SERPINA1 Inhibitor – A1-Antitrypsin

PRODUCT OVERVIEW

Product Name	a1-Antitrypsin (SERPINA1), Inhibitor
Full Product Name	a1-Antitrypsin, Human (alpha-1-Antitrypsin, Alpha-1-AT, A1A, A1AT, AAT, Alpha-1-antiproteinase, Alpha-1 Protease Inhibitor, Alpha1 Proteinase Inhibitor, Alpha1 PI, MGC23330, MGC9222, PRO2275, Protease Inhibitor 1 (Anti-elastase), PI, PI1, Serpin Peptidase
Product Gene Name	SERPINA1, inhibitor
Product Synonym Names	a1-Antitrypsin, Human (alpha-1-Antitrypsin, Alpha-1-AT, A1A, A1AT, AAT, Alpha-1-antiproteinase, Alpha-1 Protease Inhibitor, Alpha1 Proteinase Inhibitor, Alpha1 PI, MGC23330, MGC9222, PRO2275, Protease Inhibitor 1 (Anti-elastase), PI, PI1, Serpin Peptidase
Host	Human serum
Form/Format	Supplied as a liquid in PBS.
Purity/Purification	Highly Purified ~96% by SDS PAGE
Preparation and Storage	May be stored at 4 degree C for short-term only. Aliquot to avoid repeated freezing and thawing. Store at -20 degree C. Aliquots are stable for 6 months at -20 degree C. For maximum recovery of product, centrifuge the original vial after thawing and prior to removing the cap. Further dilutions can be made in assay buffer.
Molecular Weight	54kD
Chromosome Location	Chromosome: 14; NC_000014.8 (94843084..94857029, complement). Location: 14q32.1
OMIM	107400
3D Structure	ModBase 3D Structure for P01009
Product Categories/Family for SERPINA1, inhibitor	Molecular Biology; MB-Protease Inhibitors
Applications Tested/Suitable for SERPINA1, inhibitor	ELISA (EL/EIA)
Application Notes for SERPINA1, inhibitor	Suitable for use in ELISA.
Related Product Information for SERPINA1, inhibitor	Alpha-1-antitrypsin is a glycoprotein of MW 54kD with a pI of 4.8. It is a serine protease inhibitor that acts to limit the amount of cell damage and death at the tissue site. Different isoenzymes exist which together form the Protease inhibitor system. Phenotype M is the most common and certain variants (S and Z) are associated with A1AT deficiency which can lead to emphysema and liver disease.
Other Notes	Small volumes of SERPINA1, inhibitor vial(s) may occasionally become entrapped in the seal of the product vial during shipment and storage. If necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the container`s cap. Certain products may require to ship with dry ice and additional dry ice fee may apply.
Searchable Terms for SERPINA1 purchase	MBS655470 is an inhibitor targeting SERPINA1. Also known as a1-Antitrypsin, Human (alpha-1-Antitrypsin, Alpha-1-AT, A1A, A1AT, AAT, Alpha-1-antiproteinase, Alpha-1 Protease Inhibitor, Alpha1 Proteinase Inhibitor, Alpha1 PI, MGC23330, MGC9222, PRO2275, Protease Inhibitor 1 (Anti-elastase), PI, PI1, Serpin Peptidase. Host: Human serum.

ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for SERPINA1. It may not necessarily be applicable to this product.

