Blueberries each day may keep the doctor away

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(Medical Xpress)—Eating 2 cups of wild blueberries a day for two months can reduce chronic inflammation, improve metabolism of fat and lower LDL cholesterol and triglycerides, according to research by a University of Maine clinical nutritionist.

Additionally, UMaine professor Dorothy Klimis-Zacas says a diet enriched with the fruit can normalize gene expression of inflammatory markers and those related to lipid and lipoprotein metabolism.

The findings from her research with obese Zucker rats have promising implications for people wanting to reduce inflammation and thus their risk of coronary heart disease and Type 2 diabetes, says Klimis-Zacas.

The obese male Zucker rat is a valid experimental model for human metabolic syndrome (MetS), which is characterized by chronic inflammation, obesity, hypertension, glucose intolerance and insulin resistance.

The results are significant in light of the MetS epidemic in the United States, which affects an estimated 37 percent of adults, says Klimis-Zacas. That figure is expected to increase in direct relationship with the rate of obesity, according to National Health Statistics Reports.

Heart disease alone annually kills 600,000 people in the United States, according to the Centers for Disease Control and Prevention.

Being able to improve health by eating blueberries rich in antioxidants and anti-inflammatory agents that prevent degenerative disease, rather than relying on pharmaceuticals, is a great benefit, she says.

Klimis-Zacas is the first to report that wild blueberries lowered triglycerides (fatty materials) in the rats' blood in vivo.

The fruit lowered low-density lipoprotein (LDL) cholesterol—which clogs people's blood vessels and increases the risk of a heart attack—while maintaining the level of beneficial high-density lipoprotein (HDL) cholesterol, says Klimis-Zacas, who has studied nutritional benefits of wild blueberries for 15 years.

There was an overall anti-inflammatory effect in the obese rats, she says. Circulating levels of inflammatory markers were reduced in their blood, fatty tissues and livers. She found the blueberry-enriched diet improved abnormal overall blood lipid profiles and the genetic expression of enzymes that regulate lipids and cholesterol.

The multiple benefits for obese Zucker rats eating a wild blueberry-

enriched diet are detailed in two research articles recently authored by Klimis-Zacas.

The study "Wild blueberry (Vaccinium angustifolium) consumption improves inflammatory status in the obese Zucker rat model of the metabolic syndrome," was published in SciVerse ScienceDirect, a *Journal of Nutritional Biochemistry*. Stefano Vendrame, Allison Daugherty and Alekandra S. Kristo, all UMaine graduate students, as well as Patriza Riso of the Universita degli Studi di Milano in Italy, participated in the research.

The study "Wild blueberry (Vaccinium angustifolium)-enriched diet improves dyslipidaemia and modulates the expression of genes related to lipid metabolism in obese Zucker rats" was published in the *British Journal of Nutrition*. Vendrame, Daugherty and Kristo are co-authors.

Provided by University of Maine