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Bone Broth Diet

Collagen, Vitamins & Minerals Your Body Needs for Ancient Superfoods

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Copper Deficiency Symptoms + Sources to Reverse It

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Copper is an essential mineral that benefits bone, nerve, and skeletal health. Therefore, although it is not that common, a copper deficiency can actually harm the body in multiple ways. Copper is important for the production of hemoglobin and red blood cells, as well as for the proper utilization of iron and oxygen within the blood.

Because the body uses copper frequently and cannot store it in sufficient amounts, eating foods high in copper like liver, nuts and seeds, wild-caught fish, beans, certain whole grains, and certain vegetables is the best way to prevent a copper deficiency.

How do you know if your copper deficiency? Some of the most common copper deficiency symptoms include a low level of white blood cells called neutrophils (neutropenia), anemia, osteoporosis and hair with less pigment than normal.

Because it is involved in the maintenance of cells related to almost every part of the body's tissues, copper is important for preventing joint and muscle pain. That is why it is sometimes used as a natural treatment for arthritis. Copper is important for sustaining energy levels, preventing premature aging, balancing hormones and much more too.

What Is Copper Deficiency?

The recommended dietary allowance (RDA) of copper for adult men and women is 900 micrograms per day (or 0.9 milligram per day). Most adults living in developed nations obtain proper amounts of copper through diet, supplements and drinking water from copper pipes. Copper deficiency is much more common in malnourished populations

suffering from a general lack of calories and a lack of copper-rich foods.

What can cause a copper deficiency? Copper deficiency can be acquired or inherited. If it's acquired, causes can include malnutrition, malabsorption or excessive zinc intake. The absorption of copper can also be impaired from very high intakes of iron, usually from supplements. Zinc is another nutrient that interacts closely with copper. Like iron, the human body requires copper and zinc in a healthy balance since too much zinc can lower copper levels.

A copper deficiency also is sometimes present in people suffering from serious digestive disorders that impair nutrient absorption, such as Crohn's disease. Other causes can include a severe childhood protein deficiency, persistent infantile diarrhea (usually associated with a diet limited to milk) or gastric surgery (where vitamin B12 deficiency may also be present). Long-term use of oral contraceptives is also known to upset copper balance in the body, resulting in copper levels that are excessively high or low.

What are zinc-induced copper deficiency symptoms? Bone changes can distinguish a copper deficiency resulting from excess zinc intake. Acquired copper deficiency from zinc toxicity is not common, but research shows that it can be pinpointed by bone marrow examination followed by additional testing.

The U.S. Food and Drug Administration recommends the following amounts of copper be obtained daily depending on your age for best health:

- Infants 0–12 months: 200 mcg/day
- Children 1–3 years: 300 mcg/day
- Adults and children over the age of 4: 900 mcg/day
- Pregnant and breastfeeding women: 1,300 mcg/day

Some possible symptoms of copper deficiency include:

- Anemia
- Bone abnormalities
- Osteoporosis
- Copper deficiency neuropathy
- Low numbers of white blood cells known as neutrophils (neutropenia)
- Increased susceptibility to infection
- Impaired growth
- Premature graying of hair/hair with less pigment than normal
- Skin paleness
- Neurological symptoms

How do you know if you have a copper deficiency? A blood test can determine whether or not you have an acquired copper deficiency. The test evaluates your copper and ceruloplasmin levels. Ceruloplasmin is a protein made in your liver that stores and carries the majority of the copper mineral around your body.

Like humans, animals can also struggle with nutrient deficiencies. For example, copper deficiency in cattle and copper deficiency in goats can occur and be a challenge for farmers because it affects the health of their livestock.

Why We Need Copper

As you can see, a copper deficiency can cause a lot of really concerning health problems. Copper is the third most prevalent mineral within the body, yet the body cannot create it by itself. The main way to obtain copper is by eating certain foods. Copper is mostly in the liver, kidneys, heart and brain of humans and animals.

Wondering what copper does to the body? It plays an important role in maintaining a healthy metabolism, as well as contributing to bodily growth and repair. Copper helps produce melanin, bone and connective tissue. The body also needs copper to properly carry out many enzyme reactions and maintain the health of connective tissue. The body excretes copper through urine and bowel movements.

There many copper benefits that have major effects on human health, including:

1. Supports a Healthy Metabolism

Copper plays a vital party in maintaining a healthy metabolism because it ensures that many critical enzymes function properly. Enzymatic reactions are needed for our various organ systems to keep our metabolism running smoothly since they are what allows nerves to communicate with one another. This is one reason why copper enzymes are particularly abundant in the tissues of the body with the greatest metabolic activity, including the heart, brain and liver.

Copper is important for the nervous system, cardiovascular system, digestive system and almost every other part of the body too because of its impact on metabolic processes. It is essential for the synthesis of adenosine triphosphate (ATP), the body's source of fuel. Therefore a copper deficiency can result in a sluggish metabolism, low energy and other signs of poor metabolic health.

2. Provides the Body with Energy

ATP is the fuel that the body runs off of and its main source of energy. It is created in the mitochondria of cells, and copper is needed for ATP production to properly take place. Copper acts as a catalyst in the reduction of molecular oxygen to water, which is the chemical reaction that takes place during the creation of ATP.

