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Supporting Care to Cure
A Division of Orchard Medical

Lactate Dehydrogenase (LDH)

Order Information

Cat. No.	Kit Configuration
OMR1121	Reagent 1: 1 x 40 mL Reagent 2: 1 x 10 mL

Summary

Lactate dehydrogenase (LDH) is an enzyme found in many tissues in the body. The main organs include are liver, heart, kidney, skeletal muscle and RBC's. Increased levels of the enzyme are found in serum during liver disease, anemia, myocardial infarction, muscular dystrophy and renal disease.

Method

Optimized test according to German Society of Clinical Chemistry.

Principle

Lactate dehydrogenase (LDH) catalyses the reduction of pyruvate by NADH forming NAD.

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

Reagents

Storage Instructions and Reagent Stability

Reagents are stable up to the end of the indicated month of expiry, if stored at 2° – 8°C, protected from light and contamination is avoided. Do not freeze the reagents!

Reagent 1: Buffer
Solution Reagent 2:
Substrate Solution

Composition

TRIS buffer 80mmol/L, Pyruvate – 1.6 mmol/L, Sodium Chloride – 200 mmol/L, NADH 240 mmol/L.

Warnings and Precautions

1. Keep out of reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
2. Take off immediately all contaminated clothing.
3. Do not swallow. Avoid contact with skin and mucous membranes.
4. For professional use only!

Waste Management

Please refer to local legal requirements.

Reagent Preparation

Mix, 4 parts of reagent 1 and 1 part of reagent 2 = working reagent. The stability of the working reagent is 21 days at 2° - 8°C.
Protect the reaction solution from light.

Specimen

Serum, heparin, plasma or EDTA plasma separate at the latest 1h after blood collection from cellular contents.
7 days at 2° –8°C
30 days at –20°C
Only freeze once! Discard contaminated specimens.

Assay Procedure

Wavelength	340nm
Optical Path	10mm
Temperature	37°C

Sample Start

Sample	20 µL
Working reagent	1000 µL
Mix, incubate for 1 min. and read absorbance after every 1 min. for 3min.	

Substrate Start	Sample/ Calibrator
Sample	20 µl
Reagent 1	1000 µl
Mix and Incubate 5 min. then add	
Reagent 2	250 µl
Mix, incubate for 1 min. and read absorbance after every	

Calculation

ΔA/min and multiply by the corresponding factor from table below:
LDH activity U/L = ΔA/min x factor.

Factor

Sample start	340 nm	8095
Substrate start	340 nm	10080

Conversion Factor

To convert to SI Units (nkat/L) multiply IU/L by 16.67.

Quality Controls

For internal quality control any normal and abnormal controls should be assayed with each batch of samples. Each laboratory should establish corrective action in case of deviations in control recovery.

Performance Characteristics and Measuring Range

The test has been developed to determine the activity of Lactate dehydrogenase (LDH) within a measuring range from 5-2400 U/L. When values exceed this range samples should be diluted 1
+ 4 with NaCl solution (9 g/L) and the result multiplied by 5.

Interferences

No interference was observed by, Ascorbic Acid up to 30 mg/dL, Bilirubin upto 40 mg/dL and triglycerides up to 1000 mg/dL.

Sensitivity/Limit of Detection

The lower limit of detection is 5 U/L.

Linearity

The higher limit of detection is 2400 U/L.

Precision

Intra-assay n = 20	Mean [U/L]	SD [U/L]	CV [%]
Sample 1	224.25	1.72	0.77
Sample 2	354.84	2.29	0.65

Inter-assay n = 20	Mean [U/L]	SD [U/L]	CV [%]
Sample 1	126.08	1.27	1.01
Sample 2	445.02	2.96	0.67

Method Comparison

A comparison of Nucleus Diagnosys Lactate dehydrogenase (LDH) (y) with a commercially available test (x) using 15 samples gave following results:

$y = 0.974x + 5.657$; $r^2 = 0.994$

Reference Range

Normal Range:

120-240 U/L at 25˚C

160-320 U/L at 30˚C

230-460 U/L at 37˚C

Each laboratory should check if the references range are transferable to its own patient population and determine own reference ranges if necessary.

Literature

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.**
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