



Chromium (Cr) - value for the body and health, where it contains

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Abstract. The article discusses the main properties of chromium (Cr) and its effect on the human body. A systematic review of modern specialized literature and relevant scientific data was carried out. The best natural sources of chromium are indicated . The use of the mineral in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of chromium on the human body under certain medical conditions and diseases are analyzed separately.

Keywords: chromium , Cr , chromium, useful properties, contraindications, sources

If you are familiar with beneficial minerals, then you have heard of chromium. The microelement is known for helping to maintain insulin sensitivity and absorb proteins, fats, carbohydrates. It enters the body with food and supplements, which are often presented in advertising as a means to lose weight, reduce blood sugar levels. But not all marketing claims are backed by science. Do you want to know the truth about its benefits? Read on - we have collected evidence of its benefits and possible harm.

Chromium in the body

Our body uses the mineral in small amounts for essential functions such as digesting food. It is involved in the metabolism of essential nutrients, controls energy use, and enhances the action of insulin.

The body does not absorb and store chromium very well, absorbing only 1–2% from food. But it has a way of absorbing more of the micronutrient when needed—the smaller its reserves, the more efficiently it is absorbed from the gut. With age, there is inevitably a significant decrease in the level of the mineral in the body. The researchers also found that the average scores for men are significantly lower than those for women. ^[1, 2, 3]

Types of chromium and digestibility from food

Chromium exists in two main forms - the non-toxic trivalent and the carcinogenic hexavalent. The trivalent mineral is recognized as an essential nutrient and may have benefits in pharmacological amounts. Its deficiency does not cause irreversible anomalies and is easily eliminated without side effects due to the correct diet and supplements. ^[4, 5]

The stability and absorption of the nutrient varies, which affects the results of the study. For example, combining with starch does not improve absorption, as scientists expected, but block absorption. ^[6, 7]

Chromium Sources: High Foods

Chromium is widely available in food, but analysis of specific levels is unreliable. There are a large number of factors that affect its concentration: agricultural practices, the mineral composition of the soil, production processes. All this leads to large differences in the content of chromium in the same product. For example, its amount in oatmeal can decrease or increase by 50 times due to differences in cultivation, processing. ^[eight]

Scientists have found a lot of chromium in broccoli, liver, brewer's yeast. Its good sources are also:

- whole grains;
- high-fiber bran flakes;
- vegetables - potatoes, green beans;
- fruits - apples, bananas;
- beef, poultry;
- egg yolks;
- seafood;
- coffee.

Red wine may also contain the micronutrient.

recommended dose of chromium

Dietary reference values vary by age and gender. Nutritional supplements are non-toxic at recommended doses in the short term. ^[9]

Daily intake of chromium ^[10]

Life period	Age	Women (mcg)	Men (mcg)
babies	0–6 months	0.2	0.2
babies	7–12 months	5.5	5.5
Children	1–3 years	eleven	eleven
Children	4–8 years	fifteen	fifteen
Children	9–13 years old	21	25
Teenagers	14–18 years old	24	35
adults	19–50 years old	25	35
adults	51+ years old	twenty	thirty

The daily requirement for chromium increases during pregnancy and lactation - it rises to 30–45 mcg. Babies get it from mother's milk.

An upper tolerable intake level has not been established because there are few side effects associated with excess intake. According to the Institute of Medicine, the tolerable upper dose for adults is 3.6 g/day. But case reports describe kidney damage at doses of 1200–2400 mcg/day for four months.

Top 5 Health Benefits of Chromium

1. Supports Insulin Production and Controls Blood Sugar

In type 2 diabetes, the pancreas produces enough insulin, but muscle cells and other tissues become resistant to its action. This leads to poor blood glucose control. Chromium increases the sensitivity of cells to insulin to regulate blood sugar levels. The results of reviews and meta-analyses are conflicting, but people with insulin resistance should try increasing their intake of the micronutrient. ^[11, 12, 13, 14, 15]

