

Isoflavones, lignans and prostate cancer risk: an analysis of individual participant data from 5 prospective studies

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Abstract

Background and objectives: The role of phytoestrogens in prostate cancer development is unclear. Previous studies have shown different results for isoflavones among Asian and non-Asian populations, and there are too few published prospective data to evaluate whether the associations differ by stage and grade of disease. The aim of this study was to determine the association between prediagnostic blood concentrations of isoflavones [genistein, daidzein, equol] and lignans [enterolactone and enterodiol] and the risk of prostate cancer and to evaluate these associations by tumour stage and grade. Because of the large difference in circulating isoflavone concentrations between Asian and non-Asian populations, the isoflavone analyses were conducted separately for Asian and non-Asian studies.

Methods: A pooled analysis of individual participant data including up to 241 and 503 Asian cases and controls, and 1846 and 3929 non-Asian cases and controls from 5 prospective studies. Multivariable-adjusted conditional logistic regression was used to estimate the odds ratios (ORs) for prostate cancer based on the study-specific fourths of circulating concentrations of each phytoestrogen.

Results: Blood isoflavones were not associated with the risk of total prostate cancer in either Asian or non-Asian populations, although in Asian populations there was a suggestion of an inverse association between blood equol and prostate cancer risk (multivariable-adjusted OR for the highest versus lowest fourth = 0.61 [95% confidence interval [CI] = 0.39-0.97] and OR per 75 percentile increase = 0.69, 95 CI = 0.46-1.05). No associations between lignans and prostate cancer risk were observed (OR per 75 percentile increase = 1.06, 95 CI = 0.90-1.25 for enterolactone and OR per 75 percentile increase = 0.99, 95 CI = 0.79-1.25 for enterodiol). These associations did not differ significantly by time-to-diagnosis or by tumour stage or grade.

Conclusions: There was no strong evidence that prediagnostic blood concentrations of isoflavones or lignans are associated with prostate cancer risk, although there are still relatively few published prospective data.

Keywords: pooled analysis, nested case-control study, prostate cancer, isoflavones, lignans