

# Total Copper (Blood)



## Does this test have other names?

Total copper serum test

## What is this test?

This test measures the total amount of copper in your blood. Normally most of the copper in your blood is carried by a protein called ceruloplasmin.

Adults have 50 to 120 milligrams (mg) of copper in their body, mostly in muscle and the liver. Copper helps make melanin, bone, and connective tissue. It also helps with many other processes in your body. You normally get copper through your diet, in foods, such as liver and other organ meats, seafood, beans, and whole grains. You get rid of copper in your bowel movements and urine.

Many health problems can disrupt normal copper levels. This can cause you to have too little copper (copper deficiency) or too much copper (copper toxicity).

Because a normal diet has plenty of copper, copper deficiency is unlikely except in certain cases. It can occur in malnourished children. This is especially true for premature babies who don't get nutritional supplements. Children with this condition tend to have bone abnormalities and fractures. Copper deficiency can also result from a rare genetic disorder called Menkes disease. This syndrome interferes with copper absorption. Copper deficiency can lead to problems with connective tissue, muscle weakness, anemia, low white blood cell count, neurological problems, and paleness.

Too much copper can be toxic. You can get too much copper from dietary supplements or from drinking contaminated water. You can also get too much copper from being around fungicides that have copper sulfate. You can also have too much copper if you have a condition that stops the body from getting rid of copper. For example, Wilson disease keeps the liver from storing copper safely and from sending copper out of the body in your stool. Extra copper in the liver overflows and builds up in the kidneys, brain, and eyes. This extra copper can kill liver cells and cause nerve damage. Wilson disease is fatal if untreated. Extra copper can also interfere with how your body absorbs zinc and iron.

## Why do I need this test?

You may need this test if you have symptoms of either copper deficiency or copper toxicity.

Symptoms of copper deficiency can include:

- Anemia
- A low level of a type of white blood cells called neutrophils (neutropenia)
- Osteoporosis
- Paleness
- Hair with less pigment than normal

Children with copper deficiency through malnutrition or another condition may have aneurysms in the blood vessels, central nervous system problems, stunted growth, poor muscle tone and muscle weakness, and hypothermia.

Symptoms of copper toxicity include:

- Belly pain
- Diarrhea

- Vomiting

In more severe forms, copper toxicity can lead to:

- Heart and kidney failure
- Liver damage
- Brain disease or disorder
- Death

Symptoms of Wilson disease include:

- Anemia
- Low white blood cell count
- Belly (abdominal) pain, dark urine, light-colored stools, poor appetite, yellowing of eyes or skin (jaundice) when the liver is affected
- Kayser-Fleischer rings. These are brown rings around the cornea that are visible to a healthcare provider during an eye exam.
- Mental illness

If you have Wilson disease, you may need this test to make sure your treatment is working.

## What other tests might I have along with this test?

You might also be checked for possible copper deficiency, copper toxicity, or Wilson disease with these tests:

- Blood ceruloplasmin
- 24-hour urine test for copper
- Hepatic copper, or measuring copper in a liver biopsy
- Vitamin B-12 level

The level of copper in your blood can be related to many different conditions. These include liver problems or inflammation.

## 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.

The normal range for total copper in the blood is 62 to 140 micrograms per deciliter (mcg/dL).

A low amount of copper could mean that you have:

- Kidney disease
- A nutritional deficiency
- Inability to absorb copper

In Wilson disease, blood levels of copper are low even while copper builds up to toxic levels in the liver and other organs. An exception is the person with Wilson disease who has acute liver failure. In this case, the level of copper in the blood may be higher than normal.

Any of the following conditions could cause your test result to be high:

- Copper toxicity from taking in too much copper, perhaps through water or dietary supplements
- Anemia
- Biliary cirrhosis, a liver disease
- Hemochromatosis, a condition in which your body absorbs too much iron
- Overactive thyroid (hyperthyroidism)
- Underactive thyroid (hypothyroidism)
- Infection
- Leukemia
- Lymphoma
- Rheumatoid arthritis

## 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?

Pregnancy, birth control pills, infection, inflammation, and stress can all increase the copper levels in your blood. The medicines corticosteroids and corticotropin can reduce your copper levels.

## How do I get ready for this test?

You don't need to prepare for this test. Tell your healthcare provider 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.

© 2000-2027 The StayWell Company, LLC. All rights reserved. This information is not intended as a substitute for professional medical care. Always follow your healthcare professional's instructions.

This information is not intended as a substitute for professional medical care. Always follow your Healthcare professional's instructions. Copyright Krames LLC.