMOs are analyzed by Nuclear Mass Spectrometry (NMR) and High Performance Anion Exchange Chromatography (HPAEC) for structure validation and determination of their level of purity.

Contact us for any technical information and quote request
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Neutral human milk oligosaccharides

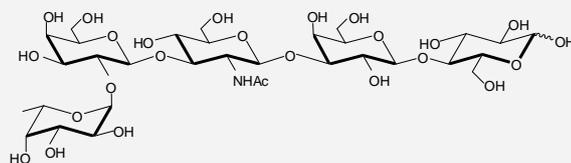
GLY031-3	2'-FL / 2'Fucosyllactose	
	Fuca1-2Gal β 1-4Glc	Blood group (O) H triose antigen type 5
		C ₁₈ H ₃₂ O ₁₅ FW 488.43 CAS [41263-94-9] Reference: Kunz C <i>et al.</i> 2000
		5 mg, 25 mg, 100 mg, 1 g, 5 g
GLY060	3-FL / 3 Fucosyllactose	
	Gal β 1-4(Fuca1-3)Glc	
		C ₁₈ H ₃₂ O ₁₅ FW 488.43 CAS [41312-47-4] Reference: Kunz C <i>et al.</i> 2000
		5 mg, 25 mg, 100 mg, 1 g, 5 g
GLY066	Difucosyllactose / DF-L	
	Fuca1-2Gal β 1-4(Fuca1-3)Glc	Lactodifucotetraose (LD)
		C ₂₄ H ₄₂ O ₁₉ FW 634.57 CAS [20768-11-0] Reference: Kunz C <i>et al.</i> 2000
		5 mg, 25 mg, 100 mg, 1 g, 5 g
GLY010	LNT / Lacto-N-tetraose	
	Gal β 1-3GlcNAc β 1-3Gal β 1-4Glc	Core structure type 1
		C ₂₆ H ₄₅ NO ₂₁ FW 707.62 CAS [14116-68-8] Reference: Kunz C <i>et al.</i> 2000
		5 mg, 25 mg, 100 mg, 1 g, 5 g
GLY021	LNnT/ neo-LNT / Lacto-N-neotetraose	
	Gal β 1-4GlcNAc β 1-3Gal β 1-4Glc	Core structure type 2
		C ₂₆ H ₄₅ NO ₂₁ FW 707.62 CAS [13007-32-4] Reference: Kunz C <i>et al.</i> 2000
		5 mg, 25 mg, 100 mg, 1 g, 5 g

GLY033-1

LNFP I / Lacto-N-fucopentaose I

Fuca1-2Galβ1-3GlcNAcβ1-3Galβ1-4Glc

Blood group O (H) antigen pentaose type 1



$C_{32}H_{55}NO_{25}$

FW 853.76

CAS [7578-25-8]

Reference: Kunz C *et al.* 2000

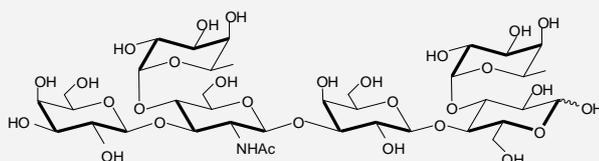
5 mg, 25 mg, 100 mg, 1 g, 5 g

GLY055

LNDFH II / Lacto-N-difucohexaose II

Galβ1-3(Fuca1-4)GlcNAcβ1-3Galβ1-4(Fuca1-3)Glc

Lewis^a (Le^a) hexaose



$C_{38}H_{65}NO_{29}$

FW 999.90

CAS [62258-12-2]

Reference: Kunz C *et al.* 2000

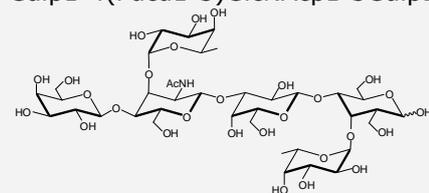
5 mg, 25 mg, 100 mg, 1 g, 5 g

GLY051

LNnDFH / Lacto-N-neodifucohexaose

Galβ1-4(Fuca1-3)GlcNAcβ1-3Galβ1-4(Fuca1-3)Glc

Lewis^X (Le^X) hexaose /LNDFH III



$C_{38}H_{65}NO_{29}$

FW 999.90

Reference: Perret S *et al.*, 2005

5 mg, 25 mg, 100 mg, 1 g, 5 g

GLY022

Para-LNnH / Para-Lacto-N-neohexaose

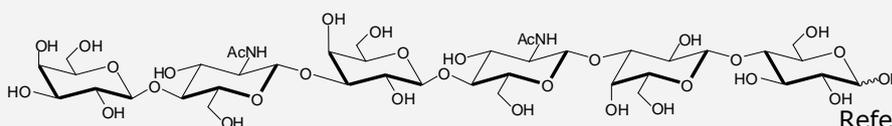
Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc

