

Thiamin

Fact Sheet for Consumers

What is thiamin and what does it do?

Thiamin (also called vitamin B1) helps turn the food you eat into the energy you need. Thiamin is important for the growth, development, and function of the cells in your body.

How much thiamin do I need?

The amount of thiamin you need depends on your age and sex. Average daily recommended amounts are listed below in milligrams (mg).

Life Stage	Recommended Amount
Birth to 6 months	0.2 mg
<u>Infants</u> 7–12 months	0.3 mg
Children 1–3 years	0.5 mg
Children 4–8 years	0.6 mg
Children 9–13 years	0.9 mg
Teen boys 14–18 years	1.2 mg
Teen girls 14–18 years	1.0 mg
Men	1.2 mg
Women	1.1 mg
Pregnant teens and women	1.4 mg
Breastfeeding teens and women	1.4 mg

What foods provide thiamin?

Thiamin is found naturally in many foods and is added to some fortified foods. You can get recommended amounts of thiamin by eating a variety of foods, including the following:

- Whole grains and fortified bread, cereal, pasta, and rice
- Meat (especially pork) and fish
- Legumes (such as black beans and soybeans), seeds, and nuts

What kinds of thiamin dietary supplements are available?

Thiamin is found in multivitamin/mineral [supplements](#), in B-complex [dietary supplements](#), and in supplements containing only thiamin. Common forms of thiamin in dietary supplements are thiamin mononitrate and thiamin hydrochloride. Some supplements use a [synthetic](#) form of thiamin called benfotiamine.

Am I getting enough thiamin?

Most people in the United States get enough thiamin from the foods they eat. Thiamin [deficiency](#) is rare in this country. However, certain groups of people are more likely than others to have trouble getting enough thiamin:

- People with [alcohol dependence](#)
- Older individuals
- People with HIV/AIDS
- People with [diabetes](#)
- People who have had [bariatric surgery](#)

Talk with your health care provider(s) about thiamin and other dietary supplements to help you determine which, if any, might be valuable for you.

What happens if I don't get enough thiamin?

You can develop thiamin deficiency if you don't get enough thiamin in the foods you eat or if your body eliminates too much or [absorbs](#) too little thiamin.

Thiamin deficiency can cause loss of weight and appetite, confusion, memory loss, muscle weakness, and heart problems. Severe thiamin deficiency leads to a disease called [beriberi](#) with the added [symptoms](#) of tingling and numbness in the feet and hands, loss of muscle, and poor reflexes. Beriberi is not common in the United States and other developed countries.

A more common example of thiamin deficiency in the United States is [Wernicke-Korsakoff syndrome](#), which mostly affects people with alcoholism. It causes tingling and numbness in the hands and feet, severe memory loss, [disorientation](#), and confusion.

What are some effects of thiamin on health?

Scientists are studying thiamin to better understand how it affects health. Here are some examples of what this research has shown.

Diabetes

People with diabetes often have low levels of thiamin in their blood. Scientists are studying whether thiamin supplements can improve [blood sugar](#) levels and glucose [tolerance](#) in people with type 2 diabetes. They are also studying whether benfotiamine (a synthetic form of thiamin) supplements can help with [nerve](#) damage caused by diabetes.

Heart failure

Many people with [heart failure](#) have low levels of thiamin. Scientists are studying whether thiamin supplements might help people with heart failure.

Alzheimer's disease

Scientists are studying the possibility that thiamin deficiency could affect the [dementia](#) of [Alzheimer's disease](#). Whether thiamin supplements may help mental function in people with Alzheimer's disease needs further study.

Can thiamin be harmful?

Thiamin has not been shown to cause any harm.

Does thiamin interact with medications or other dietary supplements?

Yes. Some medicines can lower thiamin levels in the body. Here are a couple examples:

- Furosemide (Lasix), which is used to [treat high blood pressure](#) and swelling caused by excess fluid in the body
- Fluorouracil (5-fluorouracil and Adrucil), which is used in [chemotherapy](#) treatments for some types of [cancer](#)

Tell your doctor, [pharmacist](#), and other health care providers about any dietary supplements and [prescription](#) or over-the-counter medicines you take. They can tell you if the dietary supplements might [interact](#) with your medicines or if the medicines might interfere with how your body absorbs, uses, or breaks down [nutrients](#) such as thiamin.

Thiamin and healthful eating

People should get most of their nutrients from food and beverages, according to the federal government's [Dietary Guidelines for Americans](#). Foods contain vitamins, [minerals](#), [dietary fiber](#), and other components that benefit health. In some cases, fortified foods and dietary supplements are useful when it is not possible to meet needs for one or more nutrients (for example, during specific life stages such as pregnancy). For more information about building a healthy dietary pattern, see the [Dietary Guidelines for Americans](https://www.dietaryguidelines.gov) (<https://www.dietaryguidelines.gov>) and the U.S. Department of Agriculture's ([USDA's](#)) [MyPlate](#). (<https://www.myplate.gov>).

