Cranberries for memory and brain health support

Adding cranberries to your diet could help improve memory and brain function, and lower 'bad' cholesterol – according to new research from the University of East Anglia (UK).

The research team investigated the impact of eating cranberries for 12 weeks on brain function and cholesterol among 60 cognitively healthy participants. Half of the participants consumed freeze-dried cranberry powder, equivalent to a cup or 100g of fresh cranberries, daily. The other half consumed a placebo.

The results showed that consuming cranberries significantly improved the participants' memory of everyday events (visual episodic memory), neural functioning and delivery of blood to the brain (brain perfusion).

Dr Vauzour said: "We found that the participants who consumed the cranberry powder showed significantly improved episodic memory performance in combination with improved circulation of essential nutrients such as oxygen and glucose to important parts of the brain that support cognition – specifically memory consolidation and retrieval. The cranberry group also exhibited a significant decrease in LDL or 'bad' cholesterol levels, known to contribute to atherosclerosis – the thickening or hardening of the arteries caused by a build-up of plaque in the inner lining of an artery."

"This supports the idea that cranberries can improve vascular health and may in part contribute to the improvement in brain perfusion and cognition. Demonstrating in humans that cranberry supplementation can improve cognitive performance and identifying some of the mechanisms responsible is an important step for this research field. The findings of this study are very encouraging, especially considering that a relatively short 12-week cranberry intervention was able to produce significant improvements in memory and neural function" he added.

Good bacteria to tackle depressive episodes

Intestinal flora plays an important role in health including mental health. Researchers from the University of Basel and the University Psychiatric Clinics Basel (UPK) have shown that probiotics can support the effect of antidepressants and help to alleviate depression.

In a recent study, a research team from the University of Basel and the University Psychiatric Clinics Basel (UPK) has shown that probiotics can support treatment with antidepressants. They have reported their findings in the journal Translational Psychiatry.

The research led by Dr. André Schmidt and Professor Undine Lang systematically investigated the effects of probiotics on patients with depression. All participants were inpatients at the University Psychiatric Clinics Basel (UPK) and were given a probiotic (21 subjects) or a placebo (26 subjects) for 31 days, in addition to antidepressants. Neither the participants nor the study staff knew which preparation the subjects were taking throughout the study period. The researchers carried out a series of tests on the participants immediately before treatment, at the end of the 31 days and again four weeks later. The subsequent analysis showed that although depressive symptoms decreased in all participants thanks to the general antidepressant treatment, there was a greater improvement in the subjects in the probiotic group than in the placebo group.

"With additional knowledge of the specific effect of certain bacteria, it may be possible to optimize the se-

lection of bacteria and to use the best mix in order to support treatment for depression," says the researcher – although she is keen to emphasize that probiotics are not suitable as a sole treatment for depression.

49% decreased risk of Alzheimer's with high omega-3 DHA level in their blood

Research published in Nutrients shows that people with a higher blood DHA level are 49% less likely to develop Alzheimer's disease vs. those with lower levels, according to the Fatty Acid Research Institute (FARI). The study, led by Aleix Sala-Vila, PhD, suggested that providing extra dietary omega-3 DHA, especially for those carrying the ApoE4 gene (which approximately doubles an individual's susceptibility to develop AD) might slow the development of the disease. Such a cost-effective, low-risk dietary intervention like this could potentially save billions in health care costs.

In this prospective observational study conducted within the Framingham Offspring Cohort — including 1490 dementia-free participants aged ≥65 years old — researchers examined the association of red blood cell (RBC) docosahexaenoic acid (DHA) with incident Alzheimer's Disease (AD), while also testing for an interaction with APOE-ε4 carriership.

Risk for incident AD in the highest RBC DHA quintile (Q5, >6.1%) was 49% lower compared with the lowest quintile (Q1, <3.8%). An increase in RBC DHA from Q1 to Q5 was predicted to provide an estimated 4.7 additional years of life free of AD.

Further, the researchers noted that an increased intake of DHA might lower risk for developing AD, particularly in higher-risk individuals such as those carrying the APOE-ε4 allele, suggesting that they may benefit more from higher DHA levels than non-carriers.

"Our study is in line with that of Tan et al. who reported cross-sectional associations with RBC DHA on cognitive performance and brain volume measurements (with higher DHA being associated with beneficial outcomes) in the same cohort as studied here," said William S. Harris, PhD, President of FARI, and senior author on this recent study.

