

RESEARCH

Fruit consumption and risk of type 2 diabetes: results from three prospective longitudinal cohort studies

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Abstract

Objective To determine whether individual fruits are differentially associated with risk of type 2 diabetes.

Design Prospective longitudinal cohort study.

Setting Health professionals in the United States.

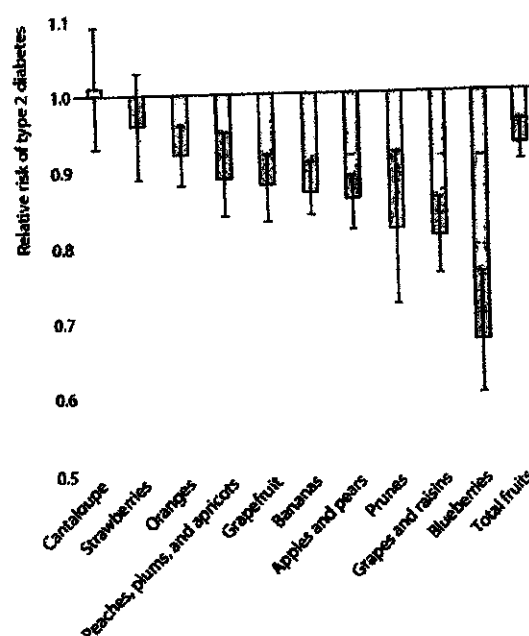
Participants 66 105 women from the Nurses' Health Study (1984-2008), 85 104 women from the Nurses' Health Study II (1991-2009), and 36 173 men from the Health Professionals Follow-up Study (1986-2008) who were free of major chronic diseases at baseline in these studies.

Main outcome measure Incident cases of type 2 diabetes, identified through self report and confirmed by supplementary questionnaires.

Results During 3 464 641 person years of follow-up, 12 198 participants developed type 2 diabetes. After adjustment for personal, lifestyle, and dietary risk factors of diabetes, the pooled hazard ratio of type 2 diabetes for every three servings/week of total whole fruit consumption was 0.98 (95% confidence interval 0.96 to 0.99). With mutual adjustment of individual fruits, the pooled hazard ratios of type 2 diabetes for every three servings/week were 0.74 (0.66 to 0.83) for blueberries, 0.88 (0.83 to 0.93) for grapes and raisins, 0.89 (0.79 to 1.01) for prunes, 0.93 (0.90 to 0.96) for apples and pears, 0.95 (0.91 to 0.98) for bananas, 0.95 (0.91 to 0.99) for grapefruit, 0.97 (0.92 to 1.02) for peaches, plums, and apricots, 0.99 (0.95 to 1.03) for oranges, 1.03 (0.96 to 1.10) for strawberries, and 1.10 (1.02 to 1.18) for cantaloupe. The pooled hazard ratio for the same increment in fruit juice consumption was 1.08 (1.05 to 1.11). The associations with risk of type 2 diabetes differed significantly among individual fruits ($P<0.001$ in all cohorts).

Conclusion Our findings suggest the presence of heterogeneity in the associations between individual fruit consumption and risk of type 2 diabetes. Greater consumption of specific whole fruits, particularly blueberries, grapes, and apples, is significantly associated with a lower risk of type 2 diabetes, whereas greater consumption of fruit juice is associated with a higher risk.

Figure



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Extra material supplied by the author (see <http://www.bmj.com/content/347/bmj.f5001?tab=related#webextra>)

Supplementary tables 1-5