

Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled NA4 Glycan

Cat. #: CAB-NA4-01

Lot #: A4BJ-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

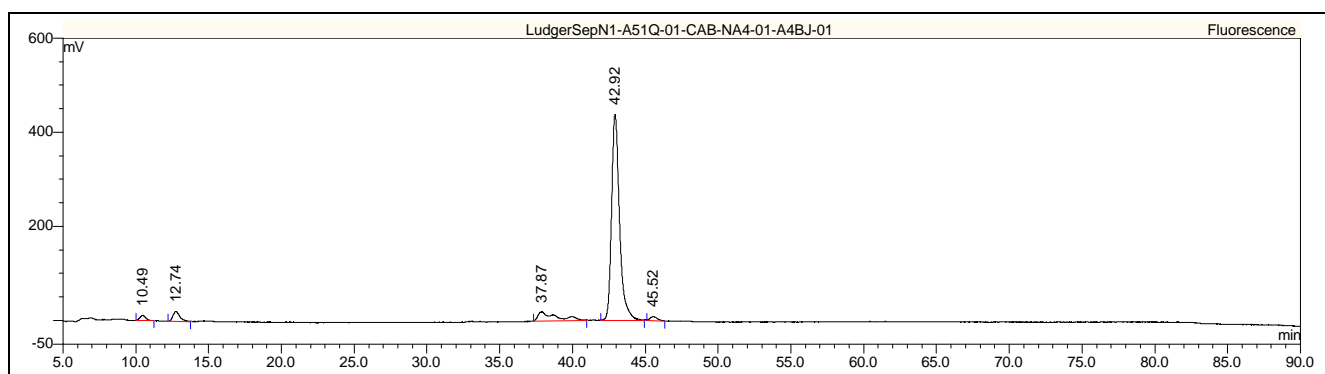


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled NA4 glycan (Cat. #: CAB-NA4-01, Lot No. A4BJ-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

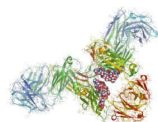
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled NGA4 Glycan

Cat. # : CAB-NGA4-01

Lot # : A51E-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

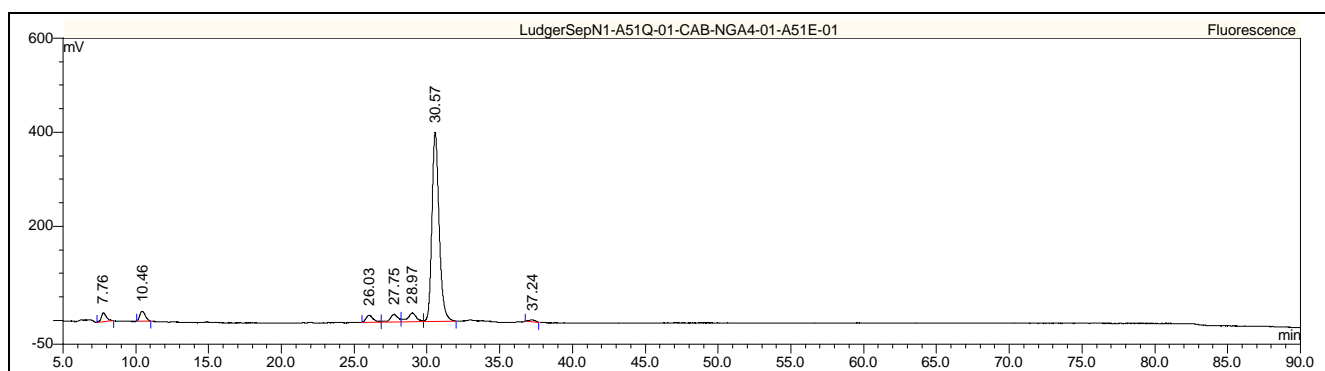


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled NGA4 glycan (Cat. #: CAB-NGA4-01, Lot No. A51E-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

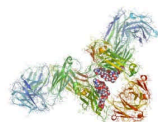
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled A3 Glycan

Cat. # : CAB-A3-01

Lot # : A4AQ-02

Size : approx. 100 pmol

Purity: >90% by hplc (see Fig 1)

