Plant-based omega-3s may boost heart health

People often think of salmon when they think of omega-3 fatty acids, but a new research review found that the major plant-based version of the nutrient, alpha-linolenic acid (ALA), can benefit heart health and reduce the risk of heart disease for those who don't eat seafood.

In a comprehensive literature review, the researchers found that consuming ALA that is found in plant-based foods like walnuts and flaxseeds was associated with a 10% lower risk of cardiovascular disease and a 20% reduced risk of fatal coronary heart disease.

"People may not want to eat seafood for a variety of reasons, but it's still important for them to consume omega-3s to reduce the risk of heart disease and to promote overall health," Evan Pugh University Professor of Nutritional Sciences at Penn State, said in a news release. "Plant-based ALA in the form of walnuts or flaxseeds can also provide these benefits, especially when incorporated into a healthy diet rich in fruits, vegetables, and whole grains."

Jennifer Fleming, assistant teaching professor of nutrition at Penn State, says, "When people with low levels of omega-3s in their diet ate ALA, they saw a benefit in terms of cardiovascular health," Fleming said. "But when people with high levels of omega-3s from other sources ate more ALA, they also saw a benefit. It could be that ALA works synergistically with other omega-3s."

Previous research has linked omega-3s with a lower risk of heart disease. However, this conclusion was based on a large evidence base from marine-derived omega-3s, and there was less evidence for the benefits of ALA.

For the review, the researchers analyzed data from previous studies to evaluate the effects of ALA on heart disease and heart disease risk factors like blood pressure and inflammation. The studies analyzed included both randomized controlled trials and observational studies.While some of the observational studies relied on the participants reporting how often they ate certain foods to determine how much ALA they were consuming, others used biomarkers — a way of measuring levels of ALA in the blood — as a more accurate measure.

After analyzing the studies, the researchers found that ALA had beneficial effects on reducing atherogenic lipids and lipoproteins — for example, total cholesterol, low density-lipoprotein cholesterol and triglycerides — as well as blood pressure and inflammation. This could help explain ALA's benefits to heart health, according to Emilio Ros, emeritus investigator at Institutd'Investigacions

Biomèdiques August Pi Sunyer, a research institution linked to Hospital Clínic of Barcelona and Barcelona University.

"We were able to find evidence supporting current dietary guidelines that ALA should provide about 0.6%–1% of total energy in a day, which is about 1.1 grams a day for women and 1.6 grams a day for men," Ros said, "and can be incorporated into the diet with foods such as walnuts, flaxseeds, and cooking oils such as canola and soybean oils.

These recommendations are equal to about 1/2 ounce of walnuts or just under one teaspoon of flaxseed oil.The researchers said that future studies are needed to help better understand the effects of ALA on other major chronic diseases. In addition, there is a need to evaluate whether the recent scientific literature supports new, higher dietary recommendations for ALA.

The review was recently published in Advances in Nutrition.

Vitamin K2 Reduces Oxidative Stress, Increases ATP Production, says study

A new study has suggested that Vitamin K2 may counter induced oxidative stress in vascular smooth muscle cells, ultimately lowering oxidative stress, while increasing ATP production.

The MenaQ7 Vitamin K2 as MK-7, an ingredient by Gnosis ByLesaffre, was used in the investigation. PhD student Asim Cengiz Akbulut from Maastricht University's department of biochemistry, CARIM, shared the recent findings, which were taken from a cellular study in which the vitamin K pathway was antagonised by warfarin, inducing oxidative stress in vascular smooth muscle cells (SMCs), contributing to

a pathological phenotype perpetuating vascular calcification and cardiovascular disease.

The authors examined ATP, oxidative stress, and extracellular vesicles (EV) after administering vitamin K2, and discovered that warfarin interferes with vitamin K metabolism, resulting in increased oxidative stress and EV release. Vitamin K2 as MK7 reduced intracellular oxidative stress in both normal and warfarin-induced circumstances, while simultaneously enhancing ATP generation in the presence of warfarin.

"Our experiments show that in primary human SMCs, MK-7 lowers oxidative stress and EV release and increases ATP production. This pathway points to a non-canonical role of MK-7 in the prevention of vascular calcification, unrelated to its canonical role as cofactor for the posttranslational modification of MGP," the authors of the study concluded.

