MAYO CLINIC LABORATORIES

Test Definition: HIAAR

5-Hydroxyindoleacetic Acid, Random, Urine

Overview

Useful For
Biochemical diagnosis and monitoring of intestinal carcinoid syndrome using random urine specimens

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

NY State Available
Yes

Specimen

Specimen Type
Urine

Ordering Guidance
This test uses a random urine collection to assess 5-hydroxyindoleacetic acid concentrations. If a 24-hour urine collection is preferred, order HIAA / 5-Hydroxyindoleacetic Acid, 24 Hour, Urine.

Necessary Information
Patient's age and sex are required.

Specimen Required
Patient Preparation:
1. Some medications could interfere with test results. If medically feasible, for 48 hours before specimen collection, patient should not take the following medications:
-Acetaminophen (Tylenol or generic versions)
-Tryptophan containing supplements
2. For 48 hours prior to the urine collection, the patient should limit the following to one serving per day:
-Fruits
-Vegetables
-Nuts
-Caffeinated beverages or foods

Supplies: Urine Tubes, 10 mL (T068)
Container/Tube: Plastic, 10-mL urine tube
Specimen Volume: 5 mL
Collection Instructions:
1. Collect a random urine specimen.
2. Store and send refrigerate

Specimen Minimum Volume

2 mL

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Urine	Refrigerated (preferred)	56 days	
	Frozen	365 days	

Clinical & Interpretive

Clinical Information

5-Hydroxyindoleacetic acid (5-HIAA) is the major metabolite of serotonin and is excreted in the urine. Intestinal carcinoid tumors, along with neuroendocrine tumors, can produce excess amounts of 5-HIAA and serotonin, especially in individuals with carcinoid syndrome. Carcinoid syndrome is characterized by carcinoid tumors, flushing, heart disease, and hepatomegaly.

Measurement of 5-HIAA in a random urine specimen can diagnose carcinoid disease with a high specificity.

Reference Values

99th percentile cutoff

Age	Female mg/g creatinine	Male mg/g creatinine
< or =23 months	< or =17.53	< or =16.42
24-35 months	< or =17.07	< or =15.96
3 years	< or =16.70	< or =15.60
4 years	< or =16.03	< or =14.93
5 years	< or =15.26	< or =14.17
6 years	< or =14.40	< or =13.34
7 years	< or =13.47	< or =12.43
8 years	< or =12.52	< or =11.52
9 years	< or =11.58	< or =10.63
10 years	< or =10.67	< or =9.79
11 years	< or =9.81	< or =9.00
12 years	< or =9.02	< or =8.29
13 years	< or =8.32	< or =7.65
14 years	< or =7.70	< or =7.08
15 years	< or =7.16	< or =6.59
16 years	< or =6.72	< or =6.15

17 years	< or =6.36	< or =5.78
18 years	< or =6.08	< or =5.45
19 years	< or =5.88	< or =5.17
20 years	< or =5.73	< or =4.93
21 years	< or =5.64	< or =4.73
22 years	< or =5.59	< or =4.55
23 years	< or =5.57	< or =4.40
24 years	< or =5.57	< or =4.28
25 years	< or =5.58	< or =4.19
26 years	< or =5.61	< or =4.11
27 years	< or =5.64	< or =4.06
28 years	< or =5.67	< or =4.03
29 years	< or =5.70	< or =4.02
30 years	< or =5.72	< or =4.01
31 years	< or =5.75	< or =4.02
32 years	< or =5.77	< or =4.03
33 years	< or =5.78	< or =4.05
34 years	< or =5.79	< or =4.06
35 years	< or =5.80	< or =4.08
36 years	< or =5.80	< or =4.09
37 years	< or =5.80	< or =4.11
38 years	< or =5.80	< or =4.12
39 years	< or =5.81	< or =4.14
40 years	< or =5.82	< or =4.17
41 years	< or =5.85	< or =4.22
42 years	< or =5.89	< or =4.27
43 years	< or =5.95	< or =4.35
44 years	< or =6.04	< or =4.43
45 years	< or =6.14	< or =4.53
46 years	< or =6.26	< or =4.63
47 years	< or =6.40	< or =4.75
48 years	< or =6.55	< or =4.86
49 years	< or =6.71	< or =4.99
50 years	< or =6.86	< or =5.11
51 years	< or =7.01	< or =5.24
52 years	< or =7.15	< or =5.37
53 years	< or =7.29	< or =5.51
54 years	< or =7.41	< or =5.64
55 years	< or =7.52	< or =5.78
56 years	< or =7.62	< or =5.91
57 years	< or =7.71	< or =6.05
58 years	< or =7.80	< or =6.17
59 years	< or =7.88	< or =6.29
60 years	< or =7.95	< or =6.41

