

# Soil Dehydrogenase(S-DHA) Activity Assay Kit

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

**Operation Equipment:** Spectrophotometer

**Cat No:** NA0836

**Size:** 50T/24S

## Components:

Reagent I: Powder×1. Add 30 mL of Distilled water before use, store at 4°C and protect from light. (Try to dilute it when it will be used)

Reagent II: Liquid 50 mL×1, store at 4°C.

Reagent III: Acetone, self-provided.

## Product Description:

The activity of soil dehydrogenase can reflect the amount of active microorganisms in the soil system and its degradation activity to organic compounds, it can be used as the degradation index of soil microorganisms.

The hydrogen receptor 2, 3, 5-triphenyl tetrazolium chloride (TTC) is reduced to Triphenyl Formazone (TF) during cellular respiration, TF is red which has a maximum absorption peak at the wavelength of 485 nm. Detect the absorbance at 485 nm can obtain the activity of soil dehydrogenase.

## Required reagents and equipment:

Sieve, scale, constant temperature incubator, centrifuge, spectrophotometer, 1 mL glass cuvette, ice, distilled water, acetone(self-provided).

## Procedure:

### I. Sample preparation

1. Soil sample: Take 0.1 g of fresh soil sample which passed through 40 meshes sieve. (To ensure that TTC is in full contact with soil particles)
2. Mud sample: Wash mud with distilled water, centrifuge at 12000 rpm for 10 minutes at 25°C, discard supernatant, repeat 3- 4 times.

### II. Determination operation

Reagent	Control tube	Test tube
Sample (g)	0.1	0.1
Reagent I (mL)	-	0.5
Reagent II (mL)	1	0.5
Mix thoroughly, incubate at 37°C dark place for 6 hours, then keep on ice for 5 minutes immediately.		
Reagent III (mL)	0.5	0.5
Shake several times, incubate at 37°C for 10 minutes, centrifuge at 12000 rpm for 5 minutes at 4°C,		

take 1 mL of supernatant in 1 mL glass cuvette, detect control tube and test tube.  $\Delta A = A_T - A_C$

### III. Calculation:

Definition: One unit of enzyme activity is defined as the amount of enzyme catalyzes the increasing absorbance of every 0.005 for per hour in per milliliter reaction system at 37°C every gram of sample.

$$\text{sDHA (U/g)} = \Delta A \div 0.01 \div \text{incubation time (6 h)} \div \text{sample weight (0.1 g)} \times V_{RT} (1.5 \text{ mL}) = 250 \times \Delta A$$

#### Note:

1. The prepared Reagent I store at 4°C in dark place, use timely within one weekend. If appear red, it cannot be used.
2. Reagent III is volatile and toxic, please wear lab clothes, masks and latex gloves for your health.
3. Ice bath immediately after completing the reaction to stop the reaction.
4. If the absorbance is larger, detect again after decreasing the sample. If the absorbance value is too small, the culture time can be appropriately prolonged.

#### Recent Product Citations:

[1] Hou Q, Wang W, Yang Y, et al. Rhizosphere microbial diversity and community dynamics during potato cultivation[J]. European Journal of Soil Biology, 2020, 98: 103176.

#### References:

[1] Kumar S, Chaudhuri S, Maiti S K. Soil dehydrogenase enzyme activity in natural and mine soil-a review[J]. Middle-East Journal of Scientific Research, 2013, 13(7): 898-906.

[2] Friedel J K, Mölter K, Fischer W R. Comparison and improvement of methods for determining soil dehydrogenase activity by using triphenyltetrazolium chloride and idonitrotetrazolium chloride[J]. Biology and fertility of soils, 1994, 18(4): 291-296.

#### Related Products:

NA0805/NA0563	Soil Acid Protease Activity Assay Kit
NA0804/NA0374	Soil Alkaline Protease Activity Assay Kit
NA0846/NA0604	Soil Alkaline Phosphatase(S-AKP/ALP) Activity Assay Kit
NA0862/NA0619	Soil Polyphenoloxidase Activity Assay Kit
NA0373/NA0372	Soil Neutral Invertase(S-NI) Activity Assay Kit
NA0361/NA0360	Soil $\beta$ -1,4-Glucanase Activity Assay Kit
NA0364/NA0363	Soil $\beta$ -Xylosidase(S- $\beta$ -XYS) Activity Assay Kit