Soil Hydrargyrum (S-Hg) Content Assay Kit

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

Operation Equipment: Spectrophotometer

Cat No: BC2870

Size： 50T/48S

Components:

Reagent I: Powder×2, storage at 4℃. Dissolve with 1mL of distilled water with one bottle. The left reagent can be stored at 4°C for one week.

Reagent II: 25ml×1. Storage at 4℃.

Reagent III: 15ml×1. Storage at 4℃.

Reagent IV: Powder×1. Storage at 4℃. Dissolve with 5mL of distilled water. The left reagent can be stored at 4°C for two weeks.

Reagent V: Powder×2. Storage at 4℃. Add 25mL of chloroform (**self-provided reagent**) with one bottle to fully dissolve. The left reagent can be stored at 4°C for one week.

Reagent VI: 30ml×1. Storage at 4℃.

Standard: 1ml×1, 4000 nmol/mL Hg^{2+}. Storage at 4℃. Dilute standard 400 times to prepare 10 nmol/mL with distilled water. Dilute the standard before use.

Product Description:

Soil hydrargyrum pollution can be transmitted and enriched through the food chain, posing a threat to plant, animal, and human health. Mine development, industrial processing, agricultural production, and domestic waste often cause soil mercury pollution, so evaluating and preventing soil heavy metal pollution often requires measuring soil mercury content.

After the soil digested, hydrargyrum exists in the form of Hg^{2+}; Hg^{2+} can form an orange complex with dithizone, and after dissolving in chloroform, measuring the absorbance at 490nm, the S-Hg content can be calculated.

Reagents and Equipment Required but Not Provided:

Spectrophotometer, water bath, centrifuge, 1ml glass cuvette, adjustable pipette, 30-50 mesh sieve (can be smaller), **concentrated sulfuric acid (H_2SO_4)**, **concentrated nitric acid (HNO_3)**, **chloroform (CCl_3)** and distilled water.

Procedure:

I. Sample preparation:

Fresh soil samples are naturally air-dried or air-dried at 37℃ and passed through a 30-50 mesh sieve.

II. Determination

1. Preheat the spectrophotometer 30min, adjust wavelength to 490 nm, set zero with **chloroform.**
2. Add reagents with the following list:

Reagent name	Test tube (T)	Standard tube (S)	Blank tube (B)

Air-dried soil （g）	0.1		
Standard solution（μL）		1000	
distilled water（μL）	1000		1000
H_2SO_4（μL）	40	40	40
HNO_3（μL）	10	10	10
Reagent I（μL）	32	32	32
Reagent II（μL）	400	60	60
Seal the lid, mix thoroughly, and shake for 2min. Digest in a 95℃-water bath for 2 hours and cool to about 40℃.			
Reagent III（μL）	200	200	200
Shake until the solution in the EP tube is clear and transparent. Leave the lid open for 10 minutes. Shake several times during the period to allow the gas in it to overflow.			
Reagent IV（μL）	80	80	80
Thoroughly mix and centrifuge at 10000 rpm for 10 min at room temperature. Pipette the entire supernatant into a 5mL EP tube and then add			
Reagent V（μL）	1000	1000	1000
After closing the lid tightly, shake it for 2min, let it stand for 10min, and suck the lower organic phase into a 1.5mL EP tube.			
Reagent VI（μL）	400	400	400

Shake sufficiently to make the organic phase green or light green. After standing and layering, absorb the lower organic phase and measure its absorbance at a wavelength of 490nm, and record it as At, As, Ab. Calculate ΔAt = At -Ab, ΔAs = As-Ab

III. S-NR activity Calculation

Hg^{2+}（nmol/g）= Cs× ΔAt ÷ ΔAs× Vs ÷W=10×ΔAt÷ΔAs÷W。

Cs：standard concentration，10 nmol/mL；

V_S：standard volume,1mL;

W：the weight of air-dried soil;

Note:

1.1000 μg/L Cu^{2+}, 20 μg/L Ag^{+}, 10μg/L Au^{+}, and 5 μg/L Pt^{2+} in the soil sample will not interfere with the determination.

2. Pay attention to safety during the measurement, wear masks and gloves to avoid inhalation or contamination of toxic and dangerous reagents.

3. When the absorbance is greater than 1, it is recommended to measure after dilution.

4. After adding reagent II, the sample tube is pink or purple black (the color may be brown due to soil influence). If the upper solution of the sample tube becomes transparent during the digestion process, reagent II can be added appropriately to keep the sample tube pink or black-purple.

5. If the added reagent III is not enough to make the sample tube clear, you can increase the amount of reagent III to make the sample tube clear.

6. If the lower organic phase still shows a clear green color after adding reagent VI, you can increase the amount of Reagent VI to make the lower organic phase lighter.

Related Products:

BC2880/BC2885	Soil Phosphate(S-PHOS) Content Assay Kit
BC2890/BC2895	Soil Phosphorus Content Assay Kit
BC0390/BC0395	Soil Dehydrogenase Activity Assay Kit
BC0860/BC0865	Soil Acid Protease Activity Assay Kit