

ORIGINAL RESEARCH COMMUNICATION

# Serum selenium and risk of prostate cancer—a nested case-control study<sup>1,2,3</sup>

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**Background:** Selenium is a potential chemopreventive agent against prostate cancer, whose chemoprotective effects are possibly mediated through the antioxidative properties of selenoenzymes. Interrelations with other antioxidative agents and oxidative stressors, such as smoking, are poorly understood.

**Objectives:** The aims were to investigate the association between serum selenium and prostate cancer risk and to examine interactions with other antioxidants and tobacco use.

**Design:** A nested case-control study was performed within the screening arm of the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial. Serum selenium in prospectively collected samples was compared between 724 incident prostate cancer case subjects and 879 control subjects, frequency-matched for age, time since initial screen, and year of blood draw. The men were followed for up to 8 y.

**Results:** Overall, serum selenium was not associated with prostate cancer risk ( $P$  for trend = 0.70); however, higher serum selenium was associated with lower risks in men reporting a high (more than the median: 28.0 IU/d) vitamin E intake [odds ratio (OR) for the highest compared with the lowest quartile of selenium: 0.58; 95% CI: 0.37, 0.91;  $P$  for trend = 0.05;  $P$  for interaction = 0.01] and in multivitamin users (OR for highest compared with the lowest quartile of selenium: 0.61; 95% CI: 0.36, 1.04;  $P$  for trend = 0.06;  $P$  for interaction = 0.05). Furthermore, among smokers, high serum selenium concentrations were related to reduced prostate cancer risk (OR for the highest compared with the lowest quartile of selenium: 0.65; 95% CI: 0.44, 0.97;  $P$  for trend = 0.09;  $P$  for interaction = 0.007).

**Conclusion:** Greater prediagnostic serum selenium concentrations were not associated with prostate cancer risk in this large cohort, although greater concentrations were associated with reduced prostate cancer risks in men who reported a high intake of vitamin E, in multivitamin users, and in smokers.

**Key Words:** Selenium • prostate cancer • vitamin E • smoking • serum • nested case-control study

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