Test Definition: RAMSU
Amylase, Random, U

Overview

Useful For
Assessment of acute rejection of bladder-drained pancreas transplants
Diagnoses of acute pancreatitis

Method Name
EnzymaticRate

NY State Available
Yes

Specimen

Specimen Type
Urine

Specimen Required

Container/Tube: Plastic, 5-mL tube (T465)

Specimen Volume: 5 mL

Collection Instructions:
1. Collect a random urine specimen.
2. No preservative.

Forms

If not ordering electronically, complete, print, and send a Gastroenterology and Hepatology Client Test Request (T728) with the specimen.

Specimen Minimum Volume
1 mL

Reject Due To

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

Specimen Stability Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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<tbody>
<tr>
<td>Urine</td>
<td>Refrigerated (preferred)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
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Clinical and Interpretive

Clinical Information

Amylases are enzymes that hydrolyze complex carbohydrates. They are produced by a number of organs and tissues, predominantly the exocrine pancreas (P-type amylase) and salivary glands (S-type amylase). Plasma amylases are of relatively low molecular weight for an enzyme (55,000 to 60,000 daltons) and enter the urine through glomerular filtration. Conditions that cause increased entry of amylase into plasma (eg, acute pancreatitis) will thus result in increased urinary excretion of amylase. Urinary amylase is therefore sometimes used in the diagnosis of acute pancreatitis. However, the rate of urinary amylase excretion appears to be less sensitive than plasma markers, and is not specific for the diagnosis of acute pancreatitis.

Similar to other low molecular weight proteins filtered by glomeruli, amylases are reabsorbed to an extent by the proximal tubule. Thus, conditions associated with increased production and glomerular filtration of other low molecular weight proteins that compete with tubular reabsorption of amylase, or conditions of proximal tubular injury may increase urinary amylase excretion. Also, a number of disorders other than acute pancreatitis may cause increases in plasma amylase concentrations and consequent increases in urinary amylase excretion. These conditions include burns, ketoacidosis, myeloma, light-chain proteinuria, march hemoglobinuria, acute appendicitis, intestinal perforation, and following extracorporeal circulation.

Urinary amylase clearance is increased about 3-fold for 1 to 2 weeks in patients with acute pancreatitis. A value > 550 U/L has been reported as 62% sensitive and 97% specific for acute pancreatitis (3), while a value > 2000 U/L has been reported as 62% sensitive and 97% specific for acute pancreatitis (4).

Quantitation of urinary amylase excretion is also useful in monitoring for rejection following pancreas transplantation. The duodenal cuffs of donor pancreases are often surgically anastomosed to the recipient's bladder at the time of pancreas transplantation, allowing for drainage of exocrine pancreas fluid into the bladder. In pancreatic rejection, urinary amylase excretion decreases.

In patients with pancreas transplants that drain into the urinary system, a drop in urinary amylase of more than 25% from that patient's baseline value can indicate acute rejection (5). In this situation, collecting a timed urine sample and expressing the urinary amylase level as Units excreted/hr might reduce variability and improve test performance (6).

Reference Values

No established reference values

Interpretation

Decreases in urinary amylase excretion of greater than 30% to 50%, relative to baseline values, may be associated with acute pancreas allograft rejection. Because there is large day-to-day variability in urinary amylase excretion following pancreas transplantation, if a significant decrease is noted, it should be confirmed by a second collection. There is also large inter-individual variability in urinary amylase excretion among pancreas transplant recipients. Acute rejection is usually not established solely by changes in urinary amylase excretion, but by tissue biopsy.

Levels are elevated in acute pancreatitis (but with poor sensitivity and specificity).

Clinical Reference


**Performance**

**Method Description**

This is an enzymatic rate reaction. The liquid Roche amylase (AMYL) method is an enzymatic colorimetric test using 4,6-ethylidene (G7)-p-nitrophenol (G1)-a, D-maltoheptaoside (ethylidene-G7PNP) as a substrate. Human salivary and pancreatic amylase convert the substrate at approximately the same rate. The alpha-amylase cleaves the substrate into G2, G3, G4 PNP fragments. The G2, G3 and G4 PNP fragments are further hydrolyzed by an alpha-glucosidase to yield p-nitrophenol and glucose. The rate of increase in absorbance at 415 nm (measuring the increase in p-nitrophenol) is proportional to amylase activity.(Package Insert: Roche P-Amylase, Roche Diagnostic Corp., Indianapolis, IN)

**PDF Report**

No

**Day(s) and Time(s) Test Performed**

Monday through Sunday; Continuously

**Analytic Time**

1 day

**Maximum Laboratory Time**

2 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 or approved by the U.S. 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
82150

LOINC® Information

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<td>Amylase, Random, U</td>
<td>1799-6</td>
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