



## Certificate of Analysis

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### Fetuin Glycan Library

Cat. #: CLIBN-FETUIN-01

Batch #:B52H-10

Size: ~7.5 µg

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- Description:** A mixture of bi-, tri-, and tetra-antennary glycan standards with variable sialylation released from fetuin glycoprotein.
- Source:** The glycans in this product are released from a fetuin standard that is purified from fetal calf serum. Fetuin is a glycoprotein present in the circulation which is synthesized by hepatocytes. Fetuin exists in a variety of glycoforms containing bi-, tri-, and tetra-antennary oligosaccharides with variable sialylation.
- Form:** Dry. Lyophilised powder.
- Storage:** Refrigerate (-20°C) both before and after dissolving. This product is stable for at least 5 years as supplied.
- Shipping:** The product is shipped at ambient temperature.
- Handling:** Once dissolved avoid repeated thawing and refreezing, storage over 3 h at room temperature or above, exposure to light and long term exposure to acid as these will cause glycan desialylation.
- Safety:** This product is non-hazardous and has been purified from natural sources certified to be free of all hazardous material including pathogenic biological agents.

**For research use only. Not for human or drug use**

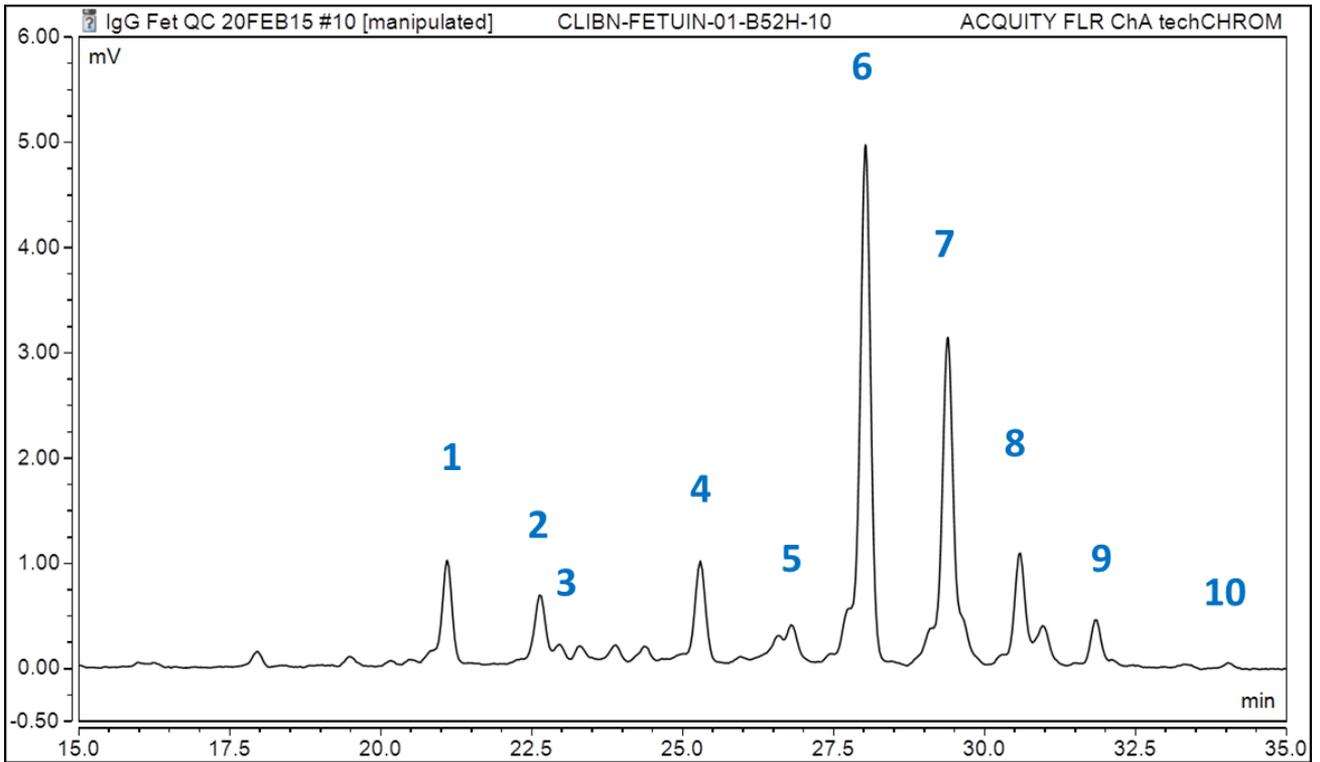


Figure 1: Waters UPLC BEH Glycan column profile of 2AB labelled fetuin glycans (CLIBN-FET-01, Batch B52H-10).

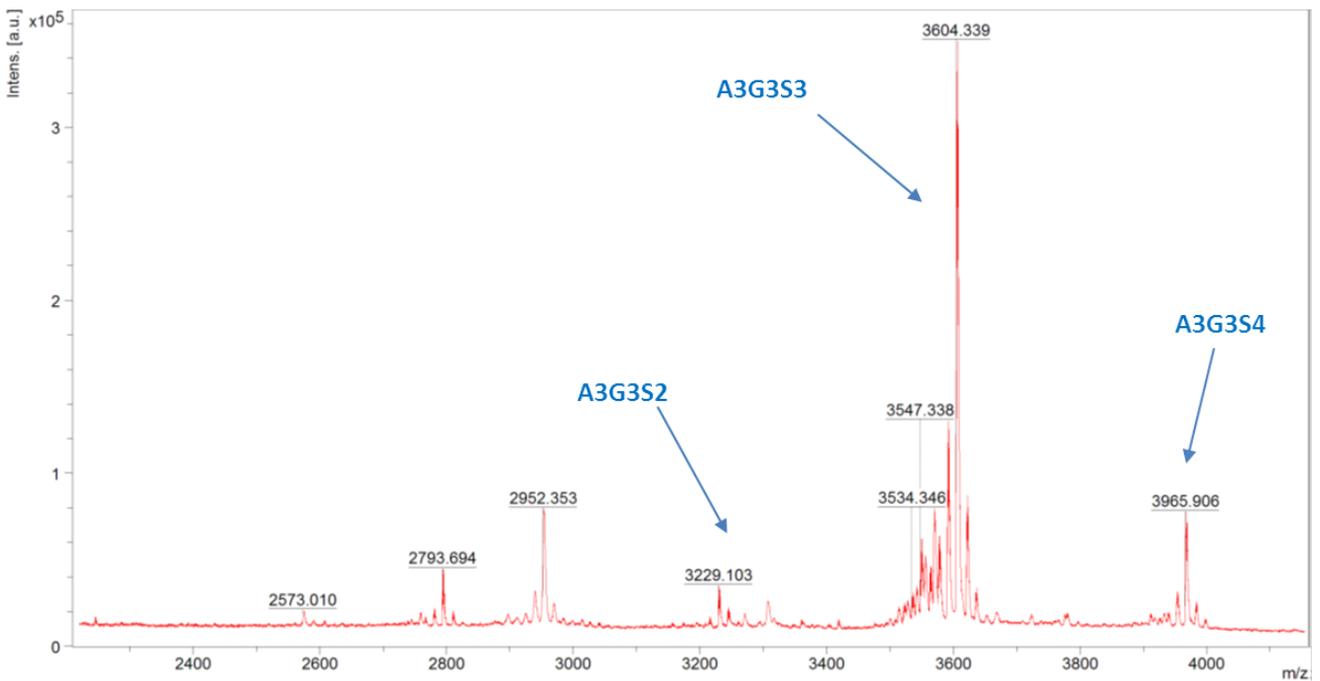


Figure 2: Positive ion mass spectrum of permethylated fetuin glycans (CLIBN-FET-01, Batch B52H-10).

