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Our October 2019 Newsletter for Healthy Living

Flavonoids for Prevention

Flavonoids may not have the name recognition vitamins and minerals do, but as antioxidants with the power to fight disease and premature aging, plus decrease inflammation, they can make a dramatic difference in your health if you know where to find them. Believe it or not, there are more than 6,000 distinct flavonoids, and every one of them communicates a unique benefit for your body. Found in fruits, vegetables, nuts and herbs, these phytonutrients have the capacity to prevent many of the most common illnesses in the world. Several of them are becoming more familiar to savvy consumers.

Findings from a recent study collaboration of international researchers show you can lower your risk of developing heart disease, cancer and all-cause mortality when you regularly eat foods containing flavonoids. Published in Nature Communications and known as the Danish Diet, Cancer and Health cohort, the study is the work of researchers who spent 23 years scrutinizing the diets of 53,048 Danish people. They found lower

risks of death from cancer and heart disease in those who consumed more flavonoids. According to the scientists: *"A moderate habitual intake of flavonoids is inversely associated with all-cause, cardiovascular- and cancer-related mortality ... The inverse associations between total flavonoid intake and mortality outcomes are stronger and more linear in smokers than in non-*



smokers, as well as in heavy vs. low-moderate alcohol consumers ... Fruit and vegetable intakes are associated with a lower risk of cardiovascular disease (CVD), cancer, and all-cause mortality, with an estimated 7.8 million premature deaths worldwide in 2013 attributable to a fruit and vegetable intake below 800 (grams per) day."

According to the CDC, in 2016,

had the lowest risk of a cancer or heart disease-related death."

However, even the Danish study listed negative effects from smoking and drinking; besides being carcinogenic, it's also damaging to endothelial and platelet function and culpable in such problems as thrombosis, inflammation and elevated blood pressure. Both habits damage blood vessels and in-

"Flavonoids are associated with a broad spectrum of health-promoting effects."

heart disease topped the list of the leading causes of death in the U.S., with cancer in the second position. Stroke and diabetes — two of the five risk factors for metabolic syndrome that also raise your risk for heart disease — take the fifth and seventh slots. But researchers at Edith Cowan University's School of Medical and Health Sciences in Australia looked at the data from the Danish Diet, Cancer and Health cohort and backed up the Danish cohort with a report that eating apples and drinking tea lower both cancer and heart disease risks. Both of those are high in flavonoids. They also found a link between regular flavonoid consumption, drinking alcohol and smoking. People who were at a high risk of developing chronic diseases due to smoking and drinking more than two alcoholic drinks a day seemed to benefit the most from eating flavonoid-rich foods. Specifically, "Participants consuming about 500 [milligrams] of total flavonoids each day

crease inflammation, but flavonoid intake targets both of those specifically. The researchers added: *"We know these (kinds) of lifestyle changes can be very challenging, so encouraging flavonoid consumption might be a novel way to alleviate the increased risk, while also encouraging people to quit smoking and reduce their alcohol intake."* About 500 milligrams (mg) of flavonoids were consumed by the study participants on a daily basis to lower their disease risks.

The researchers advised: *"It's important to consume a variety of different flavonoid compounds found in different plant based food and drink. This is easily achievable through the diet: one cup of tea, one apple, one orange, 100 [grams] of blueberries, and 100 [grams] of broccoli would provide a wide range of flavonoid compounds and over 500 mg of total flavonoids."* The Danish study specified that 500 mg of flavonoid intake positively influenced outcomes for

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Omega 3s - the Essential Fats

Dietary fats are essential to good health. Although it is harmful to eat too many of some, or not enough of others, without healthy fats your body will not work properly. Fat is used to keep your skin and hair healthy, absorb certain vitamins and insulate your body to keep you warm. Certain fats are essential since your body cannot

risk of many of the chronic diseases prevalent in Western society.

In an effort to understand how this may occur, a team of researchers in California investigated levels of omega 3 compared to telomere length from the 2009 Heart and Soul Study. This study involved 608 outpatients, through whom researchers identified an inverse rela-

“This four-month study found that telomere length increased with a decreasing omega-6 to omega-3 ratio.”

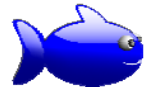
make them. Fat is required for brain development as well as controlling inflammation and blood clotting.

Polyunsaturated fats are essential, which means you must eat them since your body doesn't make them. The two main types are omega-3 and omega-6 fatty acids. While both are essential, most people eat them in the wrong ratio, which leads to an increase in chronic inflammation. Omega-6 is found in high concentrations in processed foods, corn oil, sunflower oil and safflower oil. The ideal ratio of omega-3 to omega-6 fats is 1-to-1. Unfortunately, the typical Western diet has a ratio up to 1-to-16. Maintaining a low ratio may help reduce your

relationship in the baseline levels of omega-3 fatty acids and telomere shortening over a five-year period. In a subsequent study researchers used a randomized control trial to assess the effect of omega-3 supplementation on telomere length and oxidative stress. This four-month study found that telomere length increased with a decreasing omega-6 to omega-3 ratio. This suggests that even over a short study period, the ratio could impact cell aging.