NCBI GI #	189163542

NCBI GeneID	5265
NCBI Accession #	NP_001121179.1
UniProt Primary Accession #	P01009
UniProt Secondary Accession #	Q0PVP5; Q13672; Q53XB8; Q5U0M1; Q7M4R2; Q86U18; Q86U19; Q96BF9; Q96ES1; A6PX14; B2RDQ8
UniProt Related Accession #	P01009
GenBank Nucleotide #	NM_001127707.1
NCBI Official Full Name	alpha-1-antitrypsin
NCBI Official Synonym Full Names	serpin peptidase inhibitor, clade A (alpha-1 antiproteinase, antitrypsin), member 1
NCBI Official Symbol	SERPINA1
NCBI Official Synonym Symbols	PI; A1A; AAT; PI1; A1AT; PRO2275; alpha1AT
UniProt Protein Name	Alpha-1-antitrypsin
UniProt Synonym Protein Names	Alpha-1 protease inhibitor; Alpha-1-antiproteinase; Serpin A1
Protein Family	Alpha-1-antiproteinase
UniProt Gene Name	SERPINA1
UniProt Synonym Gene Names	AAT; PI; SPAAT
UniProt Entry Name	A1AT_HUMAN
NCBI Protein Information	alpha-1-antitrypsin; serpin A1; alpha-1-antiproteinase; alpha-1-antitrypsin null; alpha-1 protease inhibitor; protease inhibitor 1 (anti-elastase), alpha-1-antitrypsin; serine (or cysteine) proteinase inhibitor, clade A, member 1
NCBI Summary for SERPINA1	The protein encoded by this gene is secreted and is a serine protease inhibitor whose targets include elastase, plasmin, thrombin, trypsin, chymotrypsin, and plasminogen activator. Defects in this gene can cause emphysema or liver disease. Several transcript variants encoding the same protein have been found for this gene. [provided by RefSeq, Jul 2008]

UniProt Comments for SERPINA1	Function: Inhibitor of serine proteases. Its primary target is elastase, but it also has a moderate affinity for plasmin and thrombin. Irreversibly inhibits trypsin, chymotrypsin and plasminogen activator. The aberrant form inhibits insulin-induced NO synthesis in platelets, decreases coagulation time and has proteolytic activity against insulin and plasmin. Ref.17 Ref.18 Ref.24Short peptide from AAT: reversible chymotrypsin inhibitor. It also inhibits elastase, but not trypsin. Its major physiological function is the protection of the lower respiratory tract against proteolytic destruction by human leukocyte elastase (HLE). Ref.17 Ref.18 Ref.24 Subcellular location: Secreted Ref.24. Short peptide from AAT: Secreted › extracellular space › extracellular matrix Ref.24. Tissue specificity: Plasma. Domain: The reactive center loop (RCL) extends out from the body of the protein and directs binding to the target protease. The protease cleaves the serpin at the reactive site within the RCL, establishing a covalent linkage between the carboxyl group of the serpin reactive site and the serine hydroxyl of the protease. The resulting inactive serpin-protease complex is highly stable. Post-translational modification: N-glycosylated. Differential glycosylation produces a number of isoforms. N-linked glycan at Asn-107 is alternatively di-antennary, tri-antennary or tetra-antennary. The glycan at Asn-70 is di-antennary with trace amounts of tri-antennary. Glycan at Asn-271 is exclusively di-antennary. Structure of glycans at Asn-70 and Asn-271 is Hex5HexNAc4. The structure of the antennae is Neu5Ac(alpha1-6)Gal(beta1-4)GlcNAc attached to the core structure Man(alpha1-6)[Man(alpha1-3)]Man(beta1-4)GlcNAc(beta1-4)GlcNAc. Some antennae are fucosylated, which forms a Lewis-X determinant. Ref.19 Ref.26 Ref.34Proteolytic processing may yield the truncated form that ranges from Asp-30 to Lys-418. Polymorphism: The sequence shown is that of the M1V allele which is the most common form of PI (44 to 49%). Other frequent alleles are: M1A 20 to 23%; M2 10 to 11%; M3 14 to 19%. Involvement in disease: Alpha-1-antitrypsin deficiency (A1ATD) [MIM:613490]: A disorder whose most common manifestation is emphysema, which becomes evident by the third to fourth decade. A less common manifestation of the deficiency is liver disease, which occurs in children and adults, and may result in cirrhosis and liver failure. Environmental factors, particularly cigarette smoking, greatly increase the risk of emphysema at an earlier age.Note: The disease is caused by mutations affecting the gene represented in this entry. Ref.59 Ref.61 Ref.63 Miscellaneous: The aberrant form is found in the plasma of chronic smokers, and persists after smoking is ceased. It can still be found ten years after smoking has ceased. Sequence similarities: Belongs to the serpin family. Sequence caution: The sequence CAD62334.1 differs from that shown. Reason: Erroneous initiation. Translation N-terminally shortened.The sequence CAD62585.1 differs from that shown. Reason: Erroneous initiation. Translation N-terminally shortened.
Research Articles on SERPINA1	**1.** Metabolism and metabolic burden by alpha1-antitrypsin production in human AGE1.HN cells
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