Beetroot can boost athletic potential

Beetroot could become one of the next go-to foods for athletes as UniSA research shows it can provide a competitive edge when it comes to playing sport. Evaluating the performance effects of foods that are thought to have a beneficial effect on aerobic performance, researchers found that beetroot, grapes, sour cherries, and pine bark extract, which contribute to nitric oxide availability in the body, boost endurance exercise performance.

Assessing data from 118 studies involving 1872 participants from 25 different countries, the meta-analysis evaluated the effect of consuming nitrate-rich foods (typically green leafy vegetables), foods that contain polyphenols (such as berries, cherries and cocoa), and L-Citrulline (found in watermelon) on exercise endurance performance.

The study found that the nitrate levels contained in beetroot, which have been shown to boost blood flow and increase the delivery of nutrients and oxygen to muscles during exercise, helped athletes perform better more quickly. Similarly, the polyphenols in grapes, cherries and pine bark extract helped protect nitrate from degradation in the body, boosting stamina. And,

despite the ability of L-citrulline to boost nitric oxide production in the body, consuming watermelon (high in L-citrulline) did not boost exercise performance.

Lead researcher and UniSA PhD candidate Noah D'Unienville says these findings provide further evidence of foods as natural endurance enhancers. "There's a lot of interest in nitrate-rich and polyphenol-rich foods because of their potential to boost exercise performance, but just because they contain these elements, doesn't mean this will translate into improved exercise performance," D'Unienville says.

Co-researcher, UniSA's Professor Jon Buckley says that while these foods were effective in boosting exercise performance and building stamina, their effects did discriminate. "The results did show that more significant effects among athletes who were less fit, and also that, men were more likely to benefit from these foods than women," Prof Buckley says.

Connection between diet, eye health and lifespan

Researchers from the Buck Institute have demonstrated for the first time a link between diet, circadian rhythms, eye health and lifespan in Drosophila. Published in the June issue of Nature Communications, they additionally and unexpectedly found that processes in the fly eye are actually driving the aging process.

Previous studies have shown in humans that there is an association between eye disorders and poor health. "Our study argues that it is more than correlation: dysfunction of the eye can actually drive problems in other tissues," said senior author and Buck Institute Professor Pankaj Kapahi, whose lab has demonstrated for years that fasting and caloric restriction can improve many functions of the body. "We are now showing that not only does fasting improve eyesight, but the eye actually plays a role in influencing lifespan."

"The finding that the eye itself, at least in the fruit fly, can directly regulate lifespan was a surprise to us," said lead author, Brian Hodge, PhD, who did his postdoctoral studies in Kapahi's lab.

The explanation for this connection, Hodge said, lies in circadian "clocks," the molecular machinery within every cell of every organism, which has evolved to adapt to daily stresses, such as changes in light and temperature caused by the rising and setting of the sun. These 24-hour oscillations - circadian rhythms - affect complex animal behaviors, such as predator-prey interactions and sleep/wake cycles, down to fine-tuning the temporal regulation of molecular functions of gene transcription and protein translation.

"We always think of the eye as something that serves us, to provide vision. We don't think of it as something that must be protected to protect the whole organism," said Kapahi, who is also an associate adjunct professor of urology at UCSF.

Since the eyes are exposed to the outside world, he explained, the immune defenses there are critically active, which can lead to inflammation, which, when present for long periods of time, can cause or worsen a variety of common chronic diseases. Additionally, light in itself can cause photoreceptor degeneration which can cause inflammation. "Staring at computer and phone screens and being exposed to light pollution well into the night are conditions very disturbing for circadian clocks," Kapahi said. "It messes up protection for the eye and that could have consequences beyond just the vision, damaging the rest of the body and the brain."

The biggest question raised by this work as it might apply to humans is, simply, do photoreceptors in mammals affect longevity? Probably not as much as in fruit flies, said Hodge, noting that the majority of energy in a fruit fly is devoted to the eye. But since photoreceptors are just specialized neurons, he said, "the stronger link I would argue is the role that circadian function plays in neurons in general, especially with dietary restrictions, and how these can be harnessed to maintain neuronal function throughout aging."

High protein intake while dieting leads to healthier eating

Eating a larger proportion of protein while dieting leads to better food choices and helps avoid the loss of lean body mass, according to a Rutgers study. Also, diets with more protein prevent lean mass loss.

