

Man of iron

The oldest nutritional myth in the business is dead but refuses to lie down

Sweden has the highest suicide rate in the world. Everyone knows that! Trouble is, everyone's wrong - Sweden sits in the middle of the European suicide table. An equally enduring myth is that vegetarians are at risk of iron deficiency anaemia because red meat is the best - the only - source of this man-making mineral. Despite a battery of science that shows this isn't true, despite every major health body declaring it not to be true, just about every health writer and newspaper doctor in the business repeats this little gem ad nauseam, even when the rest of their information is fairly accurate. So, here are the facts!

The answer lies in the soil

The majority of iron in our diet comes not from meat but other sources - plants. Iron is as important to plants as it is to us. It helps them produce food from carbon dioxide and water, using the sun's energy in photosynthesis and it plays a part in many of the enzyme systems which keeps them functioning. Plants obtain their iron from the soil and many are rich in it.

Legumes, such as kidney beans, lentils and chickpeas, soya bean curd (tofu), nuts, seeds, wholegrains and dried fruits such as raisins, prunes, apricots and figs, are all good sources. Many breakfast cereals are also fortified with iron, providing another regular, non-meat source. The Food Standards Agency (FSA) actually put some figures on where we get our iron in the latest *UK National Diet and Nutrition Survey*. It found that only 17 per cent comes from eating meat, three per cent from fish and a staggering 80 per cent comes from vegetarian foods. Cereals make the single biggest contribution of 44 per cent (1)

There is a difference between the iron found in meat and iron from plants. That from meat is called haem (which essentially means blood) iron and that from plants is called non-haem iron - and the body handles each of them slightly differently. Iron from meat is rapidly absorbed and continues to be absorbed and stored whether the body needs it or not. Plant iron, tends to be 'bound' to other nutrients in the food and has to be broken down in the body before it can be absorbed. This not only slows down the process of absorption but enables the body to limit its overall intake - it only takes in what it needs and absorption decreases as iron stores increase (2, 3).

This is often portrayed as a negative by the meat industry and many nutritionists but it isn't, in fact it's a distinct advantage. High iron stores, as a result of eating meat, are a known risk factor for heart

disease and diabetes (see page 18). Absorption of plant iron can be improved simply by including vitamin C with the same meal, such as a fresh orange juice drink (2, 4, 5). Tannins in tea and coffee and oxalic acid in spinach, swiss chard, berries, phytates, chocolate and tea can have the opposite effect and slow down absorption so are best avoided when eating iron-rich foods (2, 6). Dairy and calcium can have a similar effect (2, 7).

By Lee Jerome
(MSc Clinical
Nutrition) and
Laura Scott
(MSc Nutrition)