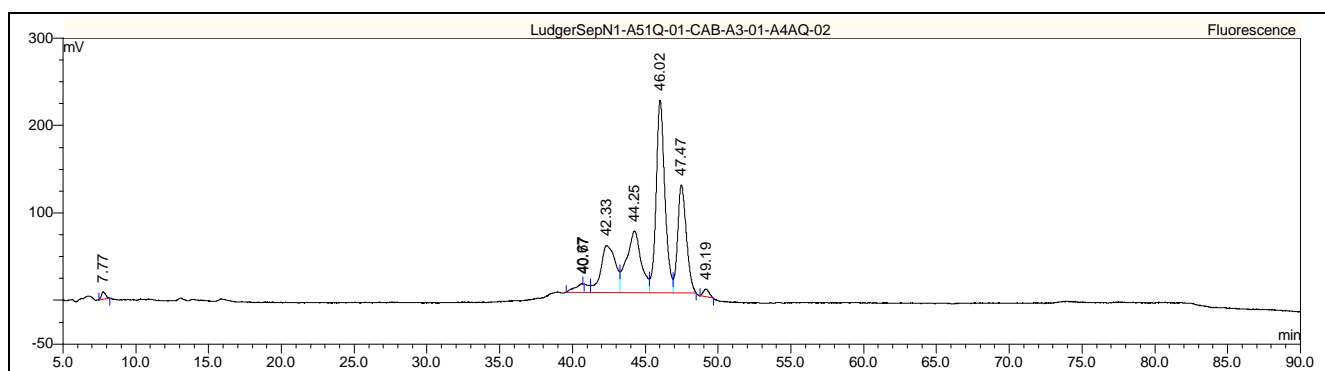


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled A3 glycan (Cat. #: CAB-A3-01, Lot No. A4AQ-02).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

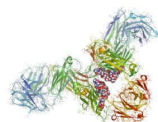
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled NA3 Glycan

Cat. # : CAB-NA3-01

Lot # : A4AT-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

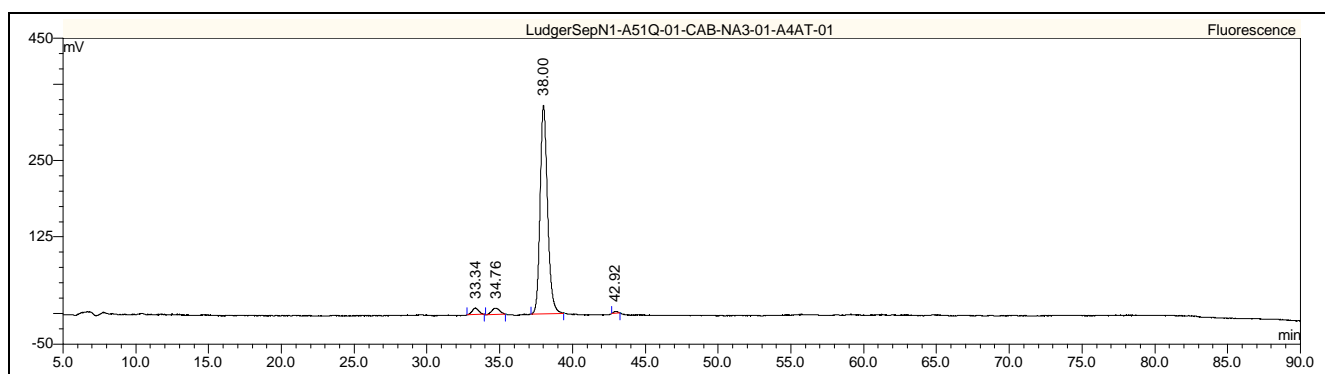


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled NA3 glycan (Cat. #: CAB-NA3-01, Lot No. A4AT-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

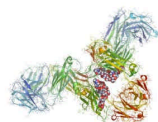
80-83 min - 100 % B

83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920 Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled NGA3 Glycan

Cat. # : CAB-NGA3-01

Lot # : A51H-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

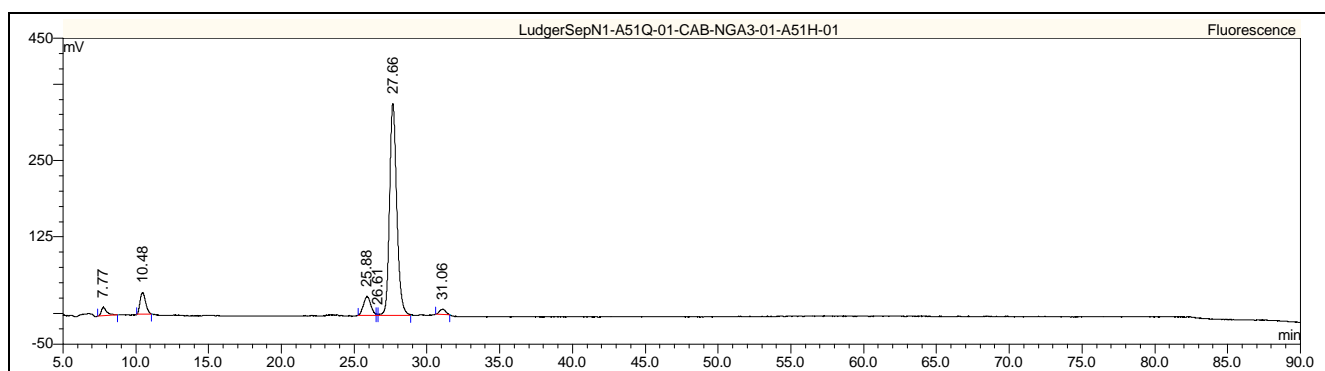


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled NGA3 glycan (Cat. #: CAB-NGA3-01, Lot No. A51H-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