Where can I find out more about thiamin?

- For general information on thiamin
 - [Office of Dietary Supplements](#) (ODS) Health Professional Fact Sheet on [Thiamin](#)
 - [Thiamin](https://medlineplus.gov/ency/article/002401.htm) (<https://medlineplus.gov/ency/article/002401.htm>), MedlinePlus
- For more information on food sources of thiamin
 - ODS Health Professional Fact Sheet on [Thiamin](#)
 - USDA's [FoodData Central](#) (<https://fdc.nal.usda.gov/>).

- Nutrient List for thiamin (listed by food name or by nutrient content), USDA
- For more advice on choosing dietary supplements
 - ODS Frequently Asked Questions: Which brand(s) of dietary supplements should I purchase?
- For information about building a healthy dietary pattern
 - MyPlate (<https://www.myplate.gov/>).
 - Dietary Guidelines for Americans (<https://www.dietaryguidelines.gov>).

Disclaimer

Glossary

absorption

In nutrition, the process of moving protein, carbohydrates, fats, and other nutrients from the digestive system into the bloodstream. Most absorption occurs in the small intestine.

alcohol dependence

A chronic disease (it lasts a person's lifetime) in which a person is unable to stop drinking once he or she has begun, needs to drink larger amounts of alcohol to get high, and suffers withdrawal symptoms (such as nausea, sweating, shakiness, and anxiety) after stopping drinking. The risk of developing alcohol dependence is influenced by a person's genes and lifestyle. Also called alcoholism.

Alzheimer's disease

A brain disease in which thinking, memory, and reasoning ability is slowly destroyed. In advanced stages, an affected person becomes disoriented and confused, has mood and behavior changes, and has difficulty talking, walking, and swallowing. Alzheimer's disease is progressive, irreversible, and incurable.

bariatric surgery

An operation on the stomach and/or intestines to help patients with extreme obesity lose weight. Some types of bariatric surgery limit the amount of food your stomach can hold. Other types of surgery change how food is digested, which stops some calories (and nutrients, such as vitamins) from being absorbed.

beriberi

A condition that occurs in people who are deficient in thiamine (vitamin B1). There are two types of beriberi: wet and dry. Wet beriberi affects the cardiovascular system and can cause increased heart rate, shortness of breath, and swelling of the lower legs. Dry beriberi affects the nervous system and can cause difficulty walking, loss of feeling in the hands and feet, paralysis of the lower legs, mental confusion, speech difficulty, pain, and vomiting. This condition is rare in the United States. Alcohol abuse increases the risk of developing beriberi.

blood sugar

The main source of energy used by the body's cells. Blood sugar comes from food and is made by the liver, and is carried to the cells through the bloodstream. Also called blood glucose.

cancer

A group of diseases in which cells divide abnormally and without control, and spread to nearby tissues and other parts of the body. Without treatment, cancer can stop organs from working normally, damage body systems, and cause the patient to die. Cancer may be caused by multiple factors, such as radiation, sunlight, tobacco, certain viruses, and poisonous chemicals; however, the cause of many cancers is unknown.

cell

The individual unit that makes up the tissues of the body. All living things are made up of one or more cells, which are the smallest units of living structure capable of independent existence.

chemotherapy

A chemical that kills bacteria, viruses, fungi, or tumor cells. It usually refers to drugs used in cancer treatment.

deficiency

An amount that is not enough; a shortage.

dementia

Damaged brain function (thinking, learning, making decisions, remembering) that worsens over time. It disrupts activities of daily living such as bathing, dressing, and walking.

diabetes

A disease in which blood sugar (glucose) levels are high because the body is unable to use glucose properly. Diabetes occurs when the body does not make enough insulin, which helps the cells use glucose, or when the body no longer responds to insulin.

dietary fiber

A substance in plants that you cannot digest. It adds bulk to your diet to make you feel full, helps prevent constipation, and may help lower the risk of heart disease and diabetes. Good sources of dietary fiber include whole grains (such as brown rice, oats, quinoa, bulgur, and popcorn), legumes (such as black beans, garbanzo beans, split peas, and lentils), nuts, seeds, fruit, and vegetables.

Dietary Guidelines for Americans

Advice from the federal government to promote health and reduce the chance (risk) of long-lasting (chronic) diseases through nutrition and physical activity. The Guidelines are updated and published every 5 years by the US Department of Health and Human Services and the US Department of Agriculture.

dietary supplement

A product that is intended to supplement the diet. A dietary supplement contains one or more dietary ingredients (including vitamins, minerals, herbs or other botanicals, amino acids, and other substances) or their components; is intended to be taken by mouth as a pill, capsule, tablet, or liquid; and is identified on the front label of the product as being a dietary supplement.

disorientation

A mental state marked by confusion about time, place, or who one is.

fortified

When nutrients (such as vitamins and minerals) are added to a food product. For example, when calcium is added to orange juice, the orange juice is said to be "fortified with calcium". Similarly, many breakfast cereals are "fortified" with several vitamins and minerals.

