

Overview

Useful For

Investigation of primary aldosteronism (eg, adrenal adenoma/carcinoma and adrenal cortical hyperplasia) and secondary aldosteronism (renovascular disease, salt depletion, potassium loading, cardiac failure with ascites, pregnancy, Bartter syndrome)

Not useful for determination of plasma renin concentration.

Special Instructions

- [Renin-Aldosterone Studies](#)

Method Name

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

Portions of this test are covered by patents held by Quest Diagnostics

NY State Available

Yes

Specimen

Specimen Type

Plasma EDTA

Specimen Required

Patient Preparation: The plasma renin activity cannot be interpreted if the patient is being treated with spironolactone (Aldactone). Spironolactone should be discontinued for 4 to 6 weeks before testing.

Collection Container/Tube: Chilled, lavender top (EDTA)

Submission Container/Tube: Plastic vial

Specimen Volume: 2 mL

Collection Instructions:

1. Draw blood in a chilled syringe from a patient in a seated position; place specimen in a chilled, lavender-top (EDTA) tube; and mix.
2. Alternatively, draw blood directly in a chilled, lavender top (EDTA) tube.
3. Immediately place EDTA tube into an ice-water bath until thoroughly cooled.
4. Refrigerate specimen during centrifugation and immediately transfer plasma to plastic vial. (If a refrigerated centrifuge is unavailable, chill the centrifuge carriers. Centrifuge specimen for < or =5 minutes, then promptly transfer plasma.)
5. Immediately freeze plasma.

Additional Information: See [Renin-Aldosterone Studies](#) in Special Instructions for further information.

Forms

If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:

-[General Request](#) (T239)

-[Cardiovascular Test Request](#) (T724)

Specimen Minimum Volume

1.15 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma EDTA	Frozen	14 days	

Clinical and Interpretive

Clinical Information

The renal juxtaglomerular apparatus generates renin, an enzyme that converts angiotensinogen to angiotensin I. The inactive angiotensin I is enzymatically converted to the active octapeptide angiotensin II, a potent vasopressor responsible for hypertension of renal origin. Angiotensin II also stimulates the zona glomerulosa of the adrenal cortex to release aldosterone.

Renin secretion by the kidney is stimulated by a fall in glomerular blood pressure, by decreased sodium concentration at the macula densa at the distal tubule, or by stimulation of sympathetic outflow to the kidney, such as in renal vascular diseases.

Reference Values

0-2 years: 4.6 ng/mL/hour (mean)* Range: 1.4-7.8 ng/mL/hour

3-5 years: 2.5 ng/mL/hour (mean)* Range: 1.5-3.5 ng/mL/hour

6-8 years: 1.4 ng/mL/hour (mean)* Range: 0.8-2.0 ng/mL/hour

9-11 years: 1.9 ng/mL/hour (mean)* Range: 0.9-2.9 ng/mL/hour

12-17 years: 1.8 ng/mL/hour (mean)* Range: 1.2-2.4 ng/mL/hour

Mean data not standardized as to time of day or diet. Infants were supine, children sitting.

Na-depleted, upright (peripheral vein specimen)

18-39 years: 10.8 ng/mL/hour (mean)

2.9-24.0 ng/mL/hour (range)

> or =40 years: 5.9 ng/mL/hour (mean)

2.9-10.8 ng/mL/hour (range)

Na-replete, upright (peripheral vein specimen)

18-39 years: 1.9 ng/mL/hour (mean)

< or =0.6-4.3 ng/mL/hour (range)

> or =40 years: 1.0 ng/mL/hour (mean)

< or =0.6-3.0 ng/mL/hour (range)

*Stalker HP, Holland NH, Kotchen JM, Kotchen TA: Plasma renin activity in healthy children. J Pediatr 1976;89:256-258

Interpretation

A high ratio of serum aldosterone (SA) in ng/dL to plasma renin activity (PRA) in ng/mL per hour, is a positive screening test result, a finding that warrants further testing. A SA:PRA ratio > or =20 and SA of > or =15 ng/dL indicates probable primary aldosteronism.

Renal disease, such as unilateral renal artery stenosis, results in elevated renin and aldosterone levels. Renal venous catheterization may be helpful. A positive test is a renal venous renin ratio (affected:normal) above 1.5.

See [Renin-Aldosterone Studies](#) in Special Instructions.

Cautions

Angiotensin converting enzyme (ACE) inhibitors have the potential to "falsely elevate" PRA. Therefore, in a patient treated with an ACE-inhibitor, the findings of a detectable PRA level or a low SA:PRA ratio do not exclude the diagnosis of primary aldosteronism. In addition, a strong predictor for primary aldosteronism is a PRA level undetectably low in a patient taking an ACE-inhibitor.

Clinical Reference

1. Young WF Jr: Primary aldosteronism: A common and curable form of hypertension. Cardiol Rev 1999;7:207-214
2. Young WF Jr: Pheochromocytoma and primary aldosteronism: diagnostic approaches. Endocrinol Metab Clin North Am 1997;26:801-827

Performance

Method Description

The renin in plasma is allowed to act on the plasma's endogenous substrate, angiotensinogen, producing angiotensin I. This is measured by mass spectrometry. Renin activity is expressed in nanograms of angiotensin produced per milliliter of plasma per hour of incubation.(Fredline VF, Kovacs EM, Taylor PJ, Johnson AG:

Measurement of plasma renin activity with use of HPL celectrospray-tandem mass spectrometry. Clin Chem 1999 May;45[5]:659-664)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

2 to 5 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees and 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 Regional Manager. 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. This test has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

84244

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
PRA	Renin Activity, P	2915-7

Result ID	Test Result Name	Result LOINC Value
8060	Renin Activity, P	2915-7