Antioxidants: Myth vs. Truth

Those powerful nutrients can work for or against you, depending on how you consume them. Grocery-stores shelves are full of products with labels bragging that they contain antioxidants, and implying that you're just a few bites (and a few bucks) away from better health:

- "The #1 antioxidant fruit," boasts a can of Wyman's wild blueberries.
- "Antioxidant Advantage" promises a banner on Tropicana Pure Premium Orange Juice.
- "The antioxidant power of 6 servings of fruits and vegetables," claims the website for the food supplement Go Greens Super Fruits & Veggies drink mix. But it's not that simple. More is not necessarily better when it comes to antioxidants. And research has found that how you consume them can make a big difference in your health. In fact, two recent lawsuits have challenged manufacturer claims about antioxidants, alleging that product labels are misleading consumers. To help you distinguish the myths from the truth, here's a close look at the latest on antioxidants.

MYTH: Antioxidants are all vitamins.
TRUTH: There are thousands of antioxidants, but relatively few of them are vitamins. Some are minerals and others are enzymes, which are protein molecules that facilitate chemical reactions necessary for cells to function properly. Vitamins C and E, the minerals selenium and zinc, and pigments such as carotenoids are all promoted for their antioxidant abilities. Polyphenols (or flavonoids), the most plentiful and common form of antioxidants, are found in fruit, vegetables, whole grains, tea, chocolate, and red wine.

What antioxidants have in common is their ability to block the action of free radicals: unstable chemical fragments that can wreak havoc on healthy components in your body's cells. This damage can cause cells to grow and reproduce abnormally, part of a dangerous chain reaction. In time, that process is thought to play a role in chronic conditions including cancer, cardiovascular disease, Alzheimer's, Parkinson's, and eye diseases such as cataracts and age-related macular degeneration.

Your body produces free radicals during exercise and when converting food into energy. And your body generates antioxidants to help stabilize them. Other factors—cigarette smoke, alcohol consumption, and exposure to sunlight and environmental contaminants such as pesticides—trigger the production of more free radicals, which can potentially overwhelm your body's natural defenses. Antioxidants in the food you eat, such as fruit, vegetables, and whole grains, can come to the rescue. Substances known as antioxidants also have other beneficial effects, including combatting inflammation.

MYTH: All antioxidants are created equal.
TRUTH: "Different antioxidants fight different free radicals," says Jeffrey Blumberg, Ph.D., director of the Antioxidant Research Lab at Tufts University. "There is an antioxidant defense network. It's like an army; you have generals and colonels and lieutenants. Each one has a different job." And they work well together. For example, vitamin C recycles vitamin E. Once a molecule of vitamin E neutralizes a free radical, vitamin C converts that molecule of E back to its antioxidant form, allowing it to combat more free radicals. "So if you take a lot of vitamin E but your vitamin C intake is low, you won't see much antioxidant benefit," Blumberg says.

The synergistic effect among thousands of antioxidants is a major reason doctors, dietitians, and others advise people to eat a wide range of fruit, vegetables, whole grains, and legumes. Even though scientists have yet to pinpoint all the ways those healthy compounds protect against disease, many observational studies suggest that people who consume a greater amount of antioxidant-rich foods have a lower risk of certain diseases than people who don't. For example, a study published in the October 2012 American Journal of Medicine that followed more than 32,000 Swedish women for 10 years concluded that those whose diets contained the most antioxidants had a 20 percent lower risk of a heart attack compared with women who consumed the least.

MYTH: Be sure to eat pomegranates, berries and other "super fruits."
TRUTH: "All fruits are 'super, " Blumberg says. "There's no scientific or regulatory definition of 'super fruit: It can mean anything—therefore, it's meaningless" Each fruit or vegetable has a unique combination of healthy compounds, including antioxidants. By eating only those billed as "super," you shortchange your health by skipping those combinations of nutrients in other produce. And what if you dislike a particular fruit or vegetable? "Nature tends to group similar nutrients in foods that have the same color, so find foods you like in as many colors as you can," says Tricia Psota, Ph.D., a clinical research dietitian at the National Institutes of Health's Clinical Center. If you don't like kale or spinach, opt for broccoli or green pepper. Instead of oranges, consider mangoes or papaya.

