



Sheep anti-human α_1 Antitrypsin (α_1 AT)

Whole IgG from antiserum

10 mg

Product #: SA1AT-IG

Lot #: [REDACTED]

Expiry date: [REDACTED]

Store at -10 to -20°C

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

Description of α_1 Antitrypsin (α_1 AT)

α_1 Antitrypsin (α_1 AT), also known as α_1 Proteinase inhibitor (α_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 μM) but α_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. α_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 α_1 AT is believed to be neutrophil elastase^{1,2}, but α_1 AT is a broad-spectrum inhibitor for many serine proteinases and the main role of α_1 AT *in vivo* is likely that of a "backup" inhibitor and proteinase scavenger in fluids and tissues. Although the association rates of α_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 plasmin¹⁻⁴. Enzyme inhibition by α_1 AT occurs through proteolytic cleavage between Met³⁵⁸ and Ser³⁵⁹, which induces a conformational change in α_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 α -1-Proteinase Inhibitor; JBC 254, pp4022-4026, 1979.
2. Travis J, Johnson D; Human α -1-Proteinase Inhibitor; Methods in Enzymology, 80, pp 754-765, 1981.
3. Heeb MJ, Griffin JH; Physiologic Inhibition of Human Activated Protein C by α -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 α_1 protease inhibitor and protective effect of high molecular weight kininogen. J Clin Invest 69, pp 844, 1982.

Product Specifications

Description:

Vial containing [REDACTED] ml of whole IgG, representing approximately 1 ml of antiserum. Total protein is 10 mg.

Format:

Whole IgG, clear liquid.

Host Animal:

Sheep

Immunogen:

Human α_1 antitrypsin purified from plasma.

Concentration:

IgG concentration is [REDACTED] 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 α_1 AT as demonstrated by immunoelectrophoresis and ELISA.

Applications:

Suitable for use as a source of antibodies to human α_1 AT.

Neutralizing activity:

Not determined

Species Cross Reactivity: (immunodiffusion vs. citrated plasma)

Human:	[REDACTED]	Mouse:	[REDACTED]	Rat:	[REDACTED]
Rabbit:	[REDACTED]	Pig:	[REDACTED]	Dog:	[REDACTED]