Although omega-3 fat may be found in plant and animal sources, it's the animal-based sources that have higher levels of EPA and DHA. Plant-based sources such as raw nuts and

seeds are high in alpha-linolenic acid (ALA). These are shorter chain omega-3 fats and are also essential since your body cannot make them. While all three are needed to keep you healthy, it's important to know that plant-based sources are higher in ALA and animal-based sources are higher in EPA and DHA. Your body is able to make some EPA and DHA from the short chain ALA in plant-based sources, but it does so inefficiently. The conversion is not enough for optimal brain growth and development or to reduce the inflammatory effects of omega-6 in your body.



The best omega-3 supplement is from an animal-based source. Krill oil and fish oil provide both EPA and DHA, but krill oil is not as unstable because it also contains astaxanthin which reduces oxidative damage. In addition to a lower rate of contamination, krill oil is far more potent than fish oil. In one study, participants who took krill oil required only 62.8% of the amount of those taking fish oil to achieve the same results.

Reference: Medline Plus, Dietary Fats Explained. Harvard Health Publishing, August 13, 2018. JAMA, 2010; 303(3):250. Brain, Behavior and Immunology, 2013; 28:16. WebMD, What to Know About Omega3s and Fish. Lipids, 2011; 46(1):37.

Flavonoids *continued from page 1*

cardiovascular diseases, but with regard to cancer-related death, 1,000 mg per day was found to lower the "hazard ratios." Dark-hued fruits and vegetables as well as dark chocolate, red wine and tea typically provide ample flavonoids.

There are six flavonoid categories, with similar names because of their chemical structure. It's important to note that the chemical structure of these compounds is also responsible for generating changes in bioactivity and metabolism, and that's where the health advantages are introduced. The Journal of Nutritional Science states:



"Flavonoids are associated with a broad spectrum of health-promoting effects and are an indispensable component in a variety of nutraceutical, pharmaceutical, medicinal and cosmetic applications. This is because of their antioxidative, anti-inflammatory, anti-mutagenic and anti-carcinogenic properties coupled with

their capacity to modulate key cellular enzyme functions"

A Harvard Health article says one reason avid tea drinkers are less prone to developing heart disease may be because of potency of the flavonoids in tea leaves. Part of the benefits of drinking tea, particularly for strengthening the blood vessels in your heart, stems from catechin and epicatechin compounds. Specifically: *"Research suggests that flavonoids help quell inflammation, and that in turn may reduce plaque buildup inside arteries. Green tea has slightly higher amounts of these chemicals than black tea ... Short-term studies have shown that drinking tea may improve vascular reactivity — a measure of how well your blood vessels respond to physical or emotional stress. There's also evidence that drinking either black or green tea may lower harmful LDL cholesterol levels ... Several large, population-based studies show that people who regularly drink black or green tea may be less likely to have heart attacks and strokes."*

A 2019 study found that the flavonoids in citrus fruits specifically are an example of how hard working and far reaching they are, notably zapping free radicals, improving both insulin sensitivity and glucose tolerance. They can break down fat for energy (lipid metabolism), decrease inflammation, fight obesity and improve endothelial function. All of these things lead to a healthier heart and improved blood sugar levels. In a study published in the Journal of Translational Medicine, it was observed that the more flavonoid-rich foods people eat, the less apt they are to develop heart disease, experience a nonfatal heart problem or die from heart disease. When you realize the real pharmacological mechanisms these compounds can jumpstart, it becomes clear how important they are in treating and preventing diseases and infections in multiple areas of your body.

Reference: Frontiers in Aging Neuroscience June 26, 2019. Journal of Nutrition Science December 29, 2016; 5:e47. Nature Communication August 13, 2019. CDC March 17, 2017. Edith Cowan University August 13, 2019. Harvard Health May 21, 2018. Oxidative Medicine and Cellular Longevity March 10, 2019. Journal of Translational Medicine July 8, 2015.

Tighten the Time/Tighten the Belt

Research overwhelmingly supports the notion that ditching the three square meals a day approach in favor of time-restricted feeding — a form of intermittent fasting — can do wonders for your health. Contrary to modern belief,

ease and increase longevity."

As just mentioned, to shed body fat, your body must have the ability to burn fat for fuel. While it may seem like this ability should be inherent in everyone, all the time (since we know

“Periodic fasting cycles have the power to delay the onset of disease and increase longevity.”

your body isn't designed to be fed throughout the day, and the near-continuous grazing that most engage in can have serious health consequences.

