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Fruits & Vegetables

"Eat your fruits and vegetables." It's one of the tried and true recommendations for a healthy diet. And for good reason. Fruits and vegetables are rich in essential vitamins and minerals, fiber, carbohydrates, and phytochemicals. They've also been linked to many health benefits, including lowered risk for certain cancers, stroke, heart disease, and high blood pressure.



While it's important to eat a diet rich in a variety of fruits and vegetables, research is increasingly uncovering links between specific fruits and vegetables and specific diseases. Prostate cancer is one good example.

Fruits, Vegetables, and Cancer

Prostate Cancer

The exact link between fruits and vegetables and prostate cancer is still a bit unclear. Some studies have found a weak relationship between the two, while others have found no link. While this may seem to argue against fruits and vegetables as being protective against prostate cancer, there have been more promising results when researchers have looked at one particular vegetable--the tomato. In a study of over 40,000 health professionals, Harvard investigators found that men who ate the most tomato-based foods (like cooked tomatoes, tomato sauce, and pizza with red sauce) had a 35 percent lower risk of developing prostate cancer than those who ate the least amount of these foods. Tomatoes (and many of the products made with them) are rich in the carotenoid lycopene, and when the amount of lycopene in the diet was looked at specifically, it too was found to be protective.

Carotenoids are the pigments that color dark green and orange vegetables. Many are precursors to vitamin A and act as powerful antioxidants that can protect cells in the body from damage by a specific type of oxygen called oxygen free radicals. The damage to cells caused by oxygen free radicals is thought to lead to a number of health problems, including cancer, heart disease, and cataracts. Thus antioxidants


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may help protect against such diseases. In another Harvard study of prostate cancer, researchers looked at blood levels of carotenoid lycopene and found that the risk of developing prostate cancer, especially aggressive cancer, decreased with increasing blood lycopene levels.

Although several studies have supported the association between lycopene and prostate cancer, others have not--or have found only a weak association. Taken as a whole, however, these studies suggest that increased consumption of tomato-based products (especially cooked tomato products) and other lycopene-containing foods may reduce the occurrence or progression of prostate cancer. But more research is needed before we know the exact relationship between fruits and vegetables, carotenoids, and prostate cancer.

Colon Cancer

While large studies looking specifically at the link between fruit and vegetable intake and colon cancer have found no substantial relationship between the two, there have been a number of studies linking the vitamin folate with colon cancer risk. Folate is found in high amounts in dark leafy green vegetables, orange juice, fortified grains and cereals, and vitamin supplements (in the form of folic acid). Harvard researchers have linked low blood levels of folate with an increased risk of colon cancer and a high intake of folate (either from food or multivitamins) with a lower risk.



Eating foods rich in folate, like dark leafy green vegetables, can help ensure you are getting enough folate in your diet. For the greatest protection against colon cancer (and possibly [heart disease](#)), though, you may need to supplement your folate intake with a multivitamin. A Harvard study of over 80,000 female nurses found that the long term risk-reducing benefits of a high folate intake rested mainly in women who supplemented their diets with a multivitamin containing folic acid.

Fruits, Vegetables, and Stroke

Harvard researchers have found that diets rich in fruits and vegetables may also reduce the risk of stroke. Studying nearly 80,000 women and 40,000 men, the researchers found that people who ate five servings of fruits and vegetables every day had a 30 percent lower risk of ischemic stroke. Cruciferous vegetables (like broccoli); green, leafy vegetables (like spinach); and citrus fruits and juices seemed to provide the greatest benefit. Ischemic stroke is by far the most common type of stroke and, like coronary heart disease, is caused by the blockage of blood vessels.

For more information on this study, [click here](#).

Other researchers have found similar benefits linked to fruit and vegetable intake, but

not all studies have been consistent, and more research is needed.