MYTH: You should amp up your intake with supplements.
TRUTH: Focus on food instead. Overall, clinical trials that have examined the disease-fighting capability of specific antioxidant nutrients in supplement form haven't shown very promising results. One of the exceptions is the Age-Related Eye Disease Study led by the National Eye Institute. It found that a combination of antioxidants and zinc supplements reduced the risk of developing advanced age-related macular degeneration in people who already had an intermediate stage of the disease.
Talk with your physician about supplement use, however, because some studies have suggested that some can cause harm. Selenium supplements of 200 micrograms a day have been linked to a higher incidence of recurrence of non-melanoma skin cancers in people who previously suffered such a cancer. And despite earlier findings that men who took vitamin E or selenium had a lower risk of prostate cancer, a large study of about 35,000 men, published in 2011, found that those who had taken 400 international units of vitamin E a day were 17 percent more likely to develop prostate cancer over seven years. Scientists don't know why the studies have been disappointing, but they have some theories. "Some people would argue that the trials have focused too much on high doses of single or limited combinations of nutrients: says Howard Sesso, Sc.D., an epidemiologist at Brigham and Women's Hospital in Boston and associate professor at the Harvard Medical School. He says another explanation might be that supplements can't replicate the complex, beneficial effects of a healthy diet.

MYTH: If some antioxidants are good, more are better.
TRUTH: "Too much of a good thing can be problematic: especially when it comes from dietary supplements, says Susan Mayne, Ph.D., an epidemiologist at the Yale School of Public Health.

So beware of multi- and single-antioxidant capsules labeled "megadoses," which contain more than the recommended daily values for antioxidants. Some evidence suggests that when taken in megadoses, antioxidants can become pro-oxidants, which increase the production of free radicals, especially in people who smoke or drink alcohol. "Supplements can have unpredictable interactions in these cases: Mayne says. "They can flip from potentially healthful to being harmful." In one study, heavy smokers who took high-dose beta-carotene, alone or with vitamin E, were more likely to get lung cancer.
It's much less likely that you'll consume too many antioxidants from food. But eating one type of fruit or vegetable in excessive amounts can result in some odd, if harmless, effects. For example, consuming extremely large amounts of carrots or other beta-carotene-rich vegetables can result in orange-tinted skin. And eating an excessive amount of tomatoes can cause yellow-orange skin discoloration. But most Americans eat too little, not too much, fruit and vegetables. If you want to boost your intake, stick to normal serving sizes and choose a wide variety of produce.

MYTH: Packaged food with labels that promise antioxidant benefits will boost your health.
TRUTH: Antioxidant claims on packaged food don't always mean a health benefit. "Unfortunately, 'antioxidant' is a very loosely used term: says Joy Dubost, Ph.D., a nutritionist and spokeswoman for the Academy of Nutrition and Dietetics. "Outside the lab, it has become more of a marketing term than a scientific term:
Some food manufacturers add an antioxidant, such as vitamin C or E, and then label the product as containing antioxidants, presumably in hopes of boosting sales. Kellogg's FiberPlus Antioxidants Dark Chocolate Almond bars, for example, have 20 percent of the daily value of vitamin E and zinc But they also contain 7 grams of sugar and 5 grams of fat. You can avoid processed food and eat an ounce of dry-roasted almonds, which provides more vitamin E, and 3 ounces of lean beef, which has more zinc.
Some food manufacturers even advertise antioxidant "power: represented by ORAC, or oxygen radical absorbance capacity values. But ORAC measures antioxidant activity in a test tube, not in the human body. So if you're tempted by Mystic Harvest Purple Corn Tortilla Chips, which are supposed to have an ORAC score of 6,000, don't be. "We don't know what these values mean biologically: Dubost says, but they don't guarantee better health.

A class-action lawsuit filed in November 2012 against the makers of 7Up Cherry Antioxidant Soda claimed that the packaging and marketing could lead consumers to think that the antioxidants in the soft drink come from fruit, when they really come from added vitamin E, and a 12-ounce can provides only 15 percent of the daily value.
Another class-action lawsuit, filed in April 2012 against Hershey, alleges that the chocolate giant makes "misleading" and "unlawful" claims regarding antioxidants. For example, certain packages of Hershey Special Dark Kisses state that "Cocoa is a natural source of flavanol antioxidants: While cocoa is a reasonable source of antioxidants, the suit alleges that many—if not all—of Hershey's cocoa or chocolate products undergo alkalization, a process that reduces or virtually eliminates the flavanol content.
Both companies have publicly denied any wrongdoing. The maker of 7Up Cherry Antioxidant said that in a decision unrelated to the lawsuit it has produced a new version of 7Up Cherry without antioxidants.

As scientists continue to explore how antioxidants work in the body, the best health advice remains the simplest: Make sure your diet contains plenty of varieties of fruit, vegetables, whole grains, and legumes.

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