Certificate of Analysis

LudgerTag™ Sialic Acid DMB Labeling Kit

Cat. #: LT-KDMB-A1 Batch: B8BL-01

Size: 1 set of labeling reagents per kit Expiry Date: 18 Sept 2020

This kit conforms to the specifications given in Ludger document # LT-KDMB-A1-Guide.

Each kit contains the following components:

Quantity per Kit	Cat #	Batch #	Component Name
2	LT-ACETIC2M-01	B89B-03	Acetic Acid 2Molar
1	LT-MERCAPTO-01	B89I-01	Mercaptoethanol
1	LT-DITHIO-01	B8AB-01	Sodium Dithioninte
1	LT-DMB-01	B8B2-01	DMB Dye
1	CM-SRP-01	B84A-01	Sialic Acid Reference Panel
1	CM-NEUAC-01	B836-01	N-Acetyl Neuraminic acid
1	CM-NEUGC-01	B84C-01	N-Glycolyl Neuraminic acid

NeuAc Standard

Cat. #: CM-NEUAC-01 Batch: B836-01

Size: 1.07 ± 0.09 nmol Expiry Date: 06 Mar 2023

The N-acetylneuraminic acid standard is a quantitative standard of NIST-F and USP traceable Neu5Ac monosaccharide.

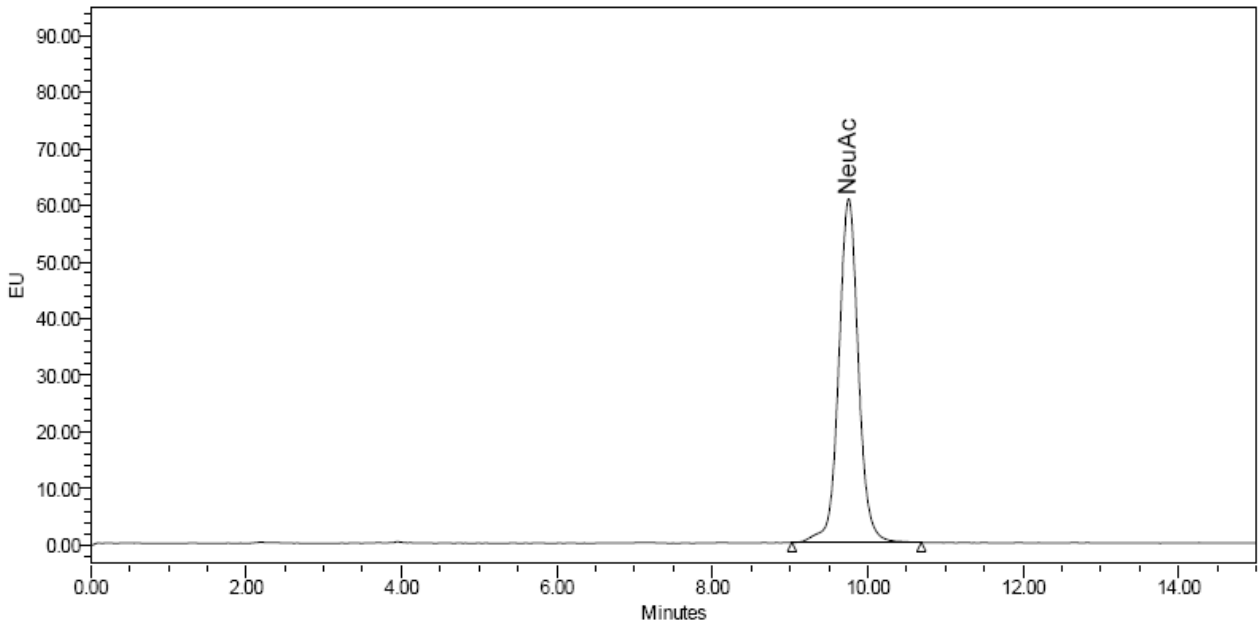

Figure 1: *LudgerSep-R1 HPLC profile of 1,2-diamino-4,5-methylenedioxybenzene.2HCl (DMB) labeled NeuAc standard (Cat. #: CM-NEUAC-01, Batch B836-01).*

Accuracy: This analysis was performed on 12 vials of CM-NEUAC-01.

The dispensed amount was determined as 1.07 ± 0.09nmol NeuAc per vial.