"We are incredibly encouraged by the results of this study highlighting the potential of Vitamin K2 as MK-7 for healthy aging, as oxidative stress is involved in several age-related conditions, such as increased cardiovascular risk, chronic kidney conditions, and neurodegenerative disorders," said Hogne Vik, Gnosis by Lesaffre chief medical officer in a news report by Nutraceutical Business Review. "This contributes nicely to our already substantial body of research showing MenaQ7 is a cardio-protective nutrient and reaffirms why the medical community is interested in the ongoing study of this important nutrient for the betterment of global health.

"Further, evidence showing MenaQ7 increased the production of ATP shines highlights K2 as MK-7 as a potentially essential nutrient for sports nutrition," Vik said. "While it is preliminary data, we are excited about the next steps of this important research to validate the additional health benefits and applications."

The findings of the study were presented at the second International Electronic Conference on Nutrients (IECN).

Drinking coffee exerts protective effects on the heart

Drinking coffee—particularly two to three cups a day—is not only associated with a lower risk of heart disease and dangerous heart rhythms but also with living longer, according to studies presented at the American College of Cardiology's 71st Annual Scientific Session.

"Oour data suggest that daily coffee intake shouldn't be discouraged, but rather included as a part of a healthy diet for people with and without heart disease," said Peter M. Kistler, MD, professor and head of arrhythmia research at the Alfred Hospital and Baker Heart Institute in Melbourne, Australia, and the study's senior author. "We found coffee drinking had either a neutral effect—meaning that it did no harm—or was associated with benefits to heart health."

Kistler and his team used data from the UK BioBank, a large-scale prospective database with health information from over half a million people who were followed for at least 10 years. Researchers looked at varying levels of coffee consumption ranging from up to a cup to more than six cups a day and the relationship with heart rhythm problems (arrhythmias); cardiovascular disease, including coronary artery disease, heart failure and stroke; and total and heart-related deaths among people both with and without cardiovascular disease. Patients were grouped by how much coffee they reported drinking each day: 0, <1, 1, 2-3, 4-5, >5 cups/day. Coffee drinking was assessed from questionnaires completed upon entry into the registry. Overall, they either found no effect or, in many cases, significant reductions in cardiovascular risk after controlling for exercise, alcohol, smoking, diabetes and high blood pressure that could also play a role in heart health and longevity.

For the first study, researchers examined data from 382,535 individuals without known heart disease to see whether coffee drinking played a role in the development of heart disease or stroke during the 10 years of follow up. Participants' average age was 57 years and half were women. In general, having two to three cups of coffee a day was associated with the greatest benefit, translating to a 10%-15% lower risk of developing coronary heart disease, heart failure, a heart rhythm problem, or dying for any reason. The risk of stroke or heart-related death was lowest among people who drank one cup of coffee a day. Researchers did observe a U-shaped relationship with coffee intake and new heart rhythm problems. The maximum benefit was seen among people drinking two to three cups of coffee a day with less benefit seen among those drinking more or less.

The second study included 34,279 individuals who had some form of cardiovascular disease at baseline. Coffee intake at two to three cups a day was associated with lower odds of dying compared with having no coffee. Importantly, consuming any amount of coffee was not associated with a higher risk of heart rhythm problems, including atrial fibrillation (AFib) or atrial flutter, which Kistler said is often what clinicians are concerned about. Of the 24,111 people included in the analysis who had an arrhythmia at baseline, drinking coffee was associated with a lower risk of death. For example, people with AFib who drank one cup of coffee a day were nearly 20% less likely to die than non-coffee drinkers.

"There is a whole range of mechanisms through which coffee may reduce mortality and have these favorable effects on cardiovascular disease," he said. "Coffee drinkers should feel reassured that they can continue to enjoy coffee even if they have heart disease. Coffee is the most common cognitive enhancer—it wakes you up, makes you mentally sharper and it's a very important component of many people's daily lives."

In a third study, researchers looked at whether there were any differences in the relationship between coffee and cardiovascular disease depending on whether someone drank instant or ground coffee or caffeinated or decaf. They found, once again, two to three cups a day to be associated with the lowest risk of arrhythmias, blockages in the heart's arteries, stroke or heart failure regardless of whether they had ground or instant coffee. Lower rates of death were seen across all coffee types. Decaf coffee did not have favorable effects against incident arrhythmia but did reduce cardiovascular disease, with the exception of heart failure. Kistler said the findings suggest caffeinated coffee is preferable across the board, and there are no cardiovascular benefits to choosing decaf over caffeinated coffees.

