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Expert Column

# Want to Donate Blood? Let's Boost Our Haemoglobin Levels

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***“I’m very sorry Madam, as you are not eligible to donate blood today. Your haemoglobin level is low.”***

This is one of the frequently heard quotes during the initial screening process prior to blood donation. Anaemia or low haemoglobin level is one of the common causes of temporary deferrals during a blood donation drive. In the US, 10% of the deferrals from blood donation are due to low haemoglobin levels <sup>(1)</sup>, while this number is shown to be relatively higher in developing countries, such as India which has a rate of 15.5% <sup>(2)</sup>.

Malaysia as a developing country has a high prevalence of anaemia as well. Around 12.6% of men are known to be anaemic, and this rate increases with age <sup>(3)</sup>. Women, especially pregnant women are the most affected group, with studies showing anaemia in up to 57.4% of pregnant women <sup>(4)</sup>. Generally, a third of these conditions are attributed to iron deficiency anaemia. The symptoms due to iron deficiency anaemia can be non-specific, however, due to the high prevalence, it should always be considered. The following diagram illustrates the symptoms involved (Figure 1):

# SYMPTOMS OF IRON DEFICIENCY

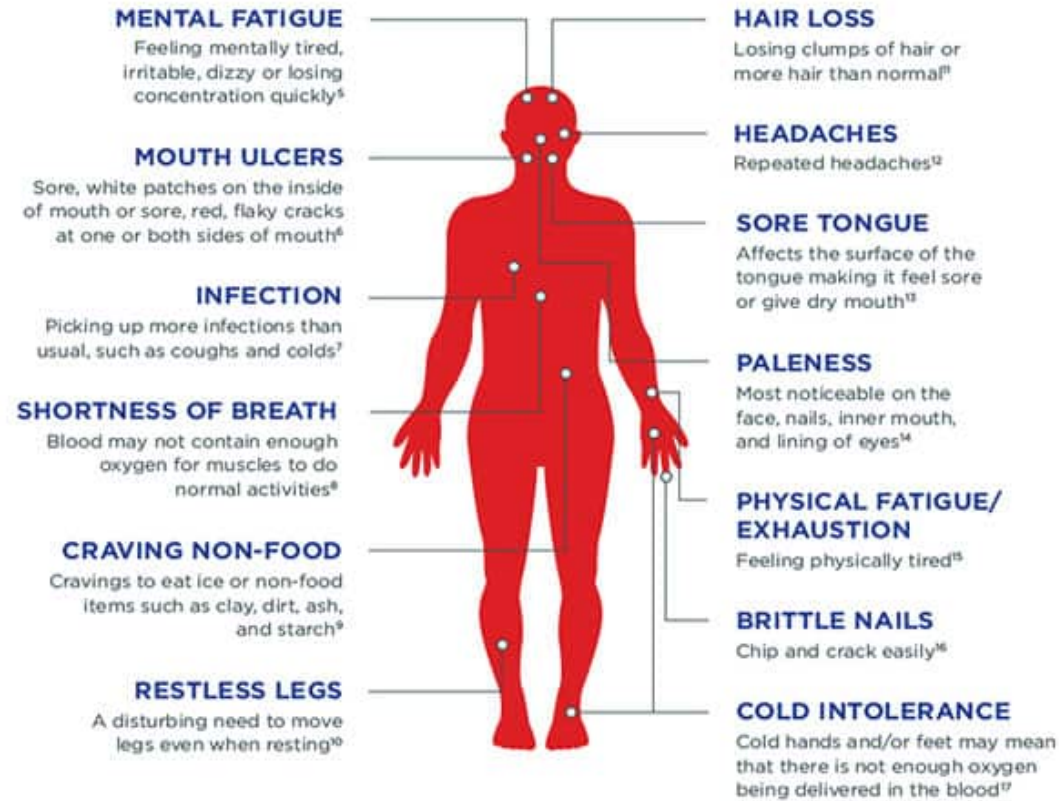


Figure1 : Symptoms of Iron Deficiency

Source: <https://vegansfirst.com/best-vegan-iron-supplements/>

This brings the question; how can we prevent being deferred from blood donation due to iron deficiency anaemia? Generally, this can be achieved with a few simple steps:

## 1. Iron-Rich Diet

In the human body, iron is mostly stored in the red blood cells, forming the heme- portion of haemoglobin. Most of the iron is recycled

from broken-down red blood cells, with the recommended intake for an adult being 8mg/day, while premenopausal women are recommended a daily intake of 18mg (5). The types of iron consumed can affect the absorption of iron.

