Chemicals found in cherries may help fight diabetes

Article Date: 21 Dec 2004

Perhaps George Washington wouldn't have chopped down his father's cherry tree if he knew what chemists now know. They have identified a group of naturally occurring chemicals abundant in cherries that could help lower blood sugar levels in people with diabetes. In early laboratory studies using animal pancreatic cells, the chemicals, called anthocyanins, increased insulin production by 50 percent, according to a peer-reviewed study scheduled to appear in the Jan. 5 issue of the American Chemical Society's Journal of Agricultural and Food Chemistry. ACS is the world's largest scientific society.

Anthocyanins are a class of plant pigments responsible for the color of many fruits, including cherries. They also are potent antioxidants, highly active chemicals that have been increasingly associated with a variety of health benefits, including protection against heart disease and cancer.

"It is possible that consumption of cherries and other fruits containing these compounds [anthocyanins] could have a significant impact on insulin levels in humans," says study leader Muralee Nair, Ph.D., a natural products chemist at Michigan State University in East Lansing. "We're excited with the laboratory results so far, but more studies are needed." Michigan is the top cherry producing state in the nation.

Until human studies are done on cherry anthocyanins, those with diabetes should continue following their doctor's treatment recommendations, including any medicine prescribed, and monitor their insulin carefully, the researcher says. The compounds show promise for both the prevention of type 2 (non-insulin-dependent) diabetes, the most common type, and for helping control glucose levels in those who already have diabetes, he adds.

While fresh cherries and fruits containing these anthocyanins are readily available, medicinal products may be the most efficient way to provide the beneficial compounds, according to Nair. It's possible that anthocyanins eventually could be incorporated into new products, such as pills or specialty juices that people could take to help treat diabetes. Such disease-specific products may take several more years to develop, he notes.

Scientists in Nair's laboratory have even developed a unique process, patented by the university, for removing sugar from fruit extracts that contain anthocyanins. This could lead to "sugar-free" medicinal products for people with diabetes.

The current study, partially funded by the U.S. Department of Agriculture, involved tart cherries (also known as sour cherries or pie cherries), a popular variety in the United States, and the Cornelian cherry, which is widely consumed in Europe. Nair and his associates, B. Jayaprakasam, Ph.D., L.K. Olson, Ph.D., and graduate student S. K. Vareed, tested several types of anthocyanins extracted from these cherries against mouse pancreatic-beta cells, which normally produce insulin, in the presence of high concentrations of glucose.

Insulin is the protein produced by the pancreas that helps regulate blood sugar (glucose) levels. Compared to cells that were not exposed to anthocyanins, exposed cells were associated with a 50 percent increase in insulin levels, the researchers say. The mechanism of action by which these anthocyanins boost insulin production is not known, Nair says.

Nair and his colleagues are currently feeding anthocyanins to a group of obese, diabetic mice to determine how the chemicals influence insulin levels in live subjects. Results of these tests are not yet available.

Although other fruits, including red grapes, strawberries and blueberries, also contain anthocyanins, cherries appear to be the most promising source of these compounds on the basis of serving size, according to the researcher. The compounds are found in both sweet and sour (tart) cherry varieties.

The potential benefits of cherries extend beyond diabetes. Previous studies by the researcher found that certain anthocyanins isolated from cherries have anti-inflammatory properties and may be useful in fighting arthritis. Nair's colleagues have found that cherries also may help fight colon cancer.

But people with diabetes are encouraged to use caution when it comes to consuming maraschino cherries, the bright red candied version that adorns ice cream and cocktails, Nair points out. Many of the beneficial cherry pigments that were present in the fresh fruit have been removed during processing, replaced with food coloring, and extra sugar has been added.

The American Chemical Society is a nonprofit organization, chartered by the U.S. Congress, with a multidisciplinary membership of more than 159,000 chemists and chemical engineers. It publishes numerous scientific journals and databases, convenes major research conferences and provides educational, science policy and career programs in chemistry. Its main offices are in Washington, D.C., and Columbus, Ohio.

Michael Bernstein
m_bernstein@acs.org
202-872-6042 202-872-6042
American Chemical Society