

Dietary Phytoestrogens and Total and Cause-Specific Mortality: Results From Two Prospective Cohort Studies

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Objectives: Evidence regarding dietary phytoestrogens in relation to mortality remains limited and mixed. We aimed to examine associations of dietary intake of total and subclasses of phytoestrogens, specifically: isoflavones, lignans, and coumarins, with total and cause-specific mortality in US men and women.

Methods: We prospectively followed 75,981 women in the Nurses' Health Study (1984–2018), and 44,001 men in the Health Professionals Follow-up Study (1986–2018), who were free of cardiovascular disease (CVD), diabetes, or cancer at baseline. Diet was repeatedly assessed using validated food frequency questionnaires every 2–4 years. Associations with total and cause-specific mortality (CVD, cancer, and other) were assessed using time-dependent Cox models with adjustments for demographics, dietary and lifestyle factors, and medical history.

Results: During 3,427,156 person-years of follow-up, we documented 50,734 deaths, including 12,492 CVD deaths, 13,726 cancer deaths, and 24,516 other deaths. In multivariable-adjusted analyses, higher total phytoestrogen intake was associated with lower total, CVD, and other mortality: comparing extreme quintiles, the pooled HRs (95% CIs) were 0.89 (0.87, 0.92) for total mortality, 0.90 (0.85, 0.96) for CVD mortality, and 0.86 (0.82, 0.90) for other mortality. Furthermore, isoflavones, lignans, and coumarins were all inversely associated with mortality. Specifically, for total mortality, comparing extreme quintiles, the pooled HRs (95% CIs) were 0.90 (0.87, 0.92) for total isoflavones, 0.93 (0.90, 0.96) for total lignans, and 0.93 (0.90, 0.95) for coumarins. These phytoestrogens were also significantly associated with lower CVD mortality or other mortality, although only coumarins were significantly associated with lower cancer mortality. Primary food sources of phytoestrogens, such as tofu, soymilk, whole grains, tea, flaxseed, and flaxseed oil, were inversely associated with total mortality.

Conclusions: Higher intake of total phytoestrogens, including isoflavones, lignans, and coumarins as well as foods rich in these compounds were associated with lower total and certain cause-specific mortality in generally healthy U.S. adults. These data suggest that these phytochemicals and their dietary sources may be integrated into an overall healthy diet to achieve a longer life span.

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