Grab a boost of blue®

NATIONAL HEART HEALTH MONTH:

What's New in Blueberry Health Research

OVERVIEW

February is American Heart Month, a time to focus on the vital importance of cardiovascular health, which is the leading cause of death among men and women in the United States.[1] Pre-existing conditions that increase an individual's risk for developing cardiovascular disease include high blood sugar, high blood pressure, obesity and high blood-lipid levels. While each condition can be problematic on its own, when combined, they are collectively referred to as "metabolic syndrome" and can significantly impact one's risk for heart disease onset.[2]

The good news is that American Heart Month offers an opportunity to embrace heart-healthy habits – such as incorporating blueberries and other nutritious foods into our daily diet. Blueberries, whether fresh or frozen, offer a variety of beneficial vitamins and minerals, including vitamin C, vitamin K and manganese. For busy people and families on the go, blueberries make a no-fuss snack or addition to any dish. They're also a good source of fiber, containing 4 grams, and only 80 calories per serving (one cup, or approximately a handful). According to the Dietary Guidelines for Americans (DGAs), a healthy dietary pattern, which includes a higher intake of fruits, is associated with a reduced risk of many chronic diseases, including cardiovascular disease.[3]

The American Heart Association (AHA) reinforces the recommendation put forth in the DGAs and also advises eating an overall healthy dietary pattern that emphasizes a wide variety of fruits and vegetables, in conjunction with regular physical activity.[4] **Encourage your clients and patients to look for the Heart-Check mark to find foods, like blueberries, that have been certified by the AHA as heart-healthy.**

FOLLOWING ARE SUMMARIES OF RECENT STUDIES THAT ILLUSTRATE THE VARIOUS WAYS BLUEBERRIES HELP SUPPORT OVERALL CARDIOVASCULAR HEALTH.

1. Heart Disease Facts. (2022, July 15). Retrieved from https://www.cdc.gov/heartdisease/facts.htm
2. Metabolic Syndrome. (n.d.). Retrieved from https://www.nhlbi.nih.gov/health-topics/metabolic-syndrome
3. U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2020-2025. 9th Edition. December 2020. Available at DietaryGuidelines.gov
4. The American Heart Association Diet and Lifestyle Recommendations

WHAT THE SCIENCE SAYS: Adding Blueberries to Energy-Dense, High-Fat, High-Sugar Meals Improves Various Markers of Cardiometabolic Health in an 'At Risk' Population

A new research study published in Clinical Nutrition found that the equivalent of one cup of fresh blueberries, consumed as 26 g of freeze-dried blueberries, may reduce the acute cardiometabolic burden of energy-dense meals. This emerging study finds that adding anthocyanin-rich blueberries (364 mg anthocyanin and 879 mg phenolics) to a high calorie, high-fat/high-sugar meal (969 kcal, 64.5g fat, 84 g carbohydrate) results in reduced insulin and glucose levels, lower total cholesterol, and improved good cholesterol (HDL-C) and its related lipoproteins (fractions of HDL-P and Apo-A1) in the 24 hours following the meal. These findings are noteworthy because elevated post-meal glucose and impaired glucose tolerance are associated with increased heart disease risk, which is already elevated in people with metabolic syndrome. While the conclusions drawn from a single study cannot be generalized to all populations, the results suggest that adding just a single cup serving of anthocyanin-rich foods like blueberries to high-fat/high-sugar and energy dense meals should be advocated to reduce the acute postprandial increases in risk markers like glucose, insulin and cholesterol.[5]

WHAT THE SCIENCE SAYS: Blueberries Improve Biomarkers of Cardiometabolic Function in Participants with Metabolic Syndrome

A research study conducted at the University of East Anglia in the United Kingdom investigated if blueberries improve biomarkers of cardiometabolic function in participants with metabolic syndrome during a six-month, double-blind, randomized controlled trial. One hundred and fifteen (115) participants between the ages of 50 and 75 years with metabolic syndrome were randomly assigned to receive one of three daily treatments: 26 g freeze dried blueberries (the equivalent of one U.S. cup/ day); 13 g freeze-dried blueberries (the equivalent of one-half U.S. cup/day fresh blueberries); or a placebo powder matched for color, taste and consistency. The study found that daily intake of the equivalent of one U.S. cup of blueberries resulted in clinically significant improvements in heart health measures, particularly markers of vascular function including improved endothelial function and reduced arterial stiffness, which are associated with a reduced risk of cardiovascular events such as heart attack and stroke.[6] Intake of one cup of blueberries per day also resulted in significantly increased HDL cholesterol levels compared to the placebo. While the conclusions drawn are from a single study that cannot be generalized to all populations, the data add weight to the evidence that a dietary intervention with a realistic serving of blueberries may be an effective strategy to decrease important risk factors for heart disease.[7]