Peak Number	Assignment	Relative Amount (%)
1	A3G3	5.24
2/3/4	A3G2S2, A3G3S1, A3G3S2	13.4
5	A3G3S2, A3G2S3	5.09
6	A3G3S3, A3G3S4	31.87
7/8	A3G3S3, A3G2S4	30.07
9	A3G3S3, A3G3S4	3.38
10	A3G3S3, A3G3S4	0.28

**Figure 3; Batch B52H-10 Relative Peak amount chart**

**Table 1: Summary of bovine fetuin N-glycans.** See the end of this document for details of the glycan nomenclature used. Many common N-glycans have similar reported GU values. Due to the heterogeneous nature of the sample variations in the linkage type of a sialic acid will cause variations in column retention times. A combination of GU value, mass spectrometry and exoglycosidase digestion can be used to unambiguously identify most N-glycans. For a more complete analysis of bovine fetuin, see the CofA provided for GCP-Fet-50.

## Structure Abbreviations

All N-glycans have two core GlcNAcs; F at the start of the abbreviation indicates a core fucose, (6) after the F indicates that the fucose is  $\alpha$ 1-6 linked to the inner GlcNAc; Mx, number (x) of mannose on core GlcNAcs; Ax, number of antenna (GlcNAc) on trimannosyl core; A2, biantennary with both GlcNAcs as  $\beta$ 1-2 linked; A3, triantennary with a GlcNAc linked  $\beta$ 1-2 to both mannose and the third GlcNAc linked  $\beta$ 1-4 to the  $\alpha$ 1-3 linked mannose; A3', triantennary with a GlcNAc linked  $\beta$ 1-2 to both mannose and the third GlcNAc linked  $\beta$ 1-6 to the  $\alpha$ 1-6 linked mannose; A4, GlcNAcs linked as A3 with additional GlcNAc  $\beta$ 1-6 linked to  $\alpha$ 1-6 mannose; B, bisecting GlcNAc linked  $\beta$ 1-4 to  $\beta$ 1-3 mannose; Gx, number (x) of linked galactose on antenna, (4) or (3) after the G indicates that the Gal is  $\beta$ 1-4 or  $\beta$ 1-3 linked; [3]G1 and [6]G1 indicates that the galactose is on the antenna of the  $\alpha$ 1-3 or  $\alpha$ 1-6 mannose; Sx, number (x) of sialic acids linked to galactose; the numbers 3 or 6 in parentheses after S indicate whether the sialic acid is in an  $\alpha$ 2-3 or  $\alpha$ 2-6 linkage.

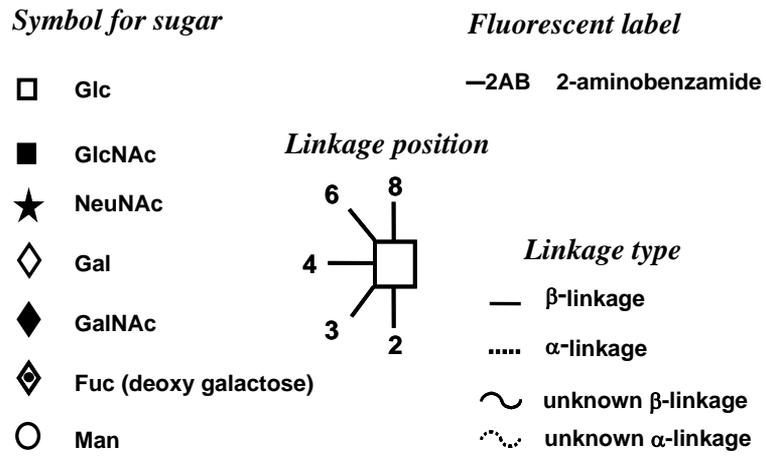


Figure 3: Symbols used to depict glycan structures



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Ludger shall not be liable for any incidental, consequential or contingent damages.

**This product is intended for *in vitro* research only.**

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