There are two forms of iron, namely heme and non-heme (Figure 2). Heme iron is available in meat, eggs, and seafood. This iron is more easily absorbed by the human body, up to around 30% of the food consumed. On the other hand, plant-based food such as vegetables, fruits, and nuts are rich in non-heme iron. Only around 10% of non-heme iron is readily absorbed by the human body, and this can be enhanced if consumed with vitamin C-rich food such as citrus fruits, peppers, and tomatoes (6).

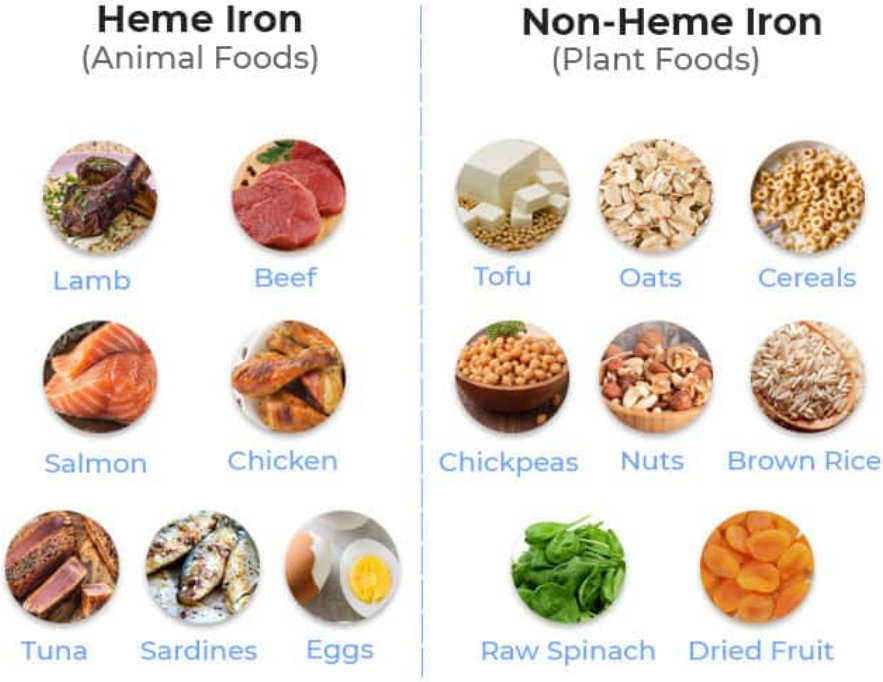


Figure2 : Sources of Heme Iron and Non-Heme Iron  
Source: <https://vegansfirst.com/best-vegan-iron-supplements/>

## **2. Avoidance of Dietary Antagonists of Iron Absorption**

One of the well-known inhibitors of iron absorption is calcium, therefore it is suggested to consume dairy products such as milk or calcium supplements at a different time than the main meals (7). Another antagonist of iron absorption is tannins, which are found in tea and coffee. Therefore, they should be avoided from being consumed with iron-rich food as well (7). Various timing suggestions have been made, such as avoiding food that limits iron absorption for at least 2 hours prior to or after a main meal that should consist of iron-rich food.

## **3. Iron Supplementation**

Oral supplementation with iron can help certain at-risk groups such as vegetarians and young women, however, this must be accompanied by adequate knowledge of how to achieve the maximum effect of the iron supplements. They should be taken on an empty stomach (at least an hour prior to a meal), and best taken with a vitamin C-rich drink such as orange juice (8).

## **4. Donation Intervals**

Blood donation itself would be a possible cause of iron deficiency anaemia among donors. Current guidelines would suggest an interval of at least 56 days after the previous whole blood donation. However, as per the National Blood Centre's advice, it is suggested for an interval of around 3 months in between whole blood donations for the blood donors to recover the iron stores. This advice is in line with a study done in France, especially for donors with haemoglobin levels very close to the cut-off level (9).

In conclusion, iron deficiency anaemia is a major preventable cause of donor deferrals in Malaysia. Therefore, the general public, especially blood donors should be well informed on these simple steps to achieve the optimum iron stores.

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