Serum Phospholipid Fatty Acids and Prostate Cancer Risk: Results From the Prostate Cancer Prevention Trial

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Abstract

Inflammation may be involved in prostate cancer development and progression. This study examined the associations between inflammation-related phospholipid fatty acids and the 7-year-period prevalence of prostate cancer in a nested case–control analysis of participants, aged 55–84 years, in the Prostate Cancer Prevention Trial during 1994–2003. Cases (n = 1,658) were frequency matched to controls (n = 1,803) on age, treatment, and prostate cancer family history. Phospholipid fatty acids were extracted from serum, and concentrations of ω-3, ω-6, and trans-fatty acids (TFAs) were expressed as proportions of the total. Logistic regression models estimated odds ratios and 95% confidence intervals of associations of fatty acids with prostate cancer by grade. No fatty acids were associated with low-grade prostate cancer risk. Docosahexaenoic acid was positively associated with high-grade disease (quartile 4 vs. 1: odds ratio (OR) = 2.50, 95% confidence interval (CI): 1.34, 4.65); TFA 18:1 and TFA 18:2 were linearly and inversely associated with risk of high-grade prostate cancer (quartile 4 vs. 1: TFA 18:1, OR = 0.55, 95% CI: 0.30, 0.98; TFA 18:2, OR = 0.48, 95% CI: 0.27, 0.84). The study findings are contrary to those expected from the pro- and antiinflammatory effects of these fatty acids and suggest a greater complexity of effects of these nutrients with regard to prostate cancer risk.

Key words fatty acids  histology  inflammation  phospholipids  prostatic neoplasms  serum

Abbreviations

CI  confidence interval
DHA  docosahexaenoic acid
EPA  eicosapentaenoic acid
OR  odds ratio
RR  relative risk
TFA  trans-fatty acid

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