Needs must

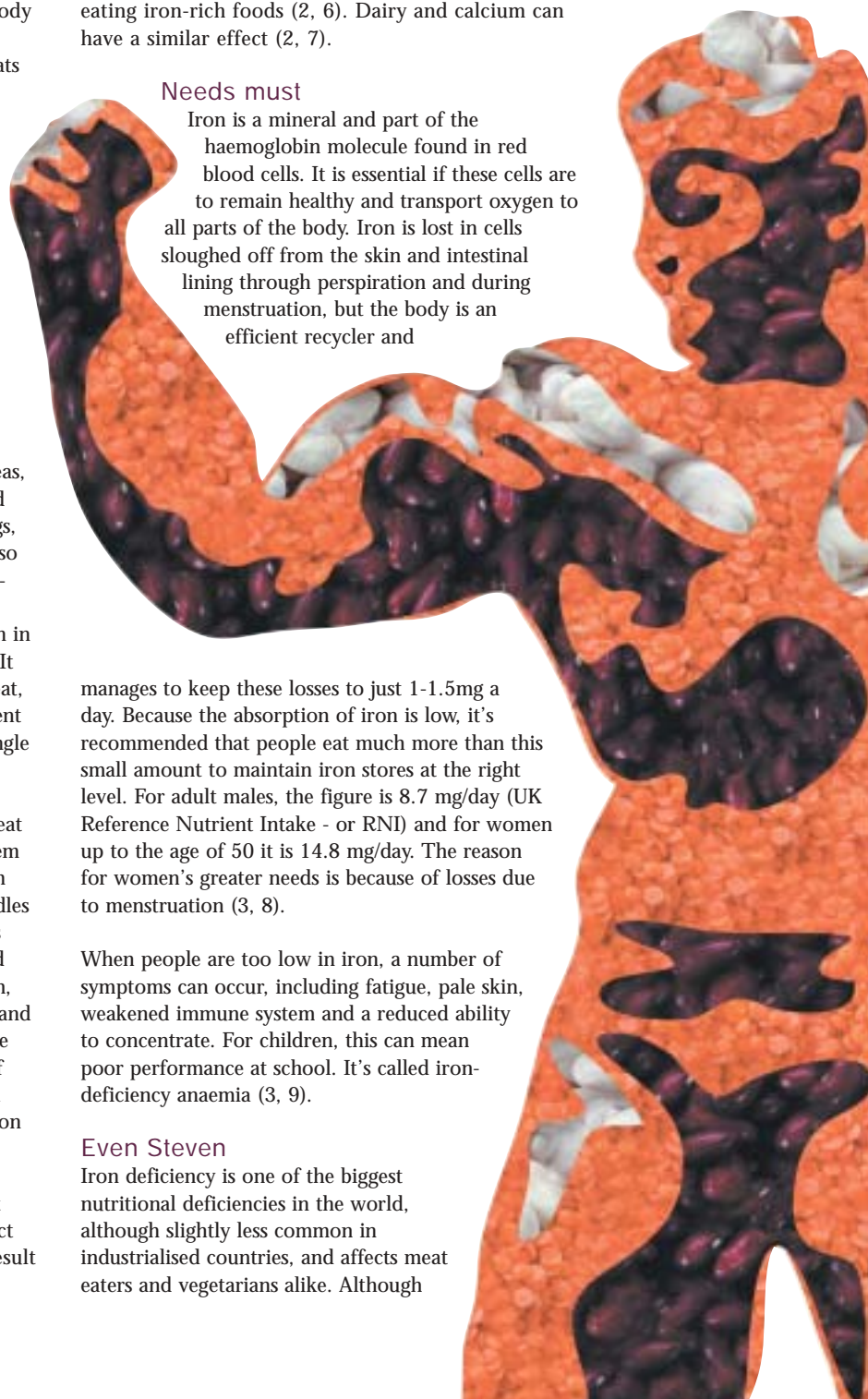
Iron is a mineral and part of the haemoglobin molecule found in red blood cells. It is essential if these cells are to remain healthy and transport oxygen to all parts of the body. Iron is lost in cells sloughed off from the skin and intestinal lining through perspiration and during menstruation, but the body is an efficient recycler and

manages to keep these losses to just 1-1.5mg a day. Because the absorption of iron is low, it's recommended that people eat much more than this small amount to maintain iron stores at the right level. For adult males, the figure is 8.7 mg/day (UK Reference Nutrient Intake - or RNI) and for women up to the age of 50 it is 14.8 mg/day. The reason for women's greater needs is because of losses due to menstruation (3, 8).

When people are too low in iron, a number of symptoms can occur, including fatigue, pale skin, weakened immune system and a reduced ability to concentrate. For children, this can mean poor performance at school. It's called iron-deficiency anaemia (3, 9).

Even Steven

Iron deficiency is one of the biggest nutritional deficiencies in the world, although slightly less common in industrialised countries, and affects meat eaters and vegetarians alike. Although



veggies tend to have lower iron stores (serum ferritin) than meat eaters, there is no difference in the incidence of iron deficiency anaemia between the two (10). Two of the world's most prestigious health organisations - the American Dietetic Association and the British Medical Association - support this view.

Measure for measure

Haemoglobin is found in red blood cells and it is haemoglobin which holds most of the body's iron and it can be either haem or non-haem. It is responsible for transporting oxygen around the body and unloads it in tissues, such as the muscles, where it's needed. Haem iron from meat - but not non-haem iron - is stored in proteins known as ferritins (3). As veggies consume only plant - non-haem - iron, their iron stores tend to be naturally lower than meat eaters.

So how do they measure iron in the body and decide whether we have sufficient or not? This is where it gets a bit technical as there are many different tests but they are important in identifying iron deficiency disorders such as anaemia and more severe conditions such as chronic inflammation, infection or malignant diseases (11). The most common test measures both haemoglobin and serum ferritin.

