TEST

Alanine transaminase (ALT) blood test

An ALT blood test measures an enzyme that can rise when liver cells are injured

WHAT IT MEASURES
Alanine transaminase, an enzyme released by injured liver cells

SAMPLE
Blood

FASTING NEEDED?
Usually no; fasting may be requested for other tests

HOW LONG IT TAKES
Usually less than five minutes

RESULTS IN
Often within one day; timing varies by laboratory

USED FOR
Assessing and monitoring liver cell injury

MAIN LIMITATION
Cannot identify the cause or severity of liver damage

Overview

An alanine transaminase (ALT) test measures the amount of ALT in your blood. Some laboratories call the enzyme alanine aminotransferase.

ALT helps cells process energy. It is found mainly in the liver, although smaller amounts occur in muscles and other tissues. When liver cells are irritated or injured, ALT can leak into the bloodstream.

A high result can therefore indicate liver cell injury, but ALT cannot identify the cause on its own. It also does not directly measure liver function or permanent damage.

ALT is often included in a group of liver blood tests called a liver panel.

Why the test is ordered

ALT may be checked as part of a routine blood panel or to investigate symptoms and conditions that could involve the liver.

Reasons include:

ALT cannot diagnose a specific condition by itself. It is interpreted alongside your symptoms, medical history and other results.

- Checking an unexpected result from another liver blood test
- Investigating yellow skin or eyes, dark urine, nausea or abdominal discomfort
- Looking for liver effects from alcohol, viral hepatitis or metabolic conditions
- Monitoring a known liver condition
- Checking for liver injury while you take certain medicines
- Following an earlier ALT result that was above your laboratory's range

Who should have the test

You may be offered an ALT test if you have symptoms of a liver or bile duct problem, an existing liver condition, or factors that increase the likelihood of liver injury.

Testing may also be appropriate if you take a medicine that can affect the liver. Whether monitoring is needed depends on the medicine and your circumstances.

People without symptoms sometimes have ALT measured as part of a broader blood panel. An unexpected result does not necessarily mean you have liver disease, but it may need to be repeated or assessed with other tests.

How to prepare

ALT testing by itself usually does not require fasting. If other blood tests are being taken, you may be asked not to eat or drink anything except water for a set period.

Tell the person arranging the test about prescription medicines, non-prescription painkillers, vitamins, and herbal or bodybuilding supplements. Some can affect ALT levels. Do not stop a medicine unless the clinician responsible for it tells you to do so.

Strenuous exercise can temporarily raise ALT and related enzymes, particularly when it causes muscle soreness or injury. Ask whether you should avoid hard exercise before the test, and mention recent heavy exercise when your result is reviewed.

Follow any instructions about alcohol, food and appointment timing.

What happens during the test

A healthcare professional places a needle into a vein, usually inside your elbow or on the back of your hand. A small amount of blood is collected into a tube.

You may feel a brief scratch or sting. The blood draw usually takes less than five minutes.

Understanding your results

ALT is usually reported in units per litre, written as U/L. Use the reference range beside your result rather than a range found online.

Ranges and interpretation vary by laboratory, testing method, age, sex, pregnancy status, medicines and clinical context. Changes across several tests may be more useful than a single measurement.

A result above the laboratory range means more ALT than expected was found in your blood. Possible causes include liver fat accumulation, viral hepatitis, alcohol-related injury, medicine effects and other forms of liver inflammation. Muscle injury can also contribute.

The height of the result does not reliably show how much lasting liver damage is present. A marked temporary rise may improve, while some long-term liver conditions cause only a small rise or a result within range.

A low ALT result is usually not concerning by itself.

ALT is commonly interpreted with:

- Aspartate transaminase (AST), another enzyme found in liver and muscle
- Alkaline phosphatase (ALP), which may rise with bile duct or bone conditions
- Bilirubin, a yellow pigment processed by the liver
- Albumin and clotting tests, which can help assess liver function

What affects the results

Factors that can affect ALT include:

Mention a recent transfusion because the illness or procedure that required it may affect liver tests.

- Recent strenuous exercise: Hard exercise, weightlifting or muscle injury can raise ALT and AST

- Medicines: Some antibiotics like amoxicillin or doxycycline , cholesterol-lowering medicines, anti-seizure medicines and other drugs can affect ALT
- Painkillers and supplements: Acetaminophen, also called paracetamol, and some herbal or bodybuilding products may affect the liver
- Alcohol: Recent or repeated alcohol use can alter liver tests
- Body weight and metabolic health: Liver fat associated with diabetes, cholesterol or excess weight can raise ALT
- Age, sex and pregnancy: Expected levels and interpretation can differ
- Kidney disease: Chronic kidney disease can be associated with lower ALT levels
- Normal biological variation: ALT can move up and down between tests
- Sample problems: Breakdown of blood cells in the tube, called haemolysis, can interfere with some measurements

Accuracy and limitations

ALT detects many forms of liver cell injury, but a result within range does not rule out liver fat, scarring or other chronic liver disease.

ALT can also come partly from another source. Strenuous exercise and muscle injury are important examples; a muscle enzyme test such as creatine kinase may then help.

A high ALT cannot show whether the cause is a medicine, infection, alcohol, liver fat or another condition. It also cannot reliably measure liver scarring. Further assessment may include hepatitis blood tests, ultrasound, elastography to measure liver stiffness, or other liver blood tests.

Repeating ALT can show whether a change is temporary, persistent, improving or worsening. However, repetition should not delay further assessment when symptoms or other results need prompt attention.

Risks and complications

A blood draw may cause a small bruise, mild soreness or brief bleeding. Some people feel faint or light-headed, but serious complications are uncommon.

What happens next

A result within range may require no further action when your other tests and clinical assessment are reassuring.

A mildly raised result is often reviewed routinely. The next step may be to repeat the test, review alcohol use and medicines, or check related liver and muscle tests. Persistent or clearly abnormal results may lead to additional blood tests, imaging or specialist assessment.

Contact a healthcare professional promptly if you develop yellow skin or eyes, dark urine, pale stools, worsening abdominal pain or repeated vomiting.

Seek urgent medical help for new confusion, extreme drowsiness, vomiting blood, black stools, or severe and rapidly worsening abdominal pain. These symptoms matter regardless of your ALT number.

Common questions

Can I drink coffee before an ALT test?

Usually, if ALT is the only test and you have not been told to fast. Coffee with milk or sugar breaks a fast, so follow the instructions for any other tests.

Can I eat before the test?

Usually. ALT itself does not normally require fasting, but other tests collected at the same appointment may have different instructions.

Does the time of day matter?

ALT can vary slightly during the day, but testing at a particular time is not usually required. Similar timing and conditions can make repeat tests easier to compare.

Can I exercise beforehand?

Light everyday activity is unlikely to be a problem. Hard exercise, long-distance running or heavy weightlifting can raise ALT and AST, so ask whether to avoid these beforehand.

Should I stop my medicines?

No, unless the clinician responsible for the medicine tells you to stop. Provide an accurate list of medicines and supplements.

How quickly can ALT return to normal?

This depends on the cause. A temporary rise may fall within days or weeks, while ongoing liver or muscle injury can keep ALT raised.

Sources

- MedlinePlus Medical Test: ALT Blood Test , US National Library of Medicine
- ACG Clinical Guideline: Evaluation of Abnormal Liver Chemistries , Kwo PY, Cohen SM and Lim JK, American Journal of Gastroenterology , 2017
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- Muscular Exercise Can Cause Highly Pathological Liver Function Tests in Healthy Men , Pettersson J and colleagues, British Journal of Clinical Pharmacology , 2008