

# Evidence-based Copper Usage

---

**Name(s):** Copper sulphate, copper picolinate, copper gluconate, copper complexes of various amino acids.

**Description:** Since this mineral is necessary for the synthesis of haemoglobin. Haemoglobin is the part of the blood that carries oxygen, making copper essential for respiration. Polyunsaturated fatty acids are unable to become rancid in the presence of copper. The most important property of copper is that it acts as an antioxidant for the blood. Proper bone formation is also reliant on this mineral as is the production of ribonucleic acid (RNA). Some food sources containing copper include whole-grain products, leafy vegetables, nuts, shellfish, poultry, dried legumes, and liver.<sup>1</sup>

**Absorption/Storage:** The stomach and the upper intestine are the sites of copper absorption, with only 30% being absorbed. After absorption, copper then enters the bloodstream. The amounts that are not used are excreted in the faeces.<sup>1</sup>

**Recommended Dietary Allowance/Dietary Reference Intake:** There is no RDA or RNI for copper. However, normal daily-recommended intakes are generally defined as follows:

- Birth to 3 years of age: 0.4 to 1 milligram (mg) per day.
- 4 to 6 years of age: 1 to 1.5 mg per day.
- 7 to 10 years of age: 1 to 2 mg per day.
- Adolescent and adult males--1.5 to 2.5 mg per day.
- Adolescent and adult females--1.5 to 3 mg per day.<sup>2</sup>

**Optimum Daily Allowance (Adult):** 2-3 mg.<sup>3</sup>

**Tolerable Upper Intake Levels:** None available.

**Principal Uses:** There are no well-documented uses for copper.<sup>4</sup>

**Proposed Uses:** High cholesterol, Menkes' disease (injectable copper histidine), osteoporosis and wound healing.<sup>4</sup>

**Traditional Uses:** Athletic performance, benign prostatic hyperplasia, cardiac arrhythmia, hypoglycaemia, peripheral vascular disease, rheumatoid arthritis, sprains and strains.<sup>4</sup>

**Healthy Sources:**

High (40%+ US DRI): Amaranth, raw coconut cream,

potato flour, dried oriental radish dark rye flour, soy flour, soybean nuts and boiled wing beans.<sup>5</sup>

Medium (25-39% US DRI): Adzuki beans, dried agar, boiled artichoke, raw Florida avocado, whole groat buckwheat flour, carob (St. John's bread) flour, cashew butter, roasted cashews, boiled chickpeas, coconut milk, dried figs, dried longans, dried lychees, mixed nuts without peanuts, peanut flour, dried sulphured pears, quinoa, toasted and roasted whole sesame seeds, cooked or dried shitake mushrooms, boiled navy beans, dried pepeao, baked potato with skin, boiled mature soybeans, stir-fried sprouted mature soybeans, raw spirulina, roasted sunflower seeds, canned mashed sweet potato, canned tomato paste, sun-dried tomatoes whole grain triticale flour and boiled or canned white beans.<sup>5</sup>

**Contraindications:** If you are taking this dietary supplement without a prescription, carefully read and follow any precautions on the label. For copper supplements, the following should be considered:

**Allergies--**Tell your health care professional if you are allergic to any substances, such as foods, preservatives, or dyes.

**Pregnancy--**It is especially important that you are receiving enough vitamins and minerals when you become pregnant and that you continue to receive the right amount of vitamins and minerals throughout your pregnancy. The healthy growth and development of the foetus depend on a steady supply of nutrients from the mother. However, taking large amounts of a dietary supplement in pregnancy may be harmful to the mother and/or foetus and should be avoided.

**Breast-feeding--**It is important that you receive the right amounts of vitamins and minerals so that your baby will also get the vitamins and minerals needed to grow properly. However, taking large amounts of a dietary supplement while breast-feeding may be harmful to the mother and/or baby and should be avoided.

**Children--**Problems in children have not been reported with intake of normal daily-recommended amounts.

**Older adults--**Problems in older adults have not been reported with intake of normal daily-recommended amounts.

# Evidence-based Copper Usage

Medicines or other dietary supplements--Although certain medicines or dietary supplements should not be used together at all, in other cases they may be used together even if an interaction might occur. In these cases, your health care professional may want to change the dose, or other precautions may be necessary. When you are taking copper supplements, it is especially important that your health care professional know if you are taking any of the following:

- Penicillamine or
- Trientine or
- Zinc supplements (taken by mouth)--Use with copper supplements may decrease the amount of copper that gets into the body; copper supplements should be taken at least 2 hours after penicillamine, trientine, or zinc supplements

Other medical problems--The presence of other medical problems may affect the use of copper supplements. Make sure you tell your health care professional if you have any other medical problems, especially:

