

Iron is the Most Common Nutritional Deficiency!

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Causes of iron deficiency: Inadequate dietary intake, increased demands due to pregnancy or growth or, increased blood losses (menses, haemorrhage or trauma).

Affected groups: Adolescents (particularly menstruating girls), pregnant women or those of childbearing age, infants and older people.

Symptoms include fatigue, shortness of breath and vertigo.

Lab tests: Haemoglobin and serum ferritin are the most common ways to detect anaemia. Haemoglobin concentrations below 13 g/dl for adult males, 12 g/dl for menstruating women and 11 g/dl in pregnancy are considered indicative of anaemia.

1. Haemoglobin and Haematocrit confirm the presence of anaemia
2. Bone marrow Iron and Serum ferritin to evaluate iron status and Iron stores.
3. Serum transferrin receptor concentration, Transferrin saturation, free erythrocyte protoporphyrin, Red blood cells indices, and Serum iron to detect Iron supply.

Iron in the diet:

The average iron content of a typical western diet is about 10–15 mg, of which only 10–15% is absorbed.

Haem iron is highly absorbed, ranging from 8 to 40%. Haem iron

is provided by foods of animal-origin (i.e. red meat and meat products, liver, kidneys, egg yolk, fish, chicken, etc.).

Haem iron absorption is higher in the presence of meat, by a mechanism still under investigation. Also, calcium chloride directly inhibits haem iron, counteracting the enhancing effect of meat. This inhibitory effect is dose-related, a dose below 40mg does not have an inhibitory effect, while maximum inhibition is reached with intakes around 300 mg.

Heat treatment and storage can transform haem iron into non-haem iron, resulting in the lower absorption of iron from certain foods.

Non-haem iron, which is only absorbed by 0.5–6%, is very abundant in vegetable foods and in fortified foods (i.e. dried fruits and vegetables, whole grain cereals, legumes and fortified bread and cereals).

However, the availability of non-haem iron is low. Its absorption is inhibited by the presence of phytic acid and polyphenols. Phenolic compounds found in spices and herbs (i.e. chilli, garlic, pepper, shallot and turmeric) are potent inhibitors of iron availability, reducing iron availability from 90 to 20% in a dose-dependent manner. Conversely, caseinophosphopeptides improve iron absorption by increasing its solubility or by diminishing other interactions with other minerals. Also, vitamin A and C enhance iron availability, thus counteracting the action of polyphenols and phytic acid.