An analysis of pooled data from multiple weight-loss trials conducted at Rutgers shows that increasing the amount of protein even slightly, from 18 percent of a person's food intake to 20 percent, has a substantial impact on the quality of the food choices made by the

person. The study was published in the medical journal Obesity.

"It's somewhat remarkable that a self-selected, slightly higher protein intake during dieting is accompanied by higher intake of green vegetables, and reduced intake of refined grains and added sugar," said Sue Shapses, author of the study and a professor of nutritional sciences at the Rutgers School of Environmental and Biological Sciences (SEBS). "But that's precisely what we found."

In addition, the researchers found a moderately higher intake of protein provided another benefit to the dieters: a reduced loss of lean body mass often associated with weight loss.

Weight-loss regimens that employ calorie restrictions can often spur dieters to reduce the intake of healthy foods that contain micronutrients such as iron and zinc. Ingesting higher levels of proteins is often associated with healthier outcomes, but the link between protein intake and diet quality is poorly understood, according to researchers.

"The impact of self-selected dietary protein on diet quality has not been examined before, to our knowledge, like this," said Anna Ogilvie, co-author of the study and a doctoral student in the Department of Nutritional Sciences at Rutgers SEBS. "Exploring the connection between protein intake and diet quality is important because diet quality is often suboptimal in the U.S., and higher-protein weight loss diets are popular."

The data was collected from more than 200 men and women participating in clinical trials at Rutgers funded by the National Institutes of Health over the past two decades. The analysis of food records and diet quality for this study was funded by the Institute for the Advancement of Food and Nutrition Sciences in Washington, D.C. Participants were between the ages of 24 and 75 and registered a body mass index that categorized them as either overweight or obese. All participants were encouraged to lose weight by following a 500-calorie-deficit diet and met regularly for nutrition counselling and support over a six-month period.

The participants were given nutrition advice based on the guidelines of the Academy of Nutrition and Dietetics and the American Diabetes Association. They were discouraged from ingesting saturated fats, refined grains, sugar and salt.

The study concluded the following: (1) Both low- and high-protein groups lost the same amount of weight – about five percent of their body weight over six months. (2) Higher-protein groups individuals chose a mix of healthier foods to eat overall. (3) Higher-protein group individuals specifically increased intake of green vegetables and cut back on sugar and refined grains. (4) Higher-protein group individuals were better able to retain their lean muscle mass.

Sugar-sweetened beverage consumption linked with liver cancer in postmenopausal women

A study of more than 90,000 postmenopausal women found that those who consumed at least one sugar-sweetened beverage daily faced a 78% higher risk of developing liver cancer compared with people who consumed less than three servings per month of such beverages.

"Our findings suggest sugar-sweetened beverage consumption is a potential modifiable risk factor for liver cancer," said Longgang Zhao, a doctoral candidate at the University of South Carolina, the study's lead author. "If our findings are confirmed, reducing sugar-sweetened beverage consumption might serve as a public health strategy to reduce liver cancer burden.

Replacing sugar-sweetened beverages with water, and non-sugar-sweetened coffee or tea could significantly lower liver cancer risk."

For the new study, researchers analyzed data from 90,504 postmenopausal women who participated in the Women's Health Initiative, a long-term study launched in the early 1990s. Participants completed baseline questionnaires in the mid-1990s and were tracked for a median of 18 years. Researchers assessed sugar-sweetened beverage intake based on validated food frequency questionnaires and confirmed liver cancer diagnoses using participants' medical records.

About 7% of participants reported consuming one or more 12-ounce servings of sugar-sweetened beverages per day and a total of 205 women developed liver cancer. Women consuming one or more sugar-sweetened beverages daily were 78% more likely to develop liver cancer and those consuming at least one soft drink per day were 73% more likely to develop liver cancer compared with those who never consumed these

beverages or consumed less than three servings per month.

Although more studies would be needed to determine the factors and mechanisms behind the linkage, researchers said that higher sugar-sweetened beverage consumption might increase the risk of obesity and type-2 diabetes, which are in turn risk factors for liver cancer. These beverages also can contribute to insulin resistance and to the build-up of fat in the liver, both of which influence liver health. "Intake of sugar-sweetened beverages, a postulated risk factor for obesity, diabetes and cardiovascular disease, may drive insulin resistance and inflammation which are strongly implicated in liver carcinogenesis," Zhao said.