Values are in nmols ± standard deviation.

DMB labeled sialic acid standards eluted under the following HPLC conditions:

Column: LudgerSep R1 (Cat. #: LS-R1-4.6x150)

Flow: 0.5 ml/min.

Temperature: 30 °C

Solvent A: methanol:acetonitrile:water (7:9:84)

Solvent B: acetonitrile

Gradient:

Time (min)	%B
0.0	0.0
19.0	0.0
19.5	90.0
23.5	90.0
24.0	0.0
30.0	0.0
35.0	0.0

Detector: Fluorescence

Excitation wavelength: 373 nm Emission wavelength: 448 nm

NeuGc Standard

Cat. #: CM-NEUGC-01 Batch: B84C-01

Size : 1.02 ± 0.07 nmol Expiry Date: 12 April 2023

The N-glycolylneuraminic acid standard is a quantitative standard of NIST-F and USP traceable Neu5Gc monosaccharide.

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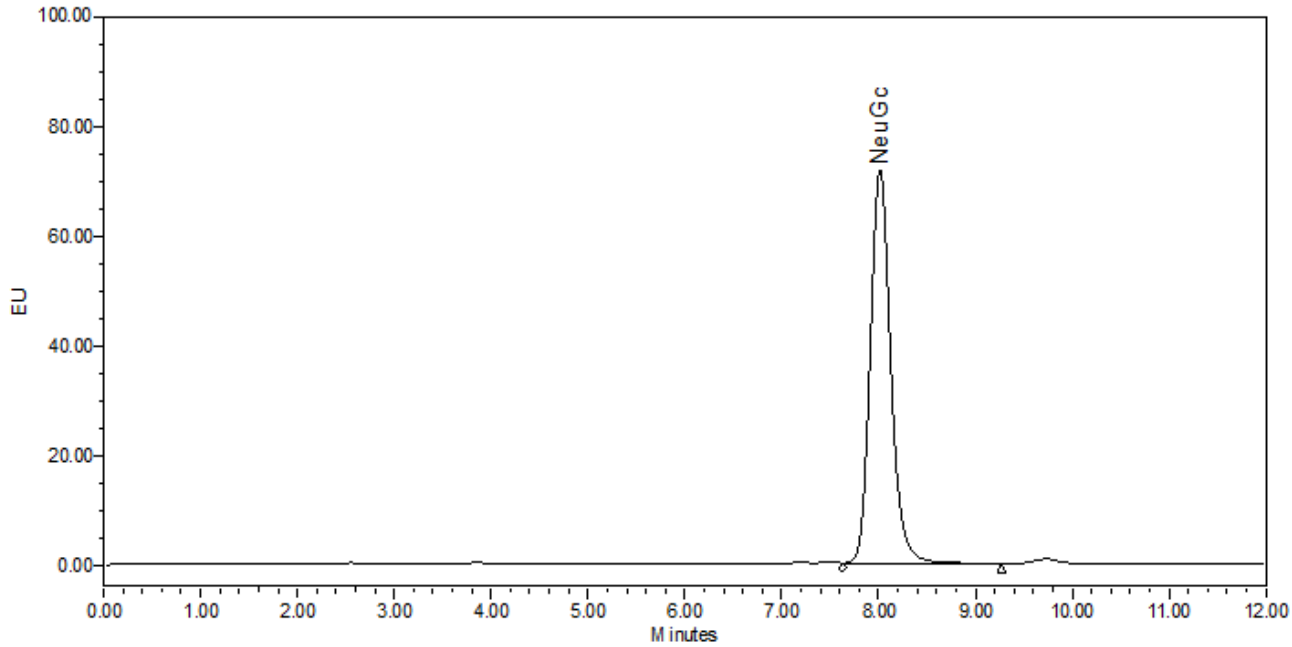

Figure 1: LudgerSep-uR2 HPLC profile of 1,2-diamino-4,5-methylenedioxybenzene.2HCl (DMB) labeled NeuGc standard (Cat. #: CM-NEUGC-01, Batch B84C-01).

Accuracy: This analysis was performed on 12 vials of CM-NEUGC-01.

The dispensed amount was determined as 1.02 ± 0.07 Nmol NeuGc per vial.

Values are in Nmols ±95% confidence interval.

