

Overview**Useful For**

Diagnosing protein-losing enteropathies

Profile Information

Test ID	Reporting Name	Available Separately	Always Performed
AATS	Alpha-1-Antitrypsin, S	No	Yes
A1ATF	Alpha-1-Antitrypsin, 24 Hr, F	No	Yes

Method Name

Nephelometry

NY State Available

No

Specimen**Specimen Type**Fecal
Serum**Advisory Information**

The recommended procedure for protein-losing enteropathy is A1AFS / Alpha-1-Antitrypsin Clearance, Feces and Serum.

Shipping Instructions

Feces and serum should be shipped together. Specimens shipped separately may delay testing.

Specimen Required**Both feces and serum are required.**Blood **must** be drawn during the stool collection period.**Specimen Type:** Serum**Collection Container/Tube:** Red top or serum gel**Submission Container/Tube:** Plastic vial**Specimen Volume:** 1 mL**Collection Instructions:**

1. Centrifuge within 2 hours.
2. Aliquot and ship in plastic vial.

Specimen Type: Feces

Supplies: Stool Containers - 24, 48, 72 Hour Kit (T291)

Container/Tube: Stool container

Specimen Volume: Entire collection

Collection Instructions:

1. Collect a 24-hour fecal collection.
2. If no specimen is obtained within 24 hours, extend collection time to 48 to 72 hours. Document time frame.

Forms

If not ordering electronically, complete, print, and send a [Gastroenterology and Hepatology Client Test Request \(T728\)](#) with the specimen.

Specimen Minimum Volume

Homogenized feces: 1 mL

Serum: 0.5 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK
Feces collected in any preservative or fixative	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Fecal	Frozen (preferred)	14 days	
	Ambient	14 days	
	Refrigerated	14 days	
Serum	Frozen (preferred)	28 days	
	Ambient	28 days	
	Refrigerated	28 days	

Clinical and Interpretive

Clinical Information

Alpha-1-antitrypsin (AAT) is a 54kDa glycoprotein that is resistant to degradation by digestive enzymes and is, therefore, used as an endogenous marker for the presence of blood proteins in the intestinal tract. AAT clearance is reliable for measuring protein loss distal to the pylorus. A serum sample is required to interpret results as a serum deficiency of AAT would make the AAT fecal excretion lower and could invalidate the test utility.

Gastrointestinal protein enteropathy has been associated with regional enteritis, sprue, Whipple intestinal lipodystrophy, gastric carcinoma, allergic gastroenteropathy, intestinal lymphangiectasia, constrictive pericarditis, congenital hypogammaglobulinemia, and iron deficiency anemia associated with intolerance to cow's milk. Increased fecal excretion of AAT can be found in small and large intestine disease and is applicable to adult and children.

Reference Values

CLEARANCE:

< or =27 mL/24 hours

FECAL ALPHA-1-ANTRYPSIN CONCENTRATION:

< or =54 mg/dL

SERUM ALPHA-1-ANTRYPSIN CONCENTRATION:

100-190 mg/dL

Interpretation

Elevated alpha-1-antitrypsin (AAT) clearance suggests excessive gastrointestinal protein loss. The positive predictive value of the test has been found to be 97.7% and the negative predictive value is 75%.

Patients with protein-losing enteropathies generally have AAT clearance values greater than 50 mL/24 hours and AAT fecal concentrations above 100 mg/dL.

Borderline elevations above the normal range are equivocal for protein-losing enteropathies.

Cautions

In the absence of either a 24-hour fecal collection or a contemporary serum specimen, the fecal concentration of alpha-1-antitrypsin (AAT) can be used as a surrogate marker. The clearance test is preferred as it normalizes the large range of serum AAT concentrations and the variability in random fecal AAT concentrations.

When gastric loss of AAT is suspected (eg, Menetrier disease), AAT clearance is not a reliable indicator of protein loss as AAT is sensitive to pH <3 and rapidly destroyed. When gastric protein loss is suspected and the AAT clearance is normal, the recommendation is to repeat testing after starting an acid suppressive medication regime.

Supportive Data

Protein-losing enteropathy has been studied by intravenous injection of radioactive chromium chloride or labeled human serum albumin. The correlation between radiochromium and stool alpha-1-antitrypsin clearance has been measured with excellent correlation coefficients.

Clinical Reference

1. Florent C, L'Hirondel C, Desmazes C, Aymes C, Bernier JJ: Intestinal clearance of alpha 1-antitrypsin. A sensitive method for the detection of protein losing enteropathy. *Gastroenterology*. 1981 Oct;81(4):777-780

2. Crossley JR, Elliott RB: Simple method for diagnosing protein-losing enteropathies. *Br Med J*. 1977 Feb 12;1(6058):428-429

3. Perrault J, Markowitz H: Protein-losing gastroenteropathy and the intestinal clearance of serum alpha-1-antitrypsin. *Mayo Clin Proc.* 1984 Apr;59(4):278-279
4. Schmidt PN, Blirup-Jensen S, Svendsen PJ, Wandall JH: Characterization and quantification of plasma proteins excreted in faeces from healthy humans. *Scand J Clin Lab Invest.* 1995 Feb;55(1):35-45
5. Davidson NO: Intestinal lipid absorption. In: Yamada T, Alpers DH, Kaplowitz N, eds. *Textbook of Gastroenterology.* JB Lippincott; 2003:413
6. Rybolt AH, Bennett RG, Laughon BE, Thomas DR, Greenough WB III, Bartlett JG: Protein-losing enteropathy associated with *Clostridium difficile* infection. *Lancet.* 1989 Jun 17;1(8651):1353-1355
7. Molina JF, Brown RF, Gedalia A, Espinoza LR: Protein losing enteropathy as the initial manifestation of childhood systemic lupus erythematosus. *J Rheumatol.* 1996 Jul;23(7):1269-1271
8. Umar SB, DiBaise JK: Protein-losing enteropathy: case illustrations and clinical review. *Am J Gastroenterol.* 2010 Jan;105(1):43-49
9. Levitt DG, Levitt MD: Protein losing enteropathy: comprehensive review of the mechanistic association with clinical and subclinical disease states. *Clin Exp Gastroenterol.* 2017 Jul;10:147-168
10. Murray FR, Morell B, Biedermann L, Schreiner P: Protein-losing enteropathy as precursor of inflammatory bowel disease: A review of the literature. *BMJ Case Rep.* 2021 Jan 11;14(1):e238802

Performance

Method Description

Immunonephelometry quantitates the alpha-1-antitrypsin (AAT) contained in a 24-hour fecal collection. From the concentration of feces and serum AAT, a 24-hour clearance is calculated. In the absence of a serum specimen or a timed fecal collection, an AAT fecal concentration will be reported. (Package insert: N Antiserum to Human alpha-1-antitrypsin. Siemens Healthcare Diagnostics Inc; 01/2018)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Friday; Continuously until 2 p.m.

Analytic Time

Same day/1 day

Maximum Laboratory Time

2 days

Specimen Retention Time

Serum/2 weeks; Stool/Aliquot 2 weeks

Performing Laboratory Location

Rochester

Fees and Codes

Fees

- Authorized users can sign in to [Test Prices](#) for detailed fee information.
- Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact [Customer Service](#).

Test Classification

This test has been modified from the manufacturer's instructions. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

82103 x 2

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
A1AFS	Alpha-1-Antitrypsin Clearance	93419-0

Result ID	Test Result Name	Result LOINC Value
AAT24	Alpha-1-Antitrypsin, 24 Hr, F	9407-8
AATS	Alpha-1-Antitrypsin, S	6771-0
CRCLR	Clearance	18271-7