

## 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/](http://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**

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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