Medicinal mushrooms and their unique health benefits

Far from being curiosities of the past, medicinal mushrooms are gaining an ever-wider popularity. This new interest has been greatly stimulated by the large number of scientific studies that have been conducted on medicinal mushrooms. These modern studies have confirmed the traditional uses of many fungi and have even found new applications for them in some cases.

One of the key results that has come out of both laboratory and human clinical studies conducted on fungi is that a number of compounds in fungi can stimulate immune function and inhibit tumour growth. In particular, compounds called polysaccharides, which are large, complex branched chain-like molecules built from many smaller units of sugar molecules, have been intensively studied since the 1950s. Again and again they have been shown to have antitumor and immune-stimulating properties, not only from many of the medicinal mushrooms reviewed in this book, but also from lichens (such as usnea), bacteria, and even from the cell wall of a yeast (called zymosan).

Recently, German researchers have demonstrated that immune-activating polysaccharides similar to those found in many fungi are also found in higher plants, such as the widely popular Echinacea, and Astragalus, an important Chinese herb (Wagner and Proksch, 1985). These giant molecules are similar to ones found in the cellular membranes of bacteria, and thus may "fool" our immune system into mounting an immune response to them, while posing no actual threat. This response has been shown to activate a variety of immune effector cell responses, including an increase in macrophage and killer T-cell activity. Since these hetero-polysaccharides are considered to be among the most important of the active compounds in medicinal mushrooms, it is useful to look at them in closer detail for a moment.

In fungi, polysaccharides are often molecularly bound to various proteins. Proteins are molecules that closely represent the unique identity of organisms, and thus often activate the immune system as they enter the body. They can sometimes initiate an immune response which does not act as a beneficial stimulant or tonic but can induce a powerful immune overreaction-leading to an allergic response, for instance as in casein from milk products or gluten from wheat or grass pollens. This response can even be life-threatening, such as in a bee or wasp sting. A number of mushrooms are said to increase the beneficial immune-activating response of the body.

Study examines how diet quality may affect breast cancer risk

Research shows that what we eat may influence our cancer risk, but it's not always clear which foods or dietary patterns are best for cancer prevention. Results from a new study presented by Shah et al. during Nutrition 2022 Live Online, the annual meeting of the American Society for Nutrition, suggest that the quality or overall healthiness of a person's diet may be the key. The study, based on data from over 65,000 postmenopausal women who were tracked for more than 2 decades, found that a healthy plant-based diet was linked with a 14%

lower risk of breast cancer, whereas an unhealthy plant-based diet was linked with a 20% higher risk of breast cancer. The findings were consistent across all breast cancer subtypes.

"These findings highlight that increasing the consumption of healthy plant foods and decreasing the consumption of less healthy plant foods and animal foods might help prevent all types of breast cancer," said lead study author Sanam Shah, a doctoral candidate at the Center for Research in Epidemiology and Population Health at Paris-Saclay University, INSERM, Gustave Roussy.

Previous studies have examined cancer risks associated with various dietary patterns such as the Western diet, the Mediterranean diet, and vegetarian diets. Although some studies suggest diets with less or no meat consumption offer health benefits, results have been somewhat mixed. For the new study, researchers focused on differentiating between healthy plant-based foods (such as whole grains, fruit, vegetables, nuts, legumes, vegetable oils, and tea or coffee) and plant-based foods the study categorized as less healthy (such as fruit juices, refined grains, potatoes, sugar-sweetened beverages, and desserts).

"What is different about our study is that we could disentangle the effects of the quality of plant foods, which has not been the focus of previous studies on other dietary patterns," said Ms. Shah. "By scoring healthy, unhealthy, and animal-based foods, we comprehensively analyzed food intake by considering the 'healthiness' of food groups."

The researchers analyzed data from 65,574 postmenopausal women living in France who filled out dietary intake questionnaires in 1993 and 2005 and were followed for an average of 21 years. Over the course of the study, 3,968 study participants were diagnosed with breast cancer.

Comparing breast cancer rates among women with different dietary quality revealed significant differences in cancer risk among those with healthy and unhealthy diets. The researchers used 18 food groups to categorize the degree to which participants adhered to a plant-based v/s animal-based diet and ate healthy v/s less healthy foods. Ms. Shah noted that a plant-based diet does not equate to a vegan or vegetarian diet, but rather describes a general emphasis on plant-based over animal-based foods.

While the findings suggest that choosing healthy plant-based foods is likely helpful for cancer prevention, Ms. Shah noted that more research is needed to assess the connections between diet and cancer risk in diverse populations (in particular, to determine causality).