There are several important limitations to these studies. Researchers were unable to control for dietary factors that may play a role in cardiovascular disease, nor were they able to adjust for any creamers, milk or sugar consumed. Participants were predominantly white, so additional studies are needed to determine whether these findings extend to other populations. Finally, coffee intake was based on self-report via a questionnaire fielded at study entry. This should be considered when interpreting the study findings, though Kistler noted that research suggests people's dietary habits don't change much in adulthood or over time. Kistler said the results should be validated in randomized trials.

Cranberry supplementation can improve cardiovascular health

According to a recent human clinical study published in Food and Function, cranberries may help heart and blood vessel function.

The 45 healthy males in the double-blind, randomised, placebo-controlled research were given either a placebo or nine grammes of cranberry powder (equal to one cup of cranberries) every day for one month.

Those who consumed cranberry powder saw substantial improvements in flow-mediated dilation (FMD), which is a sensitive biomarker of heart and blood vessel function as well as a predictor of cardiovascular disease. While the study was purely observational in nature, the scientists did identify a number of metabolites present after cranberry supplementation that might have had a part in the mechanism of action behind FMD benefits.

"The increases in polyphenols and metabolites in the bloodstream and the related improvements in flow-mediated dilation after cranberry consumption emphasize the important role cranberries may play in cardiovascular disease pre-

vention," says Dr. Ana Rodriguez-Mateos, senior lecturer in nutrition at the department of nutritional sciences at King's College London. "The fact that these improvements in cardiovascular health were seen with an amount of cranberries that can be reasonably consumed daily makes cranberry an important fruit in the prevention of cardiovascular disease for the general public."

According to the authors, low consumption of fruits and vegetables is one of the top modifiable risk factors associated with higher incidence of heart disease worldwide – meanwhile, berries contain polyphenols, which growing evidence continues to link with heart health benefits. Cranberries contain a specific polyphenol called proanthocyanidins, which have distinct properties compared to the polyphenols found in other fruits.

"Our findings provide solid evidence that cranberries can significantly affect vascular health even in people with low cardiovascular risk," Dr. Christian Heiss, professor of cardiovascular medicine at the University of Surrey, said. "This study further indicates that specific metabolites present in blood after cranberry consumption are related to the beneficial effects." Specifically, at two hours post-consumption, cranberry usage was related to a significant increase in 13 plasma and 13 urinary metabolites, while 4 plasma and 13 urinary metabolites remained higher after one month of cranberry consumption, compared to the control group.

These results followed an initial pilot study involving five healthy young men, in order to confirm the biological activity of the whole cranberry freeze-dried powder. The pilot confirmed dosing, and concluded that cranberry consumption may increase FMD.

The study was funded by the Cranberry Institute, a nonprofit organisation that promotes cranberry producers and research on the fruit.

Grapes increase gut biome diversity and lowers cholesterol

A team of researchers from the University of California's David Geffen School of Medicine discovered evidence that consuming grapes can boost gut biome diversity as well as reduce blood cholesterol levels. The group discusses studies in which they provided grape powder to participants for four weeks in an article published in the journal Nutrients.

Previous study has indicated that consuming some fruits, such as apples and grapes, can maintain healthy blood vessels due to the presence of polyphenols, which are antioxidants. Eating such fruits also helps to decrease blood sugar and blood pressure. Polyphenol intake has also been found in some circumstances to lower inflammation, which is a factor in heart disease. The researchers looked at additional potential health benefits of consuming grapes in their new study.

The organisation recruited the help of 19 healthy persons to learn more about potential beneficial health advantages. For four weeks, each participant followed a low-polyphenol and fibre diet. The subjects were then fed the same food as before, but with the addition of grape powder. The volunteers consumed 46 grams of the powder every day, which is comparable to two grape servings. During all rounds of the trial, the researchers collected faeces, blood, and urine samples from the subjects.

They discovered that after four weeks of ingesting the grape powder, all of the participants' gut biome diversity increased. Previous study has found that more gut biome variety is related with a robust immune system. Notably, Akkermansia bacteria levels increased, which is known to have a favourable influence on glucose levels and lipid metabolism. The researchers also discovered a 6.1 percent decrease in total cholesterol levels and a 5.9 percent decrease in LDL, reported Medical Xpress. They also discovered that certain steroid acids in bile were reduced by 40.9 percent—previous study has revealed that they play a function in cholesterol metabolism.

