

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/microplate reader

Catalog Number: BC1955

Size: 100T/48S

Components:

Reagent I: Liquid 5 mL×1, storage at 2-8°C . Toluene(self-provided).

Reagent II: Liquid 30 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 10 mL×1, storage at 2-8°C.

Reagent V: Liquid 5 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/Microplate Reader, Centrifuge, Water-bath/Constant Temperature Incubator, Transferpettor, Micro Glass Cuvette/96 Well Flat-bottom Plate, 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/microplate reader 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)	0.08	0.08
Reagent I (μL)	40	40

Thoroughly shake and mix, placed at 25 °C for 15min		
Reagent II (μL)	240	280
Reagent III (μL)	40	-
Reagent IV (μL)	80	80
Reagent V (μL)	40	40

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 micro glass cuvette/96 well flat-bottom plate, 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:

A. micro quartz cuvette

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.

$$S\text{-Mnp (U/g)} = \Delta A \div (\epsilon \times d) \times V_{rv} \times 10^9 \div W \div T = 12.121 \times \Delta A \div W$$

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

d : Cuvette aperture, 1 cm;

V_{rv} : Total volume in catalyze system, 0.44×10^{-3} L;

W : Soil sample weight, g;

T : Reaction time, 3 hours;

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

B. 96 well UV flat-bottom plate

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.

$$T\text{-Mnp (U/g)} = \Delta A \div (\epsilon \times d) \times V_{rv} \times 10^9 \div W \div T = 20.202 \times \Delta A \div W$$

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

d : Cuvette aperture, 0.6 cm;

V_{rv} : Total volume in catalyze system, 0.44×10^{-3} L;

W : Soil sample weight, g;

T : Reaction time, 3 hours;

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

Related Products:

BC0110/BC0115 Soil Polyphenoloxidase 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 Kit