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# Soil glutaminase (S-GLS) Assay Kit

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

**Operation Equipment:** Spectrophotometer

Catalog Number: AK0129

**Size**:50T/24S

#### **Components:**

**Reagent I:** 30mL×1, storage at 4°C.

**Reagent II:** Powder×1, storage at 4°C. Dissolve with 15mL of distilled water before use.

**Reagent IIIA:** 1mL×1, storage at 4°C.

Reagent IIIB: 4mL×1, storage at 4°C. Before use, pour reagent IIIA into reagent IIIB and mix before use

(IIIA: IIIB = 1: 4 (V:V)).

**Reagent IV:** 5mL×1, storage at RT.

**Standard:** 1mL×1, storage at 4°C . 10μmnol/mL NH<sub>4</sub>+ standard solution.

## **Product Description:**

S-GLS (EC3.5. 1.2) exists in some bacteria and plant roots, catalyzes the hydrolysis of glutamine to glutamic acid and ammonia. It has important regulatory effects on nitrogen metabolism, especially the regulation of free ammonia content and urea metabolism.

S-GLS catalyzes the hydrolysis of glutamine to L-glutamic acid and ammonia. The rate of ammonia increase can be calculated by the indophenol blue colorimetric method, and its enzyme activity can be calculated.

### Reagents and Equipment Required but Not Provided:

Spectrophotometer, adjustable transferpettor, balance, mortar/homogenizer, centrifuge, 1mL glass cuvette, sieve (30-50 mesh, or smaller), toluene, ice and distilled water.

## Sample preparation:

Fresh soil samples are naturally air-dried or oven dried at 37°C and passed sieve (30-50 mesh).

#### **Procedure:**

- Preheat spectrophotometer for 30min, adjust the wavelength to 630 nm and set the counter to zero with distilled water.
- 2. Dilute the standard solution 128 times with distilled water to prepare 0.078 µmol/mL standard solution
- Add reagent to a 1.5mL EP tube:

Reagent name	Test tube (At)	Control tube (Ac)	Standard tube (As)	Blank tube (Ab)
Sample (g)	0.1	0.1		



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50	50		
React 10min at room temperature.			
550	550		
400			
	400		400
Mix well and incubate at 37°C for 1 hour. Centrifuge at 10000			
g for 10 min at room temperature and take the supernatant.			
400	400		
		400	
80	80	80	80
60	60	60	60
460	460	460	460
	7°C for 1 hour. Coverature and take to 400	1 at room temperature.    550	1 at room temperature.    550

Mix well and react at room temperature for 30min. After cooling, the absorbance at the wavelength of 630nm, and record them as At, Ac, As, and Ab, and calculate  $\Delta A = At-Ac$ ,  $\Delta As = As-Ab$ .

#### Calculation:

Unit definition: One unit of enzyme activity is defined as the amount of enzyme the production of glutamine into 1µmol NH<sub>4</sub><sup>+</sup> per day every gram soil catalyzes in the reaction S-GLS (U/g) =  $\Delta A \div (\Delta As \div Cs) \times Vr \div$ system.

 $T \div W = 1.872 \times \Delta A \div \Delta As \div W$ .

Cs: standard concentration, 0.078µmoL/mL;

T: reaction time, 1/24 d;

Vr: reaction volume, 1mL;

W: soil weight, g;

#### Note:

- 1. When the A is greater than 0.7, it is recommended to further dilute the supernatant and measure.
- 2. If the supernatant still contains a small amount of impurities after centrifugation, the supernatant can be removed again by 10,000g centrifuge at room temperature for 10min.
- 3. Use reagent3 as soon as possible after configuration. If discoloration is found, do not use it again.

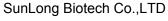
## **Experimental examples:**

Take two tubes of 0. 1g soil sample and mark them as test tube and control tube respectively, and follow the measurement procedure. Calculate  $\Delta A = At-Ac = 0.552-0$ .

116=0.436,  $\Delta As = As-Ab = 0.216$ -

0.005=0.211. The enzyme activity is calculated according to the sample mass.

S-GLS  $(U/g) = 1.872 \times \Delta A \div \Delta As \div W = 38.682 U/g$ .





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## **Related products:**

AK0370/AK0369 Soil Nitrate Reductase(S-NR) Activity Assay Kit

AK0118/AK0117 Soil β- 1,4-Glucanase Activity Assay Kit

AK0120/AK0119 Soil Leucine Arylamidase(S-LAP) Activity Assay Kit

AK0574/AK0573 Soil Saccharase(S-SC) Activity Assay Kit