



## Vegetarian Nutrition

a dietetic practice group of the  
**eat right.** Academy of Nutrition and Dietetics

### RD Resources for Consumers:

# Iron in Vegetarian Diets

**Iron is a mineral that is needed for red blood cells to bring oxygen to all parts of the body. The oxygen is then used to create energy.**

The largest fraction is found in the hemoglobin of red blood cells and is necessary for oxygen transport throughout the body. Iron also serves as part of myoglobin for oxygen supply to muscle. Iron is involved in the electron transport system, is part of NADH dehydrogenase, and also plays a role in immunity and DNA synthesis.

## Iron Deficiency

Iron deficiency is the most common nutrient deficiency internationally. It occurs most often in young children, pregnant women, and menstruating women who lose iron through their monthly periods. Iron status is easily assessed with blood tests.

Low iron levels can result in anemia. Symptoms of iron-deficiency anemia are fatigue, a fast heartbeat, and shortness of breath during physical activity.

Pica, which is a desire to eat non-food items like dirt or clay, may cause anemia or be a symptom of anemia; research results are inconsistent.

## Dietary Iron

There are two types of iron in food: *heme* and *non-heme*.

Much of the iron in meat is heme iron, which is more easily absorbed from food and used by your body. Plant foods contain only non-heme iron. Although plant foods are high in iron, it is often attached to compounds

that reduce its absorption. These compounds are called phytates and are found in whole grains and dried beans.

Compounds in coffee and tea also reduce iron absorption, as do calcium supplements.

Vitamin C can counter the effects of some of these compounds. Eating vitamin C-rich foods and iron-rich foods at the same time can increase iron absorption. Good sources of vitamin C include oranges, grapefruits, strawberries, green leafy vegetables (kale, collards, Swiss chard), broccoli, Brussel sprouts, bell peppers (yellow, red, and green), and cauliflower.

## Iron and Vegetarians

Vegetarian (including vegan) men and women tend to have lower iron stores than people who eat meat. Vegetarian men rarely have anemia, but some vegetarian women may be at risk for anemia.

There is not a separate iron RDA for vegetarians. However, because iron isn't absorbed as well from plant foods, the Food and Nutrition Board recommends that vegetarians get as much as 1.8 times the RDA for iron just to be safe. Doing the following to increase iron absorption will be more effective than increasing the amount of iron in your diet:

- Include vitamin C-rich foods in meals
- Drink coffee and tea between meals rather than with them
- Take calcium supplements between meals

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If you think you might be iron deficient, ask your doctor to test for it. Iron supplements are the treatment for anemia for both vegetarians and meat-eaters.

### Iron and Chronic Disease

Everyone has iron stores in his or her body. Vegetarians tend to have lower stores than people who eat meat. Their lower stores may be beneficial as too much iron in the body may contribute to diabetes and possibly premature death. High amounts of iron in the diet might contribute to colon cancer. The research in these areas is mixed and more evidence is needed before conclusions can be drawn.

There is also a relatively uncommon disease called hemochromatosis in which someone absorbs iron very easily. The disease is genetic and people of Northern European descent are at the highest risk. The excess iron builds up and can lead to liver damage and many other problems. For this reason, it is a good idea for men, especially, to have their iron levels tested at some point to make sure they are not absorbing too much iron.

Because very high iron levels may raise disease risk, it's a good idea to avoid high doses of iron from supplements. Limit intake from pills to no more than 20 milligrams per day without a doctor's approval. Iron supplements can also cause constipation.

### Athletes

Iron deficiency can reduce athletic performance. For athletes with low iron status, but who don't have anemia, iron supplements can improve performance.

People who take part in regular, intense endurance exercise, especially running, have higher iron needs. The average requirement may be 30% to 70% higher in athletes due to the loss of very small amounts of iron from the intestinal tract and red blood cell destruction that occurs with intense exercise.

The American College of Sports Medicine recommends that vegetarian athletes should try to get more iron than the RDA. They should also be tested occasionally for low iron levels, especially teens and pregnant

### Iron Content of Selected Foods

Food	Serving	Prep	Iron (mg)
<b>Vegetables</b>			
Spinach	1/2 C chopped	boiled	3.2
Swiss chard	1/2 C chopped	boiled	2.0
<b>Grains</b>			
Oatmeal	1/2 C	cooked	1.0
Rice (white, long-grain, enriched)	1/2 C	cooked	1.4
<b>Soy Products &amp; Legumes</b>			
Tempeh	3 oz	cooked	1.5
Soy milk	1 C		1.0 - 1.5
<b>Nuts</b>			
Almonds	1/4 C	roasted	1.3
Pistachios	1/4 C	dry roasted	1.2
<b>Fruits</b>			
Dried figs	1/2 C		1.5
Raisins	1/2 C		1.4
<b>Enriched Cereals</b>			
Grape nuts	1/2 C		16
Total- whole grain	1/2 C		8.0
<b>Other</b>			
Molasses	2 T		3.8

women. Because athletes consume more calories, they naturally get more iron in their diets. The key point for vegetarian athletes is to monitor iron stores and be aware of the signs of iron deficiency.

### Conclusion

Despite lower iron stores, vegetarian men appear to have adequate iron status. Their lower stores may be associated with a reduced risk for chronic disease. Women should pay special attention to including vitamin C-rich foods with meals. If you suspect you have iron deficiency, ask your doctor to test for it. Iron deficiency is treated with iron supplements.

A registered dietitian can help you develop a healthy vegetarian eating plan that meets your needs.

To find an RD in your area, visit [www.eatright.org](http://www.eatright.org)

RD Resources are a project of the Vegetarian Nutrition Dietetic Practice Group. More topics available at [www.VegetarianNutrition.net](http://www.VegetarianNutrition.net). Professional resources also available for members at [www.VNDPG.org](http://www.VNDPG.org). © 2013 by VN DPG.

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