

Plant Tissue Fructose Content Assay Kit

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

Operation Equipment: Spectrophotometer

Catalog Number: AK0229

Size:50T/48S

Components:

Extract reagent: 110 mL×1, storage at 4°C .

Reagent 1: Powder×1, stored at 4°C; 10 mg fructose is dissolved in 1 mL of distilled water before use, and then diluted to 4 mg/mL fructose standard solution with distilled water.

Reagent 2: 40 mL×1, storage at 4°C .

Reagent 3: 10mL×1, storage at 4°C .

Reagent 4: powder 0.5 g×1, storage at RT.

Product Description:

Fructose is one kind of ketohexose and an isomeride of glucose, which exists widely in the pulp of fruits and honey with free state. It can be combined with glucose to form sucrose. Fructose is the sweetest monosaccharide and is used widely in the production of food, medicine and health care products.

In acidic conditions, fructose reacts with resorcinol to form colored substances which has characteristic absorption peaks at 480 nm.

Reagents and Equipments Required but Not Provided:

Spectrophotometer, water bath, adjustable transferpette, 1 mL glass cuvette, mortar/homogenizer, distilled water.

Sample preparation:

0.1 g sample at RT is added 1 mL Extract reagent, grind and transfer to centrifuge tube with cap quickly. Keep cap tightly and put it in 80°C water bath for 10 min, shake 3-5 times, centrifuge at 4000 g at RT for 10 min after cooling. The supernatant is added about 2 mg of Reagent 4, keep cap tightly and decolorize at 80°C for 30 min, add 1 mL Extract reagent, centrifuge at 4000 g for 10 min at RT, supernatant is used for test.

Procedure:

1. Preheat spectrophotometer for 30 min, adjust the wavelength to 480 nm and set the counter to zero with distilled water.
2. Add these reagent to a 1.5 mL EP tube:

Reagent name (μL)	Blank tube (A2)	Standard tube (A1)	Test tube (A3)
Sample			100
Reagent 1		100	

Distilled water	100		
Reagent 2	700	700	700
Reagent 3	200	200	200

Mix thoroughly, keep cap tightly and react 10 min at 80°C water bath, detect absorbance at 480 nm after cooling, name A2, A1, A3, calculate $\Delta A(\text{standard}) = \Delta A(S) = A1 - A2$, $\Delta A(\text{test}) = \Delta A(T) = A3 - A2$.

Calculation:

1. Protein concentration:

$$\text{Fructose (mg/mg prot)} = C \times \Delta A(T) \div \Delta A(S) \times V_e \div (C_{pr} \times V_e) = 4 \times \Delta A(T) \div \Delta A(S) \div C_{pr}$$

2. Sample weight:

$$\text{Fructose (mg/g fresh weight)} = C \times \Delta A(T) \div \Delta A(S) \times V_e \div W = 8 \times \Delta A(T) \div \Delta A(S) \div W$$

C: Standard concentration, 4 mg/ mL;

C_{pr}: Sample concentration (mg/mL);

W: Sample weight(g);

V_e: Extraction volume, 2 mL.

Note:

If the OD value of the measured tube is greater than 1.3, dilute the sample with the Extract reagent.

References:

[1] Varandas S, Teixeira M J, Marques J C, et al. Glucose and fructose levels on grape skin: interference in Lobesia botrana behaviour[J]. Analytica chimica acta, 2004, 513(1): 351-355.

Technical Specifications:

The detection limit: 0.0141 mg/mL

Linear range: 0.25-25 mg/mL