Zinc…Essential to Good Health

Zinc is a critical element in human health. An essential trace mineral, zinc is required for the metabolic activity of 300 of the body's enzymes and is considered essential for cell division and the synthesis of DNA and protein.

Zinc is also critical to tissue growth, wound healing, taste acuity, connective tissue growth and maintenance, immune system function, prostaglandin production, bone mineralization, proper thyroid function, blood clotting, cognitive functions, fetal growth, and sperm production.

Zinc Deficiency

Zinc is the number-one nutritional deficiency in U.S. children, according to a Tufts University study. More than 50 percent of poor children and 30 percent of non-poor children, ages 1-5, get less than 70 percent of the Recommended Dietary Allowance of zinc. The study shows that of 16 key nutrients, more children were deficient in zinc than in any other nutrient. Zinc deficiency has been implicated as a factor in:

- Birth Defects
- Low Birth Weight
- Delayed Sexual Development
- Impaired Learning
- Loss of Smell and Taste Sensation
- Diminished Wound Healing
- Anorexia
- Loss of Appetite
- Paranoia
- Depression
- Strong Body Odor
- Benign Prostatic Hypertrophy
- Impotence
- Some Hair, Nail, and Joint Conditions
- Arthritic Problems
- Cataracts
- Optic Neuritis
- Skin Conditions such as Acne and Dermatitis
- defective bone mineralization
- Weight Loss
- Hypogonadism in Males
- Lack of Sexual Development in Females
- Infections
- Small Breasts in Females
- Growth Retardation
- Dwarfism
- Delayed Puberty in Adolescents
- Rough Skin
- Poor Appetite
- Mental Lethargy
- Short Stature
- Diarrhea
- Pneumonia
- Stretch Marks
- Poor Immune Function
- Reduced Collagen (connective tissue)
- Cataracts
- Acne
- Cross-linking in Collagen
- Macular Degeneration
- Myopia
- Retinal Detachment

Factors Affecting Zinc Availability

More than half of the body's zinc supply is found in muscle tissue. Zinc is also found in the bones, eyes, prostate gland, testes, skin, and kidneys. Minerals may compete for absorption sites in the intestine. The absorption sites for zinc are the same ones used by iron and copper. Therefore, excess intake of iron or copper can adversely interfere with zinc absorption. Likewise, excess intake of zinc can impair iron and copper absorption. Phytates and fiber found in unprocessed grains inhibit the bioavailability of zinc and other minerals. Exposure to toxic metals such as lead or cadmium can interfere with the absorption of zinc and displace zinc in its metabolic functions. Whole grain yeast breads enhance the absorption of zinc by producing enzymes that destroy phytates. Sprouting grains also destroys phytates. Zinc from meat products is four times more bioavailable than that found in fibrous grain foods.

Zinc is easier to absorb in smaller doses. Overall, the body absorbs 15-40% of dietary zinc, depending on the body's requirement. Zinc stored in body tissues does not function as zinc reserves, so the body depends on adequate dietary intake for its daily requirements.

Zinc is lost in sweat and through food processing. Canning or cooking in water can also deplete the amounts of zinc in food because zinc is water soluble.

Zinc Toxicity

While a zinc deficiency is a health disaster, once the body's needs have been met, more is not better.

If you take too much zinc, you may experience zinc toxicity, which may result in abdominal cramping, diarrhea, and vomiting.

Excessive zinc intake will eventually affect the balance and proper ratios to numerous other important nutrients that may include iron, calcium, selenium, nickel, phosphorus, copper, as well as Vitamin A, B1, C, and others.

Long term overdosing on zinc may also cause, or contribute to, gastrointestinal problems, hair loss, anemia, loss of libido, impotence, prostatitis, ovarian cysts, menstrual problems, depressed immune functions, muscle spasms, sciatica, renal tubular necrosis / interstitial nephritis, dizziness, and vomiting, among others.

Zinc Boosts the Immune System

The significance of zinc in the body's response to infection is well known. Zinc is a component in thymic hormone which controls and facilitates the maturation of lymphocytes. Zinc also plays a role in cell division and DNA replication, thereby aiding in the production of immune system cells.