$C_{40}H_{68}N_2O_{31}$

FW 1072.96

CAS [64331-48-2]

Reference: Boehm G *et al.* 2003



5 mg, 25 mg, 100 mg, 1 g, 5 g

GLY023

LNnO / Lacto-N-neooctaose

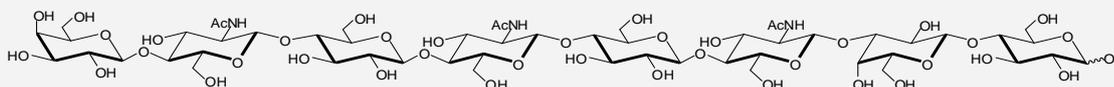
Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4Glc

$C_{54}H_{91}N_3O_{41}$

FW 1438.29

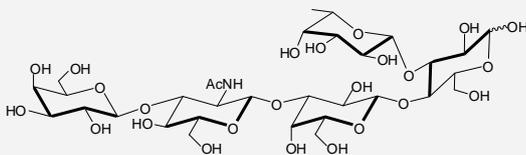
Reference: Kunz C *et al.* 2000

5 mg, 25 mg, 100 mg, 1 g, 5 g



GLY062 LNFP V / Lacto-N-fucopentaose V

Gal β 1-3GlcNAc β 1-3Gal β 1-4(Fuca1-3)Glc



C₃₂H₅₅NO₂₅

FW 853.76

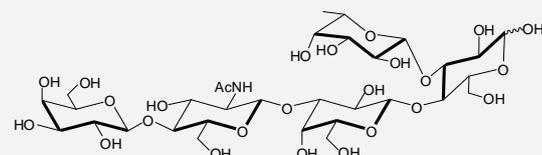
CAS [60254-64-0]

Reference: Kunz C *et al.* 2000

5 mg, 25 mg, 100 mg, 1 g, 5 g

GLY061 LNnFP V / Lacto-N-neofucopentaose V

Gal β 1-4GlcNAc β 1-3Gal β 1-4(Fuca1-3)Glc



C₃₂H₅₅NO₂₅

FW 853.76

Reference: Perret S *et al.*, 2005

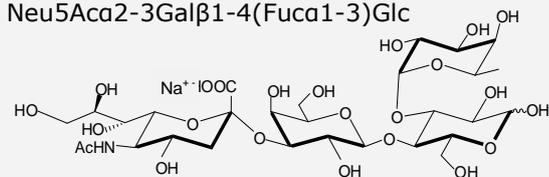
5 mg, 25 mg, 100 mg, 1 g, 5 g

Acidic human milk oligosaccharides

GLY063 3'Sialyl-3Fucosyllactose/ F-SL

Sodium salt

Neu5Ac α 2-3Gal β 1-4(Fuca1-3)Glc



C₂₉H₄₈NO₂₃Na

FW 801.67

Reference: Boehm G *et al.* 2003

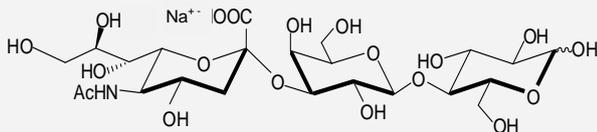
5 mg, 25 mg, 100 mg, 1 g, 5 g

GLY090 3'-SL / 3'Sialyllactose

Sodium salt

Neu5Ac α 2-3Gal β 1-4Glc

GM3 ganglioside oligosaccharide



C₂₃H₃₈NO₁₉Na

FW 655.53

CAS [35890-38-1]

