# Plant Soluble Sugar Content Assay Kit

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

**Detection instrument:** Spectrophotometer/Microplate Reader

**Cat No:** BC0035

**Size:** 100T/96S

**Components:**

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

**Reagent II:** Liquid 5 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 1.5 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 4℃ 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/microplate reader, water bath, centrifuge, micro glass cuvette/96 well flat-bottom plate, 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/microplate reader 30 minutes, adjust wavelength to 620 nm, the spectrophotometer 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 0.3, 0.2, 0.1, 0.05, 0.025, 0.0125 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 | - | 40 | - |
| Standard | - | - | 40 |
| Distilled water | 80 | 40 | 40 |
| Working solution | 20 | 20 | 20 |
| Concentrated sulfuric acid | 200 | 200 | 200 |

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. Transfer 200 μL to a micro cuvette or 96 well flat-bottom plate. Measure the absorption value at 620 nm. 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, 0.04 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] Du L, Huang X, Ding L, Wang Z, Tang D, Chen B, Ao L, Liu Y, Kang Z, Mao H. TaERF87 and TaAKS1 synergistically regulate TaP5CS1/TaP5CR1-mediated proline biosynthesis to enhance drought tolerance in wheat. New Phytol. 2023 Jan;237(1):232-250. doi: 10.1111/nph.18549. Epub 2022 Nov 15. PMID: 36264565.

[2] Wu Y, Xu X, Jiang X, Liu S, Lin J, Lin X, Zhang Y, Shi C, Zhao C, Yang J. Application of polysaccharide-rich solution derived from waste macroalgae Enteromorpha prolifera in cherry tomato preservation and utilizing post-extraction residue for crude bio-oil production. Food Chem. 2023 May 30; 409:135301. doi: 10.1016/j.foodchem.2022.135301. Epub 2022 Dec 24. PMID: 36587516.

[3] Gui Q, Yang Z, Chen C, Yang F, Wang S, Dong R. Identification and characterization of long noncoding RNAs involved in the aluminum stress response in Medicago truncatula via genome-wide analysis. Front Plant Sci. 2022 Sep 23; 13:1017869. doi: 10.3389/fpls.2022.1017869. PMID: 36212300; PMCID: PMC9541535.

[4] Gui Q, Yang Z, Chen C, Yang F, Wang S, Dong R. Identification and characterization of long noncoding RNAs involved in the aluminum stress response in Medicago truncatula via genome-wide analysis. Front Plant Sci. 2022 Sep 23; 13:1017869. doi: 10.3389/fpls.2022.1017869. PMID: 36212300; PMCID: PMC9541535.

[5] Ouyang N, Sun X, Tan Y, Sun Z, Yu D, Liu H, Liu C, Liu L, Jin L, Zhao B, Yuan D, Duan M. Senescence-Specific Expression of RAmy1A Accelerates Non-structural Carbohydrate Remobilization and Grain Filling in Rice (Oryza sativa L.). Front Plant Sci. 2021 Apr 27; 12:647574. doi: 10.3389/fpls.2021.647574. PMID: 33986763; PMCID: PMC8111089.

**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：**

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|---|---|
| BC0330/BC0335 | Trehalose Assay Kit |
| BC0340/BC0345 | Glycogen Assay Kit |
| BC2530/BC2535 | Sorbitol Dehydrogenase Activity Assay Kit |
| BC0230/BC0235 | Reducing Sugar Content Assay Kit |

**Technical Specifications：**

Minimum Detection Limit：0.0025 mg/mL

Linear Range：0.003125-0.4 mg/mL



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