

IODINE

Other names Potassium iodide, potassium iodate, sodium iodide

Availability

Iodine supplements are available without prescription as kelp tablets and in several multivitamin and mineral preparations. Iodine skin preparations are also available without a prescription for antiseptic use. A small amount of iodine is routinely added to most table salts in order to prevent iodine deficiency from occurring. Treatments for thyroid suppression are available only on prescription.

Actions on the body

Iodine is essential for the formation of thyroid hormone, which regulates the body's energy production, promotes growth and development, and helps burn excess fat.

Dietary and other natural sources

Seafood is the best source of iodine, but bread and dairy products such as milk are the main sources of this mineral in most diets. Iodized table salt is also a good source. Iodine may also be inhaled from the atmosphere in coastal regions.

Normal daily requirement

The recommended daily amounts (RDA) for iodine in micrograms (mcg) are: 50mcg (birth–3 months); 60mcg (4–12 months); 70mcg (1–3 years); 100mcg (4–6 years); 110 mcg (7–10 years); 130mcg (11–14 years); and 140mcg (15 years and over). Requirements increase very slightly during breast-feeding; one vitamin tablet with calcium and iodine daily is recommended for nursing mothers.

When supplements are helpful

Most diets contain adequate amounts of iodine and use of iodized table salt can usually make up for any deficiency. Supplements are rarely necessary except on medical advice. However, excessive intake of raw cabbage or nuts reduces uptake of iodine into the thyroid gland and it may lead to deficiency if iodine intake is otherwise low. Kelp supplements may be helpful.

Adults exposed to radiation from radioactive iodine released into the environment may be given 100mg of iodine as a single dose (as potassium iodate 170mg) to prevent their thyroid gland absorbing the radioactive material; a lower dose is given to children according to age.

Iodine is used to treat people with thyrotoxicosis before surgery on the thyroid gland, and iodine-containing compounds are also used as X-ray contrast media.

Symptoms of deficiency

Deficiency may result in a goitre (enlargement of the thyroid gland) and hypothyroidism (deficiency of thyroid hormone). Symptoms of hypothyroidism include tiredness, physical and mental slowness, weight gain, facial puffiness, and constipation. Babies born to iodine-deficient mothers are lethargic and difficult to feed. Left untreated, many show poor growth and mental retardation.

Dosage range for treating deficiency

Iodine deficiency may be treated with doses of 150mcg of iodine daily, and then followed up by ensuring that iodized table salt is used.

Symptoms and risks of excessive intake

The amount of iodine that occurs naturally in food is non-toxic, but prolonged use of large amounts (6mg or more daily) may suppress the activity of the thyroid gland. Large overdoses of iodine compounds may cause abdominal pain, vomiting, bloody diarrhoea, and swelling of the thyroid and salivary glands.

IRON

Other names Ferrous fumarate, ferrous gluconate, ferrous sulphate, iron dextran, iron-polysaccharide complex, sodium ferredelate.

Availability

Ferrous sulphate, ferrous fumarate, ferrous gluconate, and iron-polysaccharide complex are all available without prescription, alone and in multivitamin and mineral preparations. Iron dextran, an injectable form, is available only on prescription.

Actions on the body

Iron has an important role in the formation of red blood cells (which contain two-thirds of the body's iron) and is a vital component of the oxygen-carrying pigment haemoglobin. It is involved in the formation of myoglobin, a pigment that stores oxygen in muscles for use during exercise. It is also an essential component of several enzymes, and is involved in the uptake of oxygen by the cells and the conversion of blood sugar to energy.

Dietary and other natural sources

Liver is the best dietary source of iron. Meat (especially organ offal), eggs, chicken, fish, leafy green vegetables, dried fruit, enriched or wholemeal cereals, breads and pastas, nuts, and dried pulses are also rich sources. Iron is better absorbed from meat, eggs, chicken, and fish than from vegetables. Foods containing vitamin C enhance iron absorption.

Normal daily requirement

The recommended daily amounts (RDA) for iron are: 1.7mg (birth–3 months); 4.3mg (4–6 months); 7.8mg (7–12 months); 6.9mg (1–3 years); 6.1mg (4–6 years); 8.7mg (7–10 years); 11.3mg (males aged 11–18 years); 14.8mg (females aged 11–50 years); and 8.7mg (males aged 19 and over, and females aged 51 and over). Requirements may be increased during pregnancy and for 2 to 3 months after childbirth.

When supplements are helpful

Most average diets supply adequate amounts of iron. However, larger amounts are necessary during pregnancy. Supplements may be given throughout pregnancy and for 2 to 3 months after childbirth to maintain and replenish adequate iron stores in the mother. Premature babies may be prescribed supplements from a few weeks after birth to prevent deficiency. Supplements may be helpful in young vegetarians, women with heavy menstrual periods, and people with chronic blood loss due to disease (for example, peptic ulcer).

Symptoms of deficiency

Iron deficiency causes anaemia. Symptoms of anaemia include pallor, fatigue, shortness of breath, and palpitations. Apathy, irritability, and lowered resistance to infection may also occur. Iron deficiency may also affect intellectual performance and behaviour.

Dosage range for treating deficiency

Depends on the individual and the nature and severity of the condition. In adults, iron-deficiency anaemia is usually treated with 100–200mg of elemental iron (usually as ferrous sulphate or gluconate) daily. In children, the dose is reduced according to age and weight. Iron supplements of 30–60mg daily may be given during pregnancy.

Symptoms and risks of excessive intake

An overdose of iron tablets is extremely dangerous. Pain in the abdomen, nausea, and vomiting may be followed by abdominal bloating, dehydration, and dangerously lowered blood pressure. Immediate medical attention must be sought (see p.512).

Excessive long-term intake, especially when it is taken with large amounts of vitamin C, may in susceptible individuals cause iron to accumulate in organs, causing congestive heart failure, cirrhosis of the liver, and diabetes mellitus. This condition is known as haemochromatosis.