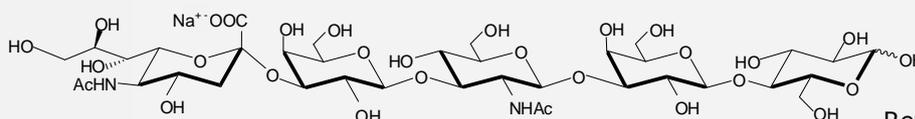
Reference: Kunz C *et al.* 2000

100 mg, 1 g, 5 g

GLY081 LSTa / LS-Tetrasaccharide a / Sialylacto-N-tetraose a

Sodium salt

Neu5Ac α 2-3Gal β 1-3GlcNAc β 1-3Gal β 1-4Glc



C₃₇H₆₁N₂O₂₉Na

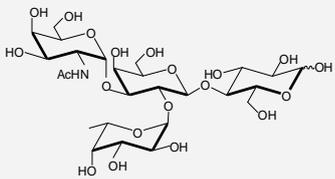
FW 1020.86

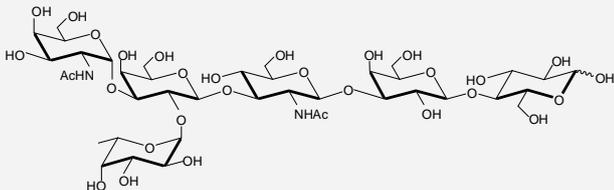
CAS [64003-58-5]

Reference: Kunz C *et al.* 2000

5 mg, 25 mg, 100 mg, 1 g, 5 g

Minor human milk oligosaccharides

GLY035-3	P_I / Blood group A antigen tetraose type 5	
	GalNAcα1-3(Fuca1-2)Galβ1-4Glc	C ₂₆ H ₄₅ NO ₂₀ FW 691.62 CAS [59957-92-5]
		Minor HMO of blood group A secretor individuals Reference: Kobata A. 2010
		5 mg, 25 mg, 100 mg, 1 g, 5 g

GLY037-1	P_{II} / Blood group A antigen hexaose type 1	
	GalNAcα1-3(Fuca1-2)Galβ1-3GlcNAcβ1-3Galβ1-4Glc	C ₄₀ H ₆₈ N ₂ O ₃₀ FW 1056.96 Minor HMO
		of blood group A secretor individuals Reference: Kobata A. 2010
		5 mg, 25 mg, 100 mg, 1 g, 5 g

Milk oligosaccharides from other mammalian species

Code	Oligosaccharide name(s)	Formula	Other milks
GLY010	LNT Lacto-N-tetraose	Galβ1-3GlcNAcβ1-3Galβ1-4Glc	Cow milk (6)
GLY031-3	2'-FL 2'Fucosyllactose	Fuca1-2Galβ1-4Glc	Cow, goat colostrum (2)
GLY060	3-FL 3 Fucosyllactose	Galβ1-4(Fuca1-3)Glc	Horse colostrum (2)
GLY090	3'-SL 3'-Sialyllactose	Neu5Aca2-3Galβ1-4Glc	Cow, goat, sheep colostrum (2,6)
GLY021	LNnT/ neoLNT Lacto-N-neotetraose	Galβ1-4GlcNAcβ1-3Galβ1-4Glc	Horse colostrum (2)
GLY070	iGb3 3'-Galactosyl-lactose/ Isoglobotriaose	Gala1-3Galβ1-4Glc	Cow, goat, sheep colostrum (2)
GLY049	Le^x Lewis ^x triaose / 3-Fucosyl N-acetyl-lactosamine	Galβ1-4(Fuca1-3)GlcNAc	Cow colostrum (2)
GLY091	DS-L Disialyl lactose	Neu5Aca2-8Neu5Aca2-3Galβ1-4Glc	Cow colostrum (2)

References

1. C Kunz *et al.* Oligosaccharides in Human Milk: Structural, Functional, and Metabolic Aspects. 2000. Ann. Rev. Nutr. 20, 699-722.
2. G Boehm and B Stahl. Oligosaccharides. 2003. In Functional dairy products. p203-243. T Mattila-Sandholm and M Saarela, Editors. Boca Raton: CRC Press.
3. S Perret *et al.* Structural basis for the interaction between human milk oligosaccharide and the bacterial lectin PA-IIL of *Pseudomonas aeruginosa*". 2005. Biochem J. Jul 15;389,325-332.
4. G Boehm and B Stahl. Oligosaccharides from Milk. 2007. J. Nutr. 137, 847S-849S.
5. A Kobata. Structures and application of oligosaccharides in human milk. 2010. Proc. Jpn. Acad. 86,731-749.
6. S Mills *et al.* Milk intelligence: Mining milk for bioactive substances associated with human health. 2011. International dairy journal. 21, 377-401.

This selection of HMOs and Mammalian oligosaccharides is extracted from the OligoTech® catalogue, our offer of oligosaccharides and polysaccharides. Full catalogue can be downloaded from www.elicityl-oligotech.com.

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