



# Copper



## ► Immune function ◀

Too little copper can lead to neutropenia. It is a deficiency of white blood cells, or neutrophils, which fight off infection.

A person with a low level of neutrophils is more likely to get an infectious disease.

## ► Osteoporosis ◀

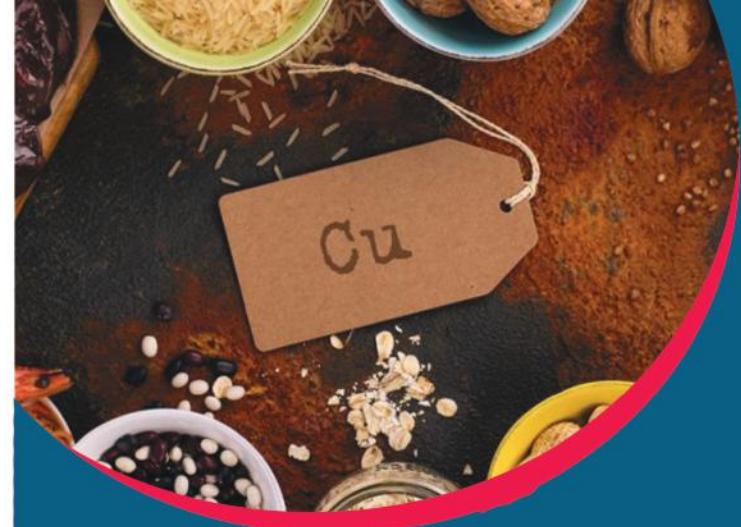
Severe copper deficiency is associated with lower bone mineral density and a higher risk of osteoporosis. More research is needed on how marginal copper deficiency may affect bone health and how copper supplementation might help prevent and manage osteoporosis.

## ► Collagen production ◀

Copper plays an important role in maintaining collagen and elastin, major structural components of our bodies. Scientists have hypothesized that trusted Source copper may have antioxidant properties and that together with other antioxidants, a healthful intake may help prevent skin aging.

Without sufficient copper, the body cannot replace damaged connective tissue or the collagen that makes up the scaffolding for bone. It can lead to a range of problems, including joint dysfunction, as bodily tissues begin to break down.

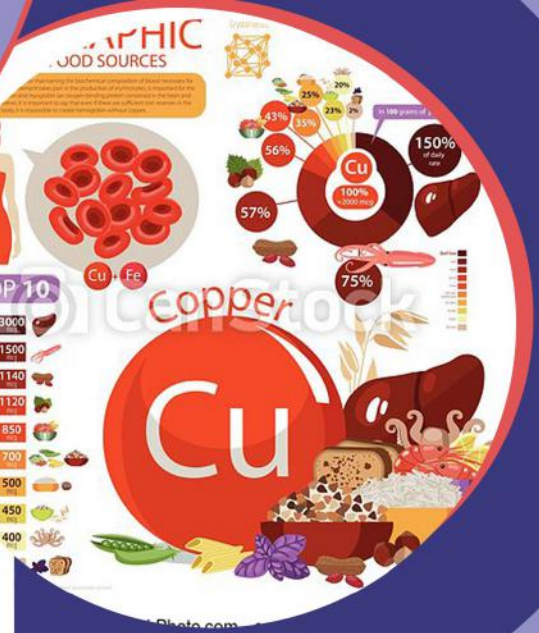
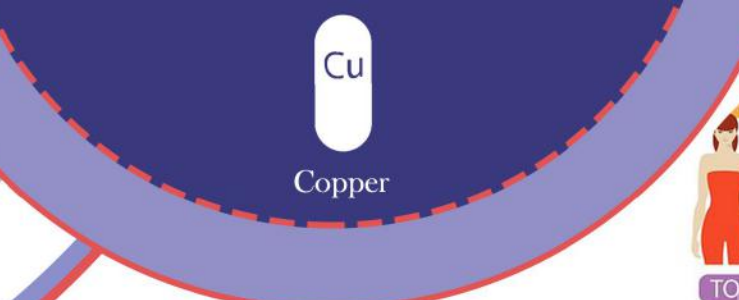
Copper is found in a wide variety of foods.



## ► Good sources include ◀

- oysters and other shellfish
  - whole grains
  - beans
  - potatoes
  - yeast
- dark leafy greens
  - cocoa
  - dried fruits
  - black pepper
- organ meats, such as kidneys and liver
  - nuts, such as cashews and almonds
- Most fruits and vegetables are low in copper, but it is present in whole grains, and it is added to some breakfast cereals and other fortified foods.





### ► Cardiovascular health ◀

Low copper levels are associated with high cholesterol and high blood pressure. One group of researchers has suggested that some patients with heart failure may benefit from copper supplements.



Animal studies have linked low copper levels to CVD, but it remains unclear if a deficiency would have the same impact on humans.

### ► Neuron signaling ◀

In 2016, Prof. Chris Chang, a chemist who is part of the Sackler Sabbatical Exchange Program at Berkeley, CA, devised and used a fluorescent probe to track the movement of copper in and out of nerve cells. Prof. Chang says: “Copper is like a brake or dimmer switch, one for each nerve cell.” His team found that if high amounts of copper enter a cell, this appears to reduce neuron signaling. When copper levels in that cell fall, signaling resumes.