

# Zinc: Benefits, intake, sources, deficiency, and side effects

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Zinc is a trace element that is necessary for a healthy immune system. A lack of zinc can make a person more susceptible to disease and illness.

It is responsible for a number of functions in the human body, and it helps stimulate the activity of at least 100 different enzymes. Only a small intake of zinc is necessary to reap the benefits.

Currently, the recommended dietary allowance (RDA) for zinc in the United States is 8 milligrams (mg) a day for women and 11 mg a day for men.

The element is naturally found in many different foods, but it is also available as a dietary supplement.

## Fast facts on zinc

Here are some key points about zinc. More detail and supporting information is in the main article.

- Zinc is an important aspect of [nutrition](#).
- Zinc deficiency can occur if there is not a high enough consumption from diet or supplementation.
- Deficiency in children can lead to growth impediments and increased risk of infection.
- During pregnancy and lactation, women may need extra zinc.

Zinc is vital for a healthy immune system, correctly synthesizing DNA, promoting healthy growth during childhood, and healing wounds.

The following are some of the health benefits of zinc:

### 1) Zinc and regulating immune function

According to the [European Journal of Immunology](#), the human body needs zinc to activate T lymphocytes (T cells).

T cells help the body in two ways:

1. controlling and regulating immune responses
2. attacking infected or cancerous cells

Zinc deficiency can severely impair immune system function.

According to a study published in the [American Journal of Clinical Nutrition](#), “zinc-deficient persons experience increased susceptibility to a variety of pathogens.”

## 2) Zinc for treating diarrhea

According to the World Health Organization, [diarrhea](#) kills an astonishing 1.6 million children under 5 every year. Zinc pills may help reduce diarrhea.

A [PLoS Medicine study](#), which “followed a nationwide public health campaign to increase zinc use for childhood diarrhea in Bangladesh,” confirmed that a 10-day course of zinc tablets is effective at treating diarrhea and also helps prevent future bouts of the condition.

## 3) Zinc effects on learning and memory

Research conducted at the University of Toronto and published in the journal [Neuron](#) suggested that zinc has a crucial role in regulating how neurons communicate with one another, affecting how memories are formed and how we learn.

## 4) Zinc to treat the common cold

Zinc lozenges were found to shorten the duration of common cold episodes by up to 40 percent in a study published in the [Open Respiratory Medicine Journal](#).

In addition, a [Cochrane review](#) concluded that taking “zinc (lozenges or syrup) is beneficial in reducing the duration and severity of the common cold in healthy people, when taken within 24 hours of onset of symptoms.”

## 5) Zinc’s role in wound healing

Zinc plays a role in maintaining skin integrity and structure. Patients experiencing chronic wounds or ulcers often have deficient zinc metabolism and lower serum zinc levels. Zinc is often used in skin creams for treating diaper rash or other skin irritations.

A Swedish study that analysed zinc in wound healing concluded, “topical zinc [may stimulate leg ulcer healing](#) by enhancing re-epithelialization, decreasing [inflammation](#) and bacterial growth. When zinc is applied on wounds, it not only corrects a local zinc deficit but also acts pharmacologically.”

However, research has not consistently shown that use of zinc sulfate in patients with chronic wounds or ulcers is effective at improving healing rate.

## 6) Zinc and decreased risk of age-related chronic disease

A study from researchers at [Oregon State University](#) have found that improving zinc status through diet and supplementation may reduce the risk of inflammatory diseases. It has been known for decades that zinc has a significant role in immune function. Deficiency has been linked to increased inflammation in chronic disease and triggering new inflammatory processes.

## 8) Zinc for preventing age-related macular degeneration (AMD)

Zinc prevents cellular damage in the retina, which helps in delaying the progression

of AMD and vision loss, according to a study published in the [Archives of Ophthalmology](#).

