MAYO CLINIC LABORATORIES

Test Definition: HIAAP

5-Hydroxyindoleacetic Acid, Plasma

Overview

Useful For

Biochemical diagnosis and monitoring of intestinal carcinoid syndrome using a plasma specimen

Method Name

Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS)

NY State Available

Yes

Specimen

Specimen Type

Plasma

Ordering Guidance

This test quantifies 5-hydroxyindoleacetic acid in plasma specimens and is comparable to testing on 24-hour and random urine specimens for the diagnosis and monitoring of intestinal carcinoid syndrome.

Necessary Information

Patient's age is required.

Specimen Required

Patient Preparation:

1. Some medications could interfere with test results. If medically feasible, for 48 hours before and during specimen collection, patient should not take the following medications:
-Acetaminophen (Tylenol or generic versions)
-Tryptophan containing supplements.
2. For 24 hours prior to and during collection, the patient should limit the following to one serving per day:
-Fruits
-Vegetables
-Caffeinated beverages or foods
3. For 24 hours prior to and during collection, patients **should not** eat nuts, especially walnuts. Plasma 5-hydroxyindoleacetic acid levels revert to baseline levels when walnuts are ingested after other foods.

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube:
Preferred: Green top (sodium heparin)
Acceptable: Lavender top (EDTA)
Submission Container/Tube: Plastic vial

Specimen Volume: 0.5 mL
Collection Instructions:
1. Centrifuge at 4 degrees C.
2. Aliquot plasma into plastic vial.
3. Send plasma frozen.

Specimen Minimum Volume
0.2 mL

Reject Due To

Gross hemolysis	OK
Thawing**	Cold OK; Warm reject
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma	Frozen (preferred)	60 days	
	Refrigerated	72 hours	

Clinical & Interpretive

Clinical Information
Intestinal carcinoid and neuroendocrine tumors can produce excess amounts of serotonin and its degradation product, 5-hydroxyindoleacetic acid (5-HIAA). Determination of 5-HIAA in urine or plasma is used to diagnose and monitor patients with carcinoid syndrome.

Carcinoid syndrome is characterized by a constellation of hormonal symptoms such as abdominal pain, increased bowel movements, episodic facial flushing, bronchoconstriction, venous telangiectasia, niacin deficiency-related symptoms, and long-term complications, such as mesenteric fibrosis and carcinoid heart disease.(1)

Measurement of 5-HIAA in a plasma specimen can diagnose carcinoid disease and produces comparable results to urinary 5-HIAA testing.

Reference Values
< or =6 months: < or =130 ng/mL
>6 months: < or =30 ng/mL

Interpretation
If pharmacological and dietary artifacts have been ruled out, an elevated concentration of 5-hydroxyindoleacetic acid is a probable indicator of the presence of a serotonin-producing tumor.

Cautions

Intake of food with a high content of serotonin (avocados, dates, eggplant, all fruit [including bananas, cantaloupe, grapefruit, kiwifruit, melons, pineapple, plantains, plums], all nuts [including walnuts, hickory nuts, butternuts, pecans, walnuts], and tomatoes and tomato products) within 24 hours of the plasma collection could result in falsely elevated 5-hydroxyindoleacetic acid (5-HIAA) excretion.

Numerous drugs affect the excretion of 5-HIAA by different mechanisms, including increased serotonin synthesis, metabolism, and release and inhibition of uptake. The following medications can interfere with 5-HIAA results:
-Acetaminophen (Tylenol or generic versions)
-Tryptophan containing supplements

Clinical Reference

1. Oleinikov K, Avniel-Polak S, Gross DJ, Grozinsky-Glasberg S. Carcinoid syndrome: Updates and review of current therapy. Curr Treat Options Oncol. 2019 9;20(9):70. doi:10.1007/s11864-019-0671-0
2. Adaway JE, Dobson R, Walsh J, et al. Serum and plasma 5-hydroxyindoleacetic acid as an alternative to 24-h urine 5-hydroxyindoleacetic acid measurement. Ann Clin Biochem. 2016;53(Pt 5):554-560. doi:10.1177/0004563215613109
3. Tohmola N, Johansson A, Sane T, Renkonen R, Hamalainen E, Itkonen O. Transient elevation of serum 5-HIAA by dietary serotonin and distribution of 5-HIAA in serum protein fractions. Ann Clin Biochem. 2015;52(Pt 4):428-433. doi:10.1177/0004563214554842
4. Tellez MR, Mamikunian G, O'Dorisio TM, Vinik AI, Woltering EA. A single fasting plasma 5-HIAA value correlates with 24-hour urinary 5-HIAA values and other biomarkers in midgut neuroendocrine tumors (NETs). Pancreas. 2013;42(3):405-410. doi:10.1097/MPA.0b013e318271c0d5

Performance

Method Description

Plasma is mixed with deuterium labeled hydroxyindoleacetic acid (HIAA) as internal standard in acetonitrile. After centrifugation and filtration, the sample is reconstituted in mobile phase. Liquid chromatography tandem mass spectrometry is performed by injecting the reconstituted specimen onto a reverse phase high-performance liquid chromatography column. HIAA is quantitated using the stable isotope-labeled internal standard from calibration over a concentration range of 0 to 1000 ng/mL.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Monday, Wednesday, Thursday, Friday

Report Available

2 to 4 days

Specimen Retention Time

1 month

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

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

83497

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
HIAAP	5-Hydroxyindoleacetic Acid, P	1693-1

Result ID	Test Result Name	Result LOINC® Value
619735	5-Hydroxyindoleacetic Acid, P	1693-1