Krill Oil Raises Omega-3 Index, Plasma Choline, and Antioxidant Capacity

In a new study, run in partnership with CienporCien Natural, Aker BioMarine and Centre d'AltRendiment (CAR), scientists confirmed that krill oil is an effective nutritional strategy for athletes to increase omega-3 and choline concentrations to support intense power training.

High-intensity exercise, such as power training, is metabolically demanding, requiring dietary intervention to speed up recovery. Previous research has shown that low levels of nutrients, such as omega-3, can impact sports performance and recovery in athletes. Krill oil is a natural combination of both omega-3 and choline, and this study reveals how supplementation with krill oil can ensure that athletes maintain optimal levels of these important nutrients.

"At the start of the study, we discovered that the 82% of the participating athletes had an Omega-3 Index below the recommended level, which clearly indicates that athletes should strongly consider including omega-3 fatty acids as part of their diet and nutrition plans," said Yunpeng Ding, Director R&D in Aker BioMarine, and one of the study authors.

Thirty-five healthy athletes (27 males and 8 females) participat-

ed in the 12-week study which was conducted in Spain. Just over half of the participants were randomly assigned to receive krill oil supplements, while the remaining individuals received placeboes, over the course of the experiment. The athletes' Omega-3 Index, plasma choline levels and total antioxidant capacity were measured before and after their regular exercise sessions, which were performed by the same instructor to ensure consistency across both test groups.

"To participate in this study, the athletes had to show that they had practiced power training or similar high intensity exercise with a specialized instructor for at least three years prior, and on a regular basis. They were also asked to avoid other nutritional supplements and maintain a normal diet, shortly before and for the duration of the study," explained Ding.

The group receiving krill oil supplementation showed a significant increase in their average Omega-3 Index, from 4.82% to 6.77% after 12 weeks. The krill oil group also showed a reduction in their omega-6 to omega-3 ratio, contributing to a potential decrease in inflammation following the exercise.Choline is a factor that contributes to optimal muscle performance. The krill oil group showed significantly increased plasma choline storage (compared to placebo group) between the pre- and post-supplementation exercises.The participants receiving krill oil exhibited higher antioxidant capacity following exercise in comparison to the placebo group, however, this variation did not reach significance due to small sample size.

The scientists behind this study concluded that krill oil is an effective nutritional strategy to increase the omega-3 index, recover choline concentrations in the body and address oxidative stress after power training sessions, all of which play an important role in preparing the body for optimal sports performance. The research team encourages further investigation on the performance effects of krill oil on a larger sample size of power training athletes.

Low vitamin C linked to cognitive impairment in older people

Cognitive impairment among older hospitalised Australians could be the result of low vitamin C levels, a Flinders University-led study has found, paving the way for a potential treatment.Common in older hospitalised patients, cognitive impairment can result in a person having trouble remembering things, concentrating or making decisions.

"Previous research has shown that vitamin C plays a significant role in the functioning of the brain, with studies finding that vitamin C deficiency may be as-

sociated with cognitive impairment, depression and confusion," says lead author Associate Professor Yogesh Sharma from Flinders University's College of Medicine and Public Health.

Looking at 160 patients aged over 75 admitted to the Geriatric Evaluation and Management Unit at the Flinders Medical Centre in Adelaide, the research team assessed their cognitive function and vitamin C levels.A total of 91 patients (56.9%) were found to have cognitive impairment, while 42 (26.3%) were found to be vitamin C deficient with a level below 11 micromol/L, below which point scurvy could develop.

"Our findings showed that cognitive function scores were significantly lower among patients who were vitamin C deficient, with further analysis suggesting vitamin C deficiency was almost 3 times more likely to be associated with cognitive impairment after adjustment for other factors," says Associate Professor Sharma.

The study also found that the symptoms associated with scurvy were likely to be present among patients with or without vitamin C deficiency. Many of these symptoms of vitamin C deficiency are common in older people, who may have bleeding, bruising and skin issues due to a number of other conditions."It may, therefore, be difficult to diagnose vitamin C deficiency solely on looking for these particular symptoms in older hospitalised patients," says Associate Professor Sharma.

"Given we know vitamin C deficiency is common among older hospitalised patients, medical professionals need to remain vigilant for this condition and confirm a patient's vitamin C status in suspected cases."The authors say while the study doesn't prove that vitamin C is a direct cause of the cognitive impairment, it has demonstrated that vitamin C deficiency is common and is associated with cognitive impairment in older hospitalised patients.

