

A Primer on Antioxidants: Focus on Food

Certain components in foods, such as antioxidants, may help promote health. You may have heard about the benefits of antioxidants, but do you know *how* they work to protect your health and *where* to find them? Read on to learn more about antioxidants and the foods that supply them

How Antioxidants Work

In much the same way that oxidation forms rust on a car, oxidation occurs in our bodies and, in some cases, causes damage to cells and contributes to age-related diseases. Substances known as *free radicals* are produced during oxidation, which, for example, occurs when the body breaks down and processes food and from exposure to tobacco smoke, sunlight, pollution and radiation. Over time, free radicals can cause damage that may lead to heart disease, cancer, diabetes, eye disease and other health problems. While the human body has a natural defense system to fight harmful effects of oxidation, the antioxidants available in foods can also help combat what is known as *oxidative stress*.

Antioxidant Power

Certain vitamins, minerals and plant substances work as antioxidants to help prevent or repair damage in the body. The most well known vitamin and mineral antioxidants are vitamin A (as beta carotene and other carotenoids), vitamin C, vitamin E and selenium. Some plant substances, known as phytonutrients, also act as antioxidants. They include polyphenols, flavonols, anthocyanin, lutein and lycopene. It is important to note that different antioxidant nutrients offer different health benefits. For example, vitamin C is linked to reduced risk of cataracts and certain types of cancer, while vitamin E may help protect against heart disease and stroke, and chlorogenic acid—a specific type of polyphenol—is being studied for its potential to lower risk for type 2 diabetes.



Zesty Pork Chops and Grilled Vegetables

Foods That Deliver Antioxidants

Antioxidants are found in many different foods. These include fruits and vegetables, legumes, seeds, nuts, whole grains, coffee, tea and wine.

- **Vitamin E** is found in vegetable oils, walnuts, peanuts, almonds, seeds, olives, avocado, wheat germ, liver and some leafy green vegetables.
- For **vitamin C**, eat citrus fruits (like oranges and grapefruit), broccoli, leafy green vegetables, tomatoes, peppers, potatoes, cantaloupe and strawberries.
- To get **beta-carotene** (that becomes vitamin A in the body) try cantaloupe, peaches, apricots, mangoes, papaya, pumpkin, peppers, spinach, kale, winter squash, sweet potatoes and, of course, carrots.
- **Selenium** is a mineral found in seafood, beef, pork, chicken, Brazil nuts, brown rice and whole wheat bread.
- **Phytonutrients** are found in a variety of plant foods. For example, blueberries are rich in *anthocyanin*; coffee contributes *chlorogenic acid* (a type of polyphenol); tea supplies *flavonols*; spinach, kale and other dark leafy greens contain *lutein*; tomatoes, processed tomato products and watermelon are good sources of *lycopene*.

Focus on Food

Because our understanding of how antioxidants work in the body is still emerging, aim to get antioxidants primarily from foods. Antioxidants in foods work together with other important nutrients and food components to provide a package of potential health benefits. A healthful, varied diet that includes plenty of fruits and vegetables (approximately 5 to 9 servings per day), recommended amounts of whole grains (at

least 3 servings per day or a total of 48 grams of whole grain) and sensible amounts of nuts and lean meats or meat alternates is a smart approach to reaping the benefits of antioxidants. Of course, in addition to eating a variety of healthful foods, working toward or staying at a healthy body weight, getting regular exercise and abstaining from tobacco use are also keys to a healthy lifestyle.

Fitting in Antioxidant-Rich Foods

Here are a few of the many easy ways to fit antioxidant-containing foods into your healthful eating plan.

- *Fresh or frozen berries, such as blueberries, strawberries and raspberries:* Stir them into cereal and salads, eat them as a snack, sprinkle them on yogurt or ice cream or add them to pancakes, waffles and muffins.
- *Coffee and tea:* Keep a pitcher of brewed iced coffee or tea in your refrigerator as a refreshing drink, or choose coffee, unsweetened tea or a low-calorie tea beverage instead of soda. (Hint: If you add calorie-containing ingredients to your beverages, remember to count them in your daily tally.)
- *Tomatoes:* Enjoy more tomato-based soups, stews and juices. (Hint: Look for lower-sodium options.) Add sliced tomatoes to salads, sandwiches, burgers. Top pizza and casseroles with chopped tomatoes. Canned tomatoes are a convenient way

to have tomatoes on hand when you need them.

