

Lactate Dehydrogenase Isoenzymes



Does this test have other names?

LDH isoenzymes

What is this test?

This is a blood test to measure the different LDH forms or isoenzymes that may be in your blood. Enzymes are proteins that cause chemical reactions in your body and provide energy. LDH isoenzymes are found in many tissues in the body, including the heart, red blood cells, liver, kidneys, brain, lungs, and skeletal muscles.

LDH exists in 5 isoenzymes. Each isoenzyme has a slightly different structure and is found in different concentrations in different tissues. For example, LDH-1 is found mostly in red blood cells and heart muscle. LDH-3 is concentrated in the lungs, although it is also found in other tissues. When LDH isoenzymes spill into your blood, it indicates damaged or diseased tissue. The results may tell your healthcare providers which tissue may be damaged or injured.

Why do I need this test?

You may need this test if your healthcare provider wants to see if you have a blood disorder, such as anemia, or tissue damage, such as damage to your liver, heart, or other body tissue.

What other tests might I have along with this test?

You may need other blood tests that can find elevated enzyme levels.

For liver enzymes, these tests may include:

- Aspartate aminotransferase
- Gamma-glutamyl transpeptidase
- Alkaline phosphatase
- Alanine aminotransferase
- Leucine aminopeptidase
- 5'-nucleotidase

For heart and skeletal muscle, tests may include:

- Creatine phosphokinase

Your healthcare provider might also order a urine test for LDH.

What do my test results mean?

Test results may vary depending on your age, gender, health history, and other things. Your test results may be different depending on the lab used. They may not mean you have a problem. Ask your healthcare provider what your test results mean for you.

Normal results for isoenzymes are listed below.

Adult/older adults:

- LDH-1: 17% to 27%
- LDH-2: 29% to 39%
- LDH-3: 19% to 27%
- LDH-4: 8% to 16%
- LDH-5: 6% to 16%

Normal ratios are:

- LDH-1 less than LDH-2
- LDH-5 less than LDH-4

When your LDH-1 is greater than your LDH-2, it could mean that you have anemia. Healthcare providers refer to this as flipped LDH because normally your LDH-2 is higher than your LDH-1.

When your LDH-5 is greater than your LDH-4 it could mean you have damage to your liver or liver disease. This includes cirrhosis and hepatitis.

If you have 2 diseases that have caused more than 1 LDH isoenzyme to rise, 1 disease could hide the other.

How is this test done?

The test is done with a blood sample. A needle is used to draw blood from a vein in your arm or hand.

Does this test pose any risks?

Having a blood test with a needle carries some risks. These include bleeding, infection, bruising, and feeling lightheaded. When the needle pricks your arm or hand, you may feel a slight sting or pain. Afterward, the site may be sore.

What might affect my test results?

If the blood sample is contaminated by broken red blood cells, a condition called hemolysis, your LDH will be elevated.

If you exercise strenuously before the sample is taken, you could have elevated LDH-1, LDH-2, and LDH-5.

Anesthetics, aspirin, narcotics, and certain other medicines can elevate your LDH. Medicines that contain ascorbic acid (vitamin C) can decrease your LDH levels. Alcohol also can affect your LDH levels.

How do I get ready for this test?

You don't need to prepare for this test. Be sure your healthcare provider knows about all medicines, herbs, vitamins, and supplements you are taking. This includes medicines that don't need a prescription and any illegal drugs you may use.

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