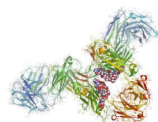
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled NGA3 Glycan

Cat. # : CAB-NGA3-01

Lot # : A51H-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

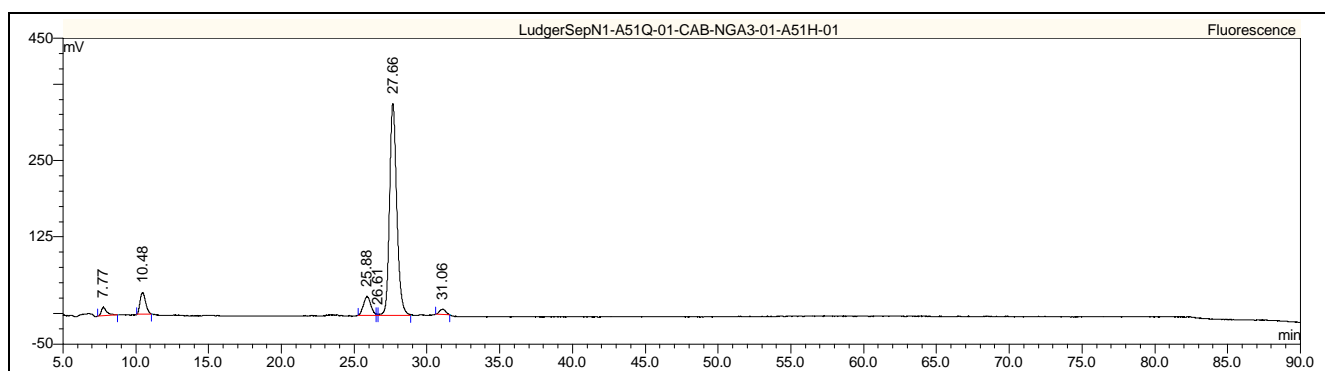


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled NGA3 glycan (Cat. #: CAB-NGA3-01, Lot No. A51H-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

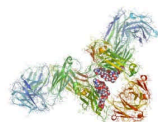
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled A2F Glycan

Cat. # : CAB-A2F-01

Lot # : A4AR-02

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

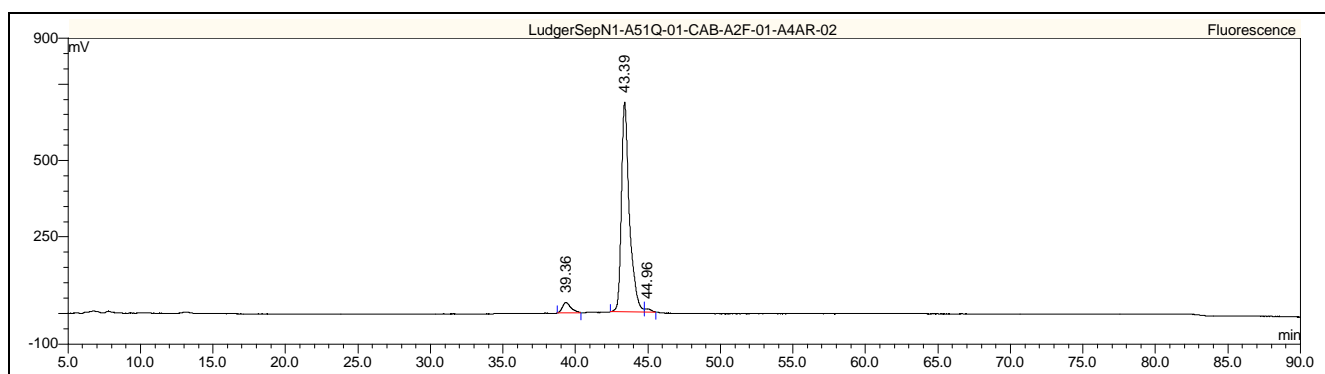


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled A2F glycan (Cat. # CAB-A2F-01, Lot No. A4AR-02).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

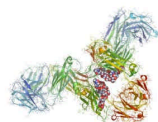
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled A1F Glycan