- *Nuts and seeds:* Sprinkle chopped nuts on hot cereal, salads and pasta or rice dishes. Add chopped or ground nuts to muffin, pancake and waffle mixes. Enjoy a handful of nuts or seeds as a satisfying snack. Toasting nuts and seeds intensifies their flavor.
- *Dark leafy greens, such as spinach, kale, or collard, mustard or turnip greens:* Mix these dark green veggies into lettuce salads for flavor and texture. Chopped, fresh or frozen greens are easy to add to soups, stews and pasta sauces.
- *Orange-colored fruits and vegetables:* Enjoy fresh cantaloupe, peaches, mango or apricots as a breakfast side dish, refreshing snack or sweet dessert. Try sweet potatoes in place of white potatoes for mashed potatoes, oven-baked fries and casseroles. Use winter squash, such as acorn or butternut, as a savory side dish or add chunks to soups and stews. Look for ways to add canned pumpkin into muffins or desserts.
- *Whole grains:* Start the day with a bowl of whole-grain cereal, choose whole-grain bread for sandwiches, top whole-grain pasta with your favorite tomato-based sauce, snack on whole-grain crackers and serve flavorful stir-fries over brown rice or whole-wheat couscous.

We've selected two favorite recipes that show how easy it is to fit foods that supply antioxidants into your healthy eating plan.

Zesty Pork Chops and Grilled Vegetables

Prep: 10 min.

Total: 41 min. (incl. marinating)

- 4 bone-in pork chops (1-1/4 lb.), 1/2 inch thick
- 1/4 cup KRAFT Light Zesty Italian Reduced Fat Dressing
- 1 Tbsp. GREY POUPON Dijon Mustard
- 2 red peppers, cut lengthwise into wide strips
- 2 green or yellow peppers, cut lengthwise into wide strips
- 2 zucchini, cut diagonally into 1/4-inch-thick slices

PREHEAT grill to medium heat. Pierce both sides of chops several times with fork; place in resealable plastic bag. Combine dressing and mustard. Pour half of the dressing mixture over chops; seal bag.



REFRIGERATE 15 min. to marinate. Set remaining dressing mixture aside for later use.

REMOVE chops from marinade; discard bag and marinade. Grill chops and vegetables 7 to 8 min. on each side or until chops are cooked through (160°F) and vegetables are crisp-tender, brushing occasionally with the reserved dressing mixture.

Makes 4 servings.

Nutrition Bonus:

The red peppers in this low-calorie main dish are not only rich in vitamin C but also provide vitamin A. Eating right never tasted so good!

Nutrition Information Per Serving: 250 calories, 10g total fat, 3g saturated fat, 75mg cholesterol, 410mg sodium, 11g carbohydrate, 4g dietary fiber, 6g sugars, 29g protein, 45%DV vitamin A, 150%DV vitamin C, 4%DV calcium, 10%DV iron.

Exchange: 2 Vegetable, 4 Meat (L), 1/2 Fat

Dietary Exchanges based on *Choose Your Foods: Exchange Lists for Diabetes* © 2008 by the American Diabetes Association and the American Dietetic Association.

Cool Fruited Shrimp Salad

Prep: 10 min.

Total: 40 min. (incl. marinating)

- 1 lb. cleaned shrimp, cooked
- 1/4 cup thin red onion slices, separated into rings
- 1/2 cup KRAFT Light Raspberry Vinaigrette Reduced Fat Dressing, divided
- 1 pkg. (10 oz.) torn salad greens
- 1 large mango, peeled, pitted and cut into chunks
- 2 kiwi, peeled, sliced
- 1 cup fresh raspberries

TOSS shrimp and onions with 1/4 cup of the dressing; cover.

Refrigerate 30 min. to marinate, stirring occasionally.

DIVIDE greens among four salad plates; top with the fruit and the shrimp mixture.

DRIZZLE with remaining 1/4 cup dressing.

Makes 4 servings, 2-1/2 cups each.



Nutrition Bonus:

This refreshing salad is low in both calories and fat, and the mango and kiwi team up to provide vitamin C.

Nutrition Information Per Serving: 270 calories, 6g total fat, 1g saturated fat, 220mg cholesterol, 530mg sodium, 28g carbohydrate, 6g dietary fiber, 21g sugars, 26g protein, 35%DV vitamin A, 120%DV vitamin C, 10%DV calcium, 25%DV iron.

Exchange: 1 Fruit, 1 Vegetable, 3 Meat (L), 1 Fat

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