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

Lactate Dehydrogenase Isoenzyme 1 (LDH-1) Assay Kit

Catalog No.: BC00194

Size: 200T

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	Lactate Dehydrogenase Isoenzyme 1 (LDH-1) Assay Kit
Detection Method	Colorimetric
Sample Type	Serum, plasma
Assay Type	Quantitative
Detection Instrument	Spectrophotometer (340 nm)

Product Introduction

This kit is used for the in vitro quantitative determination of lactate dehydrogenase isozyme 1 (LDH-1) in serum or plasma.

It is mainly applied to the auxiliary diagnosis of acute myocardial infarction (AMI), viral myocarditis, rheumatic myocarditis, Keshan disease and other related diseases.

Principle

$$L-LD\ +\ NAD^{+} \xrightarrow{\text{LDH}-1} Pyruvate + NADH + H^{+}$$

Guanidine thiocyanate inhibitor is added to the reaction system, which can inhibit the activities of LDH2, LDH3, LDH4 and LDH5, so the determined result represents the activity of LDH1. The production rate of NADH is measured at a wavelength of 340 nm, and then the LDH1 activity is calculated accordingly.

Components

No.	Components	Concentration	Size
Reagent 1	Tris-HCl buffer	100mmol/L	60mL×1
	Guanidine thiocyanate	3mmol/L	
	L-Lithium lactate	120mmol/L	

Reagent 2	NAD^+	≥5mmol/L	20mL×1
	Proclin300	0.3mL/L	

Storage

This kit should be stored away from light and remains stable for one year at 2-8℃. After opening, the reagents can be stored for 1 month at 2-8℃.

Preparation

Spectrophotometer with a wavelength of 340 nm and 1 cm optical path cuvettes (or microplate reader and 96-well plate), or automatic biochemical analyzer; 37℃ water bath or constant temperature incubator; desktop low-speed centrifuge; pipettes of various specifications; double-distilled water; normal saline (0.9%) or 0.1M PBS; vortex mixer; test tubes or centrifuge tubes.

- **Sample handling**

  Serum or plasma should be separated promptly after blood collection to avoid hemolysis. The enzyme activity of samples remains stable for 3 days when stored at 2-8℃.

Operation process

1. Determination by biochemical analyzer

   Main Performance Parameters:

Primary Wavelength	340nm	Auxiliary Wavelength	405nm
Reaction Temperature	37℃	Sample	10μL
Reaction Method	Rate method	Reagent 1	200μL
Reaction Direction	Upward	Reagent 2	50μL
Cuvette Optical Path	1.0cm	R1+S, Incubation Time	1min
R1+S+R2, Incubation Time	60sec	R1+S+R2, Reaction Time	1-2min

Operation Steps

	Black tube	Assay tube
Double-distilled water	10	
Sample (μL)		10
Reagent 1 (μL)	200	200
Mix well, incubate at 37℃ for 1 minute, then add Reagent 2.		
Reagent 2 (μL)	50	50
Mix well, incubate at 37℃ for 60 sec. Zero the instrument with distilled water at the measuring wavelength. Continuously monitor the absorbance changes of each tube for 1-2 min, and calculate the Δ A/min for each tube.		

Notes: The above basic parameters shall be entered into the fully automatic biochemical analyzer via its built-in program parameter input function. Only after parameter entry can the reagent be matched with the instrument for automatic determination. The above parameters can be appropriately adjusted according to the specific requirements of different instruments.

2. Determination Method by Spectrophotometer

	Black tube	Assay tube
Double-distilled water	40	
Sample (μL)		40
Reagent 1 (μL)	800	800
Mix well, incubate at 37℃ for 1 minute, then add Reagent 2.		
Reagent 2 (μL)	200	200
Mix well, incubate at 37℃ for 60 sec. Zero calibration with distilled water at 340 nm wavelength. Continuously monitor the absorbance changes of each tube for 1-2 min, and calculate the Δ A/min for each tube.		

Calculation

$$\text{LDH}-1\ \text{Activity}\ \ (\text{U/L}) = (\frac{\Delta A_{\text{Assay}}}{\text{min}} - \frac{\Delta A_{\text{Black}}}{\text{min}}) \times \text{F}$$

$$\text{F} = \frac{V_{\text{Total}}(\text{mL}) \times 1000}{V_{\text{Sample}}(\text{mL}) \times 6.22 \times 1} = 4180$$

Annotation:

V_{Total}: Total volume of reaction system, mL

V_{Sample}: Volume of sample added, mL

1000: Conversion coefficient from U/mL to U/L

6.22: Millimolar extinction coefficient of NADP at 340 nm

1: Cuvette optical path length, 1cm

Reference Range

Normal reference range: 15～65 U/L. (This data is for reference only. It is recommended that each laboratory establish its own reference range.)

Normal Reference Values

Reagent blank absorbance: A340nm (10 mm) ≤ 0.7 (1 cm optical path).

Reagent blank measured value: Δ A/min ≤ 0.01 (1 cm optical path).

Linear range: 0～600 U/L (Criterion: r2 ≥ 0.995).

Accuracy: The measured values shall be within the specified deviation range of the quality control material.

Precision: Intra-assay CV ＜ 5.0%, inter-assay relative range ＜ 10.0%.

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.
3. Hemolysis may cause analytical errors.
4. If the instrument is not equipped with a filter at the wavelength required by this kit, select a filter with a similar wavelength; the wavelength error is not recommended to exceed 20 nm.