Glycogen Assay Kit

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

Operation Equipment: Spectrophotometer

Catalog Number: NA0840

Size:50T/48S

Components:

Extract reagent: 50mL ×1, storage at 4℃.

Regent I: Powder×1, storage at 4℃.10 mg of glucose, add 1 mL of distilled water to dissolve it before use. Diluted with distilled water to 0.05 mg/mL glucose solution for standby, ready to use. 0.05 mg/mL glucose standard solution, storage at 4℃.

Regent II: Powder×1, storage at 4℃.

Working solution: Pour 10 mL of distilled water into Reagent II and slowly pour 40 mL of concentrated sulfuric acid. Dissolve and mix thoroughly before use. Unused reagents are valid at 4°C for one week.

Product Description

Glycogen is a high molecular polysaccharide composed of glucose units. It is one of the main storage forms of sugar. It is mainly stored in the liver and muscle as backup energy, and is called liver glycogen and muscle glycogen, respectively. Glycogen can regulate blood glucose concentration. Glycogen can be synthesized in the liver when blood glucose rises. When blood sugar decreases, liver glycogen is broken down into glucose to supplement blood sugar. Therefore, liver glycogen is important to maintain the relative balance of blood sugar. Muscle glycogen is a form of glycogen storage in muscles. When lots of blood sugar is consumed during strenuous exercise, muscle glycogen cannot be broken down directly into blood sugar. It must first be broken down to produce lactic acid, which is circulated to the liver with the blood, and transformed into liver glycogen through glycogen glucose.

Determination principle: anthrone method. Glycogen is extracted with strong alkaline extract, and the glycogen content is measured using an anthrone method under strongly acidic conditions.

Reagents and Equipment Required but Not Provided.

Spectrophotometer, desk centrifuge, transferpettor, 1mL glass cuvette, mortar, concentrated sulfuric acid (H_2SO_4) and distilled water.

Procedure:

I. Sample extraction:

1. Cells or bacteria: Collect 5-10 million bacteria or cells into a centrifuge tube, discard the supernatant after centrifugation; add 0.75mL of extraction reagent to ultrasonically break bacteria or cells (power 20% or 200W, ultrasonic 3s, 10s interval, repeat 30 times)); Transfer to a 10mL tube, boil in a boiling water bath for 20min (close tightly to prevent water loss), shake the tube every 5min to fully mix; take out the

tube and cool, take up to 5mL with distilled water and mix.

2. Tissue: Weigh 0.1~0.2g sample and put it in a 10 mL tube, add 0.75 mL extraction solution, boil in boiling water bath for 20min (close tightly to prevent water loss), shake the test tube every 5min to fully mix. After all the tissue dissolved, take out the tube and cool down, then make up to 5mL with distilled water.

II. Determination procedure:

1. Preheat the spectrophotometer 30 min, adjust wavelength to 620 nm, set zero with distilled water.
2. Sampling table (add the following regents in EP tube)

Regent(μL)	Blank Tube (A1)	Standard Tube (A2)	Test Tube (A3)
Sample			250
Regent I		250	
distilled water	250		
Regent II	1000	1000	1000

Mix well, place in a boiling water bath for 10 minutes (close tightly to prevent water loss), cool, and read the absorbance of the blank tube, standard tube, and measurement tube at 620 nm, and record them as A1, A2, and A3. The blank tube and standard tube need only be tested once.

III. Calculation:

1. Sample weight

Sorbitol (mg/g fresh weight) = (Cs×V1)×(A3-A1)÷(A2-A1)÷(W×V1÷V2)÷1.11

= 0.225×(A3-A1)÷（A2-A1)÷W

2. Protein concentration

Sorbitol (mg/mg prot) =1.11×(Cs×V1)×(A3-A1) ÷(A2-A1) ÷(V1×Cpr) ÷1.11

=0.450×(A3-A1) ÷（A2-A1) ÷Cpr

3. The number of bacteria or cells:

Sorbitol（mg/10^4 cell）

=1.11×(Cs×V1)×(A3-A1)÷(A2-A1)÷(number of bacteria or cells×V1÷V2) ÷1.11

= 0.225×(A3-A1)÷（A2-A1)÷number of bacteria or cells

1.11: It is a constant that glucose content converted to glycogen content. That is, the color of 111 μg of glucose with anthrone reagent is equivalent to that of 100 μg of glycogen with anthrone reagent.

Cs: the concentration of standard, 0.05mg/mL

V1: sample volume, 0.25 mL;

V2: Total sample volume, 5 mL;

Cpr: sample protein concentration, mg/mL;

W: Sample weight, g

Note:

If A is greater than 0.76, dilute the sample with distilled water and multiply it by the corresponding dilution factor in the calculation formula.

Recent Produt Citations：

[1] Zheng J, Yu J, Jia M, et al. Indole enhances the survival of Pantoea ananatis YJ76 in face of starvation conditions[J]. Journal of basic microbiology, 2017, 57(7): 633-639.

[2] Xu L, Li Y, Yin L, et al. miR-125a-5p ameliorates hepatic glycolipid metabolism disorder in type 2 diabetes mellitus through targeting of STAT3[J]. Theranostics, 2018, 8(20): 5593.

[3] Ce Gu,Panpan Li,Wei Liu,et al. The role of insulin in transdifferentiated hepatocyte proliferation and function in serum-free medium. Journal of Cellular and Molecular Medicine. April 2019;(IF4.658)

References：

[1] Raunkjær K, Hvitved-Jacobsen T, Nielsen P H. Measurement of pools of protein, carbohydrate and lipid in domestic wastewater[J]. Water research, 1994, 28(2): 251-262.

[2] Carroll N V, Longley R W, Roe J H. The determination of glycogen in liver and muscle by use of anthrone reagent[J]. J biol Chem, 1956, 220(2): 583-593.

Related Products：

NA0695/NA0454 Plant Tissue Fructose Content Assay Kit
NA0688/NA0447 Cellulase(CL) Activity Assay Kit
NA0841/NA0599 Trehalose Content Assay Kit
NA0691/NA0450 Trehalase Activity Assay Kit
NA0690/NA0449 Sorbitol Content Assay Kit
NA0689/NA0448 Sorbitol Dehydrogenase(SDH) Activity Assay Kit
NA0851/NA0609 Reducing Sugar(RS) Content Assay Kit
NA0693/NA0452 Blood Glucose Content Assay Kit

Technical Specification:

The detection limit: 0.0016 mg/mL
The linear range: 0.003125-0.1 mg/mL