

# Abstract

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## Selenium and human health.

Rayman MP.

Faculty of Health and Medical Sciences, University of Surrey, Guildford, UK.

**BACKGROUND:** Selenium is incorporated into selenoproteins that have a wide range of pleiotropic effects, ranging from antioxidant and anti-inflammatory effects to the production of active thyroid hormone. In the past 10 years, the discovery of disease-associated polymorphisms in selenoprotein genes has drawn attention to the relevance of selenoproteins to health.

**FINDINGS:** Low selenium status has been associated with increased risk of mortality, poor immune function, and cognitive decline. Higher selenium status or selenium supplementation has antiviral effects, is essential for successful male and female reproduction, and reduces the risk of autoimmune thyroid disease. Prospective studies have generally shown some benefit of higher selenium status on the risk of prostate, lung, colorectal, and bladder cancers, but findings from trials have been mixed, which probably emphasises the fact that supplementation will confer benefit only if intake of a nutrient is inadequate. Supplementation of people who already have adequate intake with additional selenium might increase their risk of type-2 diabetes.

**CONCLUSIONS:** The crucial factor that needs to be emphasised with regard to the health effects of selenium is the inextricable U-shaped link with status; whereas additional selenium intake may benefit people with low status, those with adequate-to-high status might be affected adversely and should not take selenium supplements.

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