5. Curtis PJ, Berends L, van der Velpen V, et al. Blueberry anthocyanin intake attenuates the postprandial cardiometabolic effect of an energy-dense food challenge: Results from a double blind, randomized controlled trial in metabolic syndrome participants. Clin Nutr. 2022;41(1):165-176. doi:10.1016/j.clnu.2021.11.030
6. Inaba Y, Chen JA, Bergmann SR. Prediction of future cardiovascular outcomes by flow-mediated vasodilatation of brachial artery: a metaanalysis. Int J Cardiovasc Imaging 2010;26(6):631-40.
7. Curtis, P. J., Van Der Velpen, V., Berends, L., Jennings, A., Feelisch, M., Umpleby, A. M., ... Cassidy, A. (2019). Blueberries improve biomarkers of cardiometabolic function in participants with metabolic syndrome—results from a 6-month, double-blind, randomized controlled trial. The American Journal of Clinical Nutrition, 109(6), 1535-1545. doi: 10.1093/ajcn/nqy380

GET THE SCOOP ON BLUEBERRY NUTRITION

One serving (a handful or a cup) of blueberries:

1. Is considered one serving of fruit.
2. Contributes essential nutrients including vitamin C, vitamin K, manganese and phytonutrients called polyphenols.
3. Contains 80 calories and is a good source of fiber
4. Contains anthocyanins, which are compounds that give blueberries their blue color.

WHAT THE SCIENCE SAYS: Daily Blueberry Consumption May Reduce Blood Pressure and Arterial Stiffness in Post-Menopausal Women

A 2015 double-blind, placebo-controlled human study out of Florida State University investigated the effects of blueberry consumption on 40 postmenopausal women with pre- and stage 1 hypertension.[8] Conducted over an eight-week period, the participants were advised to maintain their usual diet and physical activity levels during the duration of the study. The results showed that the 20 participants who consumed blueberries given as blueberry powder experienced 5.1% and 6.3% reductions in mean systolic blood pressure and diastolic blood pressure, respectively, whereas there were no significant decreases in the control group. From baseline to eight weeks, there was a significant ($P<0.01$) reduction in ankle-brachial pulse wave velocity, and there was a group-time interaction ($P<0.05$) in the blueberry group, whereas there were no changes in the control group. Reduced bioavailability of nitric oxide is thought to be one of the central factors common to cardiovascular disease, though it is unclear whether this is a cause of, or a result of, endothelial dysfunction.[9] While more research is needed, this initial study provides insight on the role that blueberries may play in the area of blood pressure and cardiovascular health.

WHAT THE SCIENCE SAYS: Blueberries Improve Endothelial Function in Adults with Metabolic Syndrome

In another human study, 44 adults with metabolic syndrome who consumed a blueberry smoothie twice daily for six weeks exhibited significant improvement in vascular endothelial function versus those who consumed a placebo.[10] Vascular endothelial function is thought to play a pivotal role in the development, progression and clinical complications of atherosclerosis.[11] There was not a significant change in blood pressure; however, many of these subjects were on antihypertensive medications, which may have masked any effect from the blueberries. There was also no difference in insulin sensitivity between the blueberry and placebo groups. Although more trials are needed, this study does suggest blueberries have a favorable effect on vascular health over a six-week period in adults with metabolic syndrome. Clinical trials with a larger sample size and longer duration are warranted to explain the potential role blueberries have in improving endothelial function and blood pressure in a population at high risk for developing cardiovascular disease.

8. Johnson, S. A., Figueroa, A., Navaei, N., Wong, A., Kalfon, R., Ormsbee, L. T., ... Arjmandi, B. H. (2015). Daily Blueberry Consumption Improves Blood Pressure and Arterial Stiffness in Postmenopausal Women with Pre- and Stage 1-Hypertension: A Randomized, Double-Blind, Placebo-Controlled Clinical Trial. Journal of the Academy of Nutrition and Dietetics, 115(3), 369-377. doi: 10.1016/j.jand.2014.11.001
9. Naseem, K. M. (2015). The Role of Nitric Oxide in Cardiovascular Diseases. Molecular Aspects of Medicine, 26, 33-65. doi: 10.1016/j.mam.2004.09.003.
10. Stull, A., Cash, K., Champagne, C., Gupta, A., Boston, R., Beyl, R., ... Cefalu, W. (2015). Blueberries Improve Endothelial Function, but Not Blood Pressure, in Adults with Metabolic Syndrome: A Randomized, Double-Blind, Placebo-Controlled Clinical Trial. Nutrients, 7(6), 4107-4123. doi: 10.3390/nu7064107
11. Landmesser, U. (2005). The Clinical Significance of Endothelial Dysfunction. Curr Opin Cardiol, 20(6):547-51. doi:10.1097/01.hco.0000179821.11071.79

CHECK OUT THESE RECIPE FAVORITES TO GET HEART-HEALTHY BLUEBERRIES INTO YOUR DIET: