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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