MAYO CLINIC LABORATORIES

Test Definition: A1AF

Alpha-1-Antitrypsin, Random, F

Overview

Useful For

Diagnosing protein-losing enteropathies, especially when used in conjunction with serum alpha-1-antitrypsin (AAT) levels as a part of AAT clearance studies

Method Name

Nephelometry

NY State Available

Yes

Specimen

Specimen Type

Fecal

Ordering Guidance

The preferred test for diagnosing protein-losing enteropathies is A1AFS / Alpha-1-Antitrypsin Clearance, Feces and Serum.

Specimen Required

Supplies:

-Stool container, Small (Random), 4 oz (T288)

-Stool Collection Kit, Random (T635)

Container/Tube: Stool container

Specimen Volume: 5 g

Collection Instructions: Collect a random fecal specimen.

Reject Due To

Feces collected in any preservative or fixative	Reject

Specimen Minimum Volume

Homogenized Stool: 1 mL

Specimen Stability Information

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

Clinical & 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 adults and children.

Reference Values

< or =54 mg/dL

Interpretation

Patients with protein-losing enteropathies generally have alpha-1-antitrypsin fecal concentrations over 100 mg/dL. Borderline elevations above the normal range are equivocal for protein-losing enteropathies.

Cautions

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

Clinical Reference

1. Florent C, L'Hirondel C, Desmazures 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. 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
5. 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 fecal specimen. In the absence of a timed fecal collection, an AAT fecal concentration will be reported.(Instruction manual: Siemens Nephelometer II

Operations. Siemens, Inc; Version 2.3, 2008; Addendum to the Instruction Manual 2.3, 08/2017)

PDF Report

No

Specimen Retention Time

14 days; supernatant aliquot only, the feces are discarded after processing

Performing Laboratory Location

Rochester

Fees & Codes

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 US Food and Drug Administration.

CPT Code Information

82103