Cat. # : CAB-A1F-01

Lot # : A4AJ-02

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

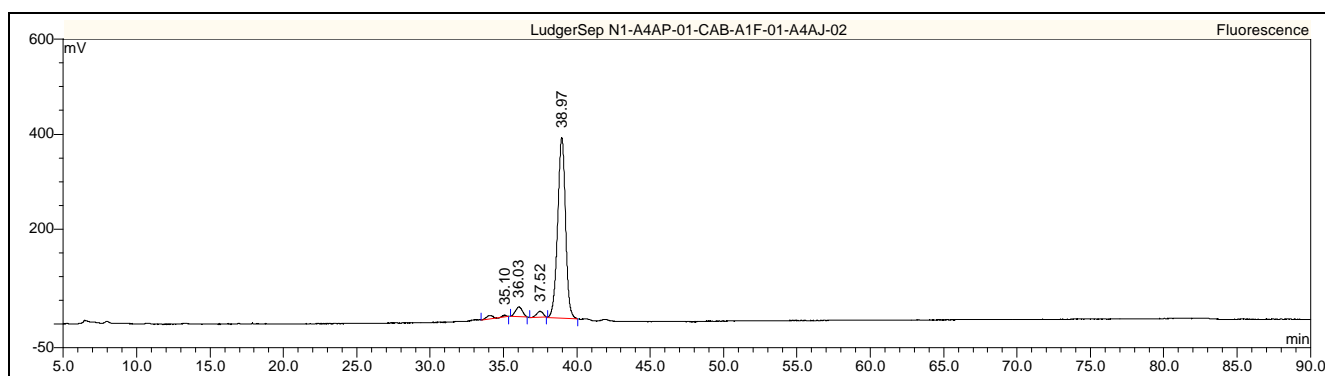


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled A1F glycan (Cat. #: CAB-A1F-01, Lot No. A4AJ-02).

HPLC Running Condition

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

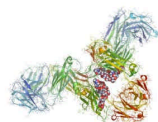
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled NA2F Glycan

Cat. #: CAB-NA2F-01

Lot #: A531-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

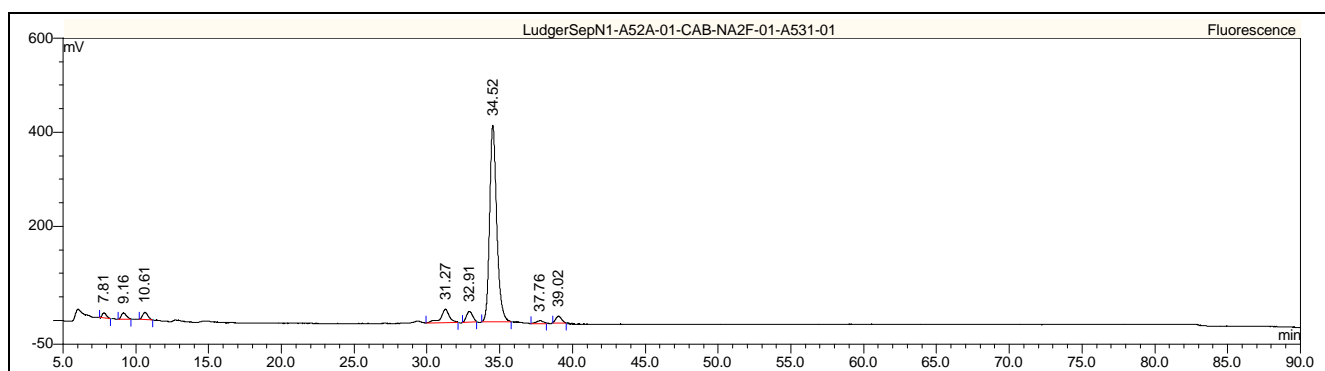


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled NA2F glycan (Cat. #: CAB-NA2F-01, Lot No. A531-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

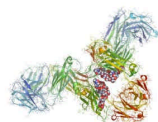
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled NGA2F Glycan

Cat. #: CAB-NGA2F-01

Lot #: A51C-01

Size: approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

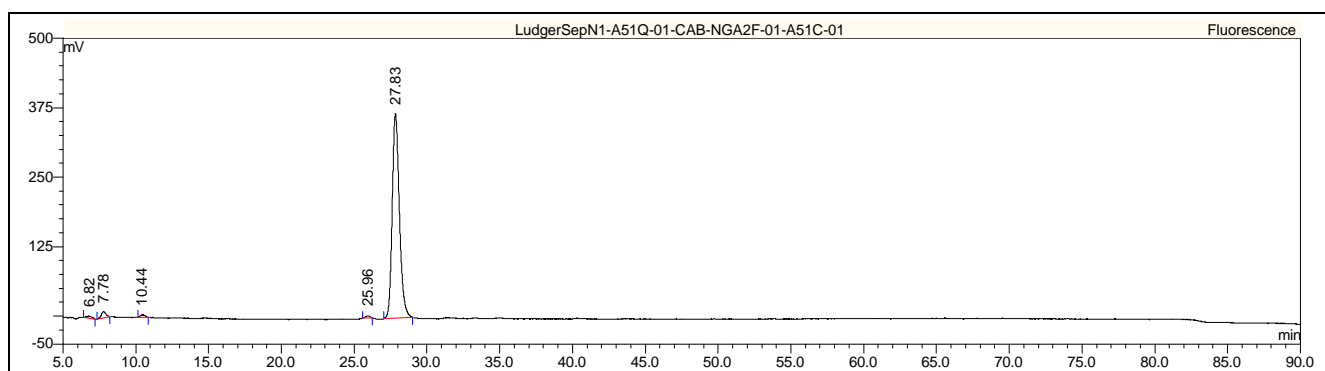


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled NGA2F glycan (Cat. #: CAB-NGA2F-01, Lot No. A51C-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