"Further studies will be needed to confirm this link and then we can look to establish whether vitamin C replacement may be beneficial in prevention or reversal of the cognitive impairment," says co-author Professor Campbell Thompson from the University of Adelaide.

"Relationship between Vitamin C Deficiency and Cognitive Impairment in Older Hospitalised Patients: A Cross-Sectional Study" by Yogesh Sharma, Alexandra Popescu, Chris Horwood, Paul Hakendorf and Campbell Thompson is published in the journal Antioxidants.

Eating a wide variety of proteins may lower risk for high blood pressure

A balanced diet that includes protein from a variety of sources may lower the risk for developing high blood pressure, new research from China finds.

The study, published in the American Heart Association journal Hypertension, found that Chinese adults whose diets included the greatest variety of protein sources had a substantially lower risk of developing high blood pressure than those who consumed the least variety.

Nearly half of U.S. adults have high blood pressure, also called hypertension. It is a major risk factor for heart disease, stroke and other chronic diseases. Prior studies have shown a strong link between poor diet quality and a higher risk of cardiovascular disease, but studies analyzing the link between dietary protein and blood pressure levels have been inconsistent. The AHA recommends eating no more than about 5.5 ounces of protein daily, about one to two servings, from healthy sources such as plants, seafood, low-fat or fat-free dairy products and some lean meats and poultry.

In the study, researchers analyzed data for 12,117 adults who took part in at least two of seven rounds of the China Health and Nutrition Survey between 1997 and 2015, with an average follow-up time of six years. Slightly less than half of the participants – who were an average 41 years old – were men. The surveys measured three consecutive days of eating during each round and assigned a score based on the number of different sources of protein participants consumed.

Protein sources included whole grains, refined grains, processed red meat, unprocessed red meat, poultry, fish, eggs and legumes. "Along with fat and carbohydrates, protein is one of the three basic macronutrients," Qin said.

Participants who reported taking blood pressure-lowering medication or being diagnosed with high blood pressure since their last survey were considered to have new-onset hypertension.

When total protein intake was

calculated, those who ate the least and the most total protein were at greatest risk for developing high blood pressure. When looking at protein variety, those who scored highest for eating a variety were 66% less likely to end up with hypertension than those who scored lowest.

"The heart health message is that consuming a balanced diet with proteins from various different sources, rather than focusing on a single source of dietary protein, may help to prevent the development of high blood pressure," study author Dr. Xianhui Qin of Nanfang Hospital, Southern Medical University in Guangzhou, China, said in a news release.

Flavonoids- a flavorful way to improve heart and brain health

Research has shown that flavonoids provide a wide range of health benefits, from fighting cancer and lowering the risk for heart disease to preserving brain function. They've even been used to fight wrinkles.

"The key reason flavonoids are good for us is they have anti-inflammatory effects and are antioxidants," said Kristina Petersen, an assistant professor in the department of nutritional sciences at Texas Tech University in Lubbock.

Antioxidants help fight inflammation and aging. Flavonoids also have properties that could help prevent blood clots. And a study published last year in the American Heart Association journal Hypertension suggests flavonoids in foods such as berries, red wine, apples and pears may influence gut bacteria in a way that lowers blood pressure, reported Laura Williamson in a news release by the organization.

Federal dietary guidelines recommend adults eat 1.5-2 cups of fruit each day and 3-4 cups of vegetables. But only 1 in 10 U.S. adults eat that many vegetables and only 1 in 8 eat a sufficient amount of fruit, according to data from the Centers for Disease Control and Prevention.

The good news is, flavonoids are found in such a wide range of fruits, vegetables and other foods that it shouldn't be hard to fit them into your diet, Petersen said. They're found in berries of all kinds, cherries, apples, grapes, leeks and leafy green vegetables such as spinach, romaine lettuce and kale. Like garlic and onions? You'll find them there as well. Soybeans? They've got them, too.

Petersen recommends eating a wide range of flavonoid-rich foods for the greatest nutritional value. "The goal is to eat a variety of fruits and vegetables of different colors. Eat a rainbow," she said.

If fresh fruits aren't available, frozen berry mixes are a good alternative, Peterson said. Fruits and vegetables that are flash frozen retain high levels of nutrients, store easily and can add variety to the plate even when out of season.Beverages such as red wine and tea, especially black or green tea, are good sources.