Fruits, Vegetables, and Heart Disease

Although not all of the research is consistent, there is compelling evidence that a diet rich in fruits and vegetables can lower the risk of heart disease, a leading cause of death in the United States. Another large Harvard study of both men and women found that those who ate eight or more servings a day of fruits and vegetables had a 20 percent lower risk of heart disease compared to those who ate fewer than three. Fruits rich in vitamin C and green, leafy vegetables seemed particularly beneficial.



One of the most heartening results of the study was its conclusion that increasing fruit and vegetable intake by as little as one serving per day can have a real impact on heart disease risk. For every extra serving of fruits and vegetables participants added to their diets, their risk of heart disease dropped by 4 percent. For more information on this study, [click here](#).

Fruits and vegetables are filled with heart-healthy nutrients: [fiber](#), which can reduce the risk of blood clots; potassium, which can help control [blood pressure](#); and folate, which can help lower levels of a heart disease-promoting amino acid called [homocysteine](#). Increasingly, homocysteine is being thought of as an important risk factor for heart disease. High levels of the protein may not only injure the walls of the coronary arteries--which can start the buildup of cholesterol--they can also promote blood clots--which can be the ultimate cause of a heart attack.

Two vitamins found in certain fruits and vegetables, however, can help lower blood homocysteine levels and possibly reduce the risk of heart disease. Results from the Harvard study of 80,000 female nurses found that women with the highest intake of both vitamins--folate and vitamin B6--had nearly half the heart disease risk of women who had a low intake of both. Interestingly, the women who benefited most had vitamin intakes that were above current recommendations. For an adult aged 19-50, the current recommended intake for folate is 400 micrograms (mcg) per day. For vitamin B6, it's 1.3 mcg per day. These are well below the levels of 500 mcg per day for folate and 3.0 mcg per day for vitamin B6 that showed the greatest benefit in the study. The findings suggest that to reduce the risk of coronary heart disease, the amount of folate and B6 consumed should be higher than what is currently recommended. For more information on this study, [click here](#).

Foods high in folate include orange juice, eggs, and dark-green, leafy vegetables, such as spinach and broccoli. Foods high in vitamin B6 are bananas, chicken, milk, fish, and whole grains. Fortified cold breakfast cereals are a good source of both folate and vitamin B6.

Fruits, Vegetables, and Blood Pressure

High blood pressure is a primary risk factor for heart disease and stroke. As such, it's

a condition that is very important to control. And research increasingly shows that diet can be a very effective tool for lowering blood pressure. One of the most convincing associations between diet and blood pressure was found in the Dietary Approaches to Stop Hypertension (DASH) study. This study examined the effect on blood pressure of a diet that was rich in fruits, vegetables, and low-fat dairy products and that restricted the amount of saturated and total fat.

The researchers found that people with high blood pressure who followed this diet reduced their systolic blood pressure (the upper number of a blood pressure reading) by about 11 mm Hg and their diastolic blood pressure (the lower number) by almost 6 mm Hg. These findings suggest that making such changes in dietary patterns--which include increasing fruit and vegetable intake--can lower blood pressure without medication.

The Bottom Line-Recommendations for Fruit and Vegetable Intake

Fruits and vegetables are clearly an important part of a good diet. Almost everyone can benefit from eating more of them, but variety is as important as quantity. No single fruit or vegetable provides all of the nutrients you need to be healthy. The key lies in the variety of different fruits and vegetables that you eat..

Some basic fruits and vegetables tips:

- **Try to increase the amount of fruits and vegetables you eat. Some experts recommend shooting for at least nine servings a day rather than the often-recommended five servings.**
- **Choose a variety of different fruits and vegetables. It's easy to get into a rut when it comes to the food you eat. Break out and try a wider variety, being sure to include dark-green, leafy vegetables; yellow, orange, and red fruits and vegetables; cooked tomatoes; and citrus fruits**

The aim of the Harvard School of Public Health Nutrition Source is to provide timely information on diet and nutrition for clinicians, allied health professionals, and the public. The contents of this Web site are not intended to offer personal medical advice, which should be obtained from a health-care provider. The information does not mention brand names, nor does it endorse any particular products.

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