61 years	< or =8.02	< or =6.51
62 years	< or =8.09	< or =6.60
63 years	< or =8.15	< or =6.69
64 years	< or =8.21	< or =6.76
65 years	< or =8.28	< or =6.82
66 years	< or =8.34	< or =6.88
67 years	< or =8.40	< or =6.93
68 years	< or =8.46	< or =6.97
69 years	< or =8.52	< or =7.00
70 years	< or =8.58	< or =7.03
71 years	< or =8.65	< or =7.06
72 years	< or =8.71	< or =7.08
73 years	< or =8.77	< or =7.10
74 years	< or =8.82	< or =7.11
75 years	< or =8.86	< or =7.11
76 years	< or =8.90	< or =7.11
77 years	< or =8.92	< or =7.10
78 years	< or =8.93	< or =7.09
79 years	< or =8.93	< or =7.07
80 years	< or =8.92	< or =7.05
81 years	< or =8.90	< or =7.02
82 years	< or =8.88	< or =7.00
83 years	< or =8.86	< or =6.98
84 years	< or =8.85	< or =6.97
85 years	< or =8.84	< or =6.95
86 years	< or =8.84	< or =6.94
87 years	< or =8.84	< or =6.94
88 years	< or =8.84	< or =6.94
>or= 89 years	< or =8.85	< or =6.93

Interpretation

If pharmacological and dietary artifacts have been ruled out, an elevated excretion 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 hickory nuts, butternuts, pecans, walnuts], and tomatoes and tomato products) within 48 hours of the urine 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

Patient should also avoid caffeinated beverages, such as tea and coffee, or caffeinated foods, such as dark chocolate, for 48 hours before and during specimen collection.

Clinical Reference

1. Grimaldi F, Fazio N, Attanasio R, et al. Italian Association of Clinical Endocrinologists (AME) position statement: a stepwise clinical approach to the diagnosis of gastroenteropancreatic neuroendocrine neoplasms. J Endocrinol Invest. 2014;37(9):875-909. doi:10.1007/s40618-014-0119-0
2. Vinik A, Hughes MS. Feliberti E, et al. Carcinoid tumors. In: Feingold KR, Anawalt B, Boyce A, et al, eds. Endotext [Internet]. MDText.com, Inc; 2000. Updated August 25, 2023. Accessed April 1, 2025. Available at www.ncbi.nlm.nih.gov/books/NBK279162/
3. Shah D, Mandot A, Cerejo C, Amarapurkar D, Pal A: The outcome of primary hepatic neuroendocrine tumors: A single-center experience. J Clin Exp Hepatol. 2019;9(6):710-715. doi:10.1016/j.jceh.2019.08.002
4. Perry D, Hayek SS. Carcinoid heart disease. A guide for clinicians. Cardiol Clin. 2019;37(4):497-503. doi:10.1016/j.ccl.2019.07.014
5. Degnan AJ, Tocchio S, Kurtom W, Tadros SS. Pediatric neuroendocrine carcinoid tumors: Management, pathology, and imaging findings in a pediatric referral center. Pediatr Blood Cancer. 2017;64(9). doi:10.1002/pbc.26477
6. Corcuff JB, Chardon L, El Hajji Ridah I, Brossaud J. Urinary sampling for 5HIAA and metanephrines determination: revisiting the recommendations. Endocr Connect. 2017;6(6):R87-R98. doi:10.1530/EC-17-0071

Performance

Method Description

5-Hydroxyindoleacetic acid (5-HIAA) is measured by solid phase extraction of an aliquot from a random urine collection and liquid chromatography tandem mass spectrometry analysis. 5-HIAA is quantitated using a custom synthesized stable isotope labeled internal standard (d6-5-HIAA) from calibration over a concentration range 0.5 to 150 mg/L.(Kroll CA, Magera MJ, Helgeson JK, Matern D, Rinaldo P. Liquid chromatographic-tandem mass spectrometric method for the determination of 5-hydroxyindole-3-acetic acid in urine. Clin Chem. 2002;48[11]:2049-2051; Calanchini M, Tadman M, Krogh J, Fabbri A, Grossman A, Shine B. Measurement of urinary 5-HIAA: correlation between spot versus 24-h urine collection. Endocr Connect. 2019;8(8):1082-1088)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

2 to 4 days

Specimen Retention Time

7 days

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
HIAAR	5-HIAA, Random, U	11145-0

Result ID	Test Result Name	Result LOINC® Value
616090	5-HIAA, Random, U	11145-0