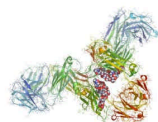
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB labeled A1 Glycan

Cat. # : CAB-A1-01

Lot # : A4AR-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

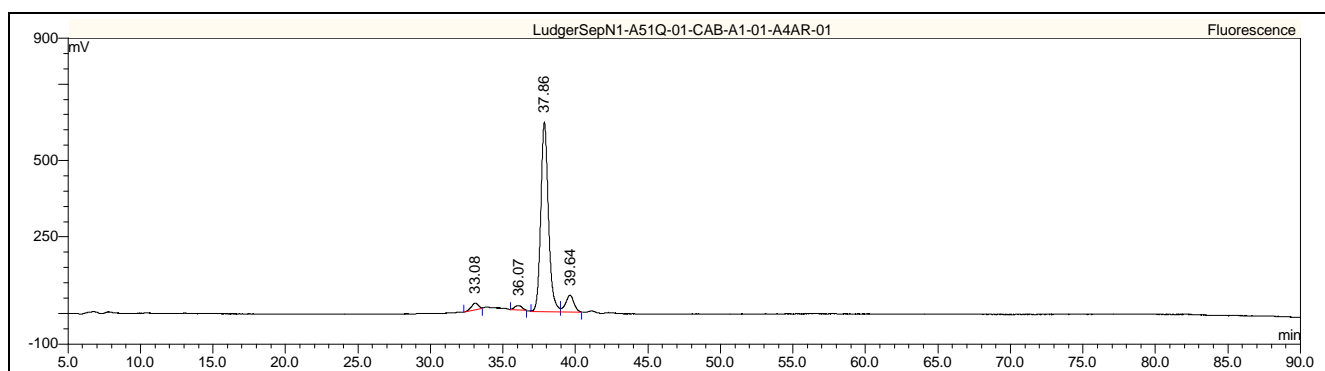


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled A1 glycan (Cat. #: CAB-A1-01, Lot No. A4AR-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

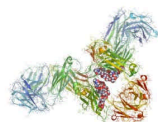
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled NA2 Glycan

Cat. # : CAB-NA2-01

Lot # : A4BP-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1).

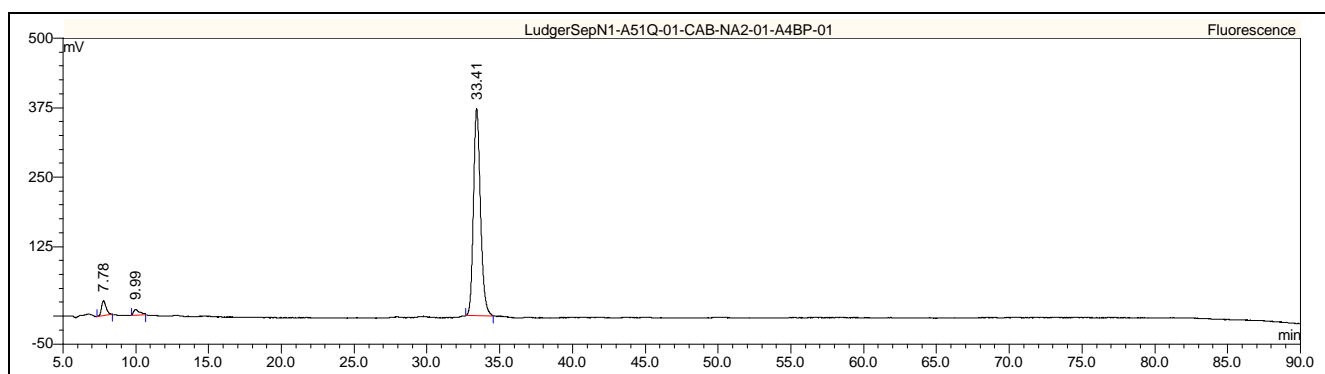


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled NA2 glycan (Cat. # CAB-NA2-01, Lot No. A4BP-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

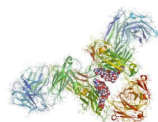
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled NGA2 Glycan

