



## Product Information

### Fetuin from fetal calf serum

Product Number **F 3004**  
Storage Temperature 2-8 °C

#### Product Description

Molecular weight: 48.4 kDa<sup>1</sup>  
CAS Number: 9014-81-7  
pI: 3.3<sup>1</sup>; 3.2 - 3.8<sup>2</sup>  
Extinction Coefficient:  $E^{1\%} = 4.1$  (278 nm)<sup>1</sup>;  
4.5 (278 nm)<sup>3</sup>  
Synonym: Fetuin Type IV

This product is a further purification of Product No. F 2379 by gel filtration. This purification step may reduce the amount of free N-acetylneuraminic acid.

Fetuin is a protein component of serum which contributes to the attachment and spreading of cells in culture medium. Researchers often add serum for this purpose.

Fetuin can be used as a glycoprotein standard for carbohydrate structure in a glycoprotein. The structural elucidation of the carbohydrate portion of fetuin has been published.<sup>4-8</sup> The cDNA and amino acid sequences has been reported.<sup>4</sup> Fetuin contains 12 Cys residues, all involved in disulfide bridges.<sup>9</sup>

The composition of bovine fetuin (weight %) is polypeptide 74%, hexose 8.3%, hexosamines 5.5%, and sialic acid 8.7%.<sup>1</sup> This product usually assays at 5-8% total sialic acid. Nearly all of this sialic acid is bound. The amount of free sialic acid is typically less than 0.3%. A method for determining free sialic acid content has been published.<sup>10</sup>

#### Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

#### Preparation Instructions

This product is soluble in water (1 mg/ml), yielding a clear to slightly hazy, colorless to very faint yellow solution.

#### Storage/Stability

Solutions of fetuin are stable for approximately 2 weeks when stored at 2-8 °C and for several months when aliquoted and stored at -20 °C. This assumption is based on the observation that cells are still active in serum, which has been stored under the above conditions.

#### References

1. Spiro, R. G., Studies on fetuin, a glycoprotein of fetal serum. I. Isolation, chemical composition and physicochemical properties. *J. Biol. Chem.*, **235**, 2860-2869 (1960).
2. Kithier, K., and Poulik, M. D., Comparative studies of bovine-fetoprotein and fetuin. *Biochim. Biophys. Acta*, **278(3)**, 505-516 (1972).
3. Murray, A. C., et al., Circular dichroism studies on native fetuin and some of its derivatives. *Biochim. Biophys. Acta*, **175(2)**, 331-338 (1969).
4. Dziegielewska, K. M., et al., The complete cDNA and amino acid sequence of bovine fetuin. Its homology with alpha 2HS glycoprotein and relation to other members of the cystatin superfamily. *J. Biol. Chem.*, **265(8)**, 4354-4357 (1990).
5. Yet, M. G., The covalent structure of individual N-linked glycopeptides from ovomucoid and asialofetuin. *J. Biol. Chem.*, **263(1)**, 111-117 (1988).
6. Takasaki, S. and Kobata, A., Asparagine-linked sugar chains of fetuin: Occurrence of tetrasialyl triantennary sugar chains containing the gal  $\beta$  (1 $\rightarrow$ 3)GlcNAc sequence. *Biochemistry*, **25(19)**, 5709-5715 (1986).
7. Spiro, R. G., and Bhoyroo, V. D., Structure of the o-glycosidically linked carbohydrate units of fetuin. *J. Biol. Chem.*, **249(18)**, 5704-5717 (1974).
8. Rafelson, M. E., Jr., et al., Neuraminidase (sialidase) from influenza virus. *Methods Enzymol.*, **VIII**, 677-680 (1966).

9. Chin, C. C., and Wold, F., The use of tributylphosphine and 4-(aminosulfonyl)-7-fluoro-2,1,3-benzoxadiazole in the study of protein sulfhydryls and disulfides. *Anal. Biochem.*, **214(1)**, 128-134 (1993).

10. Aminoff, D., Methods for the quantitative estimation of n-acetylneuraminic acid and their application to hydrolysates of sialomucoids. *Biochem. J.*, **81**, 384-392 (1961).

IRB/RXR 12/03

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.