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

Product Code: 67044

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

Product Information

Product Code	67044
Product Size	100T

Product Introduction

S-β-GC catalyzes the hydrolysis of glycosidic bonds between aryl or alkyl groups and glycosyl radicals to produce glucose. It is an important component of the cellulolytic enzyme system.

In soil microorganisms, S-β-GC has important physiological functions in carbohydrate metabolism. S-β-GC catalyzes p-nitrophenyl-β-D-glucopyranoside to produce p-nitrophenol, which has characteristic light absorption at 400 nm.

Package Contents

Code	Component	Quantity
67044.1	Reagent I	1 bottle
67044.2	Reagent II	1 bottle
67044.3	Reagent III	1 bottle
67044.m	Manual	1 copy

Toluene must be prepared by the user.

Quality and Safety Information

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

Shipping and Storage

Item	Condition
Shipping	Shipped with ice packs.
Storage	Store Reagent I at -20°C. Store the remaining components at 2-8°C.
Shelf Life	180 days.

Instructions

1. Sample Processing

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

2. Assay Procedure

1. Preheat the spectrophotometer or 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.

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

1. 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.
2. Cool under running water.
3. Centrifuge at 10000 g and 25°C for 10 min, then collect the supernatant.
4. Add the following reagents in an EP tube or 96-well plate.

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

Mix thoroughly and let stand at room temperature for 2 min. Measure the absorbance at 400 nm.

Calculate ΔA as follows: $\Delta A = A_{measurement} - A_{control}$. Set one control tube for each measurement tube.

S-β-GC Activity Calculation

Micro Quartz Cuvette Measurement

The regression equation determined under standard conditions is:

$y = 0.0032x - 0.0027$

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

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

S-β-GC activity (μmol/d/g) = $(\Delta A + 0.0027) \div 0.0032 \times V_{total\ reaction} \div W \div T = 112.5 \times (\Delta A + 0.0027)$

96-Well Plate Measurement

The regression equation determined under standard conditions is:

$y = 0.0016x - 0.0027$

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

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

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

Calculation Parameters

Parameter	Value

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.