

LDH

Pyruvate. Kinetic UV. DGKC. Liquid

Product information

24LDH01-UN	Meditest LDH	4x40 mL 2x20 mL
24LDH01-AU	Meditest LDH	4x40 mL 2x20 mL
24LDH01-AB	Meditest LDH	4x40 mL 2x20 mL
24LDH01-ER	Meditest LDH	4x40 mL 2x20 mL

Purpose

In vitro assay for the quantitative determination of LDH in human serum and plasma.

Summary

Lactate dehydrogenase (LDH) is an enzyme with extensive tissue distribution in the body. LDH is found in the highest concentrations in the liver, heart, kidney, skeletal muscle, and erythrocytes. In liver disease, myocardial infarction, kidney disease, muscular dystrophy, and anemia, enzyme levels increase in serum^{1,4,5}. Clinical diagnosis should not be based on a single test result, but clinical and other laboratory data should be integrated.

Test principle

Lactate dehydrogenase (LDH) catalyzes the reduction of pyruvate by NADH as per the following reaction.



The rate of decrease in the concentration of NADPH, measured photometrically, is proportional to the catalytic concentration of LDH present in the sample¹.

Reagents - working solutions

R 1 Buffer	Imidazole Pyruvate	<65 mmol/L >0.6 mmol/L
R 2 Substrate	NADH	0.18 mmol/L

Precautions warnings

It is intended for in vitro diagnostic use by healthcare professionals. Follow the normal precautions necessary in handling all laboratory reagents.

Infectious or microbial waste:

Warning: handle waste as potentially biohazardous. Dispose of waste according to accepted laboratory instructions and procedures.

Environmental hazards: Follow all relevant local disposal regulations to determine that it has been disposed of safely. If requested, a safety data sheet can be provided to professional users.

Inhibit foam formation in all reagents and sample types (sample, calibrator and control).

If there is any damage on the package, do not use. Read the user manual carefully before use, do not use the expired assay kit. Do not mix different lot reagents.

All samples should be considered epidemic material, please dispose of them in accordance with the laboratory working standard of infectious diseases.

Take the necessary protective measures to prevent users from becoming infected during operation.

Use of reagents

Ready to use.

Storage and stability

All components of the kit are stable until the expiration date on the label when stored tightly closed at 2-8°C, protected from light and contamination is avoided during their use.

Do not use reagents after the expiration date. Signs of reactive deterioration: Presence of particles and turbidity.

Sample collection and preparation

Use only suitable tubes and collection containers to collect and prepare specimens. Only the samples listed below have been tested and found acceptable.

Serum. Plasma: Liheparin and K2EDTA plasma

Centrifuge samples containing precipitate before performing the test. For detailed information on possible sample interactions, see the limitations and interactions section. Sample stability claims were determined by the manufacturer based on experimental data or reference literature and only for the temperatures/time frames specified in the method sheet. It is the responsibility of each laboratory to use all available references and/or their own work to determine specific stability criteria for their laboratory.

Stability: 2 days at 28 °C

1 month at -20°C

Required Materials (not included in the kit)

1. Cat# 24BIO01-DC Meditest Diachem Calibrator
2. Cat# 24BIO01-DQ Meditest Diachem Control L1
3. Cat# 24BIO02-DQ Meditest Diachem Control L2
4. General laboratory equipment
5. Distilled or deionized water

Working Procedure

If you are using a spectrophotometer to perform this test, work with the following procedure. Ask your representative for the application data for fully automatic devices.

1. Test Conditions:

Wavelength: . 340 nm

Cuvette: 1 cm light path

Temperature: . 25°C/30°C/37°C 2. Set the appliance to zero with distilled water.

3. Place the pipettes in a cuvette.

	25° - 30°C	37°C
WR (mL)	3,0	3,0
Sample (μL)	100	50

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4. Mix, incubate for 1 minute.
5. Read the initial absorbance (A) of the sample, start the stopwatch, and read the absorbances at 1-minute intervals for 3 min.
6. Calculate the difference between absorbances and the average absorbance differences per minute ($\Delta A/\mu\text{in}$).

Calculation

$$\begin{aligned} 25^{\circ}\text{--}30^{\circ}\text{C} & \quad \Delta A/\text{min} \times 4925 = \text{U/L LDH} \\ 37^{\circ}\text{C} & \quad \Delta A/\text{min} \times 9690 = \text{U/L LDH} \end{aligned}$$

One international unit (IU) is the amount of enzyme that converts 1 μmol of substrate per minute under standard conditions. The concentration is expressed in units per liter of the sample (U/L).

Conversion factor: $\text{U/L} \times 0.0167 = \mu\text{kat/L}$

Expected values

Measured at 37 °C according to IFCC⁶:

Women	135-214 U/L (2.25-3.55 $\mu\text{kat/L}$)
Men	135-225 U/L (2.25-3.75 $\mu\text{kat/L}$)
Children (215 years)	120-300 U/L (2.00-5.00 $\mu\text{kat/L}$)
Neonates (420 days old)	225-600 U/L (3.75-10.0 $\mu\text{kat/L}$)
Common values:	
Men and women	up to 250 U/L (up to 4.2 $\mu\text{fold/L}$)

These values are for orientation purposes; Each laboratory should establish its own reference range

Limitations

Hemolysis interacts with the test. Some anticoagulants, such as oxalates, interact with the reaction¹. A list of drugs and other substances that interact with LDH determination has been reported by Young et al.^{2,3}.

Performance characteristics

Measuring range: 3.42-1600 U/L

If the results obtained are greater than the linearity limit, dilute the sample by 1/10 with 9 g/L NaCl and multiply the result by 10.

Precision

	Intra-assay (n=20)		Inter-assay (n=20)	
Mean (U/L)	400	785	392	773
SD	3,15	10,97	6,23	9,93
CV (%)	0,79	1,40	1,59	1,28

Sensitivity: 1 U/L = 0.00009 $\Delta\text{Abs}/\text{min}$

Accuracy: Results obtained using Meditest reagents (y) showed no systematic differences when compared to other commercial reagents (x). The results obtained using 50 samples are as follows:

Correlation coefficient (r^2): 0.98382

Regression equation $y = 0.8988x - 2.583$

The results of the performance characteristics depend on the analyzer used.

References

1. Pesce A. Lactate dehydrogenase. Kaplan A et al. Clin Chem The C.V. Mosby Co. St Louis. Toronto. Princeton 1984; 1124-117, 438.
2. Young DS. Effects of drugs on Clinical Lab. Tests, 4th ed AACC Press, 1995.
3. Young DS. Effects of disease on Clinical lab. Tests, 4th ed AACC 2001.
4. Burtis A et al. Tietz Textbook of Clinical Chemistry, 3rd ed AACC 1999.
5. Tietz N W et al. Clinical Guide to Laboratory Tests, 3rd ed AACC 1995.
6. Lorentz K, Röhle G. Einführung der neuen Standardmethoden 1994 zur Bestimmung der katalytischen Enzymkonzentration bei 37 °C. Klin Chem Mitt 1995; 26:290-293



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