TEST

Lactate dehydrogenase test

A blood test that measures an enzyme released when cells are damaged.

WHAT IT MEASURES
Lactate dehydrogenase, an enzyme released by damaged cells

SAMPLE
Blood from a vein

FASTING NEEDED?
No, unless other tests require it

HOW LONG IT TAKES
Usually less than five minutes

RESULTS IN
Often one day, but laboratory turnaround differs

USED FOR
Investigating tissue damage and monitoring some conditions

MAIN LIMITATION
High results do not show which tissue is affected

Overview

Lactate dehydrogenase, or LDH, is an enzyme found in almost every part of your body. It helps cells produce energy. Large amounts are present in red blood cells, muscles, the liver, kidneys, lungs and other tissues.

When cells are injured or break down, LDH can enter the bloodstream. An LDH test measures the amount in a blood sample. A high result can be a sign of cell or tissue damage, but it cannot show where the damage is or what caused it.

LDH may also be measured in fluid collected from around the lungs, abdomen, brain or spinal cord. These are separate tests used in specific situations. Most people having an LDH test provide blood from a vein.

Why the test is ordered

An LDH test is usually ordered with other tests. It can provide supporting information when symptoms, an examination or another result suggests tissue damage.

It may help with:

LDH is not usually used by itself to screen healthy people. Because it is present in so many tissues, an abnormal result needs to be interpreted alongside more specific tests.

- Investigating the breakdown of red blood cells, called haemolysis
- Assessing possible injury involving the liver, muscles or other organs
- Monitoring certain blood disorders and cancers
- Following recovery from an illness or tissue injury
- Examining fluid collected from a body cavity

Who should have the test

You may have an LDH test if your healthcare professional is investigating unexplained anaemia, possible tissue injury or an abnormal liver, blood or muscle test. Anaemia means that your blood has too few healthy red blood cells or too little haemoglobin, the protein that carries oxygen.

The test may also be used during follow-up for some cancers or blood disorders. In this setting, changes over time may be more useful than one result. LDH cannot confirm or rule out cancer by itself.

Testing is not routinely useful for everyone with tiredness or general discomfort. These symptoms have many possible causes, and more targeted tests may provide clearer information.

How to prepare

You do not normally need to fast. You can usually eat, drink water and take your usual medicines before the blood draw.

If LDH is being measured with tests that require fasting, you may be asked not to eat for a set period. Follow the instructions for the full group of tests rather than the LDH test alone.

Tell the person arranging the test about your medicines, vitamins and supplements. Do not stop prescribed medicine unless you have been specifically advised to do so.

Avoid unusually strenuous exercise before testing if possible. Hard exercise can temporarily increase LDH by stressing muscle cells. If you recently exercised intensely, tell the healthcare professional interpreting the result.

What happens during the test

For a blood test, a healthcare professional places a small needle into a vein, usually in your arm. Blood is collected into a tube and sent to a laboratory. The needle is then removed and pressure is placed over the area.

The blood draw usually takes less than five minutes. You can normally leave straight afterwards.

If LDH is being measured in fluid from around an organ, collecting that fluid involves a different procedure. For example, fluid around a lung may be collected with a needle in a procedure called thoracentesis. The team arranging it should explain the preparation, risks and recovery separately.

Understanding your results

LDH is commonly reported in units per litre, written as U/L. Use the reference interval printed on your own laboratory report. Ranges and interpretation vary by laboratory method, age, sex, pregnancy status, medicines and clinical context.

A high LDH result means more LDH than expected is present in the sample. Possible explanations include red blood cell breakdown, liver or muscle injury, infection, inflammation, recent surgery, trauma and some cancers. The test cannot distinguish between these possibilities.

A high result can also come from red blood cells breaking open inside the sample tube. This is called sample haemolysis. It can produce a misleading result even when nothing new is happening in your body.

A low LDH result is usually not clinically important. Rare inherited LDH deficiencies and certain substances that interfere with testing can cause low results, but these situations are uncommon.

One result should not be interpreted in isolation. The pattern of other blood tests, your symptoms, medical history and whether LDH is rising or falling may all matter.