Cat. # : CAB-NGA2-01

Lot # : A4C2-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

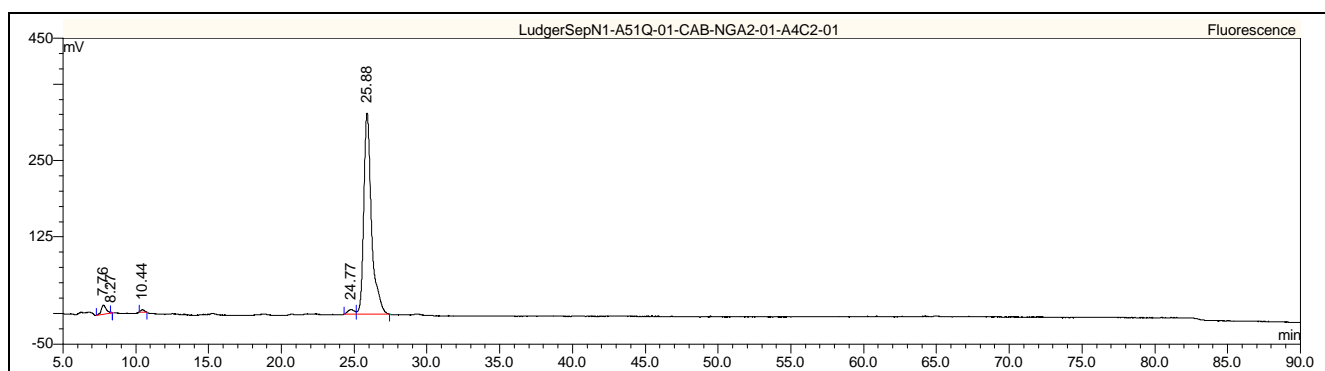


Figure 1 LudgerSepN1 HPLC profile of 2AB labeled NGA2 glycan (Cat. #: CAB-NGA2-01, Lot No. A4C2-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

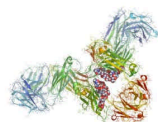
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm.



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled MAN-9 Glycan

Cat. #: CAB-MAN9-01

Lot #: A4BO-05

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

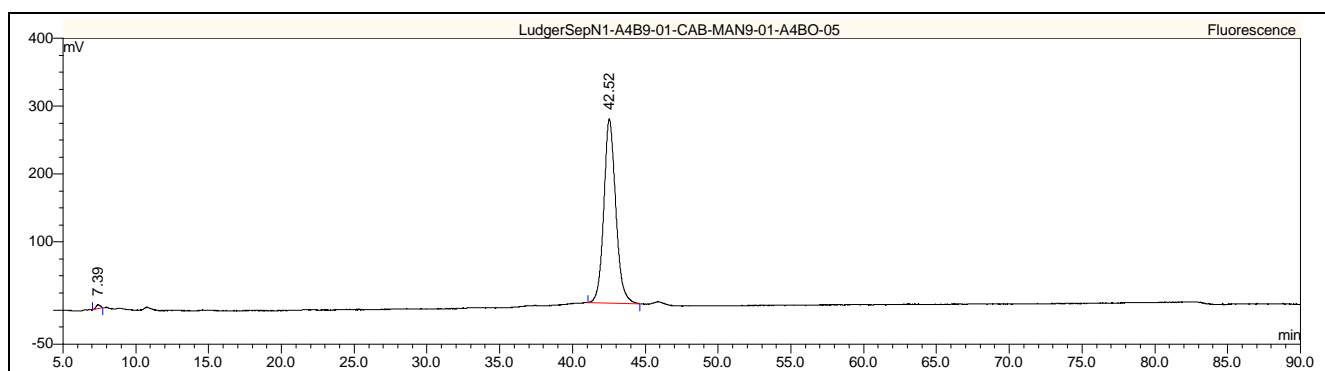


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled MAN-9 glycan (Cat. #: CAB-MAN9-01, Lot No. A4BO-05).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

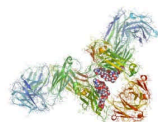
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled MAN-8 Glycan