- Biliary disease or
- Liver disease--Taking copper supplements may cause high blood levels of copper, and dosage for copper may have to be changed
- Wilson's disease (too much copper in the body)--Copper supplements may make this condition worse.<sup>2</sup>

## Interactions:

Decreases Mineral Availability:	Histamine blockers, <sup>4</sup> penicillamine, valproic acid, zidovudine, <sup>4,6</sup> antacids, alcohol, L-cystine, fructose and molybdenum. <sup>6</sup>
Increases Mineral Availability:	Cobalt, folic acid, iron, zinc, <sup>3</sup> oral contraceptives, <sup>4,6</sup> vitamins B6 & C. <sup>6</sup>
Is Decreased By Mineral Availability:	Ciprofloxacin, <sup>4</sup> and manganese. <sup>4,6</sup>
Is Increased By Mineral Availability:	NSAIDs effectiveness. <sup>4</sup>

Do not take copper supplements and zinc supplements at the same time. It is best to take your copper supplement 2 hours after zinc supplements, to get the full benefit of each.<sup>2</sup>

**Deficiency:** Copper deficiency is uncommon. Children with

Menke's syndrome are unable to absorb copper normally and become severely deficient unless medically treated early in life. Deficiency can also occur in people who supplement with zinc without also increasing copper intake. Zinc interferes with copper absorption. Health consequences of zinc-induced copper deficiency can be quite serious. In the absence of copper supplementation, vitamin C supplementation has also been reported to mildly impair copper metabolism. Copper deficiency can cause anaemia, a drop in HDL cholesterol (the "good" cholesterol), and several other health problems.

**Toxicity/Side Effects:** Along with its needed effects, a dietary supplement may cause some unwanted effects. Although copper supplements have not been reported to cause any side effects, *check with your health care professional immediately* if any of the following side effects occur as a result of an overdose:

### Symptoms of overdose

- Black or bloody vomit; blood in urine; coma; diarrhoea; dizziness or fainting; headache (severe or continuing); heartburn; loss of appetite; lower back pain; metallic taste; nausea (severe or continuing); pain or burning while urinating; vomiting; yellow eyes or skin

Other side effects not listed above may also occur in some individuals. If you notice any other effects, check with your health care professional.<sup>2</sup>

**Treatment for Overdose:** Lavage cautiously, but because of gastrointestinal ulceration and erosion, do not induce emesis; activated charcoal does not bind copper.<sup>7</sup>

**Storage:** To store this dietary supplement:

- Keep out of the reach of children.
- Store away from heat and direct light.
- Do not store in the bathroom, near the kitchen sink, or in other damp places. Heat or moisture may cause the dietary supplement to break down.
- Keep the dietary supplement from freezing. Do not refrigerate.
- Do not keep outdated dietary supplements or those no longer needed. Be sure that any discarded dietary supplement is out of the reach of children.<sup>2</sup>

## References:

1. Dr. Morrow's Library of Vitamins, Minerals, Amino

# Evidence-based Copper Usage

---

Acids, and Herbs: Magnesium. [Online]  
<http://www.nutritiondynamics.com/cgi-bin/process.asp?product=Copper>

2. National Library of Medicine. (1995). Magnesium Supplements (systemic). [Online]  
<http://www.nlm.nih.gov/medlineplus/druginfo/coppersupplementssystemic202164.html>
3. Balch, P.A. & Balch, J.F. (2000). Prescription for nutritional healing (third edition). Garden City Park: Avery Publishing.
4. Austin, S., Gaby, A., Appleton, J. et al. (2001). HealthNotes Online. [Online] <http://healthnotes.com>
5. Pennington, J.A. (1998). Boes and Church's food values of portions commonly used (seventeenth edition). Philadelphia, PA: Lippincott.
6. Meletis, C. & Jacobs, T. (1999). Interactions between drugs & natural medicines. Sandy, OR.: Eclectic Medical Publications.
7. Leikin, J.B. & Paloucek, F.P. (1995). Poisoning & toxicology handbook (second edition). Hudson, Ohio:

Lexi-Comp/American Pharmaceutical Assoc.

Information in this booklet is provided for informational purposes and is not meant to substitute for the advice provided by your own physician or other medical professional. You should not use the information contained herein for diagnosing or treating a health problem or disease, or prescribing any medication. You should read carefully all product packaging. If you have or suspect that you have a medical problem, promptly contact your health care provider. Information and statements regarding dietary supplements have not been evaluated by the Food and Drug Administration and are not intended to diagnose, treat, cure, or prevent any disease.

Compiled by:  
Michael John Nisbett, HBScN, RN  
MSc (Nutrition) Candidate