

PRODUCT INFORMATION



Alpha-1 Antitrypsin

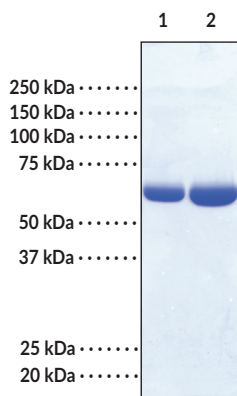
Item No. 24560

Overview and Properties

Synonyms: A₁A, A₁AT, AAT, α₁-Antitrypsin
Source: Human
Uniprot No.: P01009
Molecular Weight: 54,000 kDa
Storage: -80°C (as supplied)
Stability: ≥2 years
Purity: *batch specific* (≥90% estimated by SDS-PAGE)
Supplied in: Lyophilized in PBS, pH 7.4

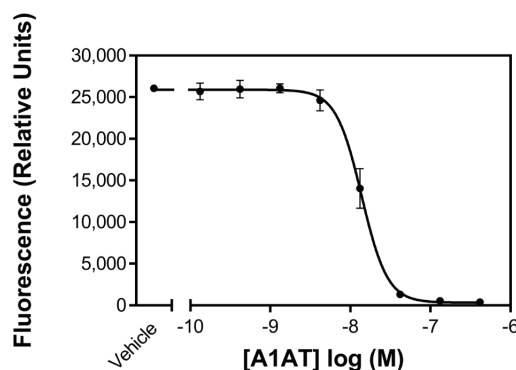
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: A1AT (2 μg)
Lane 2: A1AT (4 μg)

Representative gel image shown; actual purity may vary between each batch.



Neutrophil Elastase inhibition by A1AT using Cayman's Neutrophil Elastase Activity Assay Kit (600610)

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Description

Alpha-1 antitrypsin is a serine protease inhibitor and member of the serpin superfamily.¹ It has a five-stranded A β -sheet and a mobile reactive center loop that acts as a pseudosubstrate for various proteases. Alpha-1 antitrypsin binds to a protease, undergoes proteolytic cleavage, and forms a covalent linkage between a carboxyl group in the reactive loop and the serine hydroxyl of the protease active site, effectively inactivating the enzyme which is then cleared from circulation. The primary targets of alpha-1 antitrypsin are neutrophil elastase and proteinase 3, however, it also inhibits trypsin, kallikreins 7 and 14, and matriptase.² Alpha-1 antitrypsin protects the lower respiratory tract from proteolytic destruction via inhibition of neutrophil elastase and reduced serum levels of alpha-1 antitrypsin have been linked to early-onset liver disease and emphysema.³ Alpha-1 antitrypsin is an acute-phase protein that reduces production of inflammatory cytokines, inhibits apoptosis, blocks leukocyte degranulation and migration, as well as suppresses NF- κ B nuclear translocation in monocytes. It delays disease onset in mouse models of inflammatory disease, including collagen-induced arthritis and experimental autoimmune encephalomyelitis (EAE).

References

1. Elliott, P.R., Abrahams, J.P., and Lomas, D.A. Wild-type alpha 1-antitrypsin is in the canonical inhibitory conformation. *J. Mol. Biol.* **275**(3), 419-425 (1998).
2. Janciauskiene, S.M., Bals, R., Koczulla, R., *et al.* The discovery of α 1-antitrypsin and its role in health and disease. *Respir. Med.* **105**(8), 1129-1139 (2011).
3. Ehlers, M.R. Immune-modulating effects of alpha-1 antitrypsin. *Biol. Chem.* **395**(10), 1187-1193 (2014).

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