Cat. # : CAB-MAN8-01

Lot # : A532-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

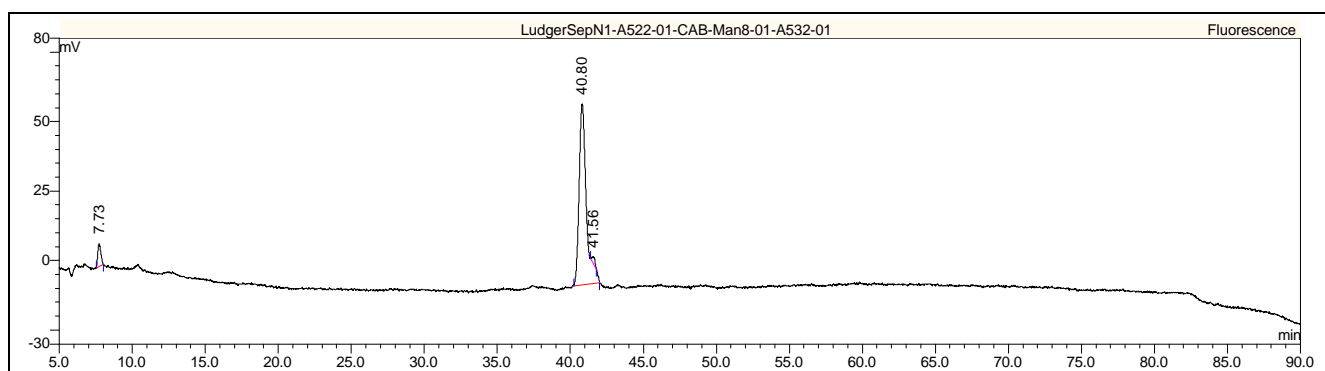


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled MAN-8 glycan (Cat. #: CAB-MAN8-01, Lot No. A532-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

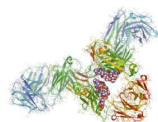
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled MAN-7 Glycan

Cat. # : CAB-MAN7-01

Lot # : A4BN-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

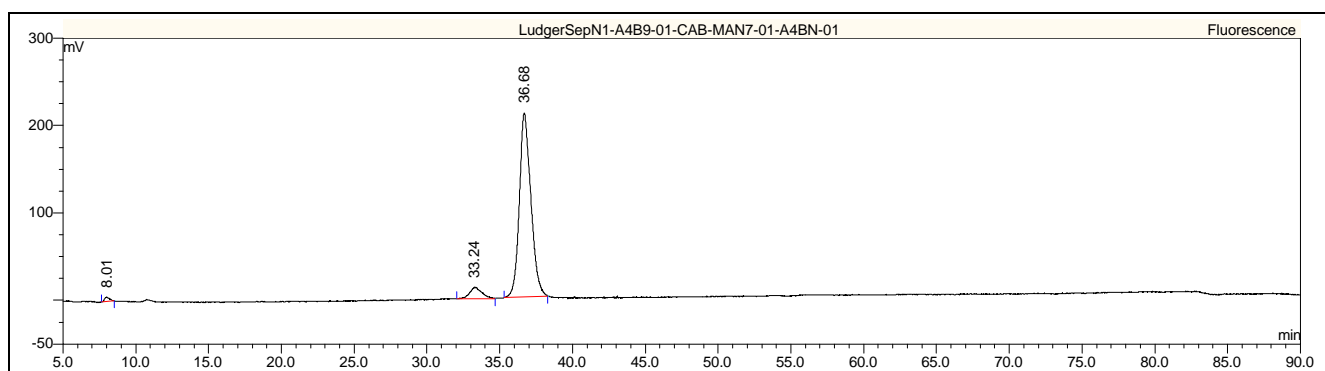


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled MAN-7 glycan (Cat. #: CAB-MAN7-01, Lot No. A4BN-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

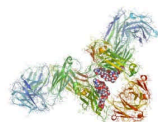
80-83 min - 100 % B

83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920 Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled MAN-6 Glycan

Cat. # : CAB-MAN6-01

Lot # : A4BM-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

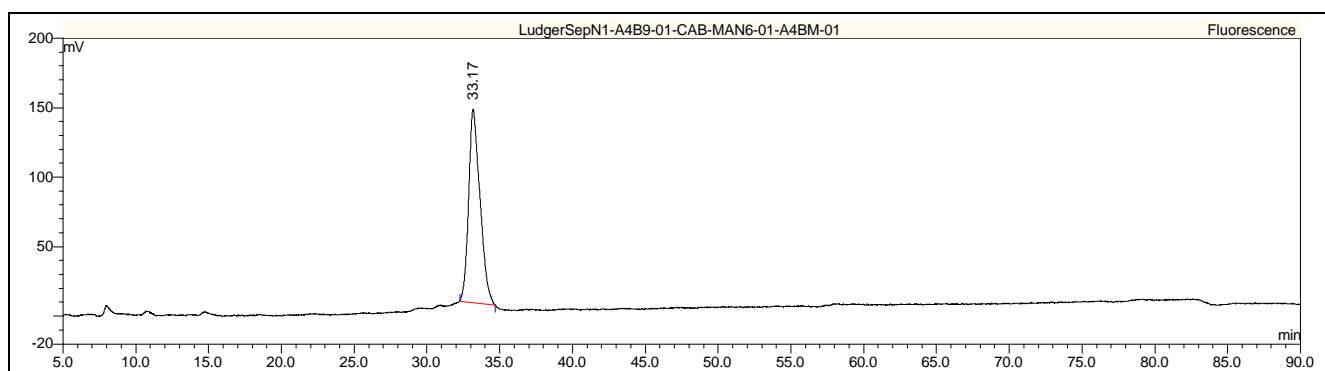


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled MAN6 glycan (Cat. #: CAB-MAN6-01, Lot No. A4BM-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

