COD 12580 5 x 40 mL + 5 x 10 mL
STORE AT 2-8ºC
Reagents for measurement of LDH concentration Only for *in vitro* use in the clinical laboratory

LACTATE DEHYDROGENASE (LDH)

BioSystems
Automated Systems

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LACTATE DEHYDROGENASE (LDH)
PYRUVATE

PRINCIPLE OF THE METHOD

Lactate dehydrogenase (LD or LDH) catalyzes the reduction of pyruvate by NADH, to form lactate and NAD^+. The catalytic concentration is determined from the rate of decrease of NADH, measured at 340 nm[1,2].

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

COMPOSITION

A. Reagent: 5 x 40 mL. Tris 100 mmol/L, pyruvate 2.75 mmol/L, sodium chloride 222 mmol/L, pH 7.2

B. Reagent: 5 x 10 mL. NADH 1.55 mmol/L, sodium azide 9.5 g/L.

WARNING: H302: Harmful if swallowed. EUH031: Contact with acids liberates toxic gas. P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P330: Rinse mouth.

For further warnings and precautions, see the product safety data sheet (SDS).

STORAGE

Store at 2-8ºC.

Reagents are stable until the expiry date shown on the label when stored tightly closed and if contaminations are prevented during their use.

Indications of deterioration:

– Reagent: Presence of particulate material, turbidity, absorbance of the blank lower the limit indicated in "Assay parameters".

AUXILIARY REAGENTS

Biochemistry Calibrator (BioSystems cod. 18011) or Biochemistry Calibrator Human (BioSystems cod. 18044).

REAGENT PREPARATION

Working Reagent: Pour the contents of the Reagent B into the Reagent A bottle. Mix gently. Other volumes can be prepared in the proportion: 4 mL Reagent A + 1 mL Reagent B. Stable for 2 months at 2-8ºC.

Reagent open and kept in the refrigerated compartment of the analyzer is stable 10 days.

SAMPLES

Serum or plasma collected by standard procedures. Serum or plasma must be separated from the clot as soon as possible. In plasma ensure that the centrifugation is adequate to remove platelets. Do not use hemolysed samples.

Lactate dehydrogenase in serum or plasma is stable for 2 days at room temperature and for 24 hours at 2-8ºC. Use heparin as anticoagulant.

REFERENCE VALUES

Reaction temperature	Adults U/L	Adults µKat/L
25ºC	105-210	1.70-3.50
30ºC[2]	140-280	2.30-4.70
37ºC[1]	207-414	3.40-6.80

Values at 25ºC are obtained from those at 30ºC by using a conversion factor.These ranges are given for orientation only; each laboratory should establish its own reference ranges.

CALIBRATION

A calibration is recommended at least every 10 days, after reagent lot change or as required by quality control procedures.

ASSAY PARAMETERS

		A25	A15
GENERAL	Test name	LDH	LDH
	Analysis mode	mono. kinetic	mono. kinetic
	Sample type	SER	SER
	Units	U/L	U/L
	Reaction type	decreasing	decreasing
	Decimals	0	0
	No. of replicates	1	1
	Test name in patient report	-	-
PROCEDURE	Reading	monoch.	monoch.
Volumes	Sample	6	6
	Reagent 1	300	300
	Reagent 2	-	-
	Washing	1.2	1.2
	Predilution factor	-	-
	Postdilution factor	2	2
Filters	Main	340	340
	Reference	-	-
Times	Reading 1	60 s	72 s
	Reading 2	195 s	216 s
	Reagent 2	-	-
CALIBRATION	Calibration type	multiple	multiple
	Calibrator replicates	3	3
	Blank replicates	3	3
	Calibration curve	-	-
OPTIONS	Blank absorbance limit	1.200	1.200
	Kinetic blank limit	-	-
	Linearity limit	1250	1250
	Substrate depletion	0.100	0.100

QUALITY CONTROL

It is recommended to use the Biochemistry Control Serum level I (cod. 18005, 18009 and 18042) and II (cod. 18007, 18010 and 18043) to verify the performance of the measurement procedure.

Each laboratory should establish its own internal Quality Control scheme and procedures for corrective action if controls do not recover within the acceptable tolerances.

METROLOGICAL CHARACTERISTICS

The following data were obtained using an A25 analyser. Results are similar with A15. Details on evaluation data are available on request.

– Detection limit: 40.5 U/L = 0.67 µkat/L.

– Linearity limit: 1250 U/L = 20.92 µkat/L.

– Repeatibility (within run):

Mean Concentration	CV	n
420 U/L = 7.00 µkat/L	1.3 %	20
852 U/L = 14.20 µkat/L	1.2 %	20

– Reproducibility (run to run):

Mean Concentration	CV	n
420 U/L = 7.00 µkat/L	2.0 %	25
852 U/L = 14.20 µkat/L	2.7 %	25

– Trueness: Results obtained with this procedure did not show systematic differences when compared with a reference procedure. Details of the comparison experiments are available on request.

– Interferences: Hemolysis interferes due to the high lactate dehydrogenase concentration in red cells. Lipemia (triglycerides < 10 g/L) and bilirubin (< 20 mg/dL) do not interfere. Other drugs and substances may interfere[3].

DIAGNOSTIC CHARACTERISTICS

Lactate dehydrogenase is present in all cells of the body but its higher concentrations are found in liver, heart, kidney, skeletal muscle and erythrocytes

Total LDH concentration in serum or plasma is increased in patients with liver disease, renal disease, myocardial infarction, many malignant diseases, progresive muscular dystrophy and almost any cause of hemolysis[4,5].

Clinical diagnosis should not be made on the findings of a single test result, but should integrate both clinical and laboratory data.

BIBLIOGRAPHY

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3. Young DS. Effects of drugs on clinical laboratory tests, 5th ed. AACC Press, 2000.
4. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, 4th ed. Burtis CA, Ashwood ER, Bruns DE. WB Saunders Co, 2005.
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