

Product Specification Sheet

Product Name: Chicken Egg White Ovotransferrin

EC number: 215-727-0,
CAS registry number: 1391-06-6,
MDL number: MFCD130856

Catalog Number: FSB1002

Lot Number: 06B21

Description

Ovotransferrin (or conalbumin) is a 686 amino acid glycoprotein from chicken egg white [1], which is expressed as a 705 amino acid pro-protein with a 19 amino acid glycosylation signal sequence that is ultimately cleaved [2]. Ovotransferrin has a single N-linked glycosylation located in the second domain at N492 [3, 4] that corresponds to a molecular weight of about 77.3 kilodaltons (deglycosylated weight of 75.9 kilodaltons) [5, 6]. The structure of ovotransferrin is made up of two transferrin-like domains that are stabilized by six disulfide bonds in the first domain and nine in the second [7, 8]. Each domain can bind one Fe³⁺ and one carbonate molecule coordinated by a four amino acid Asp-Tyr-Tyr-His motif and a Tyr-Arg-Ala-Gly motif [7], respectively. Apo-ovotransferrin (0-Fe³⁺) has two apparent isoelectric points (pI) at 6.09 (minor) and 6.24 (major), whereas mono-ovotransferrin (1-Fe³⁺) has a pI at 6.68, and holo-ovotransferrin (2-Fe³⁺) has a pI at 7.17 [9]. Absent bicarbonate, ovotransferrin can form a complex with iron and EDTA (iron-ovotransferrin-EDTA) that has an optical peak that can be observed near 490 nm, and with bicarbonate it can form an iron-ovotransferrin-CO₃⁽⁻⁾ complex has an optical peak near 470 nm [10]. At pH 7 the apo form has a thermal denaturation near 60°C, where as the holo form denatures near 65°C [11].

Product Information

Quantity:	50 mg
Purity:	> 95% by SDS-PAGE
Molecular Weight:	0-Fe³⁺: ~77.3 kDa glycosylated (~75.9 kDa deglycosylated)
Iron Content:	0-Fe³⁺: Essentially Iron Free
Ext. Coefficient:	0-Fe³⁺: 1.16 (1 mg/mL, 1 cm path length at 280 nm in H ₂ O)
pI:	0-Fe³⁺: 6.09-6.24, 1-Fe³⁺: 6.68, 2-Fe³⁺: 7.17
Tm:	0-Fe³⁺: 60°C, 2-Fe³⁺: 65°C
Storage:	Format: Liquid Buffer: 20 mM Tris – pH 8.0, 80 mM NaCl Temperature: 40°C Stability: 1 year

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References

1	AA sequence	Williams J, Elleman TC, Kingston IB, Wilkins AG, Kuhn KA (1982) The primary structure of hen ovotransferrin <i>Eur J Biochem</i> 122(2):297-303
2	Signal Peptide	Thibodeau SN, Lee DC, Palmiter RD (1978) Identical precursors for serum transferrin and egg white conalbumin <i>J Biol Chem</i> 253(11):3771-4
3	Glycosylation	Jacquinet PM, Léger D, Wieruszeski JM, Coddeville B, Montreuil J, Spik G. (1994) Change in glycosylation of chicken transferrin glycans biosynthesized during embryogenesis and primary culture of embryo hepatocytes <i>Glycobiology</i> . 4(5):617-24
4	Glycosylation Structure	Dorland L, Haverkamp J, Vliegenthart JF, Spik G, Fournet B, Montreuil J. (1979) Investigation by 360-MHz 1H-nuclear-magnetic-resonance spectroscopy and methylation analysis of the single glycan chain of chicken ovotransferrin <i>Eur J Biochem</i> . 100(2):569-74
5	Mass Glycosylated	Awadé AC, Moreau S, Mollé D, Brulé G, Maubois JL (1994) Two-step chromatographic procedure for the purification of hen egg white ovomucin, lysozyme, ovotransferrin and ovalbumin and characterization of purified proteins <i>J Chromatogr A</i> . 19;677(2):279-88
6	Mass Deglycosylated	Mizutani K, Okamoto I, Fujita K, Yamamoto K, Hirose M (2004) Structural and functional characterization of ovotransferrin produced by <i>Pichia pastoris</i> <i>Biosci Biotechnol Biochem</i> 68(2):376-83
7	Crystal Structure	Kurokawa H, Mikami B, Hirose M (1995) Crystal structure of diferric hen ovotransferrin at 2.4 Å resolution <i>J Mol Biol</i> . 24; 254(2): 196-207
8	Disulfide Bonds	Elleman TC, Williams J. (1970) The amino acid sequences of cysteic acid-containing peptides from performic acid-oxidized ovotransferrin <i>Biochem J</i> . 116(3):515-32
9	Isoelectric Points	Richards MP, Huang TL. (1997) Metalloprotein analysis by capillary isoelectric focusing <i>J Chromatogr B Biomed Sci Appl</i> . 690(1-2):43-54
10	Optical Absorbance	Rogers TB, Feeney RE, Meares CF (1977) Interaction of Anions with Iron-Transferrin-Chelate Complexes <i>J Biol Chem</i> 252(22): 8106-12
11	Denaturation Temperatures	Cunningham, F. E., and H. Lineweaver. (1965) Stabilization of egg white proteins to pasteurization temperatures above 60°C <i>Food Technol</i> . 19:136-141.

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