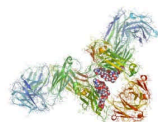
80-83 min - 100 % B

83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920 Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled MAN-5 Glycan

Cat. #: CAB-MAN5-01

Lot #: A4BQ-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

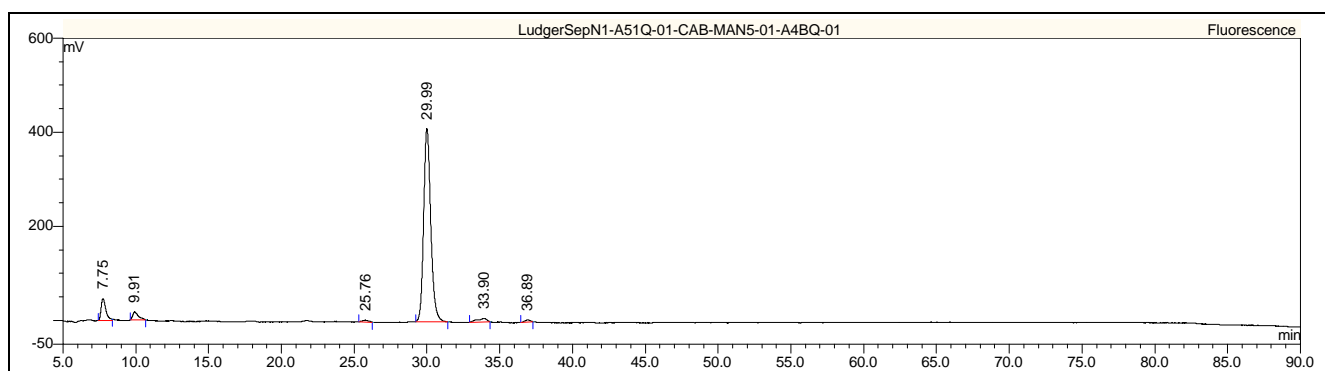


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled MAN-5 glycan (Cat. #: CAB-MAN5-01, Lot No. A4BQ-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

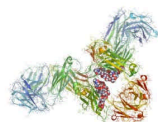
83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920

Excitation wavelength: 360 nm

Emission wavelength: 425 nm



Ludger

Certificate of Analysis

LudgerPure™ 2AB Labeled Hybrid Glycan

Cat. # : CAB-HYBRID-01

Lot # : A51I-01

Size : approx. 100 pmol

Purity: > 90% pure as assessed by HPLC (see Fig 1)

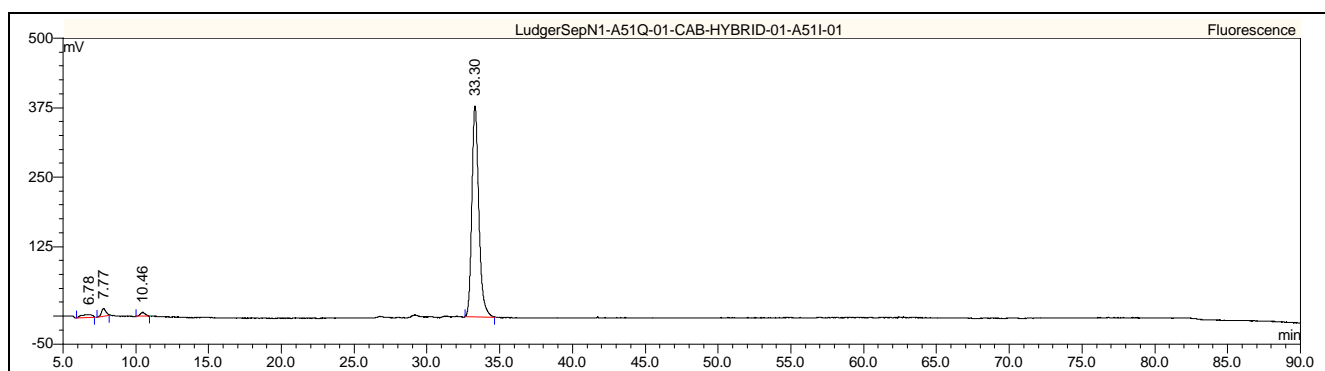


Figure 1 : LudgerSepN1 HPLC profile of 2AB labeled HYBRID glycan (Cat. # CAB-HYBRID-01, Lot No. A51I-01).

HPLC Running Conditions

Column: LudgerSep N1 Amide (Cat. #: LS-N1-4.6x250)

Flow: 0.4 ml/min

Temperature: 40 °C

Solvent A: 100 % acetonitrile

Solvent B: 250 mM ammonium formate pH 4.4

Gradient: 0-75 min - 35-65 % B

75-80 min - 65-100 % B

80-83 min - 100 % B

83-85 min - 100-35 % B

85-115 min - 35 % B

Detector: Jasco FP920 Excitation wavelength: 360 nm

Emission wavelength: 425 nm