

## Antithrombin III Protein, Human, Recombinant (His)

## General Information

Synonyms:	AT3D;THPH7;ATIII;AT3;Serpine C1;MGC22579;serpin peptidase inhibitor, clade C (antithrombin), member 1;SerpineC1
Protein Construction:	A DNA sequence encoding the human SerpinC1 (NP_000479.1) (Met 1-Lys 464) was expressed with a C-terminal polyhistidine tag. Predicted N terminal: His 33
Species:	Human
Expression Host:	HEK293 Cells
Accession:	P01008
Molecular Weight:	50.5 kDa (predicted); 55-60 kDa (reducing condition, due to glycosylation)

## QC Testing

Biological Activity:	Measured by its ability to inhibit thrombin cleavage of a fluorogenic peptide substrate Boc-VPR-AMC. The IC50 value is < 5 nM.
Purity:	> 95 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

## Preparation and Storage

**Reconstitution:**  
Reconstituted with sterile deionized water to 0.25 mg/mL. Reconstitution conditions may vary depending on the lot.

**Stability & Storage:**

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

**Shipping:**

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

## Protein Background

SerpineC1, also known as antithrombin III (AT III), is a member of the serpin superfamily of serine protease inhibitors, and has been found to be a marker for disseminated intravascular coagulation (DIC) and to be of prognostic significance in septic patients. SerpineC1 synthesized in the liver is the principal plasma serpin of blood coagulation proteases and inhibits thrombin and other factors such as Xa by the formation of covalently linked

complexes. Thus it is one of the most important coagulation inhibitors and the fundamental enzyme for the therapeutical action of heparin. In common with SerpinA5 and D1, the inhibitory activity of SerpinC1 undergoes a dramatic increase in the presence of heparin and other glycosaminoglycans. ATIII mediates the promotion of prostaglandin release, an inhibitor of leucocyte activation and downregulator of many proinflammatory cytokines. Antithrombin III exerts anti-inflammatory properties in addition to its anti-coagulative mechanisms. In animal models of sepsis, ATIII affected cytokine plasma concentrations with a decrease of pro-inflammatory cytokines. The deficiency or functional abnormality of ATIII may result in an increased risk of thromboembolic disease, such as deep vein thrombosis and pulmonary embolism. In addition, it has been reported that SerpinC1 can alter or influence inflammatory processes via inhibition of NF- $\kappa$ B activation or actin polymerization.

### Reference

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