Soil Lignin Peroxidase (S-Lip) Activity Assay Kit

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

Operation Equipment: Spectrophotometer

Catalog Number: NA0728

Size:50T/24S

Components:

Reagent I: 40 mL×1, stored at 4℃.

Reagent II: Powder×1. storage at 4℃ and protected from light. Before use, add 5 mL of ethanol into bottle, fully dissolve it for standby.

Reagent III: 10 μL×1. storage at 4℃. Before use, add 5 mL of distilled water into bottle, fully dissolve it for standby.

Product Description

Lignin peroxidase (EC1.11.1.14) is a kind of peroxidase containing heme, which belongs to lignin degradation enzyme system. It has great application potential in lignin biodegradation, papermaking industry, textile industry, aromatics transformation and degradation, and environmental pollution control. Resveratrol is oxidized by lignin peroxidase to form resveraldehyde, which has a characteristic absorption peak at 310 nm.

Reagents and Equipment Required but Not Provided.

Scales, low temperature centrifuge, ultraviolet spectrophotometer, 1 mL quartz cuvette, oscillating instrument, toluene, ethanol, 30-50 mesh sieve (or smaller), distilled water.

Procedure

I. Sample processing:

The fresh soil samples are dried naturally and screened with 30-50 mesh sieve.

II. Determination steps:

1. Preheat ultraviolet spectrophotometer for 30 minutes, adjust the wavelength to 310 nm, set zero with the distilled water.
2. The Reagent II is diluted 10 times by ethanol for standby. Prepare as much as you need. Add reagents in turn according to the following table:

Reagent name	Test tube (T)	Contrast tube (C)
Soil sample (g)	0.1	0.1
Toluene (μL)	50	50
Allow to stand for 15 minutes at room temperature.		
Reagent I (μL)	800	800
Reagent II (μL)	100	-

Reagent III (μL)	50	-
After reaction in water bath at 30℃ for 1 hour, boil immediately for 5 minutes.		
Reagent II (μL)	-	100
Reagent III (μL)	-	50
Centrifugate at 12000 ×g for 10 minutes at room temperature, take supernatant and measure the absorbance value at 310 nm, record it as A_T and A_C respectively, calculate $\Delta A = A_T - A_C$.		

III. Calculate activity of S-LiP

Unit definition: One unit of enzyme activity is defined as the amount of enzyme catalyzes the generation of 1 nmol of resveratrol in the reaction system per minute every g soil sample.

S-LiP (U/g weight) = $\Delta A \div (\varepsilon \times d) \times 10^9 \times V_{RT} \div W \div T = 1.792 \times \Delta A \div W$

ε: Molar extinction coefficient of resveratrol: 9300 L/mol/cm;

d: Light diameter of cuvette, 1 cm;

V_{RT}: The total volume of reaction, 1 mL = 1×10^{-3} L;

W: Mass of soil sample, g;

T: Reaction time, 60 minutes;

10^9: Unit conversion coefficient, 1 mol = 10^9 nmol.

Experimental example:

1. Take 2 pieces 0.1g grass to 1.5ml EP tube, one is test tube and the other is contract tube, operate as the procedure, $\Delta A = A_T - A_C = 1.296 - 0.963 = 0.333$, calculate content by sample weight: S-Lip Activity（U/g weight)= $1.792 \times \Delta A \div W = 1.792 \times 0.333 \div 0.1 = 5.967$ U/g weight.
2. Take 2 pieces 0.1g soil to 1.5ml EP tube, one is test tube and the other is contract tube, operate as the procedure, $\Delta A = A_T - A_C = 1.393 - 1.012 = 0.38$, calculate content by sample weight: S-Lip Activity（U/g weight)= $1.792 \times \Delta A \div W = 1.792 \times 0.381 \div 0.1 = 6.828$ U/g weight.

Related products：

NA0862/NA0619 Soil Polyphenoloxidase Activity Assay Kit

NA0861/NA0618 Soil Urease(UE) Activity Assay Kit

NA0850/NA0608 Soil Saccharase(S-SC) Activity Assay Kit