Zinc Cuts Short the Common Cold

Zinc gluconate lozenges taken at the first sign of a cold reduce duration and symptom severity according to a 1992 study. Zinc, an antiviral agent and astringent, is released into the saliva, relieving cough, nasal drainage, and congestion. Dr. Michael Macknin told CNN news. "It's the first thing I'm aware of that actually decreased the duration of cold symptoms to this extent." Researchers studied 100 patients who had cold symptoms for less than 24 hours, giving half of the patients a zinc lozenge and the other half a placebo. " ..... there was nearly a 50 percent reduction in the duration of the symptoms of the common cold."

Dietary Sources of Zinc

Rich sources of zinc are oysters, beef, liver, crab, seafood, poultry, nuts and seeds, whole grains, tofu, peanuts and peanut butter, legumes, and milk. Zinc found in breast milk is better absorbed than that in formula milk. Fruits and vegetables are not generally good sources of zinc.

The list below provides the zinc content of selected foods in mg. of zinc.

- Oysters, 3.5 oz ckd **39**
- Beef pot roast, 3.5 oz ckd **8.5**
- Ground beef, 3.5 oz ckd **5.5**
- Turkey, 3.5 oz ckd **4.5**
- Chicken liver, 3.5 oz ckd **4.3**
- Pumpkin seeds, 1/4 cup **4.2**
- Wheat germ, 2 TBLS. **2.4**
- Yogurt, low fat, 1 cup **2.2**
- Soy nuts, 1/4 cup **2.1**
- Almonds, 1/4 cup **2.0**
- Peanuts, 1/4 cup **1.7**
- Sunflower seeds, 1/4 cup **1.7**
- Shrimp, 3.5 oz ckd **1.6**
- Chicken, 3.5 oz ckd **1.3**
- Lentils, 1/2 cup cooked **1.3**

The upper limit of safety for zinc established by the Food and Nutrition Board of the Institute of Medicine is 40 milligrams daily for adults.

The Zinc Tolerable Upper Intake Levels for different life stages are:

Infants
0-6 months **4** (mg/day)
7-12 months **5** (mg/day)

Children
1-3 years **7** (mg/day)
4-8 years **12** (mg/day)

Males, Females
9-13 years **23** (mg/day)
14-18 years **34** (mg/day)
19-70 years **40** (mg/day)
70 years **40** (mg/day)

Pregnancy
18 years **34** (mg/day)
19-50 years **40** (mg/day)

Lactation
18 years **34** (mg/day)
19-50 years **40** (mg/day)

Zinc and Athletic Performance

Endurance athletes may develop a zinc deficiency because of dietary deficiencies and increased zinc demands and losses. A high carbohydrate diet has been used by endurance athletes in an attempt to enhance their performance. High carbohydrate diets are low in zinc. If zinc supplements are not being taken, low zinc levels are likely.

Poor appetite is one potential sign of zinc deficiency. Because zinc is involved in the growth and development of taste buds, deficiency reduces taste and a poor appetite. Zinc deficient individuals also tend to find protein disagreeable, compounding their problem. In female athletes zinc deficiency can result in menstrual cycle irregularities, amenorrhoea, and osteoporosis.

Zinc deficiency in athletes can lead to anorexia, weight loss, decreased endurance, fatigue, and an increased risk of osteoporosis.

Strenuous exercise may contribute to the zinc deficiency by increasing sweat loss and zinc redistribution between blood plasma and red blood cells.

Recommendations on Zinc Supplements

Remember that the RDI (Recommended Daily Intake) and RDA (Recommended Daily Allowance) numbers are a statistical estimate of the amounts that prevent individuals from demonstrating deficiency signs and symptoms. The optimum nutrition level is generally higher than the RDI numbers, sometimes much higher. Unfortunately, we do not know what those numbers are. Furthermore, individual needs vary with age, sex, health status, and individual genetic makeup. The simplest estimate of optimum zinc intake is assume that it is between the RDI numbers and the maximum tolerance numbers from the table above. It is also likely that foods are deficient in zinc in general, therefore, zinc supplementation is appropriate.

In general, the sum of the zinc from foods and supplements should not exceed the maximum tolerance estimates, at least for long periods of time.

Because zinc competes with iron and copper, those taking high doses of zinc supplements may develop deficiencies of these minerals. One way to avoid this is to take a good broad spectrum multi-mineral supplement. It is best to take these at different times to avoid conflict over the absorption channels.

Zinc is water soluble and is not stored effectively in body tissues. Therefore, for maximum absorption and utilization of supplemental zinc, it is best to take it in divided doses at different times of the day.

Take our Zinc Taste Test to find out where you stand!

Call our HealthQuest Radio Hotline with any questions you may have.