Soil Total Phenolics (TP) Content Assay Kit (Micro Method)

P1521998

Storage 2~8℃, Store in the dark (For detailed storage conditions, please refer to the Kit Components).

Shipping Shipped with ice packs, Avoid freezing, Please store under the specified storage conditions immediately upon receipt.

Introduction:

The phenolic substances in the soil are mainly released by plants and produced by the decomposition of plant residues and fallen leaves. Due to the difficulty in their degradation, the accumulation of phenolic substances in the soil can affect the carbon-nitrogen transformation and greenhouse gas emissions of the soil, thereby causing a decline in soil fertility. Back. In addition, phenolic substances also have significant effects on the mineralization of soil organic matter and the nutrient cycle. This kit uses the Folin phenol method to determine the content of phenolic substances in the soil. Under alkaline conditions, phenolic substances will reduce tungsten molybdate, generating a blue compound. There is a characteristic absorption peak at 750 nm. By detecting the absorbance value at 750 nm, the content of phenolic substances in the soil can be calculated.

Kit Contents:

S1521998	Components	Appearance	48T	96T	Storage	Quantity Per Test
S1521998A	Extraction Solution	Colorless clear liquid	60 mL	100 mL	2-8℃. Store in the dark	1 mL for 1 reaction
S1521998B	Reagent 1	Yellow liquid	7 mL	14 mL	2-8℃. Store in the dark	125 μL for 1 reaction
S1521998C	Reagent 2	Colorless clear liquid	1.5 mL	2.5 mL	2-8℃	25 μL for 1 reaction
S1521998D	Standard Sample	White powder	10 mg	10 mg	2-8℃	As needed

Required instruments and supplies:

Enzyme analyzer, 96-well plate, adjustable pipette, balance, centrifuge.

Determination of total phenolic content in soil:

It is recommended to select 2 samples for prediction before the formal experiment. This will help us understand the situation of this batch of samples, familiarize ourselves with the experimental process, and avoid waste of experimental samples and reagents!

1. Sample preparation:

Take approximately 0.5 g of soil sample, add 1 mL of extraction solution, and shake at room temperature for 30 minutes. Centrifuge at 25℃ and 8000 rpm for 10 minutes, then take the supernatant for testing.

2. Machine testing:

(1) The spectrophotometer was preheated for 30 minutes, the wavelength was adjusted to 750 nm, and distilled water was used for zero adjustment.

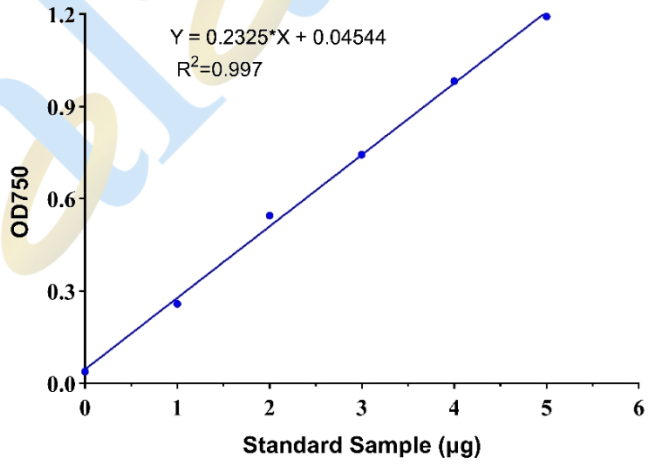
(2) Add successively in the 96-well plate:

Reagent Name (μL)	Testing tube	Blank tube (used only once)
Sample	50	-
Distilled water	-	50
Reagent 1	125	125
Reagent 2	25	25

Mix well, let it stand at room temperature (25℃) for 30 minutes. Transfer all the liquid to the 96-well plate. Measure the absorbance at 750 nm as A, and calculate △A = $A_{(measured)} - A_{(blank)}$

Result Calculation:

1. Standard curve: Y = 0.2325*X + 0.04544, where X represents the mass of the standard sample (in μg) and Y represents ΔA.



2. Total phenol content in soil (μg/g soil) = (ΔA - 0.04544) ÷ 0.2325 ÷ (V1 ÷ V × W) × D
   V---Volume of the extracted liquid, 1 mL;
   D---Dilution factor, 1 for undiluted sample;
   V1---Volume of the sample in the reaction, 0.05 mL;
   W---Mass of soil sample, g.

Appendix Procedure for preparing the standard curve:

1. Prepare standard stock solution (10 mg/mL): Add 1 mL distilled water to the standard powder vial, sonicate until fully dissolved.
2. Dilute the mother solution with distilled water to prepare five concentration gradients of standard samples: 0, 0.02, 0.04, 0.06, 0.08, 0.1 mg/mL. The concentration of the standard substance can also be adjusted according to the actual sample.
   Operation Table (Take 50 μL of the standard solution stock solution, add 4.95 mL of distilled water, and mix well to obtain a 0.1 mg/mL standard dilution solution for later use):

	①	②	③	④	⑤	⑥
Standard concentration (mg/mL)	0	0.02	0.04	0.06	0.08	0.1
Standard diluent (μL)	0	80	160	240	320	400
Distilled water (μL)	400	320	240	160	80	0

3. Operate following the pipetting protocol for test tubes above, then plot the standard curve using recorded absorbance values.