90% of people eat for more than 12 hours a day, and over time this habit will wreak havoc on your metabolism and limit your ability to metabolize fat as a primary fuel. When you eat throughout the day and never skip a meal your body adapts to burning sugar as its primary fuel, resulting in the downregulation of enzymes that utilize and burn stored fat. As a result, you become progressively more insulin resistant and start gaining weight. Efforts to lose weight also become ineffective for this very reason, since to lose body fat, your body must first be able to actually burn fat. Many biological repair and rejuvenation processes also take place while you're fasting, and this is another reason why all-day grazing triggers diseases while fasting prevents them.

Time-restricted eating is just what it sounds like. It's a form of intermittent fasting where you eat all of your meals for the day within a restricted window of time, ranging from two to eight hours. That means you're avoiding food (fasting) for 16 to 22 consecutive hours. Eating within a four- to six-hour window is likely close to metabolic ideal for most. As noted in the paper "A Time to Fast," published in the November 2018 issue of *Science*: *"Adjustment of meal size and frequency have emerged as powerful tools to ameliorate and postpone the onset of disease and delay aging, whereas periods of fasting, with or without energy intake, can have profound health benefits. The underlying physiological processes involve periodic shifts of metabolic fuel sources, promotion of repair mechanisms, and the optimization of energy utilization for cellular and organismal health ... In general, both prolonged reduction in daily caloric intake and periodic fasting cycles have the power to delay the onset of dis-*

ease and increase longevity."

fat can be used as fuel), metabolic dysfunction triggered by an inappropriate diet and feeding schedule can prevent this. In a nutshell, to be an efficient fat-burner, you need to eat a diet with a higher fat-to-sugar ratio (i.e., more healthy fats and less net carbohydrates), and restrict the timing of your meals so that you're fasting for a greater number of hours than you're eating. This will (over time) teach your body to burn fat for fuel again, rather than relying on fast-burning carbs, and in addition to burning dietary fats, to also start accessing and burning stored body fat.

So, what's the evidence that time-restricted eating actually promotes weight loss? A study in the July 2019 issue of *Obesity* premised that by eating earlier in the daytime, you properly align with the natural fluctuations in the circadian rhythm that regulates your metabolism. As a result, weight loss is enhanced. The question it sought to answer was whether this benefit is mediated through increased energy expenditure or simply lower energy intake. To find out, 11 overweight participants first adhered to an early time-restricted eating schedule, eating all meals between 8 a.m. and 2 p.m. for four days. For the next four days, they ate all meals between 8 a.m. and 8 p.m. They were also required to maintain a regular sleep schedule throughout. On the last day of each trial, energy expenditure and substrate oxidation levels were measured. Results revealed meal-timing primarily facilitates weight loss by reducing appetite and increasing fat oxidation. Energy expenditure remained unaffected. As the researchers explained: *"We think the longer daily fast gives people's bodies more time each day to dip into their fat reserves and burn fat. The body is typically maximally efficient at burning fat when people fast for at least 12-24 hours at a time."* Overall, eating all meals earlier in the day resulted in greater metabolic flexibility, lower ghrelin (known as

the hunger hormone) levels, reduced hunger and increased sense of fullness, and this is thought to drive weight loss.

Another study published in the *Nutrition and Healthy Aging Journal* in 2018, examined how TRE — without counting calories — affects weight in obese adults. Here, they used an eight-hour restricted eating window with unlimited calories, and only water at other times. At the end of 12 weeks,

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body weight decreased by an average of 2.6% and energy intake decreased by 341 calories per day compared to controls. Systolic blood pressure also decreased by an average of 7 mm Hg. According to the authors, their findings "suggest that 8-hour time restricted feeding produces mild caloric restriction and weight loss, without calorie counting."

Contrary to longer fasts and calorie restriction, TRE is a strategy that can work for most people. Remember, you're not actually limiting or counting calories — you can (theoretically) eat whatever you want in any amount — you're simply restricting the time in which you eat all this food. Your hunger and craving for sugar will slowly dissipate as your body starts burning fat as its primary fuel. Once your body has successfully shifted into fat burning mode, it will be easier for you to fast for as long as 22 hours and still feel satiated. The quality of your diet is particularly important if you're looking for more than mere weight loss. It's critical to avoid refined carbohydrates, sugar/fructose and grains. Focus your diet on veggies, healthy protein and the good fats.

Reference: *Cell* February 8, 2018; 172(4):731-43. *Medical News Today* February 8, 2018. *Science* November 16, 2018; 362(6416):770-75. *Obesity* July 24, 2019; 27(8). *Nutrition and Healthy Aging* 2018; 4(4):345-63.
