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Soil Hydrargyrum (S-Hg) Content Assay Kit

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

Operation Equipment: Spectrophotometer/ microplate reader

Cat No: AK0172

Size： 100T/96S

Components:

Reagent I: Powder×1, storage at 4℃. Dissolve with 2 mL of distilled water.

Reagent Ⅱ: 20 mL×1. Storage at 4℃.

Reagent Ⅲ: 10 mL×1. Storage at 4℃.

Reagent Ⅳ: Powder×1. Storage at 4℃. Dissolve with 5 mL of distilled water.

Reagent Ⅴ: Powder×1. Storage at 4℃ and protected from light. Add 50 mL of chloroform **(self-provided)** to fully dissolve.

Reagent Ⅵ: 30 mL×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.

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/ microplate reader, water bath, centrifuge, micro glass cuvette/ 96-well plate, adjustable pipette, 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/microplate reader 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）	0.04		
Standard solution （μL）		400	
distilled water （μL）	400		400
H_2SO_4 （μL）	16	16	16
HNO_3 （μL）	4	4	4
Reagent I （μL）	13	13	13
Reagent Ⅱ （μL）	160	25	25
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）	50	50	50
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）	32	32	32
Thoroughly mix and centrifuge at 10000 rpm for 10 min at room temperature. Pipette the entire supernatant into a 2mL EP tube and then add			
Reagent Ⅴ （μL）	400	400	400
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）	160	160	160

Shake sufficiently to make the organic phase green or light green. After standing and layering, absorb 200μL 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=4×ΔAt÷ΔAs÷W。

Cs： standard concentration， 10 nmol/mL；

V_S： standard volume,0.4 mL;

W： the weight of air-dried soil;

Note:

1. 1000μg/L Cu^{2+}, 20μg/L Ag^{+}, 10μg/L Au^{+}, and 5μg/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:

AK0372/AK0371	Soil Phosphate(S-PHOS) Content Assay Kit
AK0171/AK0170	Soil Phosphorus Content Assay Kit
AK0552/AK0551	Soil Dehydrogenase Activity Assay Kit
AK0512/AK0511	Soil Acid Protease Activity Assay Kit