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Substance in Tangerines Fights Obesity and Protects Against Heart Disease

New research from The University of Western Ontario has discovered a substance in tangerines not only helps to prevent obesity, but also offers protection against type 2 diabetes, and even atherosclerosis, the underlying disease responsible for most heart attacks and strokes. Murray Huff, a vascular biology scientist at the Schulich School of Medicine & Dentistry, along with Erin Mulvihill, a PhD student, studied the effects of a flavonoid in tangerines called Nobiletin. Their research is published in the journal Diabetes.

In a model of metabolic syndrome developed by the Huff laboratory at the Robarts Research Institute, mice were fed a "western" diet high in fats and simple sugars. One group became obese and showed all the signs associated with metabolic syndrome: elevated cholesterol and triglycerides, high blood levels of insulin and glucose, and a fatty liver. These metabolic abnormalities greatly increase the risk of cardiovascular disease and type 2 diabetes.

The second group of mice, fed the exact same diet but with Nobiletin added, experienced no elevation in their levels of cholesterol, triglycerides, insulin or glucose, and gained weight normally. Mice became much more sensitive to the effects of insulin. Nobiletin was shown to prevent the buildup of fat in the liver by stimulating the expression of genes involved in burning excess fat, and inhibiting the genes responsible for manufacturing fat.

"The Nobiletin-treated mice were basically protected from obesity," says Huff, the Director of the Vascular Biology

Research Group at Robarts. "And in longer-term studies, Nobiletin also protected these animals from atherosclerosis, the buildup of plaque in arteries, which can lead to a heart attack or stroke. This study really paves the way for future studies to see if this is a suitable treatment for metabolic syndrome and related conditions in people."

Huff's research has focused on the pharmacological properties of naturally-occurring bioactive molecules. Two years ago, his research drew international attention when he discovered a flavonoid in grapefruit called Naringenin offered similar protection against obesity and other signs of metabolic syndrome. Huff says "What's really interesting to us is that Nobiletin is ten times more potent in its protective effects compared to Naringenin, and this time, we've also shown that Nobiletin has the ability to protect against atherosclerosis."

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