

Can an apple a day keep type 2 diabetes at bay?

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Timothy M. Smith

Senior News Writer

Fruit has long been considered part of a healthy diet because of its low glycemic load and richness in soluble and insoluble fiber, vitamins, minerals and phytochemicals. Now a longitudinal study has put a finer point on the issue: Eating moderate amounts of whole fruits could even help prevent type 2 diabetes.

The study, published in *The Journal of Clinical Endocrinology & Metabolism*, examines associations between intake of fruit, and fruit juice, and these outcomes: measures of glucose tolerance and insulin sensitivity, and diabetes at follow-up.

The old axiom about moderation

The study involves 7,675 Australian men and women 25 or older who completed a food-frequency questionnaire indicating their usual intake of 74 food items over the previous 12 months, with 10 frequency response options ranging from “never” to “three or more times per day.” Food items included 10 types of fruit, including apples, oranges and other citruses and bananas, as well as unspecified fruit juices.

At baseline, the population had an average age of 54 and total fruit intake was inversely associated with serum insulin and HOMA2-%?, and positively associated with HOMA2-%S.

Compared with participants with the lowest intakes, those with moderate total fruit intakes had 36% lower odds of having diabetes at five years, after adjusting for confounding dietary and lifestyle factors. Regarding intake of individual types of fruit, apparent inverse associations did not reach statistical significance after adjusting for potential dietary and lifestyle confounders. The authors also looked associations with 12-year outcomes, but those were not statistically significant.

While a positive association between fruit juice consumption and type 2 diabetes had been reported

in a meta-analysis done previously, the authors of this study reported no association between consumption of fruit juice and insulin resistance and β -cell dysfunction or incident diabetes.

Understanding insulin

“Insulin resistance, in concert with β -cell dysfunction and obesity, is a key driver of the pathophysiology” of type 2 diabetes, wrote the study’s authors. “HOMA2 is one approach of assessing β -cell function and insulin resistance (or insulin sensitivity) by means of fasting glucose and insulin values.”

They added that “higher total fruit intake was associated with higher insulin sensitivity and lower β -cell function in a dose-response manner. At a glance, the inverse association between fruit intake and β -cell function may seem counterintuitive. However, the HOMA2 of β -cell function measurement actually reflects insulin secretion (or β -cell ‘activity’) rather than β -cell ‘function’; in this context, the lower values likely reflect higher insulin sensitivity.”

Healthier isn’t harder

“Fruit juices tend to have a relatively high glycemic load—more simple carbohydrate that’s quickly digestible—and may also make people feel less full than whole fruit, so that may be why they don’t have the same prevention value that whole fruits seem to have,” said Kate Kirley, MD, director of chronic disease prevention at the AMA.

The take-home messages, Dr. Kirley said, are: “When you want something sweet, eat fruit instead of other stuff,” and “the less you do to your fruit, the better.”

“In other words, you don’t need to juice it or blend it—just grab a piece of fruit and eat it!” she added. “If it’s hard to keep fresh fruit around, frozen fruit that doesn’t have added sugar is also a great option.”

The authors noted several limitations of their study, including that they could not infer causality or rule out residual confounding and that they did not investigate associations for intake of all fruits captured in the questionnaire.

The AMA’s Diabetes Prevention Guide supports physicians and health care organizations in defining and implementing evidence-based diabetes prevention strategies. This comprehensive and customized approach helps clinical practices and health care organizations identify patients with prediabetes and manage the risk of developing type 2 diabetes, including referring patients at risk to a National Diabetes Prevention Program lifestyle change program based on their individual needs.