

Flavonols and pancreatic cancer risk: The Multiethnic Cohort Study

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Pancreatic cancer is usually fatal so prevention is particularly important. However, knowledge about lifestyle-associated risk factors is limited, with smoking being the only established risk factor so far. Flavonols are polyphenols that are ubiquitous in plant foods and may exert cancer preventive effects. However, few prospective studies have investigated the specific class of flavonols and cancer risk, and none has included pancreatic cancer as an outcome. We estimated intakes of three flavonols, quercetin, kaempferol and myricetin, for 183,518 participants in the Multiethnic Cohort Study (MEC) and examined the association of flavonol intake with incidence of pancreatic cancer. Baseline data for the MEC were collected in Hawaii and California in 1993-96. Diet was assessed using a quantitative food frequency questionnaire especially designed and validated for this multiethnic population. The food composition table included both analyzed and published flavonol values for foods commonly consumed by MEC participants. During 8-years of follow-up, 529 incident cases of exocrine pancreatic cancer occurred. Multivariate Cox regression models using age as the time metric were calculated to estimate relative risks (RR).

Intake of total flavonols was associated with a reduced pancreatic cancer risk (RR for the highest versus lowest quintile (95% Confidence interval (CI)) = 0.77 (0.58-1.03), p trend=0.046). Of the three individual flavonols, kaempferol was associated with the largest risk reduction (RR (95%CI) = 0.78 (0.58-1.05), p trend=0.017). Across quartiles of intake, total flavonols, quercetin, kaempferol and myricetin were all associated with a significant trend toward reduced pancreatic cancer risk in current smokers (RR for the highest versus the lowest quartile = 0.41, 0.55, 0.27, 0.55, respectively), but not in never or former smokers. The interaction with smoking status was significant at $p < .10$ for total flavonols, quercetin and kaempferol.

In conclusion, our study provides evidence for a preventive effect of flavonols on pancreatic cancer, particularly among current smokers. Consumption of flavonol-rich vegetables, fruits, and tea may help reducing the risk of pancreatic cancer.