What affects the results

Several factors can change LDH or make the result difficult to interpret:

Laboratories may use serum or plasma and different testing equipment. Results from two

laboratories may therefore not be directly comparable. When monitoring a trend, using the same laboratory can make comparisons easier.

- Sample haemolysis: Red blood cells contain substantial LDH. If they break during collection, transport or processing, the measured level may be falsely high.
- Recent strenuous exercise: Intense activity can release LDH from muscles and temporarily raise the result.
- Recent injury, surgery or seizures: These can cause real cell damage and increase LDH without identifying one particular disease.
- A recent blood transfusion: Transfused red cells, especially if some break down, may affect LDH and complicate testing for haemolysis.
- Medicines and supplements: Some medicines and high amounts of vitamin C may affect LDH or the laboratory method. Do not stop anything without advice.
- Pregnancy and age: Interpretation may differ during pregnancy and across age groups, particularly in children.
- Other illnesses: Liver, kidney, muscle, blood and inflammatory conditions can all increase LDH, making it hard to identify the source.

Accuracy and limitations

The laboratory can usually measure LDH reliably in a suitable sample. The major limitation is not the measurement itself but what the number means.

A raised LDH often reflects cell damage, but it does not identify the affected organ. It can suggest a problem when there is no new tissue injury if the sample was haemolysed or you recently exercised intensely. This is similar to a false positive result: the number is high, but the suspected condition may not be present.

A normal result does not rule out every condition. Small, localised or intermittent areas of damage may not release enough LDH to raise the blood level. The timing of the test also matters. LDH may rise and fall as an illness or injury develops.

There is no single percentage describing how often LDH misses disease or gives a misleading positive result. Accuracy differs according to the condition being investigated, the cutoff used and the quality of the sample.

More specific tests are usually better for locating damage. Troponin is preferred for suspected heart muscle injury, while liver enzymes help assess the liver and creatine kinase can help investigate skeletal muscle. Suspected red blood cell breakdown is usually assessed with LDH

plus bilirubin, haptoglobin, a blood count and other findings.

Risks and complications

A blood draw may cause a small bruise, brief discomfort or light-headedness. Serious complications are uncommon.

If LDH is measured in another body fluid, the risks come from the procedure used to collect that fluid rather than from the LDH test itself.

What happens next

A mildly abnormal LDH result without urgent symptoms usually leads to routine follow-up. Your healthcare professional may review other results, ask about recent exercise or illness, or repeat the test if sample haemolysis is suspected.

Further testing is selected according to the likely source. This may include a blood count, liver tests, muscle enzymes, tests for red blood cell breakdown or imaging. If LDH is being used for monitoring, the trend over several tests may be more informative than one measurement.

An abnormal LDH result alone is rarely an emergency. Seek urgent medical assessment if you develop symptoms such as yellow skin or eyes, dark urine, marked weakness or rapidly worsening illness.

Call emergency services for severe chest pain, major difficulty breathing, fainting, new one-sided weakness or another sudden severe symptom. Do not wait for an LDH result in these situations.

Common questions

Can I drink coffee before an LDH test?

Usually, yes. LDH testing itself does not require fasting. However, avoid coffee if other blood tests being collected at the same time require fasting.

Does the time of day matter?

LDH is not usually scheduled for a particular time. For repeat monitoring, testing under similar conditions can make results easier to compare.

Can I exercise beforehand?

Light everyday activity is generally acceptable. Avoid an unusually hard workout before the test because muscle stress can raise LDH.

Does a high LDH result mean cancer?

No. Many non-cancerous conditions can increase LDH, and collection-related haemolysis can produce a falsely high result. LDH cannot diagnose cancer by itself.

Why does my report say the sample was haemolysed?

It means red blood cells broke open in the tube. Because these cells contain LDH, the result may be falsely high and the laboratory may recommend another sample.

Why might the test be repeated?

Repeating it can check an unexpected result, replace a haemolysed sample or show whether LDH is rising or falling. Repeat testing does not by itself mean that a serious condition is present.

Sources

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