

# ZINC

Zinc is an essential element for humans. It plays important roles in growth and development, the immune response, neurological function, and reproduction. Zinc is a component of various enzymes, the structure of proteins and cell membranes, and regulates gene expression. In animal studies, zinc has reported to reduce the toxic effects of nickel and cadmium.

Zinc is present in plant and animal tissues, and food is the major source of zinc intake. Drinking water usually makes a negligible contribution to total intake. In surface and ground waters, the concentration of zinc from natural leaching is usually less than 0.01mg/L. Tap water can contain much higher concentrations as a result of corrosion of zinc coated pipes and fittings. In major Australian reticulated supplies, a typical concentration of 0.05mg/L is found.

There are 1.4 to 2.3 grams of zinc found in the average healthy human adult. It is found in the liver, pancreas, kidney, bone and skeletal muscle in the greatest proportion and is found in lesser amounts in the eye, prostate gland, semen, skin, hair, as well as finger and toe nails.

## **Nutrient Interactions**

### **Copper**

Taking large quantities of zinc (50mg/day) over a period of week can interfere with copper bioavailability. More typical intakes of zinc do not affect copper absorption and high copper intakes do not affect zinc absorption.

### **Iron**

Dietary intake of iron at levels found in some supplements (38-65mg/day of element iron) can decrease zinc absorption, which is a particular concern in the management of pregnancy and lactation.

### **Calcium**

High intakes of calcium have been shown to have a negative effect on zinc absorption in animal experiments, but human data are equivocal with calcium phosphate decreasing zinc absorption and calcium as citrate-malate complex having no effect.

### **Folic acid**

There is also some evidence of potential interrelationship of zinc with folate, but studies are limited.

### **Vitamin A**

Zinc and vitamin A interact in several ways. Zinc is a component of retinol-binding protein, a protein necessary for transporting vitamin A in the blood. Zinc is also required for the enzyme that converts retinol (vitamin A) to retinal.

## **Zinc deficiency**

Although dietary is unlikely to cause severe zinc deficiency in individuals without a genetic disorder, zinc malabsorption or conditions of increased zinc loss, such as severe burns or prolonged diarrhea may also result in severe zinc deficiency.

Symptoms and diseases of zinc deficiency include:

- Slowing or cessation of growth and development
- Delayed sexual development
- Characteristic skin rashes
- Chronic and severe diarrhea
- Impaired immune responses
- Impaired wound healing
- Diminished appetite
- Anorexia nervosa
- Impaired taste sensation
- Night blindness
- Swelling and clouding of the corneas
- Behavioral disturbances
- Anemia
- Alopecia (hair loss)
- Oral and perioral dermatitis
- Benign prostatic hypertrophy

**Deficiency produces wide-ranging diseases including birth defects and degenerative diseases in all age groups. Heavy losses of zinc also occur in sweat. The average daily recommended intake of zinc for adults is about 0.2mg/kg of body weight.**

There is more information on

<http://www.nrv.gov.au/nutrients/zinc>

<http://lpi.oregonstate.edu/infocenter/minerals/zinc/index.html>

<http://www.healthy.net/scr/article.asp?id=2071> and <http://ods.od.nih.gov/FactSheets/Zinc.asp>

It does not in any way purport to give medical advice or recommendations.  
Remember that nothing will replace a good diet and regular exercise.