

Dietary Sources of Iron

Iron is essential to all body cells. Iron functions primarily as a carrier of oxygen in the body, both as a part of hemoglobin in the blood and of myoglobin in the muscles. Iron deficiency anemia occurs when there is not enough iron in the red blood cells. This is a common problem often caused by pregnancy, blood loss, and a diet low in iron or poor absorption of iron by the body. There are a variety of possible symptoms of iron deficiency including:

- lack of energy or tiredness
- extreme fatigue and feeling of weakness
- light headedness
- headache
- pale skin on the lining of the eyes, the inner mouth and the nails
- rapid and forceful heartbeat
- low blood pressure with position change from sitting to standing up
- finger nails that become thin, brittle and white – they may grow abnormally and get a spoon-shaped appearance
- tongue may become sore, smooth and reddened
- decrease in appetite
- shortness of breath during exercise
- brittle hair
- reduction in immunity and increased vulnerability to infection
- a strong desire to eat nonfoods such as ice, paint or dirt (a condition called Pica)
- disturbed sleep
- abdominal pain

Because the typical symptoms of iron deficiency have many causes, diagnosis by a blood test is needed to confirm the presence of iron deficiency anemia.

If your blood iron level is low, your health care provider may refer you to a dietitian to discuss dietary increase of iron-rich foods as well as a multivitamin pill or an iron supplement. Although iron is found in a variety of different foods and supplements, its availability to the body varies significantly. In general, iron is not readily absorbed by the body. Availability is partially determined by whether the iron is found in the form of HEME or NON-HEME iron.

HEME iron is found only in meat, fish and poultry and is absorbed much more easily than NON-HEME iron, which is found primarily in fruits, vegetables, dried beans, nuts and grain products.

The following factors will increase the iron absorption from non-heme foods:

- A good source of vitamin C (ascorbic acid) - i.e., oranges, grapefruits, tomatoes, broccoli and strawberries, eaten with a NON-HEME food
- A HEME and NON-HEME food eaten together
- A NON-HEME food cooked in an iron pot, such as a cast iron skillet

The following factors will decrease non-heme iron absorption:

- Large amounts of tea or coffee consumed with a meal (the polyphenols bind the iron).
- Excess consumption of high fiber foods or bran supplements (the phytates in such foods inhibit absorption).
- High intake of calcium - take your calcium supplement at a different time from your iron supplement.

The Recommended Dietary Allowance (RDA) for iron for non-vegetarian pre-menopausal women is 18 mg/day. The RDA for non-vegetarian men and post-menopausal women is 8 mg/day. Because of iron absorption issues in a healthful, high-fiber vegetarian diet, the RDAs for vegetarians are higher - 14 mg/day for vegetarian men and 33 mg/day for vegetarian women. Iron absorption should be twice for vegans who exclude all animal products. The upper level of intake should not exceed 45mg/day.

HEME Iron Sources

Food Source	Serving Size (oz.)	Iron (mg)
*Beef, chuck, lean	3.0	3.2
Beef, corned	3.5	1.9
Beef, eye of round, roasted	3.0	2.2
*Beef, flank	3.5	3.3
Beef, lean ground, 10% fat	3.0	3.9
Beef, liver	3.0	7.5
*Beef, round	3.5	3.1
Beef, tenderloin, roasted	3.0	3.0
Chicken, breast, roasted,	3.0	1.1
Chicken, leg, meat only, roasted	3.5	1.3
Chicken, liver	3.5	12.8
Chicken, thigh w/ bone	2.3	1.2

Food Source	Serving Size (oz.)	Iron (mg)
Clams, breaded, fried,	¼ cup	3.0
Cod, broiled	3.0	0.4
Flounder, baked	3.0	0.3
Oysters, breaded and fried	6 pieces	4.5
*Pork, lean ham	3.5	1.5
*Pork, loin chop	3.0	1.2
Salmon, pink canned	3.0	0.7
Shrimp, mixed species, cooked	4 large	0.7
Tuna, canned in water	3.0	0.8
Turkey, dark meat	3.5	2.3
Turkey, white meat	3.5	1.8

*Lean, trimmed of separable fat

NON-HEME Iron Sources

Food Source	Serving Size	Iron (mg)
Almonds, raw, whole	10-12	0.7
Apricots, dried, med.-size	10	1.7
Bagel	1 whole	1.5
Baked beans, canned	½ cup	2.0
Black beans, boiled	1 cup	3.6
Black-eyed peas (cowpeas), boiled	1 cup	1.8
Bread, white, enriched	2 slices	1.8
Bread, whole wheat	2 slices	1.8
Broccoli, cooked	½ cup	0.6
Broccoli, raw	1 stalk	1.1
Dates	10 each	1.6
Grits, quick enriched white, cooked	1 cup	1.5
Kidney beans, boiled	1 cup	5.2
Lentils, boiled	1 cup	6.6
Lima beans, boiled	1 cup	4.5
Macaroni, enriched, cooked	1 cup	1.9

Food Source	Serving Size	Iron (mg)
Molasses, blackstrap	1 tbsp.	3.5
Navy beans, boiled	1 cup	4.5
Oatmeal, fortified instant, prepared	1 cup	10.0
Peas, frozen and prepared	½ cup	1.3
Pinto beans, boiled	1 cup	3.6
Prune juice	½ cup	1.5
Raisins, seedless packed	½ cup	1.5
Rice, brown, cooked	1 cup	1.0
Rice, white enriched, cooked	1 cup	1.8
Soybeans, boiled	1 cup	8.8
Spaghetti, enriched, cooked	1 cup	1.6
Spinach, cooked (boiled, drained)	½ cup	3.2
Spinach, canned, drained	½ cup	2.5
Spinach, frozen, boiled, drained	½ cup	1.9
Tofu, raw, firm	½ cup	3.4
Vitamin supplements	varies	varies

In addition, many breakfast cereals are iron-fortified. Check nutrition information on package label for specific iron content.

Reference:

"Dietary Supplement Fact Sheet: Iron." Office of Dietary Supplements. National Institutes of Health. <http://ods.od.nih.gov/factsheets/iron.asp> 08-24-07
 Pennington, De Planter Bowes & Nichols Church. Bowes & Church's Food Values of Portions Commonly Used. 17th ed. Philadelphia: JB Lipincott, 1998.

If you are a registered University of Illinois student and you have questions or concerns, or need to make an appointment, please call: **Dial-A-Nurse at 333-2700**

If you are concerned about any difference in your treatment plan and the information in this handout, you are advised to contact your health care provider.

Visit the McKinley Health Center Web site at: <http://www.mckinley.illinois.edu>