## 9) Zinc and fertility

Several studies and trials have linked poor zinc status with low sperm quality. For example, [one study in the Netherlands](#) found that subjects had a higher sperm count after zinc sulfate and [folic acid](#) supplementation. In another study, researchers concluded that poor zinc intake may be a risk factor for low quality of sperm and male [infertility](#).

## 10) Other possible zinc benefits

Zinc may also be effective for the treatment of:

- [acne](#) – one study, [published in JAMA](#), showed promising results of zinc sulfate for the treatment of acne
- attention deficit hyperactivity disorder ([ADHD](#))
- [osteoporosis](#)
- preventing and treating [pneumonia](#)

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Adequate zinc intake is especially important for children because even mild zinc deficiency can impede growth, increase risk of infection, and increase risk of diarrhea and respiratory disease.

The recommended intake for children 1-8 years old ranges from 3-5 milligrams, increasing as the child gets older.

Males 9-13 years old require 8 milligrams of zinc per day. After the age of 14, the requirement increases to the 11 milligrams per day that is required for all adult males. For females over the age of 8, the requirement stays stable at 8 milligrams per day, except for ages 14-18, where the recommendation increases to 9 milligrams per day.

Pregnant and lactating women have an increased need for zinc at 11-13 milligrams per day, depending on age.

The best sources of zinc are beans, animal meats, nuts, fish and other seafood, whole grain cereals, and dairy products. Zinc is also added to some breakfast cereals and other fortified foods.

Vegetarians may require up to 50 percent more than the recommended intake of zinc because of low bioavailability of zinc from plant-based foods.

Foods with the highest reported zinc content are:

- raw oysters (Pacific), 3 ounces: 14.1 milligrams

- beef, lean chuck roast, braised, 3 ounces: 7.0 milligrams
- baked beans, canned, ½ cup: 6.9 milligrams
- crab, King Alaskan, cooked, 3 ounces: 6.5 milligrams
- ground beef, lean, 3 ounces: 5.3 milligrams
- lobster, cooked, 3 ounces: 3.4 milligrams
- pork loin, lean, cooked, 3 ounces: 2.9 milligrams
- wild rice, cooked, ½ cup: 2.2 milligrams
- peas, green, cooked, 1 cup: 1.2 milligrams
- yogurt, plain, 8 ounces: 1.3 milligrams
- pecans, 1 ounces: 1.3 milligrams
- peanuts, dry roasted, 1 ounces: 0.9 milligrams

Zinc supplements are also available in the form of capsules and tablets. However, the tolerable upper limit for zinc is 40 milligrams for males and females over 18 years.

It has been proven time and again that isolating certain nutrients in supplement form will not provide the same health benefits as consuming the nutrient from a whole food. First focus on obtaining your daily zinc requirement from foods, then use supplements as a backup if necessary. Zinc supplements are available to purchase in many health food stores and [online](#).

Normally, zinc deficiency is due to insufficient dietary intake. However, it may also be due to malabsorption and chronic illnesses such as [diabetes](#), malignancy ([cancer](#)), liver disease, and sickle cell disease.

Zinc deficiency signs include:

- loss of appetite
- [anemia](#)
- slow wound healing
- skin conditions such as acne or [eczema](#)
- abnormal taste and smell
- depressed growth
- altered cognition
- [depression](#) (more research needed)
- diarrhea
- [hair loss](#)

Zinc deficiency during pregnancy may [increase the chances](#) of a difficult or prolonged birth.

Zinc has many health benefits, but excessive zinc intake can be harmful. Adverse effects of severely high zinc intake may include:

- nausea
- vomiting
- loss of appetite
- stomach pains
- [headaches](#)
- diarrhea

Excess zinc may suppress [copper](#) absorption, according to a study published in [Biological Trace Element Research](#).

There is also some evidence that increased levels of zinc in the body might play a role in the development of [kidney stones](#). Research into this and other health benefits of zinc are happening now, but we have known for decades that zinc is important to good health.

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