



Rethinking Antioxidants

Dole Nutrition Institute Research Uncovers Antioxidant Pathway



Most people know the word “antioxidant” but new research from the Dole Nutrition Institute has uncovered that we may not know exactly how they work. DNI scientists investigated antioxidant capacity of fruits and vegetables and how different components of plants may influence health, revealing significant and somewhat surprising conclusions. Results have now been published in the *Journal of Nutrition*.

Antioxidants in foods are conventionally thought to act by trapping free radicals, highly reactive molecules that can have damaging effects in the body. Traditionally, antioxidants have been measured by oxygen radical absorption capacity (ORAC score), a laboratory index of the potential for a food to furnish antioxidant value in a test tube, or total phenolics content, a method which identifies specific structures of polyphenols in a food. However, DNI research finds these methods do not tell the whole story. Many healthful plant molecules may not be direct free radical scavengers at all and might actually work by inducing genetic responses that in turn destroy free radicals and benefit health.

DNI scientists looked at a variety of fruits and vegetables in the lab and analyzed how they activate antioxidant response elements (AREs), sequences of DNA in genes that provide codes for making enzymes that help protect cells from free radical damage. They also measured ORAC score and total phenolics for each piece of produce. Interestingly, some fruits and vegetables measured low in total phenolics and ORAC score but high in ARE activity, suggesting traditional measurements of antioxidant capacity do not give the full picture and are unable to predict which compounds in foods are able to deter free radical damage in a different way.

The main purpose of this study was to use this pathway to compare the antioxidant potential between different fruits and vegetables, and this new method for measurement suggests surprisingly high potential for foods not generally celebrated for antioxidant power, such as pineapples, pears and plums. Results also found fruit and vegetable peels tend to hold greater ARE activation potential than flesh, giving another reason to wash

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and eat the whole cucumber, apple or potato and to use the organic versions.

More research is to come on what this might mean for human health!

Creative Kitchen

Unique Ways to Eat Your Favorite Fruits and Vegetables



Bananas in smoothies and avocados for guacamole are tried and true ideas that will never go out of style, but it can be fun to switch things up. Research suggests the more produce you eat the healthier you will be, so squeeze more fruits and vegetables into your day with these unique ideas for simple recipe swaps.

Try substituting...

Avocado for mayonnaise: This creamy fruit makes an excellent binder in tuna salad, spread on sandwiches or dressing for potato salad. Unlike mayonnaise, which is high in fat and low in micronutrients, avocados are packed with nutrition. Half an avocado packs nearly seven grams of fiber, ten grams of heart-healthy monounsaturated fats and 14% of your daily potassium.

Bananas for ice cream: Yes, you can create a delicious, healthy and frosty treat with just one ingredient. Add frozen peeled bananas to a food processor and pulse until creamy, or use a [Yonanas® machine](#) to get perfect soft serve every time. Add other frozen fruits, dark chocolate or peanut butter to the mix for delicious and wholesome flavor combinations. Feeling fancy? Our [Grilled Tropical Split](#) is a healthful twist on the classic dessert using one-ingredient banana ice cream.

Sweet potato for butter: Cup for cup, mashed sweet potato can replace butter in most baked desserts and is especially tasty if the recipes calls for cinnamon, nutmeg or ginger. Try using sweet potato in muffins and quick breads to reduce the saturated fat content and add a nutritional boost—just one-fourth cup mashed sweet potato provides over 250% of daily vitamin A.

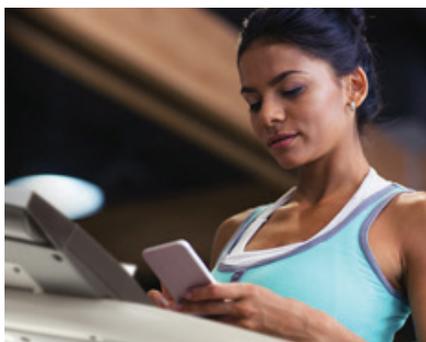
Mushrooms for meat: It's about time vegetables are getting the spotlight they deserve. More and more restaurants are starting to bring vegetables to the forefront, showcasing plant-based foods like mushrooms as a main dish rather than as a side. "Portobello's have the look, mouth feel and texture of meat," explains Chef Mark Allison, Director of Culinary Nutrition at the Dole Nutrition Institute. "I also love cooking with shiitake mushrooms. The deep color is appetizing, the woody fragrance is alluring, and glutamines, compounds naturally found in mushrooms, heighten your sense of taste. This quality of heightened taste, which the Japanese call umami, gives great depth of flavor and a wonderful mouth feel to any dish you make with them." You've likely tried a Portobello burger, but mushrooms can provide a healthful substitute to meat in a variety of recipes such as vegetarian tacos, lasagna, Bolognese sauce or shepherd's pie.

