



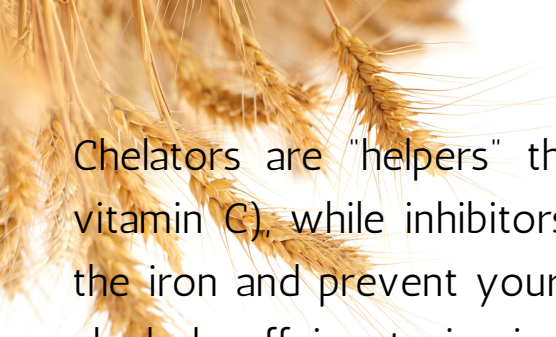
Iron



Iron is an essential mineral that's vital to your health. All of your cells contain some iron, but most of the iron in your body is in your red blood cells. However, many people, particularly women, are lacking this mineral. Iron is a component of haemoglobin and myoglobin, which are molecules responsible for the transport and release of oxygen. You could think of these molecules like buses that carry oxygen from the blood to the tissues (i.e., muscles, organs, etc.). Oxygen is vital to the existence of human beings, so the proper structure and function of these buses is vital for life. Iron is also involved in protein and DNA metabolism. There are two different types of iron:

1. Haem iron
2. Non-haem iron

Haem iron is only found in animal products, and it is the most bioavailable source of iron. This means that it is the most easily absorbed by our body. Non-haem iron is found in both animal and plant products. This type of iron is most affected by chelators and inhibitors.



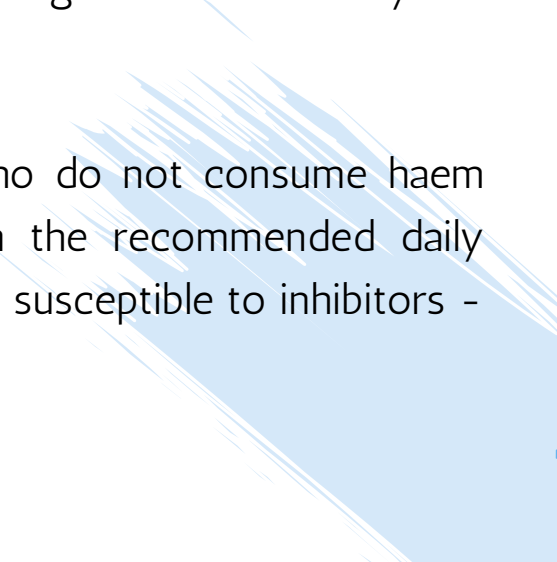
Chelators are "helpers" that work to increase the absorption of iron (e.g., vitamin C), while inhibitors are like iron "magnets" that attach themselves to the iron and prevent your body from absorbing it. Examples of inhibitors are alcohol, caffeine, tannins in tea, calcium supplements and phytates in grains. In general, the absorption of iron is inversely related to the amount of iron stored in the body. This means that if your body is low in iron, you will absorb more iron from the food you eat. Alternatively, if you have lots of iron in the body, you will absorb less.

Common causes of iron deficiency include inadequate iron intake due to poor or restrictive diets and inflammatory bowel disease. Additionally, blood losses and rapid growth cause a loss in iron. This is one of the main reasons why women of child-bearing age are most susceptible to become iron deficient. Women lose iron during menstruation and during pregnancy, as iron is lost both to the foetus and during delivery. It is extremely difficult for woman to consume adequate iron through diet alone, particularly if they follow a vegan or vegetarian lifestyle. It is estimated that 40% of women of child-bearing age do not meet their iron requirements (NNPAS 2011-12).

How much do you need?

The recommended daily intake (RDI) of iron is highest for women during pregnancy at 27 mg per day. Women between the ages of 19-50 years require 18 mg of iron per day, while women aged 51 and over are suggested to consume 8 mg daily. The recommended daily intake of iron does not vary for men. All adult males should aim to consume 8 mg of iron each day for optimal health.

