

AAT (702): sc-66025

BACKGROUND

Cumulative damage to lung tissue by Neutrophil Elastase is responsible for the development of pulmonary emphysema, an irreversible lung disease characterized by loss of lung elasticity. α 1-antitrypsin (AAT), a 394 amino acid hepatic acute phase protein, predominantly inhibits Neutrophil Elastase. AAT is highly expressed in liver and in cultured hepatoma cells and, to a lesser extent, in macrophages. AAT is a highly polymorphic glycosylated serum protein with characteristic isoelectric-focusing patterns for most variants. The gene encoding AAT maps to a region of human chromosome 14 that includes a related serine protease inhibitor (serpin) gene which encodes corticosteroid-binding globulin. Oxidation of the methionine 358 residue in the active center of AAT results in a dramatic decrease in inhibitory activity towards elastase. AAT also has a moderate affinity for plasmin and Thrombin. AAT deficiency is associated with a 20-30 fold increased risk of precocious pulmonary emphysema.

REFERENCES

- Okayama, H., et al. 1991. Characterization of the molecular basis of the α 1-antitrypsin F allele. *Am. J. Hum. Genet.* 48: 1154-1158.
- Seyama, K., et al. 1991. Siiyama (Serine 53 (TCC) to phenylalanine 53 (TTC)). A new α 1-antitrypsin-deficient variant with mutation on a predicted conserved residue of the serpin backbone. *J. Biol. Chem.* 266: 12627-12632.
- Rosenberg, S., et al. 1994. Synthesis in yeast of a functional oxidation-resistant mutant of human α -antitrypsin. *Nature* 312: 77-80.
- Graziadei, I., et al. 2000. A novel-binding site for the native hepatic acute-phase protein α -antitrypsin expressed on the human hepatoma cell line Hep G2 and intestinal cell line Caco 2. *Liver* 20: 240-246.
- Rollini, P. and Fournier, R.E. 2000. Differential regulation of gene activity and chromatin structure within the human serpin gene cluster at 14q32.1 in macrophage microcell hybrids. *Nucleic Acids Res.* 28: 1767-1777.
- Hsu, P.I., et al. 2007. α 1-antitrypsin precursor in gastric juice is a novel biomarker for gastric cancer and ulcer. *Clin. Cancer Res.* 13: 876-883.
- Churg, A., et al. 2007. α 1-antitrypsin suppresses TNF α and MMP-12 production by cigarette smoke-stimulated macrophages. *Am. J. Respir. Cell Mol. Biol.* 37: 144-151.
- Zhang, B., et al. 2007. α 1-antitrypsin protects β cells from apoptosis. *Diabetes* 56: 1316-1323.
- Chan, E.D., et al. 2007. α 1-antitrypsin (AAT) anomalies are associated with lung disease due to rapidly growing mycobacteria and AAT inhibits *Mycobacterium abscessus* infection of macrophages. *Scand. J. Infect. Dis.* 39: 690-696.

CHROMOSOMAL LOCATION

Genetic locus: SERPINA1 (human) mapping to 14q32.13.

SOURCE

AAT (702) is a mouse monoclonal antibody raised against AAT of human origin.

PRODUCT

Each vial contains 100 μ g IgG₁ in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

AAT (702) is recommended for detection of AAT of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)]; non cross-reactive with α -1-antichymotrypsin (AACT).

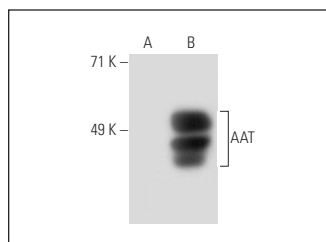
Suitable for use as control antibody for AAT siRNA (h): sc-40945, AAT shRNA Plasmid (h): sc-40945-SH and AAT shRNA (h) Lentiviral Particles: sc-40945-V.

Molecular Weight of luminal AAT: 51 kDa.

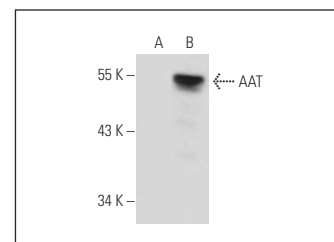
Molecular Weight of mature AAT: 55 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, human liver extract: sc-363766 or AAT (h): 293 Lysate: sc-112989.

DATA



AAT (702): sc-66025. Western blot analysis of AAT expression in non-transfected: sc-110760 (A) and human AAT transfected: sc-112989 (B) 293 whole cell lysates.



AAT (702): sc-66025. Western blot analysis of AAT expression in non-transfected: sc-117752 (A) and human AAT transfected: sc-112989 (B) 293T whole cell lysates.

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.