TEST

Aspartate aminotransferase (AST) blood test

A blood test that measures an enzyme released when liver, muscle, or other cells are injured.

WHAT IT MEASURES
AST enzyme activity released from liver and muscle cells

SAMPLE
Blood

FASTING NEEDED?
No, unless combined tests require it

HOW LONG IT TAKES
Usually less than five minutes

RESULTS IN
Often one to two days, varying by laboratory

USED FOR
Investigating and monitoring liver or muscle injury

MAIN LIMITATION
Cannot identify which tissue released AST

Overview

Aspartate aminotransferase, or AST, is an enzyme that helps cells process amino acids, the building blocks of proteins.

AST is found in the liver, skeletal muscles, heart, red blood cells, and other tissues. When these cells are injured, AST can enter the bloodstream.

An AST blood test measures the enzyme's activity in a blood sample. It is often included in a liver panel or comprehensive metabolic panel. Although commonly called a "liver test," AST is not specific to the liver and does not directly measure how well the liver works.

AST is usually interpreted alongside alanine aminotransferase, or ALT, which is more concentrated in the liver.

Why the test is ordered

AST may be ordered to look for liver or muscle cell injury, monitor a known condition, or check

the effects of a medicine.

Common reasons include:

AST was once used to assess heart attacks. Troponin blood tests are now preferred for detecting heart muscle injury.

- Investigating symptoms related to liver or gallbladder problems
- Checking an unexpected blood test result
- Monitoring known liver disease
- Looking for medicine-related liver injury
- Assessing possible muscle injury, usually with a creatine kinase test
- Checking liver chemistry during a broader health assessment

Who should have the test

A healthcare professional may suggest AST testing if you have yellow skin or eyes, dark urine, persistent nausea, abdominal discomfort, or unexplained tiredness. These symptoms have many possible causes, so AST is only one part of the assessment.

Testing may also be considered if you have risk factors for liver injury, such as heavy alcohol use, viral hepatitis exposure, metabolic conditions, or medicines that can affect the liver.

People with known liver or muscle conditions may have repeat tests to track changes. AST may also be included in routine blood panels without symptoms.

AST alone is not a screening test for a specific disease. Its usefulness depends on your history, examination, other results, and reason for testing.

How to prepare

AST by itself usually does not require fasting. However, you may need to avoid food and drinks other than water if other tests are being collected at the same time.

Tell the person arranging the test about prescription medicines, non-prescription pain relievers, vitamins, herbal products, and workout supplements. Do not stop a medicine unless the clinician responsible for it tells you to.

Avoid unusually strenuous exercise before the test if possible. Heavy weight training, endurance exercise, or muscle injury can raise AST for several days.

Alcohol can also affect the result. Follow any instructions about avoiding it before testing.

What happens during the 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.

You may feel a brief scratch or sting. Collection usually takes less than five minutes, and no recovery time is normally needed.

Understanding your results

AST is commonly reported in units per litre, or U/L. Use the reference range on your report because ranges vary by laboratory, age, sex, pregnancy status, medicines, and testing method.

A raised AST means more enzyme than expected was detected. It does not show where it came from or identify a cause. Possible sources include the liver, skeletal muscles, heart, and red blood cells.

The degree of elevation, changes over time, and other results are important. AST may be considered with:

The AST-to-ALT ratio sometimes provides context when both are elevated, but it cannot diagnose a cause by itself.

A low AST result is usually not clinically important.

- ALT, which is more closely associated with liver cells
- Alkaline phosphatase and bilirubin, which can indicate bile flow problems
- Albumin and clotting tests, which help assess liver function
- Creatine kinase, which can identify muscle injury
- Troponin, when heart muscle injury is suspected

What affects the results

AST can change for reasons unrelated to liver disease. Vigorous exercise can raise it through temporary muscle cell damage. Muscle injury, recent surgery, seizures, and injections into muscle may have similar effects.

Damage to red blood cells can also raise AST. This may happen in the body or during sample

collection and handling. This is called haemolysis. A haemolysed sample may need to be collected again.

Other influences include:

Food and time of day usually have less effect than exercise, muscle injury, alcohol, or haemolysis.

- Recent alcohol use
- Some cholesterol-lowering, anti-seizure, antibiotic like amoxicillin or doxycycline , or pain medicines
- Herbal products and bodybuilding supplements
- Recent illness or infection
- Pregnancy-related conditions
- Age and sex
- Recent blood transfusion
- Kidney disease or dialysis
- The timing of testing after an injury

Accuracy and limitations

Laboratories can measure AST reliably when the sample is collected and handled correctly. The main limitation is that AST cannot identify which organ released it.

Exercise, muscle injury, or damaged red blood cells may produce a raised result when the liver is not the source. This can lead to repeat or additional testing.

AST can also miss liver disease. Some people with chronic or advanced liver conditions have results within the reference range, so a normal result does not rule out every liver problem.

Timing matters because AST rises and falls after an injury. Results may also fluctuate between tests.

ALT is often more useful for liver cell injury, creatine kinase for skeletal muscle injury, and troponin for suspected heart muscle injury. Imaging, viral hepatitis testing, or other blood tests may be needed if AST and related results do not explain the clinical picture.

Risks and complications

A blood draw may cause a small bruise, tenderness, or brief bleeding where the needle entered. Some people feel light-headed or faint, but serious complications are uncommon.

What happens next

If AST is mildly raised and you otherwise feel well, follow-up may include reviewing medicines, alcohol intake, recent exercise, and other test results. The test may be repeated after a suitable interval to see whether the change persists.

A clinician may request ALT, bilirubin, alkaline phosphatase, creatine kinase, viral hepatitis tests, or an ultrasound. The choice depends on the pattern of results and your medical history.

Seek urgent medical advice if abnormal results occur with yellow skin or eyes, worsening abdominal pain, repeated vomiting, marked drowsiness, confusion, or unusual bleeding.

Call emergency services for severe confusion, collapse, difficulty breathing, chest pressure or pain, vomiting blood, black stools, or a suspected overdose. Do not wait for an AST result in these situations.

Common questions

Can I drink coffee before an AST blood test?

Usually, if AST is the only test. If you were told to fast because other tests are being collected, have only water unless instructed otherwise.

Does the time of day matter?

AST may vary slightly, but time of day is usually not a major influence. Repeat tests may be easier to compare when collected under similar conditions.

Can I exercise beforehand?

Light daily activity is unlikely to matter. Strenuous exercise, long-distance running, or heavy weight training can raise AST, so mention recent intense exercise.

Should I avoid alcohol before the test?

Alcohol can affect AST and other liver chemistry results. Follow your instructions and report recent alcohol use honestly.

Does a high AST mean I have liver disease?

No. AST can come from the liver, muscles, heart, or red blood cells. It must be interpreted with ALT, other tests, symptoms, medicines, and recent activity.

Do I need to stop my medicines?

Do not stop prescribed medicines on your own. Ask for instructions and provide a complete list of medicines, vitamins, herbal products, and supplements.

Sources

- MedlinePlus Medical Test: AST Test
- Kwo PY, Cohen SM, Lim JK. ACG Clinical Guideline: Evaluation of Abnormal Liver Chemistries . American Journal of Gastroenterology . 2017;112:18-35.
- Newsome PN, Cramb R, Davison SM, et al. Guidelines on the management of abnormal liver blood tests . Gut . 2018;67:6-19.
- Pettersson J, Hindorf U, Persson P, et al. Muscular exercise can cause highly pathological liver function tests in healthy men . British Journal of Clinical Pharmacology . 2008;65:253-259.
- National Institute of Diabetes and Digestive and Kidney Diseases. Liver Tests