DMB labeled sialic acid standards eluted under the following HPLC conditions:

Column: LudgerSep R1 (Cat. #: LS-R1-4.6x150)

Flow: 0.5 ml/min.

Temperature: 30 °C

Solvent A: methanol:acetonitrile:water (7:9:84)

Solvent B: acetonitrile

Gradient:

Time (min)	%B
0.0	0.0
19.0	0.0
19.5	90.0
23.5	90.0
24.0	0.0
30.0	0.0
35.0	0.0

Detector: Fluorescence

Excitation wavelength: 373 nm Emission wavelength: 448 nm

Sialic Acid Reference Panel

Cat. #: CM-SRP-01 Batch: B84A-01

Size: approx. 1.25 nmols Expiry Date: 11 Apr 2023

The sialic acid reference panel is a mixture of different sialic acids forms (as detailed on chromatogram below) sourced from bovine submaxillary mucin.

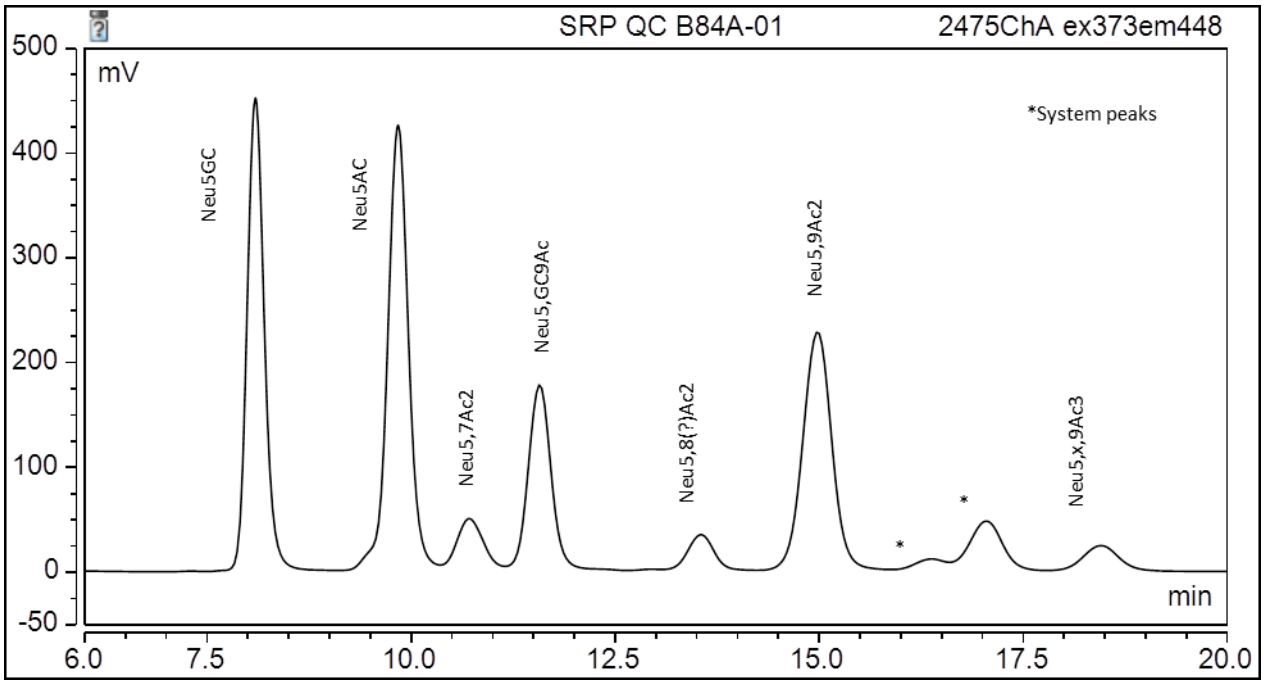

Figure 1: *LudgerSep UR2 HPLC profile of DMB labeled Sialic acid Reference Panel (Cat. #: CM-SRP-01, Batch B84A-01).*

DMB labeled SRP peaks seen above eluted under the following HPLC conditions:

Column: LudgerSep UR2 (1.9µm, 2.1x100mm)

Flow: 0.35 ml/min.

Temperature: 30 °C

Solvent: Methanol:Acetonitrile:Water (7:9:84 v/v)

Fluorescence detector: Dionex U3000

Excitation wavelength: 373 nm

Emission wavelength: 448 nm