SunLong Biotech Co.,LTD
Tel: 0086-571-56623320 Fax:0086-571-56623318
E-mail:sales@sunlongbiotech.com
www.sunlongbiotech.com

Soil β-Xylosidase (S-β-XYS) Activity Assay Kit

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

Operation Equipment: Spectrophotometer/ Microplate Reader

Catalog Number: AK0121

Size:100T/48S

Components:

Reagent I: Methylbenzene 2 mL×1, Storage at 4℃ (**self-provided reagent**).

Reagent Ⅱ: Liquid 10 mL×1. Storage at 4℃ .

Reagent Ⅲ: Powder×2. Storage at -20℃ . Add 5 mL of distilled water to each bottle before use. The left reagent store at -20℃ .

Reagent IV: Liquid 30 mL×1. Storage at 4℃ .

Standard: Liquid 1 mL×1. Storage at 4℃ . 5 mmol/L Phenol standard solution. Dilute the standard solution for 50 times to 100 μmol/L with the Reagent I before use.

Product Description:

Soil β-xylosidase (S-β-XYS) exists in organisms such as plants, bacteria and fungi, which is a key enzyme that catalyzes the degradation of xylan hemicellulose. The product xylose can be used as a carbon source in microbial fermentation. In addition, β-XYS can also be used as a biological bleaching agent in the paper industry, which is more environment-friendly than traditional bleaching methods and has a widespread application value.

S-β-XYS can catalyze the p-nitrophenyl beta-xylopyranoside to p-nitrophenol. The product has characteristic of absorption at 400 nm. In this kit, the S-β-XYS activity is quantified by measuring the increase in the color development at 400 nm.

Reagents and Equipment Required but Not Provided:

Spectrophotometer or microplate reader, water-bath, desk centrifuge, transferpettor, micro glass cuvette/96 well flat-bottom plate, analytical balance, mortar, 30-50 mesh sieve, **methylbenzene**, ice and distilled water.

Procedure:

I. Preparation of samples

Fresh soil samples are naturally air-dried or oven-dried at 37℃, pass through a 30-50 mesh sieve.

II. Determination procedure:

1. Preheat microplate reader or spectrophotometer for 30 minutes, adjust the wavelength to 400 nm, set zero with distilled water.
2. Add reagents with the following list:

Reagent	Test tube (T)	Contrast Tube (C)	Standard tube (S)	Blank tube (B)
Air-dried soil (g)	0.02	0.02	-	-
Reagent I (μL)	5	5	-	-
The soil samples are all wetted by oscillating mixing, and store at 37℃ for 15 minutes.				
Reagent Ⅱ (μL)	100	100	-	-
Reagent III	80	-	-	-
Mix thoroughly and incubate the reaction for 1 hour at 50 ℃ water bath, then take the reaction solution in a boiling water bath for 5 minutes immediately (tightly close to prevent moisture loss), flowing water to cool.				
Reagent III (μL)	-	80	-	-
Mix thoroughly, centrifuge at 10000 rpm for 10 minutes at 25℃ and take the supernatant.				
Supernatant (μL)	100	100	-	-
Standard solution (μL)	-	-	100	-
Distilled water (μL)	-	-	-	100
Reagent IV (μL)	200	200	200	200

Mix thoroughly and stand at room temperature for 2 minutes, centrifuge at 10000 ×g for 5 minutes. Take the supernatant and detect the absorbance of each tube at 400 nm, noted as A_T, A_C, A_S and A_B. Calculate $\Delta A_T = A_T - A_C$, $\Delta A_S = A_S - A_B$. Each test tube should be provided with one contrast tube.

III. S-NAG activity calculation:

Unit definition: One unit of enzyme activity is defined as the amount of enzyme that catalyzes the generation 1μmol ofp-nitrophenol every gram of soil sample in the reaction system per day.

S-β-XYS (U/g soil sample)$=\Delta A_T \div (\Delta A_S \div C) \times Vrv \div W \div T = 0.444 \times \Delta A_T \div \Delta A_S \div W$

C: Concentration of standard solution, 100 μmol/L;

Vrv: Total volume in catalyze system, 1.85×10^{-4} L;

W: Soil sample weight, g;

T: React time, 1 hour = 1/24 day;

Experimental Examples:

1. Take two tubes of 0.02 g soil, which are the measuring tube and the control tube. Follow the measuring steps and mark them as At and Ac. Calculate ΔAt=At-Ac=0.297-0. 128=0. 169, ΔAs=As-Ab=0.395- 0.047=0.348, calculate the enzyme activity:

S-NAG activity (U/g soil) =0.444×ΔAt÷ΔAs÷W= 0.444× 0. 169÷0.348÷0.02=10.781 U/g soil.

2. Take two tubes of 0.02 g forest soil samples, which are the measuring tube and the control tube. Follow the measuring steps and mark them as At and Ac. Calculate ΔAt=A t-Ac==0.251-0.089=0. 162, ΔAs=As- Ab=0.395-0.047=0.348, calculate enzyme activity:

S-NAG activity (U/g soil) =0.444×ΔAt÷ΔAs÷W=0.444× 0. 162÷0.348÷0.02=10.344 U/g soil

Related Products:

AK0155/AK0154 Soil α-glucosidase(S-α-GC) Activity Assay Kit

AK0574/AK0573 Soil Saccharase(S-SC) Activity Assay Kit