heart failure

A condition in which the heart is unable to pump the amount of blood needed by the body. It is caused by high blood pressure, heart attack, and other disorders of the heart or blood vessels. Also called congestive heart failure.

high blood pressure

A blood pressure measurement of 140/90 mmHg (millimeters of mercury) or higher is considered high blood pressure (hypertension). Blood pressure is the force of blood pushing against the walls of the arteries. Blood pressure measurements are written as two numbers, for example 120/80. The first number (the systolic pressure) measures the pressure when the heart beats and pumps out blood into the arteries. The second number (the diastolic pressure) measures the pressure when the heart is at rest between beats. High blood pressure is a condition that occurs when a person's blood pressure often measures above 140/90 or regularly

stays at that level or higher. This condition usually has no symptoms but can be life-threatening. It damages the arteries and increases the chance of stroke, heart attack, kidney failure, and blindness. Also called hypertension.

infant

A child younger than 12 months old.

interaction

A change in the way a dietary supplement acts in the body when taken with certain other supplements, medicines, or foods, or when taken with certain medical conditions. Interactions may cause the dietary supplement to be more or less effective, or cause effects on the body that are not expected.

legume

Dried beans and peas, including kidney beans, pinto beans, black beans, navy beans, lima beans, black-eyed peas, garbanzo beans (chickpeas), split peas, and lentils. Legumes are good sources of protein, iron, zinc, dietary fiber, folate, and potassium.

milligram

mg. A measure of weight. It is a metric unit of mass equal to 0.001 gram (it weighs 28,000 times less than an ounce).

mineral

In nutrition, an inorganic substance found in the earth that is required to maintain health.

neuron

A nerve cell. Neurons send chemical and electrical messages throughout the nervous system that direct the body to function, move, think, and have emotions.

nutrient

A chemical compound in food that is used by the body to function and maintain health. Examples of nutrients include proteins, fats, carbohydrates, vitamins, and minerals.

Office of Dietary Supplements

ODS, Office of Disease Prevention, Office of Director, National Institutes of Health, Department of Health and Human Services. ODS strengthens knowledge and understanding of dietary supplements by evaluating scientific information, stimulating and supporting research, disseminating research results, and educating the public to foster an enhanced quality of life and health for the US population.

pharmacist

A person licensed to make and dispense (give out) prescription drugs and who has been taught how they work, how to use them, and their side effects.

prescription

A written order from a health care provider for medicine, therapy, or tests.

soy

A plant that produces beans used in many food products. Soy products contain isoflavones (estrogen-like substances) that are being studied in the prevention of cancer, hot flashes that occur with menopause, and osteoporosis (loss of bone density). Also called soya and soybean. Latin name: *Glycine max*.

supplement

A nutrient that may be added to the diet to increase the intake of that nutrient. Sometimes used to mean dietary supplement.

symptom

A feeling of sickness that an individual can sense, but that cannot be measured by a healthcare professional. Examples include headache, tiredness, stomach ache, depression, and pain.

synthetic

Made by combining parts to make a whole; usually having to do with substances that are artificial or manufactured.

thiamin

An important nutrient that is needed by the body to make energy from food, for cell and muscle function, and for a healthy nervous system. Thiamin is found in some foods, including enriched breads and cereals, legumes, liver, nuts, pork, and whole grains.

tolerance

The ability to take a drug or dietary supplement without discomfort or unwanted side effects. Also, a condition that occurs when the body gets used to a drug or dietary supplement so that either larger amounts or a different drug or supplement is needed to get the same effect originally experienced.

treat

To care for a patient with a disease by using medicine, surgery, or other approaches.

US Department of Agriculture

USDA promotes America's health through food and nutrition, and advances the science of nutrition by monitoring food and nutrient consumption and updating nutrient requirements and food composition data. USDA is responsible for food safety, improving nutrition and health by providing food assistance and nutrition education, expanding markets for agricultural products, managing and protecting US public and private lands, and providing financial programs to improve the economy and quality of rural American life.

vitamin

A nutrient that the body needs in small amounts to function and maintain health. Examples are vitamins A, C, and E.

Wernicke-Korsakoff syndrome

A brain disorder caused by thiamine (vitamin B1) deficiency, usually as a result of alcohol abuse. Symptoms include confusion, vision problems, lack of muscle control, memory loss, tremors, hallucinations, and coma.

whole grain

Unprocessed seeds of edible grasses, including brown rice, buckwheat, bulgur, millet, popcorn, oats, quinoa, whole-grain barley, whole rye, whole wheat, and wild rice. Grains that are ground, cracked, or flaked can be labeled whole grain if they have the same amount of bran, germ, and endosperm (the inner part of the seed kernel) as the intact grain. Whole grains are sources of iron, magnesium, selenium, B vitamins, and dietary fiber. Eating whole grains may help lower the risk of heart disease, obesity, and type 2 diabetes.

Updated: March 22, 2021 [History of changes to this fact sheet](#)