"Vitamin D and cancer prevention"

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Abstract

Some observational, preclinical and clinical studies strongly suggest that vitamin D deficiency increases the risk of developing multiple malignancies. Other studies do not support this hypothesis. If adequate vitamin D concentrations do reduce risk, ensuring that people receive sufficient vitamin D would be an easily available, economical and safe modality to reduce cancer incidence and mortality. Vitamin D status, which is determined by sunlight exposure, diet and supplements, might reduce the risk of developing cancer, and the appropriate regulation of cancer-relevant pathways by vitamin D might have a role in the treatment of cancer. In this Review, we discuss the studies that examine this hypothesis, with an emphasis on breast, prostate and colon cancers, for which the most data have been accumulated.

It is evident that there are strong supportive data for the vitamin D hypothesis from basic science and preclinical studies, and there are mixed findings in the epidemiological and clinical trial data.

We also discuss the multiple mechanisms of the anticancer action of vitamin D and the potential reasons why the epidemiology data on reducing risk are inconsistent. Recent publications suggesting that vitamin D can reduce cancer risk and improve prognosis have prompted physicians to screen for vitamin D deficiency and stimulated the general population to supplement their diet. Therefore, it is timely to review the data on which this hypothesis is based. Multiple recent reviews have been written about vitamin D and cancer1–13, and a multi-authored book14 has been written that extensively details many actions of vitamin D in cancer and other disease.