Chia seeds for eggs: If you need a vegan solution in baking or simply want an alternative to whole eggs, combining one tablespoon ground chia seeds with three tablespoons of water yields a perfect one-to-one egg substitute. Just let the mixture sit for at least five minutes before using it in recipes. Chia seeds contain healthful omega-3 fatty acids that are available once the seed is milled.

Cauliflower for flour in pizza crust: Cauliflower is a powerhouse vegetable packed with vitamins C and K and folate, and has a mild flavor so it is versatile in recipes. Our [Cauliflower Pizza Crust](#) swaps flour for cauliflower as the base ingredient for a lighter spin on this traditional comfort food. Serve this nutrient-dense pizza crust with your favorite healthy toppings—we suggest fresh arugula, red bell pepper and a little fresh feta!

Don't Text and Run

Smartphone Use Reduces Treadmill Exercise Intensity



As temperatures begin to drop, many of us are exchanging running paths for treadmills and taking our workouts inside. Though convenient, there is a reason the treadmill has earned the stigma of “the dreadmill”—running in place can prove tedious and minutes can seem like hours without the distraction of technology. Smartphones can provide just the entertainment you need, but how you use them may make or break a workout.

We all know texting while driving is taboo for safety, and a 2015 study finds texting while running may be taboo for intensity. Researchers from Kent State University recruited 44 young adults to participate in four different 30-minute treadmill sessions on separate days. During three of the sessions, participants used their cell phones to talk, text or listen to music. During one session they had no cell phone access. Participants selected their initial treadmill speed and could speed up or slow down the treadmill as they pleased; however, the time and speed displays on the treadmill were hidden during the workout.

Comparing the four workouts, average treadmill speed while texting or talking ranked at the bottom of the list. Texting on the treadmill also resulted in the lowest average heart rate among any of the workouts. Listening to music not only yielded the fastest average speed and highest average heart rate, it was also the most enjoyable of the four workouts, an important factor when making exercise a daily habit. Assuming a person gets the U.S. Department of Health and Human Services’ recommended 150 minutes of moderate exercise per week, the researchers estimate using a cell phone to listen to music rather than to text or talk could result in an extra 1.1 pound loss per year. This may seem small, but over time this simple habit could help combat the average one pound Americans gain per year.

Let technology be your teammate, not your rival at the gym. Create a playlist of your favorite upbeat tunes to help you power through your workout, but switch your call and text tones to silent if listening to music through your phone. Using a different device for music? Keep your cell phone in your locker and use your workout time for you—your texts will be there when you’re done!

Spinach for Satiety

Eating Spinach May Reduce Hunger



Is there anything spinach isn't good for? Packed with nine vitamins and minerals including vitamins A and K, folate and iron, spinach is a powerhouse food linked with brain health, hearing and blood sugar control. At less than ten calories per cup, you may not suspect this leafy green could also help keep you full, but researchers from Louisiana and Sweden have found satiety could be another benefit of adding spinach to your daily diet.

In a double-blind, placebo-controlled randomized crossover study, the gold star for study design, 60 overweight or obese adults consumed either five grams of spinach extract or a placebo before eating a 750 calorie lunch. For two hours after the meal, participants were periodically asked about their hunger levels.

Compared to the placebo, consumption of the spinach extract before lunch increased diners' fullness by about 6% and reduced their hunger by about 11% for two hours after the meal. Researchers attribute this effect to thylakoids in spinach, compounds in plant membranes that contain chlorophyll, the pigment that gives plants their green color. Thylakoids can slow fat digestion, thus promoting the release of satiety hormones and reducing the hunger hormone ghrelin. This process supports a feeling of fullness and alters cravings for food.

Add spinach to your daily diet—this leafy green might not only help strengthen your muscles, it could strengthen your willpower to keep your hands out of the Halloween candy basket this month. Spinach is a versatile food that can easily be added to smoothies at breakfast or sandwiches as lunch, and it also works well as a festive Halloween meal. Our [Spider Clusters](#) salads are a fun and nutritious way to add spinach into your Halloween celebration.

