

Vitamin C-rich diet may slash diabetes risk

By Stephen Daniells, 29-Jul-2008

Increased blood levels of vitamin C may reduce the risk of developing diabetes by 62%, says a new study from Cambridge. The new study, which followed 21,831 men and women for 12 years, also found a weaker association between fruit and vegetable intake and a reduced diabetes risk, supporting the importance of the five-a-day regime.

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"The strong independent association observed in this prospective study, together with biological plausibility, provides persuasive evidence of a beneficial effect of vitamin C and fruit and vegetable intake on diabetes risk," wrote lead author Anne-Helen Harding from Addenbrooke's Hospital in Cambridge, England.

An estimated 19 million people are affected by diabetes in the EU 25, equal to four per cent of the total population. This figure is projected to increase to 26 million by 2030.

In the US, there are over 20 million people with diabetes, equal to seven per cent of the population. The total costs are thought to be as much as \$132 billion, with \$92 billion being direct costs from medication, according to 2002 American Diabetes Association figures.

Study details

Harding and co-workers analysed dietary patterns using a semi-quantitative food frequency questionnaire (FFQ) amongst the participants of the European Prospective Investigation of Cancer - Norfolk. The men and women had an average age of 58.4 at the start of the study, and women made up two-thirds of the study population.

Over 12 years of follow-up 735 incident cases of diabetes were diagnosed.

Correlating blood levels of vitamin C and diabetes, the researchers found that men and women with the highest blood levels (at least 1.10 and 1.29 mg/dL, respectively) had a 62 per cent reduction in their risk of developing type-2 diabetes, compared to men and women with the lowest blood levels (less than 0.56 and 0.77 mg/dL, respectively).

Moreover, men and women with the highest fruit and vegetable intake (459 and 550 grams per day, respectively) had a 22 per cent reduction in their risk of developing type-2 diabetes, compared to men and women with the lowest fruit and vegetable intake (289 and 382 grams per day, respectively).

"Higher plasma vitamin C level and, to a lesser degree, fruit and vegetable intake were associated with a substantially decreased risk of diabetes," wrote the researchers. "Our findings highlight a potentially important public health message on the benefits of a diet rich in fruit and vegetables for the prevention of diabetes."

Mechanism

"Plausible mechanisms for a beneficial effect of increased fruit and vegetable intake or plasma vitamin C levels on diabetes risk exist," wrote Harding and co-workers. "Fruit and vegetable consumption may be protective for diabetes risk, at least partially, through its effect on obesity."

The Cambridge-based researchers note that dietary fibre from the fruit and vegetables was not associated with a decrease risk of diabetes, despite previous studies reporting a protective effect from cereal fibre.

"The lack of association of fruit and vegetable fibre with diabetes risk but the protective effect of cereal fibre for diabetes risk reported in a recent meta-analysis is noteworthy and may suggest that it is not the fibre content of fruit and vegetables per se that contributed to the reduced risk for diabetes in our study," wrote the researchers.

Turning their attention to other compounds in fruit and vegetables, the researchers noted the presence of vitamins, minerals, and phytochemicals that possess antioxidant activity.

"Oxidative stress, the situation in which an imbalance between the levels of reactive oxygen species and antioxidants exists, can lead to disturbed glucose metabolism and hyperglycemia," they said.

Source: Archives of Internal Medicine

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"Plasma Vitamin C Level, Fruit and Vegetable Consumption, and the Risk of New-Onset Type 2 Diabetes Mellitus - The European Prospective Investigation of Cancer - Norfolk Prospective Study"

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