HEALTH BASICS

Thiamin

Thiamin is vitamin B1, a water-soluble nutrient that helps cells release energy from food.

WHAT IT IS
A water-soluble B vitamin needed for energy metabolism

WHERE IT COMES UP
Food labels, nutrition reviews, and deficiency assessments

WHY IT MATTERS
Supports energy use and normal nerve and heart function

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
Primary care clinician or registered dietitian

HOW IT IS CHECKED
Whole-blood thiamin diphosphate, when testing is useful

Overview

Thiamin is vitamin B1. "Thiamine" is another accepted spelling of the same name. It is an essential nutrient, meaning your body needs it but cannot make enough for itself.

Thiamin is water-soluble. It travels in the body's fluids rather than being stored in large amounts. Your body therefore relies on a regular supply from food.

Sources include pork, beans, lentils, nuts, seeds, whole grains, and grain products with added vitamins. Some breakfast cereals and breads are fortified or enriched with thiamin. Food processing and prolonged cooking can reduce the amount in food, especially when cooking water is discarded.

Thiamin is not a disease or diagnosis. A clinician may discuss it when reviewing nutrition, prolonged vomiting, alcohol use, digestive problems, or certain types of surgery. You may also see it listed on food or supplement labels.

How it works

Your body changes thiamin into active forms, mainly thiamin diphosphate. This helps several

enzymes work. Enzymes are proteins that control chemical reactions in the body.

These thiamin-dependent reactions help turn carbohydrates and some amino acids-the building blocks of protein-into usable energy. This matters in every tissue, but organs with high energy needs, such as the brain and heart, are especially sensitive to a severe shortage.

Thiamin also supports normal communication between nerves and muscles. It does not provide energy by itself. Instead, it helps your cells use energy from food.

The body stores only a limited amount. A shortage can therefore develop when very low intake continues, absorption is poor, needs are increased, or several of these factors occur together.

Why it matters for your health

Most people can obtain thiamin through a varied diet. Foods do not need to contain large amounts individually if thiamin-rich or fortified foods are eaten regularly.

Thiamin may need closer attention when eating has been severely restricted. Relevant situations include prolonged vomiting, serious undernutrition, malabsorption, dialysis, and recovery after bariatric surgery. Bariatric surgery changes the stomach or intestines to support weight loss and may affect food intake or nutrient absorption.

Alcohol use disorder is an important risk factor. Alcohol can be linked with poor food intake and can interfere with thiamin absorption and use. This does not mean everyone who drinks alcohol has a deficiency.

Thiamin also matters during refeeding. Refeeding means restarting or rapidly increasing nutrition after a period of very low intake. The renewed processing of carbohydrate raises the body's demand for thiamin and shifts minerals between the blood and cells. People at substantial risk may need supervised nutrition and thiamin treatment.

Taking extra thiamin does not usually produce more energy when your intake and thiamin status are already adequate. Tiredness has many possible causes and should not be assumed to mean a vitamin deficiency.

What can go wrong

Thiamin deficiency occurs when the body does not have enough thiamin for normal function. Mild or early deficiency can be difficult to recognise because problems such as reduced appetite, tiredness, irritability, or weakness are not specific to thiamin.

More severe deficiency is associated with named medical conditions:

A person with Wernicke encephalopathy may not have all of the classic features. When clinicians strongly suspect it, treatment is often started without waiting for a laboratory result because delay can cause harm.

Seek urgent medical assessment if you have ongoing vomiting, very little food intake, or heavy alcohol use together with new confusion, trouble walking, unusual eye movements, or double vision.

Call emergency services for collapse, a seizure, severe breathing difficulty, chest pain, or an inability to wake normally. These problems have many possible causes and need prompt assessment rather than self-treatment with a supplement.

Too much thiamin from food has not been shown to cause harm. No upper intake limit has been established because evidence of harm from high oral intake is limited. This does not prove that every supplement dose is risk-free. Injections are medical treatments and can rarely cause serious allergic reactions.

- Dry beriberi mainly affects peripheral nerves, which carry messages between the brain, spinal cord, and the rest of the body. It can cause weakness, numbness, pain, or difficulty walking
- Wet beriberi affects the heart and circulation. It may lead to fluid build-up, breathlessness, a fast heartbeat, or heart failure
- Wernicke encephalopathy is an acute brain disorder linked to severe thiamin deficiency. It can involve confusion, poor balance, abnormal eye movements, or double vision
- Korsakoff syndrome is a longer-term disorder involving severe memory problems, often following untreated or repeated Wernicke encephalopathy

What you can do

If you eat a varied diet and have no relevant medical or nutritional risk factors, there is usually nothing specific you need to check.

When thiamin appears on a food label, the percentage Daily Value can help you compare products. Do not judge your whole diet from one product. A registered dietitian can help review your overall intake if your diet is very restricted.

Arrange routine follow-up with a primary care clinician or dietitian if you:

Keep a record of how long vomiting or poor intake has lasted, any recent weight change, supplements you take, and relevant surgery or digestive conditions. This information can help a clinician decide whether testing or treatment is appropriate.

There is no reliable home test for thiamin status. When testing is useful, whole-blood thiamin diphosphate is commonly measured. Plasma or serum levels may be affected by recent intake and may not reflect body stores as well. Some specialist laboratories use an enzyme test called erythrocyte transketolase activity.

Testing is not always required. If severe deficiency is suspected, clinicians may give thiamin before results are available. Treatment may be by mouth or by injection, depending on urgency, symptoms, and whether the digestive system can absorb it.

Do not use a supplement as a substitute for assessment of confusion, walking difficulty, persistent vomiting, or severe undernutrition. If you have eaten almost nothing for several days, particularly with major weight loss or illness, seek clinical advice before making a sudden large increase in food intake.

- Have had bariatric surgery
- Have a condition that affects nutrient absorption
- Regularly eat a very limited range or amount of food
- Use alcohol heavily or are concerned about your alcohol intake
- Have been told that you may be at risk of malnutrition

Common questions

Are thiamin and thiamine different?

No. They are two spellings for vitamin B1. "Thiamin" is often used on US nutrition information, while "thiamine" is common in clinical writing and in other countries.

Can I get thiamin from food?

Yes. Useful sources include pork, legumes, seeds, nuts, whole grains, and fortified or enriched grain products. The amount you need is influenced by age, sex, pregnancy, and breastfeeding.

Does cooking remove thiamin?

Some thiamin can be lost through heat and into cooking water. Losses may be greater with prolonged cooking or when the water is poured away. This does not mean cooked foods lack thiamin.

Will a thiamin supplement improve my energy?

Not necessarily. Thiamin helps release energy from food, but extra thiamin has not been shown to act as a general energy booster in people with adequate status. Persistent fatigue deserves a broader assessment.

Is a blood test always accurate?

No single test answers every question. Whole-blood thiamin diphosphate can support an assessment, but availability and interpretation differ. In urgent situations, the medical history and examination may matter more than waiting for a result.

Should thiamin be taken before glucose?

In suspected severe deficiency, clinicians give thiamin promptly and pay close attention when nutrition or glucose is started. Emergency glucose should not be withheld from someone with dangerously low blood sugar. Both needs can be managed without unnecessary delay.

Sources

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