



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

Whole IgG from antiserum

10 mg

**Product #:** GA1AT-IG

**Lot #:** XXXX

**Expiry date:** XXXX

**Store at** -10 to -20°C

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  $\mu$ 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 whole IgG, representing approximately 1 ml of antiserum. Total protein is 10 mg.

#### Format:

Whole IgG, clear liquid.

#### Host Animal:

Goat

#### Immunogen:

Human  $\alpha_1$ antitrypsin purified from plasma.

#### Concentration:

IgG 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°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 for use as a source of 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