MAYO CLINIC LABORATORIES

Test Definition: GLURA

Glucose, Random, Serum

Overview

Useful For

Diagnosing and managing diabetes mellitus and other carbohydrate metabolism disorders including gestational diabetes, neonatal hypoglycemia, idiopathic hypoglycemia, and pancreatic islet cell carcinoma

Method Name

Photometric

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Collection Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL
Collection Instructions:
1. Serum gel tubes should be centrifuged within 2 hours of collection.
2. Red-top tubes should be centrifuged, and the serum aliquoted into a plastic vial within 2 hours of collection.

Forms

If not ordering electronically, complete, print, and send a Kidney Transplant Test Request with the specimen.

Specimen Minimum Volume

0.25 mL

Reject Due To

Gross hemolysis	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	7 days	

	Frozen	30 days	

Clinical & Interpretive

Clinical Information

The most common disease related to carbohydrate metabolism is diabetes mellitus, which is characterized by insufficient blood levels of active insulin. Symptoms include polyuria, abnormally elevated blood and urine glucose values, excessive thirst, constant hunger, sudden weight loss, and possibly elevated blood and urine ketones. Complications from diabetes are the third leading cause of death in the United States. There are approximately 16 million diabetics in the United States, and that number is growing. It is estimated that at least 5 million of these people have not been diagnosed. The prevalence in the population age 65 and older is 18.4%, representing 6.3 million cases. The cost of diabetes to the US economy exceeds $92 billion annually.

Overproduction or excess administration of insulin causes a decrease in blood glucose to levels below normal. In severe cases, the resulting extreme hypoglycemia is followed by muscular spasm and loss of consciousness, known as insulin shock.

Reference Values

0-11 months: not established
> or =1 year: 70-140 mg/dL

Interpretation

Any of the following results, confirmed on a subsequent day, can be considered diagnostic for diabetes:
-Fasting plasma or serum glucose > or =126 mg/dL after an 8-hour fast
-2-Hour plasma or serum glucose > or =200 mg/ dL during a 75-gram oral glucose tolerance test (OGTT)
-Random glucose >200 mg/dL, plus typical symptoms

Patients with "impaired" glucose regulation are those whose fasting serum or plasma glucose fall between 101 and 126 mg/dL, or whose 2-hour value on oral glucose tolerance test fall between 140 and 199 mg/dL. These patients have a markedly increased risk of developing type 2 diabetes and should be counseled for lifestyle changes and followed up with more testing. Indications for screening and testing include strong family history, marked obesity, history of babies over 9 pounds, and recurrent skin and genitourinary infections.

Glucose levels of 25 mg/dL or lower in infants younger than 1 week are considered to be potentially life threatening, as are glucose levels of 40 mg/dL or lower in infants older than 1 week.

Glucose levels of 400 mg/dL and higher are considered a critical value.

Cautions

Once the blood is drawn, the cells in the blood begin to metabolize the glucose that is present in the specimen. At ambient temperature, the glucose concentration in the blood will decrease by 10% per hour. Therefore, in a nongel separator tube, the specimen should be centrifuged as soon as possible and the plasma or serum removed from the cells. If the blood is drawn in a serum separator tube (SST) or plasma separator tube (PST), the glucose is stable once the specimen has been spun and the gel is in place.

Inhibitors of glucose metabolism such as fluoride also can be used. In these tubes, glycolysis will take place, but at a much reduced rate (approximately 10% over 3 hours).

Clinical Reference

Chapter 25: In Tietz Textbook of Clinical Chemistry. Fourth edition. Edited by CA Burtis, ER Ashwood, DE Bruns. WB Saunders Company, Philadelphia, 2006, pp 837-907

Performance

Method Description

Hexokinase catalyzes the phosphorylation of glucose to glucose-6-phosphate by ATP. Glucose-6-phosphate dehydrogenase oxidizes glucose-6-phosphate in the presence of nicotinamide adenine dinucleotide phosphate (NADP) to gluconate-6-phosphate. No other carbohydrate is oxidized. The rate of NADPH formation during the reaction is directly proportional to the glucose concentration and is measured photometrically.(Package insert: Glucose HK Gen.3. Roche Diagnostics; 07/2024)

PDF Report

No

Day(s) Performed

Monday through Sunday

Report Available

Same day/1 to 2 days

Specimen Retention Time

1 week

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 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.

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CPT Code Information

82947

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
GLURA	Glucose, Random, S	2345-7

Result ID	Test Result Name	Result LOINC® Value
GLURA	Glucose, Random, S	2345-7