Plant Soluble Sugar Content Assay Kit

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

Detection instrument: Spectrophotometer

Cat No: BC0030

Size: 50T/48S

Components:

Reagent I: Powder×2. Storage at 2-8℃ and protect from light.

Reagent II: Liquid 12 mL×1. Storage at 2-8℃.

Standard: Powder×1, containing 10 mg of anhydrous glucose (loss on drying<0.2%). Storage at 2-8℃. Dissolve the standard with 1 mL of distilled water to generate a 10 mg/mL glucose standard solution, store at 2-8℃ for two weeks. Or dissolve the standard with saturated benzoic acid solution for a longer time.

Preparation of working solution: Add 5 mL of reagent II to one bottle of reagent I and use it after fully dissolving it.If the reagent is difficult to dissolve, it can be heated and stirred (the unused reagent can be stored at 2-8°C for one week).

Product Description:

Sugar is one of the important components of plant, also is the main material of metabolism and storage.

Anthrone colorimetric method can be used for the determination of soluble monosaccharides, oligosaccharides and polysaccharides. It has the advantages of high sensitivity, simple and quick, and suitable for the determination of trace samples.

Reagents and Equipment Required but Not Provided:

Spectrophotometer, water bath, 1 mL glass cuvette, transferpettor, concentrated sulfuric acid, mortar/homogenizer, distilled water.

Procedure:

I. Sample Extraction:

Suggested 0.1-0.2 g of sample with 1 mL of distilled water, fully grinding, boiling water bath for 10 minutes (cover tightly to prevent water loss). After cooling, centrifuge at 8000×g at room temperature for 10 minutes, then take the supernatant into 10 mL tube, add distilled water to 10 mL, mix thoroughly.

II. Determination procedure:

1. Preheat the spectrophotometer 30 minutes, adjust wavelength to 620 nm, set zero with distilled water.
2. Set the temperature of water bath to 95℃.
3. Standard working solution: Dilute the 10 mg/mL glucose standard solution to 0.2, 0.1, 0.05, 0.025, 0.0125, 0.00625 mg/mL with distilled water.
4. Add reagents with the following list (reaction in EP tube):

Reagent (μL)	Blank tube (B)	Test tube (T)	Standard tube (S)

Sample	-	200	-
Standard	-	-	200
Distilled water	400	200	200
Working solution	100	100	100
Concentrated sulfuric acid	1000	1000	1000

Mix thoroughly, put the reaction solution in 95℃ water bath for 10 minutes (cover tightly to prevent water loss), detect the absorbance after cooling to room temperature. Take 1 ml mixture into the cuvette, measure the absorbance at 620nm, record it as Ab, At, As, and calculate ΔA=At-Ab, ΔAs=As-Ab. (Blank tube and standard curve only need 1-2 tubes).

III. Calculation:

1. According to the concentration (x, mg/mL) of the standard tube and the absorbance ΔAs (y, ΔAs), establish a standard curve. According to the standard curve, bring ΔA (y, ΔA) into the formula to calculate the sample concentration (x, mg/mL).
2. Sample weight

   Soluble sugar content (mg/g weight) =x×V1÷(W×V1÷V2) =10×x ÷W
3. Protein concentration

   Soluble sugar content (mg/mg prot)＝x×V1÷(V1×Cpr)=x ÷Cpr

   V1: Sample volume, 0.2 mL;

   V2: Extraction volume, 10 mL;

   Cpr: Sample protein concentration, mg/mL;

   W: Sample weight, g.

Note:

1. Dilute the sample and measure again if ΔA is greater than light absorption value in linear range. When calculation, multiply the calculation formula by the corresponding dilution factor.
2. Due to the strong corrosiveness of concentrated sulfuric acid, please opera with caution.

Recent Product citations:

[1] Zhang D, Liu J, Zhang Y, Wang H, Wei S, Zhang X, Zhang D, Ma H, Ding Q, Ma L. Morphophysiological, proteomic and metabolomic analyses reveal cadmium tolerance mechanism in common wheat (Triticum aestivum L.). J Hazard Mater. 2023 Mar 5; 445:130499. doi: 10.1016/j.jhazmat. 2022.130499. Epub 2022 Nov 25. PMID: 36455318.

[2] Hou X, Mu L, Hu X, Guo S. Warming and microplastic pollution shape the carbon and nitrogen cycles of algae. J Hazard Mater. 2023 Apr 5; 447:130775. doi: 10.1016/j.jhazmat.2023.130775.

[3] Bai Y, Zhang Y, Wang Z, Pi Y, Zhao J, Wang S, Han D, Wang J. Amylopectin Partially Substituted by Cellulose in the Hindgut Was Beneficial to Short-Chain Fatty Acid Production and Probiotic Colonization. Microbiol Spectr. 2023 Jun 15;11(3): e0381522. doi: 10.1128/spectrum.03815-22. Epub 2023 Apr 10. PMID: 37036363; PMCID: PMC10269567.

[4] Dong N, Xue C, Yang Y, Chang Y, Wang Y, Guo H, Liu Y, Wang Y. Auxenochlorella pyrenoidosa extract supplementation replacing fetal bovine serum for Carassius auratus muscle cell culture under low-serum conditions. Food Res Int. 2023 Feb; 164:112438. doi: 10.1016/j.foodres.2022.112438. Epub 2022 Dec 31. PMID: 36738005.

[5] He W, Xie R, Wang Y, Chen Q, Wang H, Yang S, Luo Y, Zhang Y, Tang H, Gmitter FG, Wang X. Comparative transcriptomic analysis on compatible/incompatible grafts in citrus. Hortic Res. 2022 Jan 19;9: uhab072. doi: 10.1093/hr/uhab072. Epub ahead of print. PMID: 35043167; PMCID: PMC8931943

References：

[1] Buysse J A N, Merckx R. An improved colorimetric method to quantify sugar content of plant tissue[J]. Journal of Experimental Botany, 1993, 44(10): 1627-1629.

[2] Bodelón O G, Blanch M, Sanchez-Ballesta M T, et al. The effects of high CO2 levels on anthocyanin composition, antioxidant

Related products：

BC0330/BC0335	Trehalose Assay Kit
BC0340/BC0345	Glycogen Assay Kit
BC2530/BC2535	Sorbitol Dehydrogenase Activity Assay Kit

Technical Specifications：

Minimum Detection Limit：0.0007 mg/mL

Linear Range：0.00078-0.25 mg/mL