2. Decreases heart rate in patients with impaired glucose tolerance

Chromium is involved in biochemical reactions, metabolic processes. Therefore, scientists have suggested that it can affect the functioning of the heart. Studies have confirmed that in patients treated with the mineral, the heart rate at rest, the level of cholesterol and triglycerides in the blood is significantly reduced. At the moment, the mechanism of these processes is unclear, but they are important for people with cardiovascular diseases. ^[16]

3. Reduces Inflammation

The intake of a mineral supplement reduces the level of c-reactive protein in the blood serum. The protein is produced in the liver during inflammation - it signals damage to tissues and organs. In healthy people, it is found in the blood in very small quantities. ^[17]

4. Reduces weight, insulin and free testosterone in PCOS patients

PCOS is the most common endocrine disease in women. Chromium, like some other minerals, improves the condition of the disease, increasing the chances of ovulation and regular menstruation. Currently, there is not enough evidence to introduce the mineral as a drug for the treatment and prevention of PCOS, but this direction remains open. ^[18, 19, 20]

5. Normalizes appetite

The trace element is necessary for the body to break down nutrients. It reduces hunger, cravings for fatty foods and promotes weight loss. An eight-week study showed that chromium picolinate helped overweight adult women increase the gaps between meals. ^[21, 22]

Interaction of chromium with other minerals and vitamins

[Iron](#) overload in hereditary hemochromatosis is known to impair chromium transport. But vitamin C and B3 (niacin) improve its absorption in the digestive tract. Therefore, the consumption of foods high in ascorbic acid has a positive effect on the absorption of the trace element by the body.

The use of chromium in medicine

When not enough component is supplied with food, it is taken in the form of dietary supplements. The most effective form is picolinate. The supplements are popular among diabetics and people who are looking to lose weight or gain muscle mass. There is evidence of these properties, but doctors believe that there is not enough evidence yet.

Chromium in scientific research

- The diet strongly influences the loss of the mineral in the urine. With proper nutrition, 10% of the total amount of chromium supplied with food is excreted from the body. Diets with high sugar intake lead to large losses of the component - up to 100%.^[23]
- Long-term and complete parenteral nutrition provokes a negative balance of chromium in the blood and hair - to a decrease in its concentration by more than 5 times. This leads to weight loss, the impossibility of its restoration due to intravenous administration of glucose. The addition of just 20 mcg/day of chromium normalizes glucose levels, weight and general condition.^[24]
- Chromium picolinate promotes weight loss. Some studies have shown a moderate decrease in body weight when taking dietary supplements. This effect was especially pronounced in people who suffer from insulin resistance. But nutritional supplements did not improve body composition.^[25]

Chromium contraindications and precautions

Renal failure can be considered as a relative contraindication to taking the mineral. But even if you have no reason to refuse a supplement, do not take it without the permission of a doctor, nutritionist, nutritionist.

Signs of chromium deficiency

Lack of the mineral is rare, even though it is poorly absorbed. Its losses increase with the consumption of large amounts of sugar, during pregnancy and lactation, intense physical exertion and stress due to infections, injuries. Deficiency is still more often observed with general malnutrition or acute illness. Theoretically, deficiency can impair glucose tolerance, blood sugar levels and contribute to the development of type 2 diabetes.^[26, 27]

Symptoms of excess chromium

Side effects associated with a high intake of chromium from food or supplements are rare. The toxicity of trivalent chromium is low because it is poorly absorbed and rapidly excreted in the urine. However, caution should be exercised when taking high doses of any micronutrient. Supplements in large quantities can provoke:

- stomach problems, watery stools;
- dizziness and headaches;
- urticaria;
- low blood sugar.

Several case studies have found a link between nutrient excess and kidney and liver damage.

Interaction with drugs

The trace element disrupts the absorption of certain drugs, enhances their excretion. This primarily includes thyroid and acid reflux medications (proton pump inhibitors), as well as antacids, corticosteroids, beta-blockers, insulin, and some pain medications.

Expert comment

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After many years of research, the role of chromium in the body continues to be debated - its functions and benefits are not fully understood. It is only known that it is an important mineral for carbohydrate and lipid metabolism, the cardiovascular system and the fight against diabetes. Foods rich in it are not hard to find, but they are often not consumed regularly. Use the list above to plan your diet and make sure you meet your mineral needs.

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