BIOGENIX
INC. PVT. LTD.

GLUCOSE
(GOD/POD METHOD)

Intended use: For the *in vitro* quantitative determination of glucose in human serum and plasma

Clinical Significance

Glucose is the major source of energy in the body. Measurement of glucose in serum/plasma is the most frequently performed test in clinical laboratories and is primarily run to aid in the diagnosis of diabetes. Lack of insulin or resistance to it section at the cellular level causes diabetes. Therefore, the blood glucose levels are very high. Elevated serum glucose levels are observed in diabetes mellitus and may be associated with pancreatitis, pituitary or thyroid dysfunction and liver disease. Hypoglycaemia occurs most frequently due to over dosage of insulin. It is also observed in other conditions like hypothyroidism and hypo pituitarism.

Test Principle

The method is based on two sequential enzymatic reactions; the first one involves the oxidation of glucose to gluconic acid and H_2O_2catalysed by glucose oxidase (GOD). The hydrogen peroxide is then oxidized by peroxidase (POD) in the presence of 4-aminoantipyrine and phenol to form the red dye.The intensity of the colour produced is proportional to the glucose concentration and is measured colorimetrically at505 nm(490-530 nm).

Glucose Oxidase

Glucose + O_2 + H2O —----------> Gluconate + H_2O_2

Peroxidase

H_2O_2 + Phenol + 4-AAP ———>Quinoneimine dye + H_2O

Kit components:

R: Buffer enzyme reagent
S: Glucose standard 100 mg/dL
Reagents are liquid ready to use.

Stability and Storage

The unopened reagents are stable till the expiry date stated on the label when stored at 2–8 °C.

Samples

Use serum or plasma free of hemolysis

Assay Parameters

Reaction Mode	Endpoint
Wavelength	505 nm
Sample Volume (µl)	5/10
Reagent Volume (µl)	500/1000
Incubation time (min.)	10/30 min
Incubation temp. (°C)	37/20-25
Concentration of Standard	100 mg/dl
Blank with	Reagent
Reagent Blank Abs.	<0.2

Assay Procedure

i) Wavelength: 505nm (500-510)
ii) Cuvette: 1 cm light path
iii) Temperature: 37°C/20-25°C.
iv) Adjust the instrument to zero with distilled water.
v) Pipette into clean dry test tubes labeled as Blank (B), Standard (Std), and Sample (S).

	Reagent Blank (B)	Standard (Std)	Sample (S)
Colour Reagent	1000 µl	1000 µl	1000 µl
Glucose Standard	-	10 µl	-
Sample	-	-	10 µl
Distilled Water	10 µl	-	-

Mix and incubate 10 min. at 37 °C/30 min. at room temperature (20-25°C). Measure absorbance of the test sample (Abs-T) and standard (Abs-S) against reagent blank.

Calibration

Calibration with the standard included in the kit is recommended.

Calculations

Glucose (mg/dl) =Abs-T
-------- XConc-S
Abs-S
Conc-S= Standard concentration

Conversion factor: mg/dL x 0.056= mmol/L

Reference values

Serum or plasma:
60-110 mg/dL = 3.89-6.10 mmol /L
It is recommended that each laboratory should establish its own reference range, according to its own geographic area.

Performance Characteristics

Measuring range (Linearity):
The assay is linear upto500 mg/dl. If the results obtained were greater than 500mg/dl, dilute the sample to 1:2 with sodium chloride(9 g/L) and multiply the result by 2.

Sensitivity:
1 mg/dl = 0.0032 (A)

Accuracy:
Results obtained using the reagent compared well with other commercial reagents.

Interferences

The following compounds will affect the glucose results if found in the sample at the below mentioned concentrations:
Ascorbic acid: 250mg/L
L-Cysteine: 1.5g/L
Citric acid: 15g/L
Uric acid: 150mg/L

References:

1. TRINDER P, Annual Clinical Biochem 6, 24-25 (1969)
2. Thomas L.: Clinical Laboratory Diagnostics, 1st ed. Frankfurt: TH-Books Verlagsgesellschaft; 1998, p. 131 - 7.
4. Tietz N. W., (Ed.),Textbook of Clinical Chemistry. Burtis CA and Ashwood ER, Fifth Edition, 2012

Mfg. By: BIOGENIX INC. PVT. LTD.
Factory: B - 19/A, S.I.L Ancillary Estate, Amausi Industrial Area, Nadarganj, Kanpur Road, Lucknow - 226008 (U.P.), India
Email: biogenix2007@yahoo.com, info@biogenixinc.com
Website: www.biogenixinc.com
Customer care no: +919140971443
Document No. BIPL-IFU-025