Glucose Content Assay Kit

Note: Take two or three different samples for prediction before test.

Operation Equipment: Spectrophotometer

Catalog Number: BC2500

Size:50T/48S

Components:

Solution I: 10 mL×1, 1 μmol/mL Glucose solution. Storage at 4℃.

Solution II: Liquid 25 mL×1. Storage at 4℃.

Solution III: Liquid 25 mL×1. Storage at 4℃.

Preparation of mixed reagent: mix Solution II and Solution III with equal volume 1:1 before use，prepare it fresh.

Product Description

Glucose is not only the main substrate of cell energy metabolism, but also its metabolic intermediate is an important substrate of biosynthesis. Plants produce glucose through photosynthesis. In mammals, glucose is not only the sole source of energy for the nervous system, muscles and adipose tissue of the brain, but also is closely related to the synthesis of reductive coenzymes, lactose and milk fat.

Glucose oxidase catalyzes the oxidation of glucose to gluconic acid and hydrogen peroxide. Peroxidase catalyzes the oxidation of 4-aminoantipyrine bisphenol by hydrogen peroxide to form colored compounds with characteristic absorption peaks at 505 nm.

Reagents and Equipment Required but Not Provided.

Water-bath, spectrophotometer, 1 mL glass cuvette, transferpettor, mortar/homogenizer and distilled water.

Procedure

a. Extraction of Glucose

Tissue treatment: Suggest that weigh about 0.1 g of sample, add 1 mL distilled water and grind into homogenate. Boil them in a boiling water bath for 10 minutes (cover tightly to prevent water loss). After cooling, centrifuge them at room temperature for 10 min at 8000 g, then take the supernatant on standby.

b. Bacteria or cell treatment:

Collect the bacteria or cells into the centrifuge tube, discard the supernatant after centrifugation; According to the bacteria or cells (10^4) : distilled water volume (mL) is according the ratio of 500~1000: 1 (Recommend 1 mL of distilled water is added to 5 million bacteria or cells), ultrasonic broke bacteria or cells (ice bath, power of 20% or 200W, ultrasound for 3s, interval of 10s, repeat 30 times), set in a boiling water bath boil for 10 minutes (tightly closed to prevent moisture loss), after cooling, 8000 g, 25℃ centrifuge for 10 min, take supernatant on standby.

Measuring operation table:

a. Preheat the spectrophotometer for 30min, adjust the wavelength to 505 nm and adjust zero with distilled water.

b. Add the following reagents successively into the 1.5ml centrifuge tube:

Reagent（μL）	Blank Tube (A_B)	Standard Tube (A_S)	Test Tube (A_T)
Sample			100
Solution I		100	
ddH_2O	100		
mixed reagent	900	900	900

Mix thoroughly, incubate at 37°C (mammals) or 25°C (other species) in the water bath for 15 min and read the absorbance of wavelength at 505 nm .

Calculation of glucose content:

1. Calculate by the protein concentration:

Glucose content（μmol/mg prot）$=C\times(A_T-A_B)\div(A_S-A_B)\times V_S\div(Cpr\times V_S)$

$=(A_T-A_B)\div(A_S-A_B)\div Cpr$

2. Calculate by Sample fresh weight:

Glucose content（μmol/g fresh weight)$=C\times(A_T-A_B)\div(A_S-A_B)\times V_S\div(W\div V_{TS}\times V_S)$

$=(A_T-A_B)\div(A_S-A_B)\div W$

3. Calculate by the number of bacteria or cells

Glucose content（μmol/10^4 cell）$=C\times(A_T-A_B)\div(A_S-A_B)\times V_S\div(500\div V_{TS}\times V_S)$

$=0.002\times(A_T-A_B)\div(A_S-A_B)$

C: glucose solution concentration, 1 μmol/mL;

Cpr: sample protein concentration, mg/mL;

V_S: the sample volume added, 100 μL=0.1 mL;

V_{TS}: total sample volume, 1 mL;

W: sample fresh weight, g;

500: number of bacteria or cells, 5 million.

4. If $A_T>1.0$, experiment after dilution.

Note:

If the absorbance value of the sample is greater than 1.2, it is recommended to dilute the sample with distilled water for determination.

Recent Product Citations：

[1] Meixi Peng, Dan Yang, Yixuan Hou,et al. Intracellular citrate accumulation by oxidized ATM-mediated metabolism reprogramming via PFKP and CS enhances hypoxic breast cancer cell invasion. Cell Death and Disease. March 2019; (IF5.959)

[2] Jing Li,Yabing Duan,Chuanhong Bian,et al. Effects of validamycin in controlling Fusarium head blight caused by Fusarium graminearum: Inhibition of DON biosynthesis and induction of host resistance. Pesticide Biochemistry and Physiology. January 2019; 153:152-160. (IF2.87)

References：

[1] Basagni U, Bonicolini F. Ready to use liquid reagent for determining the glucose content in blood: U.S. Patent 5,077,199[P]. 1991-12-31.

[2] Kabasakalian P, Kalliney S, Westcott A. Enzymatic blood glucose determination by colorimetry of N, N-diethylaniline-4-aminoantipyrine[J]. Clinical chemistry, 1974, 20(5): 606-607.

Related Products：

BC0340/BC0345 Glucogen Content Assay Kit
BC2540/BC2545 Cellulase(CL) Activity Assay Kit
BC0330/BC0335 Trehalose Content Assay Kit
BC2490/BC2495 Blood Glucose Content Assay Kit

Technical Specifications:

The detection limit: 0.0078 μmol/mL
Linear range: 0.0625-3 μmol/mL