

Certificate of Analysis

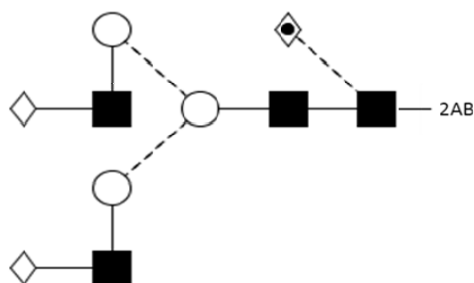
LudgerPure™ 2AB Labeled NA2F Glycan

Cat. #: CAB-NA2F-01

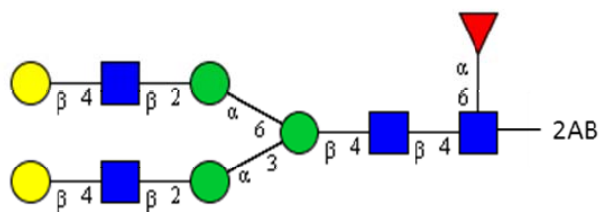
Batch: B37V-04

Size: approx. 100 pmol

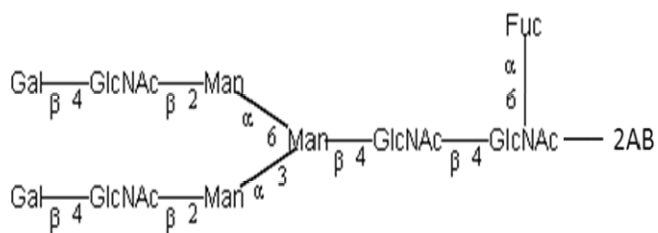
Structure



Oxford Notation



CFG Notation



Text Notation

Purity: 88.84% 2AB labeled NA2F glycan, as assessed by UHPLC - see Fig 1.

Amount: Sample vial determined to contain 94.2 pmols NA2F glycan – Test performed 31 July 2013.

