Solid-β-Glucosidase(S-β-GC) Activity Assay Kit

Product Code: 67045

Soil β-Glucosidase (S-β-GC) Activity Assay Kit - Microplate Method

Product Code

67045

Product Introduction

Soil β-glucosidase (S-β-GC) catalyzes the hydrolysis of glycosidic bonds between aryl or hydrocarbon groups and glycosyl groups to produce glucose. It is an important component of the cellulolytic enzyme system and plays important physiological roles in soil microbial carbohydrate metabolism.

S-β-GC catalyzes p-nitrophenyl-β-D-glucopyranoside to produce p-nitrophenol, which has characteristic absorbance at 400 nm.

Package Contents

Size	Item Code	Component	Quantity
100T	67045.1	Reagent I	1 bottle
100T	67045.2	Reagent II	1 bottle
100T	67045.3	Reagent III	1 bottle
100T	67045.m	Instruction Manual	1 copy

Toluene must be prepared separately.

Quality Standards and Safety Information

Raw Material or Packaging Name	Quality Standard	Main Toxicity
Reagent I	--	--
Reagent II	--	--
Reagent III	--	--

Transportation and Storage

Transportation	Transport with ice packs.
Storage	Store Reagent I at -20°C. Store the remaining components at 2-8°C, protected from light.
Shelf Life	180 days.

Instructions

1. Sample Processing

Air-dry fresh soil samples naturally, or oven-dry at 37°C. Pass the dried samples through a 30-50 mesh sieve.

2. Assay Procedure

1. Preheat the microplate reader for at least 30 min and set the wavelength to 400 nm.

2. Before use, add 10 mL double-distilled water to Reagent I. Store any unused portion at -20°C.
3. Add samples and reagents according to the table below. Set one control tube for each measurement tube.

Component or Step	Assay Tube	Control Tube
Air-dried soil sample (g)	0.02	0.02
Toluene (μL)	10	10
Mixing step	Shake and mix well at room temperature for 15 min	Shake and mix well at 90°C for 15 min
Reagent I (μL)	130	-
Distilled water (μL)	-	130
Reagent II (μL)	160	160

Mix well, incubate in a 37°C water bath for 1 h, then immediately boil in a boiling water bath for 5 min. Cap tightly to prevent water loss. Cool under running water.

Centrifuge at 10000g and 25°C for 10 min. Collect the supernatant and add the following reagents to a 96-well plate.

Component	Assay Tube	Control Tube
Supernatant (μL)	70	70
Reagent III (μL)	130	130

Mix thoroughly and let stand at room temperature for 2 min. Measure the absorbance at 400 nm as A, then calculate ΔA.

$\Delta A = A_{measurement} - A_{control}$

3. S-β-GC Activity Calculation

The regression equation determined under standard conditions is:

$y = 0.0016x - 0.0027$

In this equation, x is the standard concentration (μmol/L), and y is the absorbance value.

Unit definition: The production of 1 μmol p-nitrophenol per day by 1 g soil sample is defined as one enzyme activity unit.

S-β-GC activity (μmol/d/g) = $(\Delta A + 0.0027) \div 0.0016 \times V_{total\ reaction} \div W \div T = 225 \times (\Delta A + 0.0027)$

- T: reaction time, 1 h = 1/24 d
- $V_{total\ reaction}$: total volume of the reaction system, 3×10^{-4}L
- W: sample mass, 0.02 g

Precautions

1. This 100T kit can test 48 samples.