

Antioxidants

Latha Devareddy
Assistant Professor -
Nutrition

Jordan Teeple
Graduate Student

What Are Antioxidants?

In recent years, antioxidants have attracted a great deal of attention. Antioxidants are substances that occur naturally and protect the body's cells from stress that causes damage. They can also help repair the damage caused by stress. There are two types of antioxidants: those made within the body and those obtained from the diet. Dietary antioxidants are found in high amounts in fruits, vegetables, tea, whole grains, etc., and protect the body against stress-induced damage.

Our bodies generate highly reactive substances that cause the cells in the body to work improperly. There are several causes of these substances in the body. Some develop during normal metabolism, and the immune system also produces these to fight infections. Factors such as cigarette smoke, pollution and radiation all cause stress on the body's cells. Antioxidants combine with these substances to make them inactive before they bring about harm to the cells of the body.

Health Benefits of Antioxidants

Antioxidants help prevent or slow the onset of certain conditions, improve the immune system, lower the risk of infection and possibly slow the process of aging.

- **Heart Disease and Stroke**
Low-density lipoprotein (LDL), or "bad" cholesterol, forms plaque in arteries – a major cause of heart disease. When antioxidant levels are high in the body, this prevents LDL from causing stress on the body's cells. Red grapes, red

wine, tea (especially green tea), chocolate and olive oil have been shown to improve vascular health.

- **Diabetes**
Diabetes occurs because the cells of the pancreas malfunction, usually due to regular high blood sugar levels. Over time, this leads to insulin-resistance and creates a strain on the pancreas. Beans are an excellent source of antioxidants and help keep blood sugar levels normal. Red, black and pinto beans rank among the 20 highest antioxidant-containing foods, according to the United States Department of Agriculture (USDA).
- **Cancer**
There are many naturally occurring cancer-causing agents, such as aflatoxins, certain viruses, etc. Green and black teas appear to prevent cancer cells from dividing. Tomato and tomato products reduce the risk for breast, prostate, pancreas and colon cancer.
- **Exercise**
Regular physical exercise improves the body's antioxidant system and protects against stress brought



*Arkansas Is
Our Campus*

Visit our web site at:
<http://www.uaex.edu>

about by periods of intense exercise. Blueberries and cherries can speed up recovery time after exercise-induced stress and maintain the body's immune functions.

- **Aging**

The body's ability to fight natural stressors declines during aging. Over time, this can lead to a decline in brain function and memory. Blueberries and walnuts have proven to slow premature aging of brain cells.

Table 1. Dietary Sources of Antioxidants

Group	Function	Food Sources
Carotenoids	Important for cell growth and immune function as well as eye health; includes alpha and beta carotene, lycopene and lutein	Sweet potatoes, carrots, cantaloupe, papaya, squash, apricots, pumpkin, mangoes, spinach, kale and collard greens
Polyphenols	Slows plaque buildup and improves health of arteries and veins; includes resveratrol and flavonoids	Tea, coffee, soy, fruit, olive oil, dark chocolate, cinnamon, grapes and red wine
Selenium	Not an antioxidant itself but a component of antioxidant enzymes	Rice, wheat, breads, Brazil nuts, brewer's yeast, oatmeal, chicken, eggs, dairy products, molasses, garlic, seafood and tuna
Vitamin A	Necessary for good vision, improves immunity and helps in making red blood cells	Sweet potatoes, carrots, milk, egg yolks, mozzarella cheese and liver
Vitamin C	Required for production of collagen and a part of blood vessels, ligaments, tendons and bones	Citrus fruits and their juices, berries, red and yellow peppers, tomatoes, pineapple, cantaloupe, mangoes, papaya and many other fruits and vegetables
Vitamin E	Needed for normal blood clotting, bone mineralizing and cell growth	Vegetable oils, nuts and nut butters, seeds, whole grains, wheat, beans, lentils, olives and dark, leafy vegetables

Top Antioxidant-Containing Foods

Artichokes	Apples
Beans	Berries
Cinnamon	Pecans
Plums	Prunes
Russet potato	Soy
Tea	Whole grains

Five Ways to Fit Them Into Your Day

1. Food sources are the best options for getting your antioxidants. Supplements are not regulated and may be harmful.
2. Munch on one ounce of nuts for a healthy afternoon snack. This is equal to a small handful.
3. Choose crackers, cereals and breads made with whole grains. Check the label to make sure "wheat" or "whole wheat" is one of the first five ingredients.
4. If you regularly consume coffee all day, trade in your afternoon cup for tea.
5. Centers for Disease Control and Prevention recommend eating five to nine servings of fruits and vegetables every day.

Whole Grain Fruit Parfait

1 cup low-fat or fat-free yogurt
 ½ cup mixed berries
 1 banana, sliced
 ¼ cup dry rolled oats
 ¼ teaspoon cinnamon
 12 ounce glass or deep bowl



1. Place ½ cup yogurt in the bottom of a glass or deep bowl.
2. Add ¼ cup mixed berries and half of the banana.
3. Sprinkle the top of the fruit with half of the dry rolled oats.
4. Repeat the three layers again.
5. Add a dash of cinnamon on the top.

References

American Dietetic Association: *What Is an Antioxidant?*
 Mayo Clinic: *Food Sources: The Best Choice for Antioxidants*
 Cleveland Clinic: *Antioxidant Food Table*
 Linus Pauling Institute, Oregon State University

Printed by University of Arkansas Cooperative Extension Service Printing Services.

DR. LATHA DEVAREDDY is assistant professor - nutrition and **JORDAN TEEPLE** is a graduate student, Department of Food Sciences, University of Arkansas located in Fayetteville.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director, Cooperative Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, gender, age, disability, marital or veteran status, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.