Copper: The Forgotten Mineral

Certain minerals are essential for our health. These include magnesium, zinc and selenium and many more. Other minerals are toxic. These include mercury, aluminium and cadmium. But there's one mineral that doesn't fit neatly into either category.

That mineral is copper. For years people have worried about copper toxicity. People discussed the dangers of water from copper pipes and similar scenarios. Even ecological and orthomolecular doctors have been wary of copper.

But it seems that they may all have been wrong. Copper is an essential trace element. It's probably the most overlooked nutrient; the one we are least likely to supplement. Most of the body's enzymes need copper to work properly.

Another reason copper is so important is that the majority of people are deficient in it (72% in one study).

There's another problem regarding copper. It's very difficult to diagnose copper deficiency or copper toxicity. Copper levels in the blood go up in inflammatory illnesses and also in pregnancy and childhood. The reason is not fully understood but copper toxicity can be wrongly diagnosed in these situations (see below). Copper deficiency is also hard to diagnose (see below).

But why is copper important? Well, we need it to produce **collagen** (the cross links in collagen are copper dependent and crucial for its elasticity), to produce hormones and neurotransmitters (notably to convert T4 into T3); it reduces inflammation and arthritis and is essential for detoxification. It reduces bleeding and restores myelin. It reduces cholesterol, uric acid and homocysteine and enhances glucose tolerance. It moves calcium out of the soft tissues and into the bones. It protects the brain against aluminium and mercury overload (both associated with dementia) and protects the body from iron and fluoride overload. It helps metabolise fructose. It prevents aneurysms (probably by supporting collogen in blood vessels) and reduces the risk of sepsis in children. *https://www.ijpediatrics.com/index.php/ijcp/article/view/640*.

One of the ways we can tell how fast we are aging is to look at our telomeres. These progressively shorten as we age. Increased dietary copper has been associated with longer telomere length which suggests copper slows the aging process.

Most of us only get 1mg of copper or less from our diet. We need at least 3 mg per day. The body cannot synthesise copper so if we don't get enough then we will sooner or later become deficient. It's getting harder and harder to get enough as its being farmed out of the soil with intensive agriculture. Copper overload can happen but rarely.

It takes 500-600 times the RDA of copper to get toxicity, which means it is very hard to overdose on. In one case, a man who took 2 grams (2000 mg) daily for 4 months, he developed anaemia but nothing else. Most people will need at least 6 mg daily for at least 6 weeks to reverse a deficiency.

A range of medications reduce copper including anticonvulsants, retroviral drugs, antacids and PPIs.

Copper is difficult to measure. Serum copper is misleading as it goes up with inflammation, in pregnancy and childhood and after taking in high copper foods (even in the presence of net deficiency). There are better tests such as lymphocyte proliferation but these are not widely available.

Copper deficiency can cause anaemia and low white counts. Copper deficiency induces multiple sclerosis in mice.
https://academic.oup.com/metallomics/article/16/1/mfad072/7511117
Swayback (a demyelinating disease) in sheep is prevented by giving copper. Copper metabolism is impaired in multiple sclerosis. Copper deficiency can cause peripheral neuropathy.
https://pmc.ncbi.nlm.nih.gov/articles/PMC4208100/.

Copper deficiency may be a major factor in ischaemic heart disease.
https://openheart.bmj.com/content/openhrt/5/2/e000784.full.pdf?ct.

The inherited disease, Menkes syndrome, which produces copper deficiency, causes poor growth, strange hair, low body temperature, aneurysms, arthritis and mental deterioration.

Supplements

The most popular copper supplements are copper bisglycinate and copper glycinate which are effective. However, Jason Hommel recommends making a copper sulphate solution. This is both cheap and effective. His book and podcasts give details of how to do this.

It is important to start introducing copper slowly. Jason Hommel suggests 2mg daily for 1 month then 2mg twice daily for the second month, doubling each month up to 32mg daily if necessary. He has used higher doses than most would recommend but has found benefits from using the higher doses. Given people metabolise copper differently it may be better to stick to the 4-6mg range daily. Also, with higher doses of copper it may

be best to add in more zinc (the ideal ratio may be a 5 or 10:1 zinc to copper ratio). Side effects, such as nausea are common on starting. This may be a detoxification effect due to release of flourides from the body.

Further Reading: The Copper Revolution by Jason Hommel

Much of the credit for bringing copper to our awareness goes to Jason Hommel and Dr James DiNicolantonio.