Copper also makes protein more available to the body by freeing up iron in the blood, making it better utilized. Because it influences ATP and protein metabolism, it is important for general healing of the body's muscles, joints and tissue. It's also vital for maintaining high energy levels.

3. Needed for Proper Brain Function

According to studies, copper impacts some important brain pathways involving the neurotransmitter dopamine. Your body needs dopamine to keep energy up, maintain a happy mood and outlook, and help with focus. A dietary copper deficiency in humans is associated with a decrease in dopamine levels.

Without enough copper present in the body, signs of a copper deficiency can occur, such as low metabolic activity, fatigue, trouble concentrating, a poor mood and more. These are a sign that the network of reactions and metabolic pathways involving copper are suffering.

4. May Help Arthritis Symptoms

Studies have been limited, but copper may help the pain and stiffness associated with arthritis.

People with arthritis sometimes choose to wear copper bracelets or bands because some believe that the copper can be absorbed through the skin and can help decrease painful symptoms. However, research has shown that positive results of wearing copper bracelets for people with arthritis are most likely due to the placebo effect.

5. Maintains a Healthy Nervous System

Another benefit of copper is that it helps maintain the myelin sheath, which is the outside layer surrounding the nerves. Copper is known to stimulate thought processes and help

with cognitive function. It acts as a brain stimulant because it affects the processes of certain transporter proteins that fire neurons in the brain.

Copper enables neural pathways to fully develop, increasing creativity, decision making, memory, communication and other important cognitive functions that rely on a healthy nervous system and neurotransmitter signaling.

6. Helps Build and Maintain a Healthy Skeletal Structure

Copper plays an important role in growing bones, in addition to connective tissue and muscles. A copper deficiency can show up in brittle bones that are prone to breaking and not fully developing, osteoporosis, low strength and muscle weakness, weak joints, and more. Along with other nutrients like zinc, manganese, magnesium and calcium, copper is essential for healthy bones.

Multiple clinical studies demonstrate how taking copper, manganese, zinc and calcium together appears to be more effective at preventing bone loss than taking a calcium supplement alone.

7. Needed for Proper Growth and Development

In Western nations, copper deficiencies are not as common, but you can find them more commonly in third-world countries where undernourishment is a serious problem. In these populations, you can see the negative effects of lacking copper in the stunting of growth and poor development of children.

Along with iron, copper helps the body form red blood cells. In addition to its role in bone health, copper also assists in keeping our blood vessels, nerves and immune systems functioning optimally.

8. Helps Balance Thyroid Activity

Copper is needed for proper thyroid function because it works with other trace minerals like selenium and zinc that are needed to balance thyroid activity and prevent either hypothyroidism or hyperthyroidism. It's believed that the relationships between these trace minerals are complex, because an elevation of one must be balanced by the others.

When any of these important minerals is either too present in the body or a deficiency takes place, the thyroid can suffer. This can result in fatigue, weight gain or loss, changes in body temperature and appetite, and other unwanted symptoms.

9. Prevents Anemia or Low Iron Levels

Copper and iron work together in the synthesis of hemoglobin and red blood cells. According to studies, copper plays a part in the absorption of iron from the intestinal tract. It also helps iron be released into the liver, where it is primarily stored.

Iron from food sources, and supplements too, is used to create red blood cells. When copper deficiency occurs, iron levels can fall too low, and anemia can develop. This causes anemia symptoms like fatigue, muscle aches, digestive problems and impaired brain function.

10. Needed for Healthy Hair, Skin and Eyes

The body needs adequate levels of copper to create the natural pigment and texture of the skin, hair and eyes. Copper plays a part in the development of melanin, which is a pigment that gives skin, hair and eyes their coloring. In order for melanin to be created in the body, copper must be present to help create the enzyme called tyrosinase. Tyrosinase allows melanin to develop.

Copper also supports collagen production. What is collagen? It is the substance responsible for maintaining skin's youthful appearance and elasticity. Additionally, copper plays a role in the production of elastin, a substance found in the connective tissue of skin that keeps skin's flexibility intact.

It's also important for keeping hair from turning gray. Copper deficiency gray hair really is a thing. A study published in 2012 looked at blood levels of copper, zinc and iron in human subjects under the age of 20 experiencing premature graying of their hair. The researchers conclude that low serum copper levels may play a significant role in premature graying of hairs. More studies are needed, but copper deficiency hair loss may occur in some individuals as well.

Importance of Copper in Traditional Medicine

Copper compounds were a prescription by Hippocrates to treat various diseases as early as 400 B.C.. Some say that copper may likely have been the first metal to be used as a trace mineral supplement thousands of years back.

In more recent times, copper is a health promoting ingredient in various schools of traditional medicine. For example, [South African traditional medicine](#) is known to use copper sulfate for aches, pains, inflammation, skin rashes and even some sexually transmitted diseases.

Some practitioners of Ayurvedic medicine recommend drinking water stored overnight in a copper container first thing in the morning to promote good health and balance all three doshas.

