



Iron

What is iron?

Iron is an essential micronutrient for human health, and is involved in DNA, enzyme synthesis, oxygen transportation, metabolism, and immune function. Your body uses iron to make hemoglobin, a protein in red blood cells that carries oxygen from the lungs to all parts of the body, and myoglobin, a protein that provides oxygen to muscles in order to function properly. Your body also needs iron to make some hormones.

Low iron status may result in iron deficiency anaemia and is associated with poor physical, cognitive, and immune development and function. Additionally, Iron deficiency has also been associated with negative effects in adults, including lethargy, difficulty concentrating, and poor immune function.

What are the forms of iron?

There are two forms of iron in food; Haem Iron and non-haem iron. Haem iron is primarily derived from the flesh of animals; such as meats, poultry and fish. Whereas non-haem iron is found in both plant derived and animal derived foods. The body's ability to absorb haem iron is much higher than its ability to absorb non-haem iron. This is why vegetarians need 1.8 times as much iron to make up for the low bioavailability of non-Haem iron.

Food sources of haem iron:

- Oysters, clams, mussels
- Beef or chicken liver

- Organ meats
- Canned sardines
- Beef
- Poultry
- Canned light tuna

Food sources of non-haem iron:

- Fortified breakfast cereals
- Beans
- Dark chocolate (at least 45%)
- Lentils
- Spinach
- Potato with skin
- Nuts and seeds
- Enriched rice or bread

Iron absorption can be inhibited by certain nutrients if consumed at the same meal. These include: Phytates, present in cereal bran, cereal grains, legumes, nuts, and seeds; Polyphenols (including tannic acid) present in tea and coffee; and Calcium present in milk and milk products. While nutrients such as vitamin C (Ascorbic Acid) help iron absorption.

Fortification of food products with iron implies the addition of iron-containing substances to the product recipe, iron fortified foods, when consumed as part of a healthy diet, can improve hemoglobin, serum ferritin (Iron stores) and other markers of iron status, and also decrease the risk of iron deficiency and anaemia among a variety of populations, especially those with lower iron status.

How much iron do I need?

The amount of iron you need each day depends on multiple factors, including your age, your sex, and whether you consume a mostly plant-based diet. Vegetarians who do not eat meat, poultry, or seafood need almost twice as much iron as listed in the table because the body doesn't absorb non-haem iron in plant foods as well as haem iron in animal foods.

Below is the average daily recommended amounts of iron listed below in milligrams (mg) for each life stage.

Life Stage	Recommended Amount
Birth to 6 months	0.27 mg
Infants 7-12 months	11 mg
Children 1-3 years	7 mg
Children 4-8 years	10 mg
Children 9-13 years	8 mg
Teens boys 14-18 years	11 mg
Teens girls 14-18 years	15 mg
Adult men 19-50 years	8 mg
Adult women 19-50 years	18 mg
Adults 51 years and older	8 mg
Pregnant teens	27 mg
Pregnant women	27 mg
Breastfeeding teens	10 mg
Breastfeeding women	9 mg

What is iron deficiency anaemia?

Iron deficiency anaemia occurs when your body doesn't have enough iron to produce hemoglobin over a long time. If you aren't consuming enough iron, or if you're losing too much iron, your body can't produce enough haemoglobin, and iron deficiency anaemia will eventually develop.

Causes of iron deficiency anaemia can include:

- **inadequate dietary intake** (poor diet without supplementation)
- **inadequate absorption** (resulting from diarrhea, intestinal disease such as coeliac disease, atrophic gastritis, partial or total gastrectomy, or drug interference)
- **inadequate utilization**, secondary to chronic gastrointestinal disturbances
- **increased iron requirements** which occur during infancy, adolescence, pregnancy and lactation
- **increased excretion** such as menstrual cycle
- **defective release** of iron from iron stores caused by chronic inflammation or disorder

Eating disorders can cause several nutrient deficiencies, anaemia due to inflammation and iron deprivation has been reported within anorexia nervosa patients but is considered uncommon. In fact, most studies have found that the concentration of hepcidin (a hormone which regulates iron in blood) was higher in patients with anorexia nervosa, which is most likely the reason for elevated ferritin levels (Iron stores) in patients with anorexia nervosa. These concentrations were found to return to normal after nutritional recovery and rehabilitation.

Symptoms of iron deficiency anaemia include:

- GI upset
- weakness and tiredness
- lack of energy
- problems with concentration and memory
- breathlessness
- decreased libido

In addition, people with iron deficiency anaemia are less able to fight off germs and infections, to work and exercise, and to control their body temperature. Infants and children with iron deficiency anaemia might develop learning difficulties.

It's important to consult your doctor and an Accredited Practising Dietitian, if you think you might have iron deficiency or iron deficiency anemia. DO NOT take an iron supplement without medical supervision, as taking too much iron can cause a number of health risk problems as well.

Iron tablets may cause other drugs you are taking to not work as well. Some of these include tetracycline, penicillin, and ciprofloxacin and drugs used for hypothyroidism, Parkinson disease, and seizures.

Medicines that reduce stomach acid will impair iron absorption. Your provider may suggest changing these. It is advised to wait at least 2 hours between doses of these drugs and iron supplements.

Gastrointestinal side-effects are the most reported adverse effects associated with oral iron treatment and include nausea, flatulence, abdominal pain, diarrhoea, constipation, and black stools.