

What Are the Strengths/Limitations of Current Epidemiologic Studies Investigating Vitamin D Intake/Status as a Modifier of Colon and Prostate Cancer Risk?

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In vitro and animal studies indicate that vitamin D may have anti-cancer benefits, including against cancer progression and metastasis, and against a wide spectrum of cancers. Supporting an anti-cancer effect of vitamin D is the ability of many cells to convert 25(OH) vitamin D, the primary circulating form of vitamin D, into 1,25vitamin(OH)₂D, the most active form of this vitamin. Higher rates of total cancer mortality in regions with less UV-B radiation, and among African Americans and overweight and obese people, each associated with lower circulating vitamin D, are compatible with a benefit of vitamin D on mortality from cancer. The epidemiologic evidence that higher 25(OH)vitamin D levels, through increased sunlight exposure or dietary or supplement intake, inhibit colorectal carcinogenesis is substantial and relatively consistent.

The biologic evidence for an anti-cancer role of 25(OH)vitamin D is also strong for prostate cancer, but the epidemiologic data have not been as supportive. The reasons for this are unclear, but several factors may be relevant. There is some evidence that an influence of vitamin D on prostate cancer may be earlier in life, and that risk is elevated only at very low levels of vitamin D. In addition, the effect on prostate cancer may be more important for disease progression and most of the data have been on incident cancer.