

Flavonoids in orange juice make it a healthy drink, despite the sugar

Orange juice, despite its high caloric load of sugars, appears to be a healthy food for diabetics due to its mother lode of flavonoids, a study by endocrinologists at the University at Buffalo has shown. The study appeared in the June 2007 issue of *Diabetes Care*.

Flavonoids suppress destructive oxygen free radicals -- also known as reactive oxygen species, or ROS. An overabundance of free radicals can damage all components of the cell, including proteins, fats and DNA, contributing to the development of many chronic diseases, including heart disease and stroke as well as diabetes.

The resulting study involved 32 healthy participants between the ages of 20 and 40, who were of normal weight, with a body mass index of 20-25 kg/m². Participants were assigned randomly and evenly into four groups, who would drink the equivalent of 300 calories-worth of glucose, fructose, orange juice or saccharin-sweetened water.

Fasting blood samples were taken before the test and at 1, 2 and 3 hours after a 10-minute period to consume the drinks.

Results showed a significant increase in ROS within 2 hours in samples from the glucose group but not in those from the fructose, orange juice or water group.

“We were intrigued by the fact that there was no increase in ROS or inflammation following orange juice consumption, even though its glucose concentration was the same as in participants in the glucose group,” said Dandona. “This raised the question of what in the juice was responsible for suppressing ROS generation: flavonoids and vitamin C or fructose?”

An additional round of test on the samples showed that neither fructose nor vitamin C suppressed the oxygen free radicals. However the two types of flavonoids in orange juice -- hesperetin and naringenin -- inhibited ROS generation by 52 percent and 77 percent, respectively.

“Our data are relevant to patients with diabetes,” said Dandona, “because stress from ROS and inflammation are increased significantly in this population and may contribute to development of atherosclerosis. Clearly the choice of foods that either don’t increase or actually decrease oxidative and inflammatory stress is important.

“The search for safe non-inflammatory foods and diets must continue,” Dandona stressed, “especially since obesity, being overweight and type 2 diabetes are associated with oxidative stress and inflammation, and more than 60 percent of U.S. population is affected by these conditions.”

Source: University at Buffalo

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