

#### PRINCIPLE:

The substrate  $\beta$  D-Glucose is oxidised by glucose oxidase to form gluconic acid and hydrogen peroxide. The hydrogen peroxide so generated oxidises the chromogen system consisting of 4-Amino antipyrine and phenolic compound to a red quinoneimine dye. The intensity of the color produced is proportional to the glucose concentration and is measured at 505nm (490-530 nm) or with green filter.

#### CLINICAL SIGNIFICANCE:

Glucose estimations in serum or plasma are performed for the diagnosis and follow up of diabetes mellitus. In a normal healthy individual the fasting blood glucose level is between 70 to 110 mg/dl. This level may increase upto 500 mg/dl or more in a diabetic person. This increase in glucose level is referred as hyperglycemia. This occurs mainly due to deficiency of insulin, slight increases are also found due to hyperactivity of the pituitary, thyroid and adrenal glands.

Hypoglycemia is occasionally encountered due to hormonal disorders like hypothyroidism, hypopituitarism etc or due to glucose storage diseases and sometimes due to an overdose of insulin for the treatment of diabetes.

#### SPECIMEN COLLECTION AND STORAGE:

1. Plasma is preferred to serum.
2. Plasma should be separated within 30 minutes of collection to prevent glycolysis.
3. Sample collected in fluoride, an inhibitor of glycolysis, can be stored for 24 hrs. at 2-8° C.

#### REAGENTS

All the reagents are to be stored at 2-8° C

	No. of Bottles	
	4x50ml	4X100ml
Reagent 1 (Enzyme Chromogen)	4	4
Standard (100mg/dl)	1	1

#### REAGENT RECONSTITUTION:

Ready to use. Store at 2-8° C, protected from light when not in use.

#### REAGENT STORAGE & STABILITY:

All the reagents are stable up to expiry date indicated on the bottle label.

#### GENERAL INSTRUMENT PARAMETERS:

Reaction Type	: End Point
Standard Concentration	: 100 mg/dl
Slope of Reaction	: Increasing
Units	: mg/dl
Wavelength	: 505nm (490-530nm)
Incubation	: 10 Minutes.
Flowcell Temperature	: 37° C
Zero Setting	: Reagent blank
Reagent Volume	: 1.0 ml
Path length	: 1.0 cm
Sample Volume	: 10 $\mu$ l (0.01 ml)

#### PROCEDURE:

Allow the sample and reagent to attain room temperature prior to use

Dispense	Blank	Std.	Test
Reagent 1	1.0 ml	1.0 ml	1.0 ml
Standard	-	10 $\mu$ l	-
Sample	-	-	10 $\mu$ l

Incubate at 37° C for 10 minutes. Mix well and read at 505 nm (490-530 nm) or against green filter.

#### LINEARITY:

This method is linear for glucose values upto 500 mg/dl. For sample with values higher than 500 mg/dl, dilute the sample using normal saline and repeat the assay. Apply proper dilution factor while calculation.

**CALCULATIONS:**

$$\text{Concentration of glucose in sample (mg/dl)} = \frac{\text{Abs. of Test} \times 100}{\text{Abs. of Std.}}$$

#### REFERENCE VALUE:

Fasting Serum / plasma: 70 -110 mg/dl.

Post Prandial / Random Sugar: Up to 140 mg/dl.

It is recommended that each laboratory establish its own reference values.

#### BIBLIOGRAPHY:

1. Trinder P. Ann. Clin. Biochem, 624(1969).
2. Tietz, N. W. Fundamentals of Clinical Chemistry, 2<sup>ND</sup> edition W.B. Saunders Co., Toronto to (1982)

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	Attention, see instructions for use		Consult Instructions For Use
	For in vitro diagnostic use only		Catalog #
	Store between 2-8° C		Lot Number
	Do not use if package is damaged		Date of Manufacturing
	Manufacturer		Use by