Plant Sucrose Content Assay Kit

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

Operation Equipment: Spectrophotometer/microplate reader

Catalog Number: NA0453

Size: 100T/96S

Components:

Extract: Liquid 100 mL ×1. Storage at 4℃.

Reagent I: Powder 10 mg ×1. Store at 4℃. Add 1 mL of distilled water before use. Mix thoroughly. Dilute 10 times with distilled water for standby, and the final concentration is 1 mg/mL;

Reagent II: Liquid 2 mL×1. Storage at 4℃.

Reagent III: Liquid 20 mL×1. Storage at 4℃.

Reagent IV: Liquid 5 mL×1. Storage at 4℃.

Reagent V: Powder 0.5 g×1 bottle. Store at RT.

Product Description

Sucrose is the main product of plant photosynthesis. It is also the main form of transportation and storage of sugar. Therefore, the determination of sucrose content is of great significance to plant sugar metabolism. In addition, sucrose content is one of the important quality control indexes of beverage, honey, preserved fruit, candy and dairy products.

Firstly, alkali is used to heat the sample to destroy the reducing sugar. Glucose and fructose are produced by hydrolysis of sucrose in acid condition. Fructose further reacts with resorcinol to form a colored substance with a characteristic absorption peak at 480 nm.

Reagents and Equipment Required but Not Provided.

Spectrophotometer/microplate reader, water-bath, micro glass cuvette/96 well flat-bottom plate, pipette, distilled water.

Procedure

I. Sample preparation:

Weigh 0.1 g sample, grind it at room temperature, and then add 0.5 mL Extract. Transfer to centrifuge tube after proper grinding. Place in 80℃ water bath for 10 min. Oscillate 3-5 times. Cool it. Centrifuge at 4000 g for 10 min at 25℃. Take the supernatant. Add 2 mg Reagent V. Decolorization at 80℃ for 30 min. Then add 0.5 mL of Extract. Centrifuge at 4000 g for 10 min at 25℃. Take the supernatant for test.

II. Determination Procedure

1. Preheat the spectrophotometer/ microplate reader for more than 30 minutes, adjust the wavelength to 480 nm and set the counter to zero with distilled water.

2. Operation table: (add all reagents in 1.5 mL EP tube as follows)

Reagent Name (μL)	Blank tube (A1)	Standard tube (A2)	Test tube (A3)
Sample			25
Reagent I		25	
Distilled water	25		
Reagent II	15	15	15
Mix thoroughly. Boil at 100℃ for about 5 min. (Cover tightly to prevent water loss)			
Reagent III	175	175	175
Reagent IV	50	50	50
Mix thoroughly. React in boiling water for 10 min. After cooling, take 200 μL to micro glass cuvette/96 well flat-bottom plate to measure the absorption value A at 480 nm. Record as A1, A2, A3.			

III. Calculation:

1. Calculate by protein content

Sucrose content (mg/mg prot)= $(C_S \times V1) \times (A3-A1) \div (A2-A1) \div (V1 \times Cpr) = (A3-A1) \div (A2-A1) \div Cpr$

2. Calculate by sample weight

Sucrose content (mg/g fresh weight)=$(C_S \times V1) \times (A3-A1) \div (A2-A1) \div (W \times V1 \div V2) = (A3-A1) \div (A2-A1) \div W$

C_S: Concentration of standard tube, 1 mg/mL;

V1: Volume of sample, 0.025 mL;

V2: Volume of extract, 1 mL;

W: Sample weight, g;

Cpr: Concentration of sample protein, mg/mL.

Note：

When the absorbance value of the sample is greater than 1.4, it is recommended that the sample be diluted with the extract for determination.

References：

[1] Fils-Lycaon B, Julianus P, Chillet M, et al. Acid invertase as a serious candidate to control the balance sucrose versus (glucose+ fructose) of banana fruit during ripening[J]. Scientia horticulturae, 2011, 129(2): 197-206.

Technical Specifications：

The detection limit: 0.0316 mg/mL

The linear range: 0.039-12 mg/mL