How to Overcome Copper Deficiency

The best and safest way to avoid a copper deficiency is to get this important nutrient through your diet.

Which foods are high in copper? Here are **20 of the best food sources of copper** to help you meet your daily needs:

1. **Beef liver**
1 ounce: 4 milligrams (200 percent DV)
2. **Dark chocolate**
1 bar: 1.8 milligrams (89 percent DV)
3. **Sunflower seeds**
1 cup with hulls: 0.8 milligram (41 percent DV)
4. **Cashews**
1 ounce: 0.6 milligram (31 percent DV)
5. **Chickpeas**
1 cup: 0.6 milligram (29 percent DV)
6. **Raisins**
1 cup: 0.5 milligram (25 percent DV)
7. **Lentils**
1 cup: 0.5 milligram (25 percent DV)
8. **Hazelnuts**
1 ounce: 0.5 milligram (25 percent DV)
9. **Dried apricots**
1 cup: 0.4 milligram (22 percent DV)
10. **Avocado**

1 avocado: 0.4 milligram (18 percent DV)

11. **Sesame seeds**

1 tablespoon: 0.4 milligram (18 percent DV)

12. **Quinoa**

1 cup, cooked: 0.4 milligram (18 percent DV)

13. **Turnip greens**

1 cup, cooked: 0.4 milligram (18 percent DV)

14. **Blackstrap molasses**

2 teaspoons: 0.3 milligram (14 percent DV)

15. **Shiitake mushrooms**

1 ounce: 0.3 milligram (14 percent DV)

16. **Almonds**

1 ounce: 0.3 milligram (14 percent DV)

17. **Asparagus**

1 cup: 0.3 milligram (13 percent DV)

18. **Kale**

1 cup, raw: 0.2 milligram (10 percent DV)

19. **Goat cheese**

1 ounce, semi-soft: 0.2 milligram (8 percent DV)

20. **Chia seeds**

1 ounce (28 grams): 0.1 milligram (3 percent DV)

Copper Recipes + Adding Copper to Your Diet Naturally

You can make sure to get proper levels of copper from your diet by including nutrient-dense copper foods, including mushrooms, avocado, cocoa and almonds into your recipes. Try some of these recipes below which all feature ingredients high in copper:

- For breakfast, try making this easy [Almond Berry Cereal](#)
- As a side dish, salad topper or sandwich spread, try one of these [29 Hummus Recipes](#), which uses tahini made from sesame seeds as one of the main ingredients
- For lunch or dinner, have some mushrooms by making this [Mushroom Soup](#) or [Grilled Portobello Burger](#)
- For dessert, have this guilt-free [Chocolate Avocado Mouse](#) or make another one of these creative recipes using [avocado](#)
- Another any-time-of-day option is this decadent [Dark Chocolate Almond Butter Recipe](#), which can be used for breakfast, as a snack spread on some fruit or even in dessert

Aside from eating copper-rich foods, you can obtain copper through drinking water and cooking in copper cookware. This is because many pipes that transport water into your home often contain copper, so a certain amount of copper is able to leach into the water prior to you drinking it, which can be beneficial if you have a deficiency.

The same happens when you cook with copper pots and pans, your food is able to absorb some of the natural copper that is present within the metal.

Copper Supplements and Dosage

Copper supplements are not necessary for a healthy person with a balanced diet. If you know that you are deficient after having a copper deficiency test, then check with your doctor. For treatment of an acquired copper deficiency 1.5 to 3 milligrams of copper per day by mouth (usually as copper sulfate) may be recommended.

Only take a copper supplement under the recommendation and supervision of your health care provider.

Copper Toxicity and Precautions

Can too much copper be harmful? Yes, it can be. Copper is toxic in large amounts, so it's important to stick somewhat close to the RDA. Too high of levels can lead to acute and temporary copper poisoning. Copper toxicity symptoms can include nausea, vomiting, diarrhea, and even kidney damage or anemia.

You definitely don't want excessive copper levels in your body, which can lead to various health problems. Some studies have even linked high levels of copper to tumor and cancer growth.

It is known that an overload or deficiency of copper is associated with two inherited, genetic diseases called Wilson disease and Menkes disease. See your doctor if you or your child show any signs of Menkes or Wilson disease.

Final Thoughts

- Some signs of copper deficiency can include low neutrophils, anemia, osteoporosis and hair with less pigment than normal.
- Possible copper toxicity symptoms include nausea, vomiting and diarrhea. More

serious symptoms include kidney damage or anemia.

- There are many benefits of copper, such as:
 - Positive effects on metabolism and energy production in the body
 - Key role in growth and development
 - Vital to bone health, nervous system function, iron levels and red blood cell production
 - In a healthy balance with other trace minerals, helps to encourage ideal thyroid function
 - Having ample levels of iron can ward off premature graying of hair for some
 - Boosts skin health by encouraging collagen production
- Most people can obtain enough copper through their diets.
- Foods with copper include beef liver, shiitake mushrooms, cashews, chickpeas and kale.
- If you find out that you have a copper deficiency, only take a copper supplement under the recommendation and supervision of your health care provider.

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