Trick-or-Treat for Chocolate

Chocolate Linked to Lower Risk of Heart Disease



Trick-or-treating on October 31st? Though we usually advise to pass on the candy and opt for fruit instead, we may have reason to reach for the chocolate this Halloween. A large 2015 study out of the UK has linked higher chocolate intake with a lower risk of future cardiovascular events.

Using about 12 years of data from the European Prospective Investigation into Cancer study in the UK, researchers analyzed questionnaires from more than 20,000 men and women to gather information on health and lifestyle. They specifically looked at chocolate consumption and heart health, finding a strong link between the two. Among the people who ate the most chocolate (0.5 to 3.5 ounces per day), only 9.7% developed coronary heart disease, while 13.8% of those non-chocolate eaters suffered from the condition. For stroke, those rates were 3.1% and 5.4% for the most and non-chocolate group, respectively. After reviewing previous studies that also examined this relationship, researchers uncovered five additional studies linking chocolate to a 29% reduction in CHD risk and five studies finding a 21% risk reduction for stroke.

But is chocolate really a treat without a trick? This study found the greatest potential heart benefit from eating up to 3.5 ounces of chocolate a day, but that doesn't come calorie-free. Hitting the upper amount of that range could tack on an extra 500 calories and 18 grams of saturated fat each day, which could equate to a weight gain of one pound per week! Though this study did not differentiate between types of chocolate eaten, we suggest always choosing dark chocolate with at least 70% cocoa, which is high in flavonoids and may help reduce inflammation and anxiety, and keeping serving sizes to about half an ounce per day.

For a healthier Halloween, enjoy a little dark chocolate and the sweet taste of fresh fruit. Our [Pineapple Jack-o-Lantern and Bountiful Fruit Salad with Orange-Mint Dressing](#) and is festive way to naturally sweeten and decorate your Halloween table display.

Daylight Savings Benefit

Early Morning Light Exposure Linked to Lower BMI



Get ready to “fall back”—on November 1st at 2:00 AM, clocks will turn back one hour (that's right, you get an extra hour of sleep this time of year!). Though the end of Daylight Savings may take away precious hours of sunshine from the afternoon, science shows an earlier sunrise might be beneficial. A 2015 study published in the journal *Sleep* links early morning light exposure to lower BMI.

Northwest University researchers asked 23 healthy adults to wear a wrist monitor for one week to determine their patterns of light exposure. They also measured their heights and weights to calculate BMI and measured percent body fat.

Results showed people who had more exposure to light earlier in the day also had lower BMIs and percentages body fat than people with more of their light exposure later in the day.

A 2014 study by the same group of researchers also determined what time of day you get the majority of your sunlight matters. For every hour later in the day people got the most of their sunlight, there was a 1.28 unit increase in BMI. Researchers note that light is a powerful biological signal and might work by altering metabolism and appetite. Getting longer, more intense and light exposure earlier in the day could be a way to help manage weight.

Embrace the early sunlight and start your day on a healthy note. What better way to get outside and see the light than by going for a morning jog or walk? A combination of sunlight and cardio might help keep your waistline trim, exercising in nature has been linked to less depression and stress and improvements in memory. Get up, get out and get some early sun!

FEATURED RECIPE

Pineapple Jack-O'-Lantern and Bountiful Fruit Salad with Orange-Mint Dressing

Ingredients:

- 1 DOLE® Tropical Gold® Pineapple
- 1 cup DOLE Grapes
- 1 cup DOLE Strawberries, quartered
- 1 DOLE Banana, sliced
- 3 cups DOLE Spring Mix
- Orange-Mint Dressing (see recipe below)

Directions:

1. Cut the top off a pineapple and reserve pineapple shell for jack-o'-lantern. Remove the fruit from the inside, dice and reserve. Reserve 1 cup for salad. Save remaining pineapple for snacking and other uses.
2. Toss 1 cup reserved diced pineapple, grapes, strawberries, banana, spring mix and Orange-Mint Dressing and place in serving bowl. Serve immediately.
3. Cut a classic jack-o'-lantern face into side of hollowed pineapple shell. Place a votive candle inside, replace the leafy top and use for a table decoration.



Serves: 6 Servings

Prep Time: 35 minutes

Orange-Mint Dressing:

Whisk together 3 tablespoons orange juice, 2 tablespoons julienned fresh mint, 1 tablespoon olive oil, 1 teaspoon grated orange peel, 1 teaspoon rice vinegar, 1 teaspoon honey, ¼ teaspoon ground cumin, ¼ teaspoon salt.

EDITORIAL TEAM

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