Overview

Useful For
Evaluation of patients with suspected sarcoidosis

Method Name
Spectrophotometry (SP)

NY State Available
Yes

Specimen

Specimen Type
Serum

Necessary Information
The use of angiotensin converting enzyme (ACE)-inhibiting antihypertensive drugs will cause decreased ACE values. Patients taking ACE inhibitors, such as captopril and enalapril, will have extremely low or unmeasurable ACE activity. Indicate on the request form if the patient is on ACE inhibitors.

Specimen Required
Collection Container/Tube:

Preferred: Serum gel

Acceptable: Red top

Submission Container/Tube: Plastic vial

Specimen Volume: 0.5 mL

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
0.5 mL

Reject Due To

<table>
<thead>
<tr>
<th>Condition</th>
<th>Action</th>
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</thead>
<tbody>
<tr>
<td>Gross hemolysis</td>
<td>Reject</td>
</tr>
<tr>
<td>Gross lipemia</td>
<td>Reject</td>
</tr>
<tr>
<td>Gross icterus</td>
<td>Reject</td>
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</tbody>
</table>
**Specimen Stability Information**

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum</td>
<td>Refrigerated (preferred)</td>
<td>7 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>180 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambient</td>
<td>24 hours</td>
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**Clinical and Interpretive**

**Clinical Information**

Angiotensin converting enzyme (ACE) is integral to the renin-angiotensin system (RAS), which maintains blood pressure by regulation of fluid volume and vascular tension. Its peptidase action on the decapeptide angiotensinogen I results in the hydrolysis of a terminal histidyl leucine dipeptide and the formation of the octapeptide angiotensin II, a potent vasoconstrictor that increases blood pressure.

ACE activity is increased in sarcoidosis, a systemic granulomatous disease that commonly affects the lungs. In sarcoidosis, ACE is thought to be produced by epithelioid cells and macrophages of the granuloma.

ACE activity reflects the severity of sarcoidosis: 68% positivity in those with stage I sarcoidosis, 86% in stage II sarcoidosis, and 91% in stage III sarcoidosis.

Other conditions such as Gaucher disease, leprosy, untreated hyperthyroidism, psoriasis, premature infants with respiratory distress syndrome, adults with amyloidosis, and histoplasmosis have been associated with increased serum ACE activity.

**Reference Values**

> or =18 years: 16-85 U/L

0-17 years: ACE activity may be 20-50% higher in healthy children compared to healthy adults (16-85 U/L).

For SI unit Reference Values, see https://www.mayocliniclabs.com/order-tests/si-unit-conversion.html

**Interpretation**

An elevation in the level of serum angiotensin converting enzyme (ACE), along with radiographic evidence of infiltrates or adenopathy and organ biopsies showing noncaseating epithelial granulomas is suggestive of a diagnosis of sarcoidosis.

Normal, healthy children and infants are known to have ACE activity levels greater than the adult reference interval.

**Cautions**

Spinal fluid angiotensin converting enzyme (ACE) activity to aid the diagnosis of neurosarcoidosis has been reported; however, there is insufficient evidence to support ACE being used for this purpose.

**Clinical Reference**


3. Personal observations from a Mayo pediatric normal range study using a manual method (Hana)


Performance

Method Description
Angiotensin converting enzyme (ACE) catalyzes the conversion of angiotensin I to angiotensin II. The enzyme also mediates the cleavage of the synthetic substrate \( N-(3-[2\text{-fur}y]l\text{acyrloyl}])\text{-L-phenylalanylglutamylglycine} \) (FAPGG) into an amino acid derivative and a dipeptide. The kinetic of this cleavage reaction is measured by recording the decrease in absorbance at 340 nm. (Package insert: Buhlmann ACE Kinetic, Schonenbuch, Switzerland. 1/30/2013)

PDF Report
No

Day(s) Performed
Monday through Friday

Report Available
1 to 3 days

Specimen Retention Time
7 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 has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
82164

LOINC® Information
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<th>Test Order Name</th>
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<tbody>
<tr>
<td>ACE</td>
<td>Angiotensin Converting Enzyme, S</td>
<td>2742-5</td>
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</tbody>
</table>

<table>
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<tr>
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<th>Test Result Name</th>
<th>Result LOINC Value</th>
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