Individuals following vegetarian or vegan diets who do not consume haem iron sources require around 50% more iron than the recommended daily intake, since non-haem sources of iron are the most susceptible to inhibitors - the magnets preventing iron absorption.



A twisted irony is that the plant foods containing the best non-haem iron sources for vegetarians and vegans are also the foods that contain the most inhibitors! Iron-fortified cereals for example, are a rich source of non-haem iron, however the grains contained in these cereals are also one of the highest sources of phytates – an iron inhibitor.

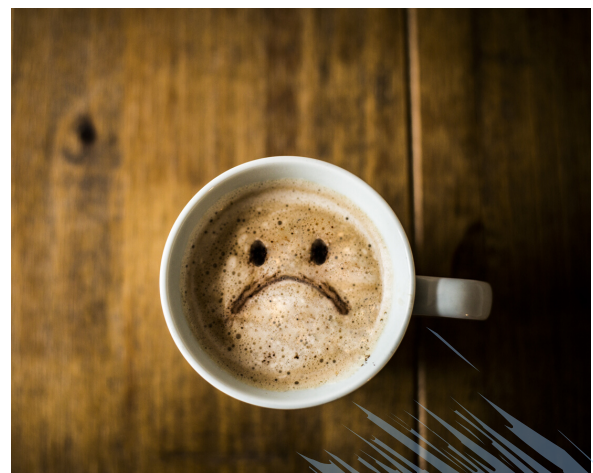
If you are a vegan or vegetarian, it is recommended that you consult a dietitian about optimising your diet to achieve the recommended daily intake of iron. One simple tip to enhance your iron absorption is to squeeze a fresh lemon (for vitamin C – an iron "helper") over your meal and/or in the water you drink with your meal.

Iron deficiency can prevent you from Food Freedom

The benefits of iron often go unnoticed until a person is not getting enough. Low-energy diets, poorly balanced diets, infections and malabsorption issues (e.g. Coeliac Disease, inflammatory bowel disease), highly physically active, stages of rapid growth, repeat pregnancies and heavy menstrual losses are all factors that increase one's risk of iron deficiency.

Symptoms of iron deficiency include, but are not limited to:

- fatigue
- tiredness
- paleness
- weight gain (insulin resistance)
- regular headaches
- low mood
- reduced physical work capacity
- poor mental function
- low immunity
- brittle nails
- cracks in sides of mouth
- restless legs (especially during night/sleep)



Considering the essential functions of iron in the body and the difficulty in consuming an adequate amount of iron, a suspected or known deficiency should not be taken lightly. However, self-prescribed supplementation is not advised, as iron is toxic in high amounts. Acute iron toxicity can be fatal and generally results from excess supplemental intake of iron. Chronic iron toxicity typically occurs in individuals affected by a genetic condition known as haemochromatosis (a.k.a, "bronze disease"), and is managed with regular blood donations and avoidance of iron-fortified foods and supplements. It is always recommended that you consult a medical doctor and dietitian about investigating and treating an iron deficiency and/or condition of iron excess.

Dietary Sources of iron

Food	Iron (mg)/100 g
Thyme, dried*	124
Turmeric, dried*	55
Cocoa powder*	30
Shrimp paste	21
Seaweed/nori, dried	19
Chicken liver	11
Sardine	6
Beef sausage	6
Octopus, boiled	6
Egg, yolk	5
Oyster	4



The plant foods (*) included, in the table below contain non-haem iron, which is harder for your body to absorb.

References

Bothwell TH, Charlton RW, Cook JD, Finch CA. Iron metabolism in man. Oxford: Blackwell Scientific, 1979.

Roy R. NTDT5601 Food and Nutritional Science, 2016. The University of Sydney. National Health and Medical Research Council. Nutrients: Iron, 2014. Available from: <https://www.nrv.gov.au/nutrients/iron>. Cited 19 Jun 2018.