(FOR RESEARCH USE ONLY. DO NOT USE IT IN CLINICAL DIAGNOSIS!)

Phenylalanine Ammonia Lyase (PAL) Assay Kit

Catalog No.: BC00209

Size: 50T

Please read the instructions carefully before use. If you have any questions or need further help during experiment, please don't hesitate to contact us through the following methods:

✉ Email (Sale) order@enkilife.com

✉ Email (Techsupport) techsupport@enkilife.com

☎ Tel: 0086-27-87002838

Website: www.enkilife.com

Shelf life: Please refer to the label on the outer package.

Techsupport: In order to provide you with better service, please inform us the lot number on the label of the outer package.

Basic Information

Product Name	Phenylalanine Ammonia Lyase (PAL) Assay Kit
Detection Method	Colorimetric
Sample Type	Plant
Assay Type	Quantitative
Detection Instrument	Ultraviolet spectrophotometer (290 nm)

Product Introduction

PAL widely exists in various plants and a small number of microorganisms. As a key enzyme in plant phenylpropanoid metabolism, it is closely associated with the synthesis of vital secondary metabolites including lignin, isoflavonoid phytoalexins and flavonoid pigments. It plays an essential role in plant growth, development and pathogen resistance.

Principle

PAL catalyzes the cleavage of L-phenylalanine into trans-cinnamic acid and ammonia. Trans-cinnamic acid has the maximum absorption at 290 nm. PAL activity is calculated by measuring the absorbance variation.

Components

No.	Components	Size	Note
Reagent 1	Extraction solution	60 mL	Store at 4°C.
Reagent 2	Buffer solution	80 mL	Store at 4°C.
Reagent 3	Substrate solution	20 mL	Store at 4°C.
Reagent 4	Stop solution	5 mL	Store at 4°C.

Storage

The kit can be stored for 3 months under specified conditions.

Preparation

Ultraviolet spectrophotometer, water bath kettle, tabletop centrifuge, adjustable pipette, 1 cm optical path quartz cuvette.

- **Sample requirements**

Extraction of crude enzyme solution from samples: Add Reagent 1 at the ratio of tissue mass (g) to extract volume (mL) = 1:9, e.g., 0.9 mL extract for 0.1 g tissue. Homogenize in ice water bath, centrifuge at 10000 rpm for 10 minutes, and collect supernatant for testing.

Operation process

	Assay tube	Blank tube
Sample (μL)	40	
Reagent 2 (μL)	1480	1520
Reagent 3 (μL)	400	400
Mix well and incubate precisely in water bath at 30°C for 30 minutes.		
Reagent 4 (μL)	80	80
Mix well and stand for 10 minutes. Zero the instrument with double-distilled water. Measure absorbance of each tube at 290 nm using a 1 cm optical path quartz cuvette. Calculate $\triangle A = A_{Assay} - A_{Blank}$.		

Note: Only 1 to 2 blank tubes are required.

Calculation

1. Calculated based on fresh sample weight

Definition: One enzyme activity unit is defined as the absorbance change of 0.1 at 290 nm per minute per gram of tissue in per milliliter reaction system.

$$\text{PAL Activity (U/g)} = \frac{\triangle A}{0.1} \div \left(\frac{W}{V} \times V_{Sample}\right) \times \frac{V_{Total}}{1} \div T$$

2. Calculated by protein concentration

Definition: One enzyme activity unit refers to 0.1 absorbance change at 290 nm per minute per milligram of tissue protein in each milliliter reaction system.

$$\text{PAL Activity (U/mg)} = \frac{\triangle A}{0.1} \div (Cpr \times V_{Sample}) \times \frac{V_{Total}}{1} \div T$$

Annotation:

V: Total volume of extracted crude enzyme solution, mL

V_{Sample}: Volume of sample added, 0.04mL

V_{Total}: Total volume of reaction solution, 2 mL

T: Reaction time, 30 minutes

W: Sample weight, g

Cpr: Homogenate protein concentration, mg/mL

Precautions

1. It is recommended to use disposable laboratory test tubes for operation.
2. This product is intended for scientific research use only by professionals and must not be used for clinical diagnosis or treatment, in food or drugs, or stored in ordinary residences.