

Soil manganese peroxidase (S-Mnp) Activity Assay Kit

Note: It is necessary to predict 2-3 large difference samples before the formal determination

Operation Equipment: Spectrophotometer

Catalog Number: BC1950

Size: 50T/24S

Components:

Reagent I: Liquid 3 mL×1, storage at 2-8°C . Toluene(self-provided).

Reagent II: Liquid 40 mL×1, storage at 2-8°C.

Reagent III: Powder×1, storage at 2-8°C. Before use, add 3.5 mL distilled water to fully dissolve it. The unused reagent can be stored at 2-8°C for 3 months. Do not place it at - 20 °C.

Reagent IV: Liquid 12 mL×1, storage at 2-8°C.

Reagent V: Liquid 6 mL×1, storage at 2-8°C.

Product Description:

Soil manganese peroxidase (EC1.11.1.13) is a kind of peroxidase containing met Hb. It widely exists in white rot basidiomycetes, belongs to the lignin degrading enzyme system, and is the key enzyme for initial degradation of lignin. It can effectively degrade lignin and chlorides, azides, DTTs, polycyclic hydrocarbons, etc. that are difficult to degrade in wastewater and soil, It has more research and application in agricultural waste treatment, biodegradation, biobleaching, dye decolorization and other fields.

Manganese peroxidase oxidizes guaiacol to tetra-o-methoxycophenol in the presence of Mn²⁺, with a characteristic absorption peak at 465 nm.

Reagents and Equipments Required but Not Provided:

Spectrophotometer, centrifuge, water-bath/constant temperature incubator, transferpeltor, 1 mL glass cuvette, oscillator, toluene, 30-50 mesh sieve and distilled water.

Procedure:

I. Sample preparation:

Fresh soil samples are naturally air-dried or oven to dry at 37°C, then sieved by 30 ~ 50 mesh sieve.

II. Determination procedure:

1. Preheat Spectrophotometer for 30 minutes, adjust the wavelength to 465 nm, set zero with distilled water.

2. Add reagents with the following list (add the following reagents into the EP tube in turn):

Reagent	Test Tube (T)	Contrast Tube (C)
soil sample (g)	0.1	0.1
Reagent I (μL)	50	50
Thoroughly shake and mix, placed at 25 °C for 25min		

Reagent II (μL)	600	700
Reagent III (μL)	100	-
Reagent IV (μL)	200	200
Reagent V (μL)	100	100

Fully mix, shake and react at 30 °C for 3h, centrifuge at 11000g and 4 °C for 10min (if it is not clarified, take out the supernatant and centrifuge again), take out the supernatant and put it into 1mL glass cuvette, measure the light absorption value at 465nm, record it as A_T and A_C , $\Delta A = A_T - A_C$.

Note: Each test tube shall be equipped with a contrast tube.

III. S-Mnp activity calculation:

Unit definition: One unit of enzyme activity is defined as the amount of enzyme catalyzes the production of 1 nmol of guaiacol in the reaction system per hours every gram soil sample.

$$S\text{-Mnp (U/g)} = \Delta A \div (\epsilon \times d) \times V_{rv} \times 10^9 \div W \div T = 28.926 \times \Delta A \div W$$

ϵ : Molar extinction coefficient of hydrogen peroxide, 12100L/mol/cm;

d: Cuvette aperture, 1 cm;

V_{rv} : Total volume in catalyze system, 1.05×10^{-3} L;

W: Soil sample weight, g;

T: Reaction time, 3 hours;

10^9 : 1 mol = 10^9 nmol.

Related Products:

BC0110/BC0115 Soil Catalase (S-CAT) Activity Assay Kit

BC0890/BC0895 Soil Peroxidase(S-POD) Assay Kit

BC1960/BC1965 Soil Laccase Activity Assay Kit

BC1970/BC1975 Soil lignin peroxidase(S-Lip) Activity Assay