N BIO - GLUCOSE

(Hexokinase method)

KIT NAME	KIT SIZE	CAT. NO
N BIO - Glucose	2 x 100 ml	DGLU02100M
N BIO - Glucose	5 x 100 ml	DGLU05100M

GENUINE BIOSYSTEM

INTRODUCTION

Glucose is a simple six-carbon sugar. Oxidative metabolism of glucose provides the energy for most cellular processes. Glucose level in the blood is tightly controlled by several hormones. Elevated glucose level is the classic sign of diabetes mellitus. Glucose level abnormalities (hyper- or hypoglycemia) might be caused also by pancreas tumors and diseases of liver, thyroid gland or adrenal Glands.

METHOD PRINCIPLE

The formation rate of NADPH is directly proportional to the glucose concentration. NADPH has a absorption peak in wavelength 340 nm, the increase rate of absorbance is directly proportional to the Glucose concentration of the sample.

Glucose + ATP ----------> G6P + ADP

G6PD

G6P + NADP ----------> 6PG + NADPH + H+

KIT CONTENTS

Reagent Name	DGLU02100M	DGLU05100M
R1 - Glucose Reagent	2 x 80 ml	5 x 20 ml
R2 - Glucose Reagent	2 x 20 ml	2 x 20 ml
R3 Standard	1 vial	1 vial

Refer standard value mentioned in the vial.

WORKING REAGENT PREPARATION AND STABILITY

The reagents R1 and R2 are stable up to the expiry date printed on the package. The assay can be prepared by 4 parts of R1 Glucose reagent with 1 part of R2 Glucose reagent. The reagents are stable for 3 weeks on board the analyser at 2-10°C. Protect from contamination.

CONCENTRATIONS IN THE TEST

Tris buffer	50 mmol/L
ATP	2 mmol/L
NADP	5 mmol/L
Hexokinase	≥ 8 KU/L
G6PD	14 KU/L

ADDITIONAL EQUIPMENT

- Automatic analyzer or photometer able to read at 340 nm
- Thermostat at 37°C
- General laboratory equipment

SPECIMEN

Use fresh un-haemolysed serum. The stability of glucose in specimen is reduced by bacterial contamination and by glycolysis. Serum or plasma should be separated from the cells, as soon as possible, to prevent glycolysis.

PROCEDURE

These reagents may be used both for manual assay and in several automatic analysers. Applications for them are available on request.

Wavelength	340 nm
Temperature	37°C
Cuvette	1 cm

Pipette into the cuvettes:

Reagent	Standard (S)	Test (T)
R1 Glucose Reagent	800 µl	800 µl
R3 Standard	10 µl	-
Sample	-	10 µl
Mix well and incubate for 5 mins at 37° C, then add		
R2 Glucose Reagent	200 µl	200 µl

Mix well & incubate for 5 min. at 37°C. Measure the absorbance of calibrator & sample against reagent blank.

CALCULATION

Glucose concentration = A(T) / A(S) x standard concentration

REFERENCE VALUES

Serum, Plasma	65 to 110 mg/dl
CSF	40 to 70 mg/dl

It is recommended for each laboratory to establish its own reference ranges for local population.

QUALITY CONTROL

To Ensure adequate quality control, each run should include assayed normal and abnormal controls. If commercial controls are not available it is recommended that known value samples be aliquoted, frozen and used as controls.

PERFORMANCE CHARACTERISTICS

Sensitivity / Limit of Quantitation: 5 mg/dl

Linearity: up to 1000 mg/dl glucose concentration exceeds the range of linearity, dilute sample with 0.9% NaCl and repeat the assay. Multiply the result by the dilution factor.

Specificity / Interferences

Haemoglobin up to 2.5 g/dl, ascorbate up to 62 mg/l, bilirubin Up to 20 mg/dl and triglycerides up to 500 mg/dl do not interfere with the test.

WASTE MANAGEMENT

Please refer to local legal requirements.

LITERATURE

1) Sacks, D.B, carbohydrates Tietz Fundamentals of Clinical Chemistry 5th Ed.Butis, C.A & Ashwood,E.R
2) Dods, R.F, Diabetes Melitus Clinical Chemistry Theory Analysis , Correlation 4th Ed, Kapalan, L.A Pesce, A.J,Kazmierozak S.C
3) Teitz, N W Clinical Guide to laboratory test 3rd Ed.
4) Young, D S Effects of preanalytical variables on clinical laboratory tests 2nd edition, AACC press(1997)

SYSTEM PARAMETERS

Method	End Point
Wavelength	340 nm
Zero Setting	Distilled Water
Temperature Setting	37° C
Incubation Temperature	37° C
Incubation Time	5 mins + 5 mins
Delay Time	-----
Read Time	-----
No. of Reading	-----
Interval Time	-----
Sample Volume	0.01 ml (10 ul)
Reagent Volume	1.0 ml (1000 ul)
Standard Concentration	Refer Standard vial
Units	mg/dl
Factor	-----
Reaction Slope	Increasing
Linearity	1000 mg/dl

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