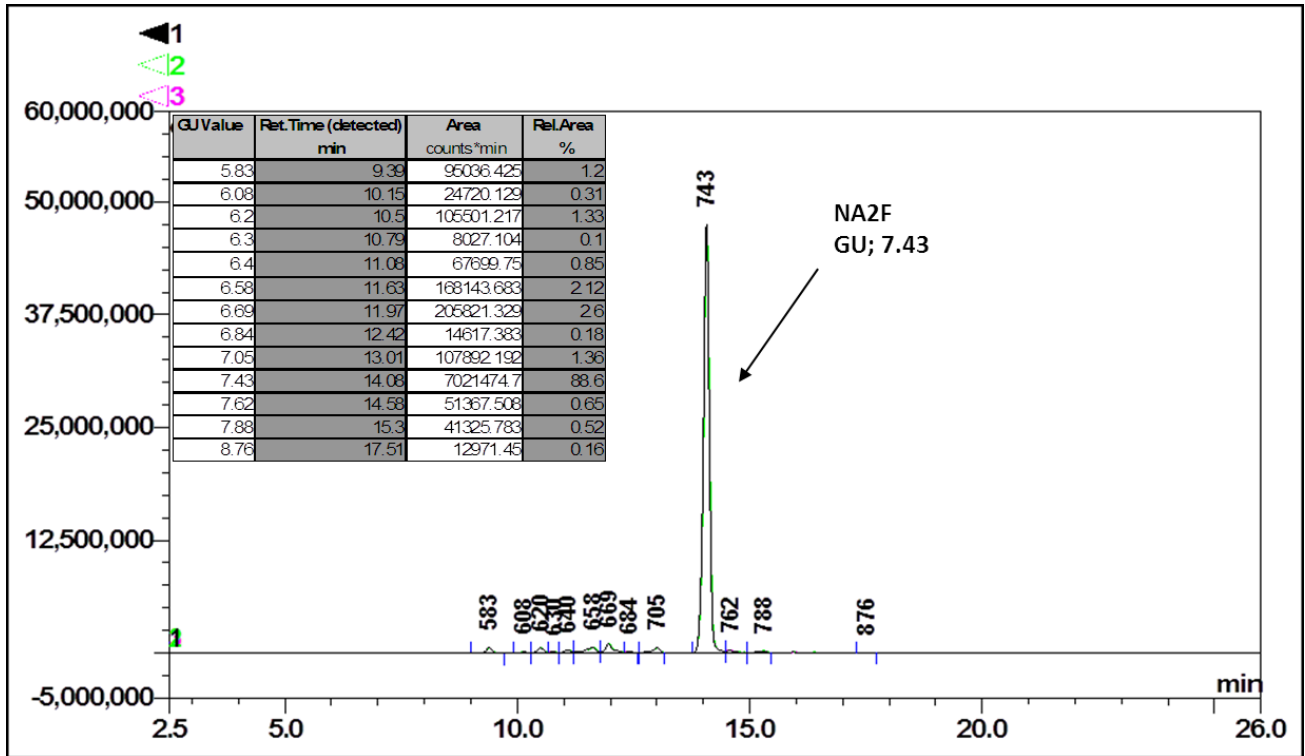


Figure 1: HILIC HPLC profile of 2AB labelled NA2F glycan (see method conditions below)
 (Cat. #: CAB-NA2F-01, Batch B37V-04).

*NA2F glycan structure identified by MALDI, MS & HPLC (GU value comparison to GlycoBase). This structure is drawn according to the scheme developed by Oxford-Dublin Glycobiology Laboratory (see Fig 2).

2-AB NA2F peak seen above, eluted at 14.08 minutes, under the following conditions:

HPLC Running Conditions:

Column: Waters BEH Glycan 1.7µm column (150mm)

Flow: 0.56mL/min.

Temperature: 60 °C

Solvent A: 50mM ammonium formate pH 4.4

Solvent B: 100 % acetonitrile

Gradient:

| Time (min) | %B |
|------------|------|
| 0.0 | 75.0 |
| 1.5 | 75.0 |
| 24.8 | 58.0 |
| 25.8 | 40.0 |
| 25.9 | 75.0 |
| 31.0 | 75.0 |

Detector: Dionex FLD-3000

Excitation wavelength: 250 nm

Emission wavelength: 428 nm

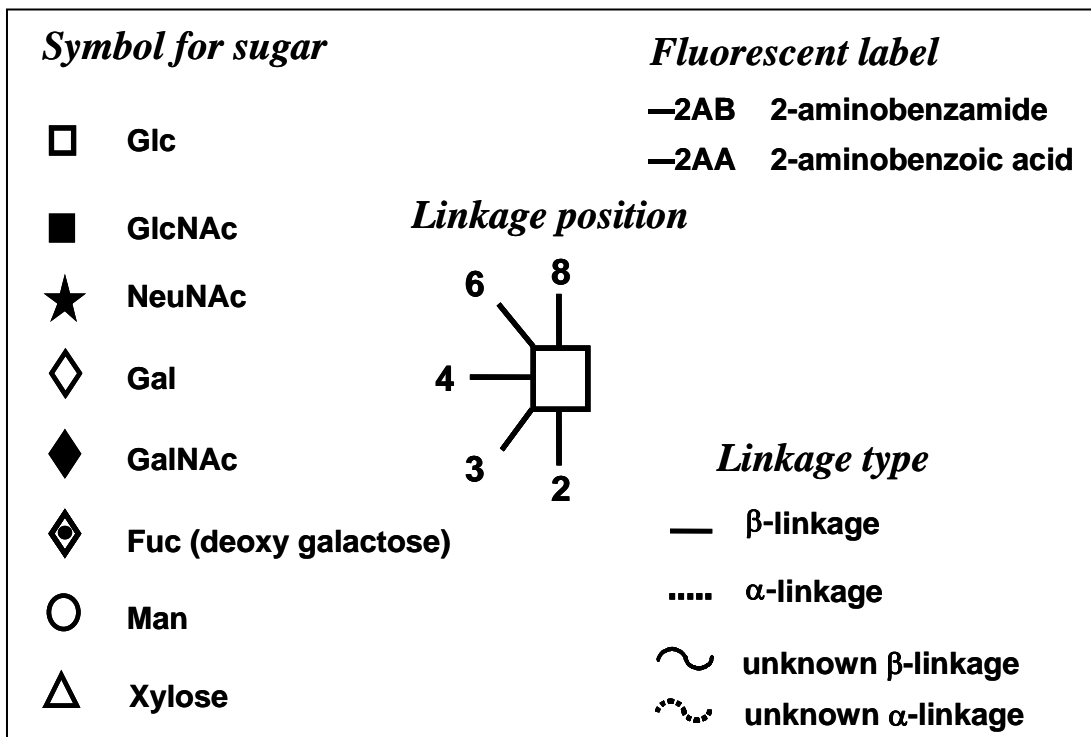


Figure 2: GlycoBase glycan structure key.