Measuring ferritin levels gives information about the body's iron stores - too much, too little or just right (11). Haemoglobin levels are used as a screening device for iron deficiency anaemia as a low count is a key feature of this disorder.

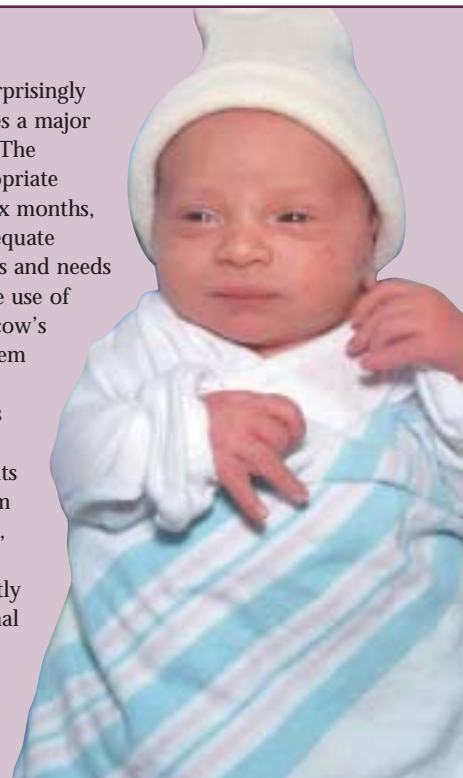
Death by Iron

People with a high level of iron stored in their bodies are more likely to die from heart disease (12, 13, 14, 15, 16,17). The usual cause of high stores is too much haem iron in the diet but there can be a genetic link, also (14). The chances of this are quite high, with 12 per cent of non-veggies having the gene and one-in-250 having two such genes. Another negative effect of too much iron is its tendency to damage (oxidise) the 'bad' cholesterol (LDL) that clogs arteries. Causing damage to cholesterol makes it even more dangerous and the chemical reaction that causes it is thought to also damage heart cells directly, making this a two-pronged attack (15)

A study looking at the link between high iron stores and heart health found iron from red meat does increase the risk of heart disease, particularly in older men and women (16). Another study also showed an increased risk of heart attacks among meat-eating males. It concluded that there was a direct association between meat intake, high haem iron stores and heart disease (17). Research has tested if high serum ferritin levels (iron stores) and high dietary iron intake are linked to heart disease and found a strong link (15).

Baby blues

Anaemia in infants is surprisingly common - in fact it poses a major problem for UK babies. The primary cause is inappropriate weaning because after six months, breast milk is not an adequate source of iron for infants and needs to be supplemented. The use of unfortified/unmodified cow's milk is part of the problem because of its low iron content, the fact that it's poorly absorbed and because it actually inhibits iron being absorbed from other foods. Even worse, allergy to cow's milk is widespread and frequently results in unseen intestinal bleeding, with considerable quantities of iron being lost in the blood (22, 23, 24).



Nasties in store

Excessive iron stores can also affect the body's ability to regulate insulin production (see page 18), which is the first warning sign of diabetes. This 'insulin resistance' can go on to cause full-blown adult onset diabetes (Type 2). There is plenty of research to show that insulin resistance is directly related to iron stores - the lower the stores, the less the risk of insulin resistance and the less chance of developing diabetes. It's also clear that veggies have lower insulin resistance than meat eaters and a lower risk of diabetes. The higher diabetes risk for meat eaters is primarily due to their iron intake from meat. Not surprisingly, the conclusions of these studies are that there would be fewer cases of Type 2 diabetes in meat eaters if they lowered their iron stores. It's a scientific way of saying 'give up meat'(18, 19, 20, 21).

there would be fewer case of Type 2 diabetes in meat eaters if they lowered their iron stores

Plant an idea

Plant-based diets that include daily servings of iron-rich foods, backed up with fruits and vegetables rich in vitamin C, will easily ensure you get enough - but not too much - iron. It will give you a clear health advantage over meat eaters. And the next time you're confronted by someone with the great iron myth, show them this article.

As for the Swedish myth, that was spread by US president General Ike Eisenhower in the 1950s. He was so peeved that a socialist country could be successful that he had it rubbished. Providing the best welfare state in the world made people so depressed that they killed themselves, went the story! The meat industry's perpetuation of the iron myth has about as much credibility and the same level of self interest.