

**\*\*REPRESENTATIVE DATASHEET\*\***

## Sheep anti-human $\alpha_1$ Antitrypsin ( $\alpha_1$ AT)

Affinity-Purified IgG

0.5 mg

**Product #:** SA1AT-AP

**Lot #:** XXXX

**Expiry date:** XXXX

Store at  $-10$  to  $-20^\circ\text{C}$

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For Research Use Only.  
Not for use in diagnostic procedures.

### Description of $\alpha_1$ Antitrypsin ( $\alpha_1$ AT)

$\alpha_1$ Antitrypsin ( $\alpha_1$ AT), also known as  $\alpha_1$ Proteinase inhibitor ( $\alpha_1$ PI), is the most abundant protease inhibitor in blood and a member of the SERPIN family of proteinase inhibitors. Serum levels are typically 1.3 mg/ml (25  $\mu\text{M}$ ) but  $\alpha_1$ AT is an acute phase protein and concentrations can rise four-fold during inflammatory episodes or tissue injury. Low levels in circulation have been associated with pulmonary disease such as emphysema.  $\alpha_1$ AT is a single chain molecule with a mass of 52,000 daltons that is produced primarily in the liver and to a lesser extent by blood monocytes and intestinal epithelium. Based on association rates, the primary target enzyme for  $\alpha_1$ AT is believed to be neutrophil elastase<sup>1,2</sup>, but  $\alpha_1$ AT is a broad-spectrum inhibitor for many serine proteinases and the main role of  $\alpha_1$ AT *in vivo* is likely that of a “backup” inhibitor and proteinase scavenger in fluids and tissues. Although the association rates of  $\alpha_1$ AT with other enzymes are lower, the high concentration in plasma makes it an important inhibitor of activated Protein C, activated FXI, thrombin and plasmin<sup>1-4</sup>. Enzyme inhibition by  $\alpha_1$ AT occurs through proteolytic cleavage between Met<sup>358</sup> and Ser<sup>359</sup>, which induces a conformational change in  $\alpha_1$ AT locking the enzyme into a stable, inactive 1:1 enzyme-inhibitor complex.

### REFERENCES and REVIEWS

1. Johnson D, Travis J; Oxidative Inactivation of Human  $\alpha_1$ -Proteinase Inhibitor; JBC 254, pp4022-4026, 1979.
2. Travis J, Johnson D; Human  $\alpha_1$ -Proteinase Inhibitor; Methods in Enzymology, 80, pp 754-765, 1981.
3. Heeb MJ, Griffin JH; Physiologic Inhibition of Human Activated Protein C by  $\alpha_1$ -Trypsin Inhibitor; JBC 263, pp1163-11616, 1988.
4. Scott CF, Schapira M, James HL, Cohen AB, Colman RW; The Inactivation of Factor XIa by plasma protease inhibitors: Predominant role of  $\alpha_1$ protease inhibitor and protective effect of high molecular weight kininogen. J Clin Invest 69, pp 844, 1982.

### Product Specifications

**Description:**

Vial containing XXXX ml of IgG purified by affinity-chromatography on immobilized  $\alpha_1$ AT. Total protein is 0.5 mg.

**Format:**

Affinity-purified IgG (APIgG), clear liquid.

**Host Animal:**

Sheep

**Immunogen:**

Human  $\alpha_1$ antitrypsin purified from plasma.

**Concentration:**

APIgG concentration is XXXX mg/ml, determined by absorbance using an extinction coefficient ( $E^{1\%_{280}}$ ) of 13.4.

**Buffer:**

10 mM HEPES, pH 7.4, 150 mM NaCl, 50% (v/v) glycerol.

**Storage:**

Store between  $-10$  and  $-20^\circ\text{C}$ . Product will become viscous but will not freeze. Avoid storage in frost-free freezers. Keep vial tightly capped. Allow product to warm to room temperature and gently mix before use.

**Specificity:**

This antibody is specific for  $\alpha_1$ AT as demonstrated by immunoelectrophoresis and ELISA.

**Applications:**

Suitable as a source of enriched antibodies to human  $\alpha_1$ AT.

**Neutralizing activity:**

Not determined

**Species Cross Reactivity:** (immunodiffusion vs. citrated plasma)

Human:	XXXX	Mouse:	XXXX	Rat:	XXXX
Rabbit:	XXXX	Pig:	XXXX	Dog:	XXXX

**Related Products:**

Cat #: **GA1AT-IG** Goat anti-human  $\alpha_1$ AT, whole IgG from antiserum  
 Cat #: **GA1AT-AP** Goat anti-human  $\alpha_1$ AT, affinity-purified IgG  
 Cat #: **SA1AT-IG** Sheep anti-human  $\alpha_1$ AT, whole IgG from antiserum  
 Cat #: **SA1AT-APHRP** Sheep anti-human  $\alpha_1$ AT, APIgG-peroxidase  
 Cat #: **A1AT-EIA** Paired antibody set for ELISA of  $\alpha_1$ AT, 5 x 96 wells  
 Cat #: **APCAT-EIA** Paired antibody set for ELISA of APC- $\alpha_1$ AT complexes

Visit our site ([www.affinitybiologicals.com](http://www.affinitybiologicals.com)) for details.

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