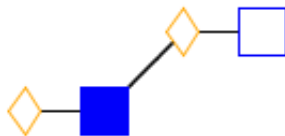




CERTIFICATE OF ANALYSIS

PRODUCT NAME: GLYKO[®] LACTO-N-NEOTETRAOSE (LNnT)
PRODUCT CODE: GKAD-02005
LOT NUMBER: DP08G2403
PACK SIZE: 500 µg (qualitative standard for glycan identification)
PURITY: ≥90% of glycan by UPLC[®]
FORM: Dry solid
STORAGE: Store at -20°C in the dark before and after reconstitution
EXPIRATION: April 2023, may be used for 1 year after reconstitution (extended from prior exp. date based on re-assay)
RE-ASSAY DATE: April 2018
STRUCTURE^{1,2,3}:



Structure Key:

Monosaccharide symbol	Linkage position	Linkage type
Glucose		β-linkage
Galactose		α-linkage
N-Acetylglucosamine (GlcNAc)		

Quality Control:

Sample Preparation: LNnT was labeled with 2-aminobenzamide (2-AB) by reductive amination⁴ using the Signal™ 2-AB Labeling Kit (product code GKK-404).

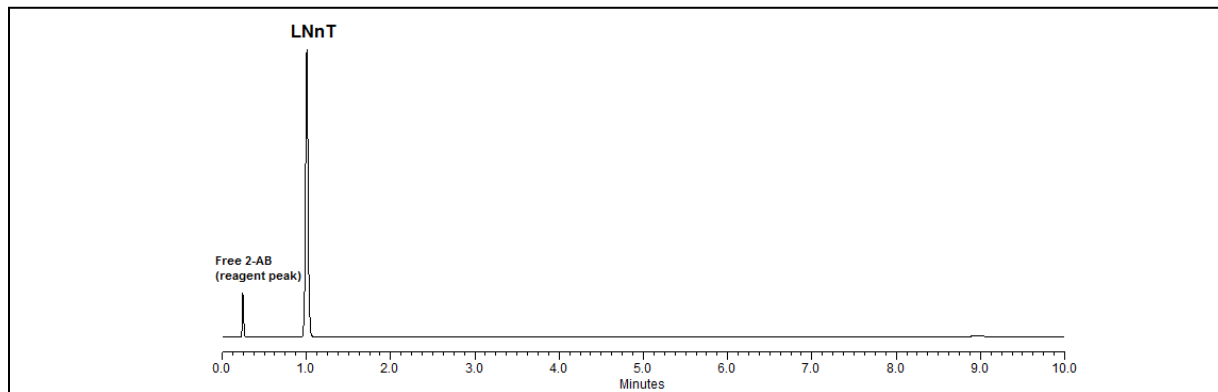


Figure 1 - UPLC® Results: 9 - 13 pmol (1 µl, aqueous) of the 2-AB-labeled⁴ glycan was injected on a Waters ACQUITY UPLC® H Class System utilizing a 10-minute method under the conditions below:

Time (min)	Flow (ml/min)	%ACN	%Buffer
00.0	1.0	75.0	25.0
8.0	1.0	60.0	40.0
8.1	0.5	40.0	60.0
8.5	0.5	40.0	60.0
8.6	1.0	40.0	60.0
8.8	1.0	75.0	25.0
10.0	1.0	75.0	25.0

Column: Waters ACQUITY UPLC BEH Glycan Column (1.7 µm, 2.1 x 100 mm)

ACN: Acetonitrile

Buffer: 100 mM ammonium formate, pH 4.4

Flow rate: As stated in table, in ml/min

Temperature: 60° C

Max Pressure: 15,000 psi

Fluorescence Detection: λ_{ex} = 330 nm, λ_{em} = 420 nm

Average Mass⁵: 707.6

Monoisotopic Mass⁵: 707.2484

Structural Analysis: The purity and structural integrity of the glycan was assessed by UPLC⁶ (as described above) and MALDI-TOF^{7,8} or LC-MS. Agreement was found between the results from mass spectrometry and UPLC.

Application:

- Qualitative standard for various analytical procedures
- Fluorescent-labeling or formation of a variety of oligosaccharide derivatives
- Substrate for glycosidase and glycosyl transferase assays

Handling & Reconstitution:

The oligosaccharide is shipped as a dried solid. Use ultra-pure water or an aqueous buffer to dissolve the materials.

Allow the unopened vial to reach ambient temperature and tap on a solid surface to ensure that most of the material is at the bottom of the vial. Gently remove the cap, add the desired volume of ultra-pure water or aqueous buffer, re-cap and mix thoroughly to redissolve all the material.

For maximal recovery, ensure that the cap lining is also rinsed. Centrifuge the reconstituted vial briefly before use.

Make sure that any glassware, plasticware, solvents or reagents used are free of glycosidases and carbohydrate contaminants.

Minimize exposure to elevated temperatures or extremes of pH. Store the reconstituted glycan at -20° C. Allow the vial to equilibrate to ambient temperature before use.

REFERENCES

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<http://web.expasy.org/glycanmass/>
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Authorized Signature