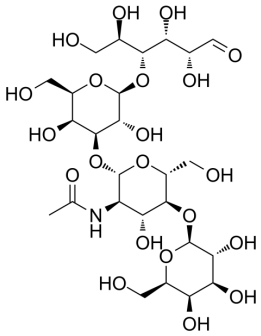
Lacto-N-neotetraose

Cat. No.:	HY-N9445
CAS No.:	13007-32-4
Molecular Formula:	$C_{26}H_{45}NO_{21}$
Molecular Weight:	707.63
Target:	Endogenous Metabolite; TNF Receptor
Pathway:	Metabolic Enzyme/Protease; Apoptosis
Storage:	4°C, protect from light * In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro

H_2O : 125 mg/mL (176.65 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	1.4132 mL	7.0658 mL	14.1317 mL
	5 mM	0.2826 mL	1.4132 mL	2.8263 mL
	10 mM	0.1413 mL	0.7066 mL	1.4132 mL

Please refer to the solubility information to select the appropriate solvent.

BIOLOGICAL ACTIVITY

Description

Lacto-N-neotetraose (LNnT) is an endogenous metabolite. Lacto-N-neotetraose can inhibit TNF-α induced IL-8 secretion in immature epithelial cells. Lacto-N-neotetraose has anti-inflammatory avtivity, and can improve the wound closure[1][2][4].

IC_{50} & Target

Endogenous Metabolite[1], TNFR1[2].

In Vitro

Lacto-N-neotetraose (5 mg/mL, 24 h) induces IL-8 secretion in T84 cells[2].
Lacto-N-neotetraose (5 mg/mL, 24 h) reduces TNF-α induced IL-8-secretion with 38% in FHs 74 Int cells[2].
Lacto-N-neotetraose binds TNFR1 (Tumor necrosis factor receptor 1) with a K_d value of 900 ± 660 nM[2].
Lacto-N-neotetraose (5 mg/mL, 24 h) attenuates TNF-α induced inflammation by TNFR1 ectodomain shedding in FHs 74 Int cells[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

In Vivo

Lacto-N-neotetraose (100 μM, intratracheal administration for 24 h) reduces the abundance of Streptococcus pneumonia in the lungs of pneumonia rabbits[3].
Lacto-N-neotetraose (100/200 μg, Intradermal injection, at 3, 7, 14, and 21 days post-surgery) increases the wound closure rate on day 7 post-wounding[4].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Rabbit model of pneumonia[3]
Dosage:	100 μM
Administration:	Intratracheal administration for 24 h
Result:	Decreased by ~2 logs the bacterial load in the lung at 48 h after challenge. Eliminated the extensive, edematous right middle lobe lesion evident at 48 h in control animals.

Animal Model:	Mice with symmetric full-thickness wounds
Dosage:	100, 200 μg
Administration:	Intradermal injection, at 3, 7, 14, and 21 days post-surgery.
Result:	Exhibited better healing score, follicle formation, and lower epidermal thickness index (H&E staining).

REFERENCES

[1]. Xiaomin Dong, et al. CRISPRi-Guided Multiplexed Fine-Tuning of Metabolic Flux for Enhanced Lacto- N-neotetraose Production in Bacillus subtilis. J Agric Food Chem. 2020 Feb 26;68(8):2477-2484.

[2]. Lianghui Cheng, et al. The Human Milk Oligosaccharides 3-FL, Lacto-N-Neotetraose, and LDFT Attenuate Tumor Necrosis Factor-α Induced Inflammation in Fetal Intestinal Epithelial Cells In Vitro through Shedding or Interacting with Tumor Necrosis Factor Rece

[3]. I Idänpään-Heikkilä, et al. Oligosaccharides interfere with the establishment and progression of experimental pneumococcal pneumonia. J Infect Dis. 1997 Sep;176(3):704-12.

[4]. Behrouz Farhadihosseinabadi, et al. The in vivo effect of Lacto-N-neotetraose (LNnT) on the expression of type 2 immune response involved genes in the wound healing process. Sci Rep. 2020 Jan 22;10(1):997.

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