MAYO CLINIC LABORATORIES

Test Definition: HPP

Pancreatic Polypeptide, Plasma

Overview

Useful For

Detecting pancreatic endocrine tumors

Assessing vagal nerve function after meal or sham feeding

Method Name

Radioimmunoassay (RIA)

NY State Available

Yes

Specimen

Specimen Type

Plasma EDTA

Ordering Guidance

This test should not be requested in patients who have recently received radioisotopes, therapeutically or diagnostically, because of potential assay interference. A recommended time period before collection cannot be made because it will depend on the isotope administered, the dose given, and the clearance rate in the individual patient. Specimens will be screened for radioactivity prior to analysis. Radioactive specimens received in the laboratory will be held and assayed after the radioactivity has sufficiently decayed. This will result in a test delay.

Necessary Information

Patient's age must be provided.

Specimen Required

Patient Preparation:

1. Fasting: 8 hours, required

2. The patient **should not** have recently received radioisotopes, either therapeutically or diagnostically, due to potential assay interference. See Ordering Guidance.

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)

Collection Container/Tube: Lavender top (EDTA)

Submission Container/Tube: Plastic vial

Specimen Volume: 3 mL Plasma

Collection Instructions:

1. Place specimen on wet ice and keep cold at all times following collection.

2. Centrifuge (refrigerated centrifuge is not required) and aliquot plasma into a plastic vial. Freeze immediately.

Forms

If not ordering electronically, complete, print, and send an Oncology Test Request (T729) with the specimen.

Specimen Minimum Volume

Plasma: 0.35 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma EDTA	Frozen (preferred)	90 days	
	Ambient	7 days	
	Refrigerated	14 days	

Clinical & Interpretive

Clinical Information

Pancreatic polypeptide (PP) is secreted by the pancreas in response to hypoglycemia, ingestion of food, or "sham" feeding (food is chewed but not swallowed) secondary to vagal nerve stimulation. Secretion is blocked by vagotomy or atropine.

The exact physiologic role of PP is undetermined, although the hormone is thought to be involved in exocrine pancreatic secretion and gallbladder emptying.

Markedly elevated levels are often associated with endocrine tumors of the pancreas (eg, insulinoma, glucagonoma, pancreatic polypeptide-secreting tumor of the pancreas). Patients with diabetes may also have elevated PP levels.

A lack of response to sham feeding may indicate vagal nerve damage (eg, surgery-related nerve damage, autonomic nerve disorders). Extensive pancreatic destruction (eg, chronic pancreatitis, pancreatic cancer) may also result in low basal PP levels and a lack of response to sham feeding.

Reference Values

0-19 years: Not established
20-29 years: <228 pg/mL
30-39 years: <249 pg/mL
40-49 years: <270 pg/mL
50-59 years: <291 pg/mL
60-69 years: <312 pg/mL
70-79 years: <332 pg/mL

> or =80 years: Not established

Interpretation

High levels of pancreatic polypeptide may be seen in pancreatic endocrine tumors, diabetes, and a nonfasting state. Markedly elevated levels may be seen in some pancreatic exocrine tumors.

A normal response to sham feeding consists of a rapid pancreatic polypeptide rise over baseline followed by a return to baseline. With vagal damage, no increase over baseline is seen.

Cautions

Pancreatic polypeptide (PP) normal values increase with age (approximately 20 pg/mL per decade).

Nonfasting state results in falsely elevated values.

The sham feeding test is invalid if food is swallowed. Ingestion of food typically results in a significant and prolonged PP increase over baseline (typically >200 pg/mL).

Clinical Reference

1. Panzuto F, Severi C, Cannizzaro R, et al. Utility of combined use of plasma levels of chromogranin A and pancreatic polypeptide in the diagnosis of gastrointestinal and pancreatic endocrine tumors. J Endocrinol Invest. 2004;27(1):6-11
2. Brimnes Damholt M, Rasmussen BK, Hilsted L, et al. Basal serum pancreatic polypeptide is dependent on age and gender in an adult population. Scand J Clin Lab Invest. 1997;57(8):695-702
3. Escobar H, Jushnir M, Ray J, et al. Measurement of pancreatic polypeptide and its peptide variant in human serum and plasma by immunocapture-liquid-chromatography-tandem mass spectrometry. Reference intervals and practical assay considerations. Biochem Physiol. 2014;3(4):140. doi:10.4172/2168-9652.1000140
4. Balaji N, Crookes P, Banki F, et al. A Safe and Noninvasive Test for Vagal Integrity Revisited. Arch Surg. 2002;137(8):954-959
5. Maus A, Fatica EM, Taylor R, et al. Identification, measurement, and assessment of the clinical utility of human pancreatic polypeptide by liquid chromatography-tandem mass spectrometry. J Proteome Res. 2023;22(4):1322-1330. doi:10.1021/acs.jproteome.2c00829

Performance

Method Description

A radioimmunoassay technique is used. The assay system utilizes rabbit-antihuman pancreatic polypeptide (PP) antiserum, a standard or patient plasma specimen, and radiolabeled human PP that has been iodinated by a modified Hunter-Greenwood technique.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Tuesday

Report Available
4 to 10 days

Specimen Retention Time
2 weeks

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

Fees & 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 account representative. For assistance, contact Customer Service.

Test Classification
This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information
83519

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
HPP	Pancreatic Polypeptide, P	2721-9

Result ID	Test Result Name	Result LOINC® Value
8014	Pancreatic Polypeptide, P	2721-9