

Pancreatic Insufficiency

Pancreatic Elastase-1

Overview

Chronic pancreatitis is characterized by progressive inflammation and results in irreversible loss of the exocrine and endocrine sections of the pancreas.¹ Pancreatic insufficiency occurs when the pancreas cannot produce enough digestive enzymes to break down food in the intestine for absorption.² Severe pancreatic insufficiency is typically characterized by malabsorption, which leads to malnutrition, vitamin deficiencies and weight loss, and is often associated with steatorrhea.¹ Cystic fibrosis and chronic pancreatitis can both cause pancreatic insufficiency; pancreatic insufficiency develops in 85% of cystic fibrosis patients.^{1,3} Treatment is exogenous enzyme replacement therapy with meals.²

The gold standard methods for detecting pancreatic insufficiency are time consuming, invasive, uncomfortable and costly, especially in pediatric patients.⁴ Traditional non-invasive methods of diagnosing pancreatic insufficiency include fecal concentrations of chymotrypsin, fat and trypsin.^{1,2} However, these methods have either poor sensitivity, or are inaccurate in patients with previous gastrointestinal operations and/or in those who are receiving enzyme replacement therapy.^{1,2,4}

Specialty is pleased to introduce Pancreatic Elastase-1, one of the most sensitive diagnostic tests available for pancreatic insufficiency.⁴⁻⁶ Additionally, Pancreatic Elastase-1 is pancreas-specific and unaffected by enzyme replacement therapy.⁴

Clinical Utility

- ?? For diagnosis or exclusion of pancreatic exocrine insufficiency caused by chronic pancreatitis⁴ and cystic fibrosis^{5,6}
- ?? 93% overall sensitivity and specificity;⁴ 100% diagnostic sensitivity in adults⁴ and CF children^{5,6} with moderate to severe pancreatic insufficiency
- ?? Greater diagnostic accuracy than fecal chymotrypsin (92% vs. 82%, respectively)⁶
- ?? 99% negative predictive value for pancreatic insufficiency²

Ordering Information & Specimen Requirements

Test Code	Test Name	Specimen Requirements
3878	Pancreatic Elastase-1	1 gram Stool; Refrigerated or Frozen. Collect approximately 1 gram of formed stool in a clean, leakproof plastic container.

Methodology

EIA – Enzyme Immunoassay

Related Tests

- 3844 Amylase
- 3846 Amylase Isoenzymes
- 4426 Fecal Fat (Lipids), Qualitative
- 4427 Fecal Fat, Quantitative
- 3369 Lipase

References

1. Dominici R, Franzini C. Fecal elastase-1 as a test for pancreatic function: a review. *Clin Chem Lab Med* 2002;40:325-32.
2. Beharry S, Ellis L, Corey M, Marcon M, Durie P. How useful is fecal pancreatic elastase 1 as a marker of exocrine pancreatic disease? *J Pediatr* 2002;141:84-90.
3. Phillips IJ, Rowe DJ, Dewar P, Connett GJ. Faecal elastase 1: a marker of exocrine pancreatic insufficiency in cystic fibrosis. *Ann Clin Biochem* 1999;36:739-42.
4. Löser C, Möllgaard A, Fölsch UR. Faecal elastase 1: a novel, highly sensitive, and specific tubeless pancreatic function test. *Gut* 1996;39:580-6.
5. Soldan W, Henker J, Sprössig C. Sensitivity and specificity of quantitative determination of pancreatic elastase 1 in feces of children. *J Pediatr Gastroenterol Nutr* 1997;24:53-5.
6. Carroccia A, Verghi F, Santini B, et al. Diagnostic accuracy of fecal elastase 1 assay in patients with pancreatic maldigestion or intestinal malabsorption. *Dig Dis Sci* 2001;46:1335-42.

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