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# Selenium in diet

Selenium is an essential trace mineral. This means your body must get this mineral in the food you eat. Small amounts of selenium are good for your health.

## Function

Selenium is a trace mineral. Your body only needs it in small amounts.

Selenium helps your body with:

- Making special proteins, called antioxidant enzymes. These play a role in preventing cell damage.
- Protecting you after a vaccination.

Some research suggests that selenium may help with the following conditions, but more studies are needed. Selenium may help:

- Prevent certain cancers
- Prevent cardiovascular disease
- Protect the body from the poisonous effects of heavy metals and other harmful substances

Taking a selenium supplement in addition to food sources of selenium is not currently recommended for these conditions.

## Food Sources

Plant foods, such as vegetables, are the most common dietary sources of selenium. How much selenium is in the vegetables you eat depends on how much of the mineral was in the soil where the plants grew.

Brazil nuts are a very good source of selenium. Fish, shellfish, red meat, grains, eggs, chicken, liver, and garlic are also good sources. Meats produced from animals that ate grains or plants found in selenium-rich soil have higher levels of selenium.

Brewer's yeast, wheat germ, and enriched breads are also good sources of selenium.

## Side Effects

Selenium deficiency is rare in people in the United States. However, deficiency may occur when a person is fed through a vein (IV line) for long periods of time.

Keshan disease is caused by a lack of selenium. This leads to an abnormality of the heart muscle. Keshan disease caused many childhood deaths in China until the link to selenium was discovered and supplements were provided.

Two other diseases have been linked to selenium deficiency:

- Kashin-Beck disease, which results in joint and bone disease
- Myxedematous endemic cretinism, which results in intellectual disability

Severe gastrointestinal disorders may also affect the body's ability to absorb selenium. Such disorders include Crohn disease.

Too much selenium in the blood can cause a condition called selenosis. Selenosis can cause hair loss, nail problems, nausea, irritability, fatigue, and mild nerve damage. However, selenium toxicity is rare in the United States.

## Recommendations

Recommendations for selenium, as well as other nutrients, are provided in the Dietary Reference Intakes (DRIs) developed by the Food and Nutrition Board at the Institute of Medicine. DRI is a term for a set of reference intakes that are used to plan and assess the nutrient intakes of healthy people.

How much of each vitamin you need depends on your age and gender. Other factors, such as pregnancy and illnesses, are also important. Women who are pregnant or breast-feeding need higher amounts. Ask your health care provider which amount is best for you. These values include:

- **Recommended Dietary Allowance (RDA):** The average daily level of intake that is enough to meet the nutrient needs of nearly all (97 to 98%) healthy people. An RDA is an intake level based on scientific research evidence.

- **Adequate Intake (AI):** This level is established when there is not enough scientific research evidence to develop an RDA. It is set at a level that is thought to ensure enough nutrition.

Infants (AI)

- 0 to 6 months: 15 micrograms per day (mcg/day)
- 7 to 12 months: 20 mcg/day

Children (RDA)

- Age 1 to 3: 20 mcg/day
- Age 4 to 8: 30 mcg/day
- Age 9 to 13: 40 mcg/day

Adolescents and adults (RDA)

- Males, age 14 and older: 55 mcg/day
- Females, age 14 and older: 55 mcg/day
- Pregnant females: 60 mcg/day
- Lactating females: 70 mcg/day

The best way to get the daily requirement of essential vitamins is to eat a balanced diet that contains a variety of foods.

## References

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