

Abstract

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Optimal vitamin D status for colorectal cancer prevention: a quantitative meta analysis.

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BACKGROUND: Previous studies, such as the Women's Health Initiative, have shown that a low dose of vitamin D did not protect against colorectal cancer, yet a meta-analysis indicates that a higher dose may reduce its incidence.

METHODS: Five studies of serum 25(OH)D in association with colorectal cancer risk were identified using PubMed. The results of all five serum studies were combined using standard methods for pooled analysis. The pooled results were divided into quintiles with median 25(OH)D values of 6, 16, 22, 27, and 37 ng/mL. Odds ratios were calculated by quintile of the pooled data using Peto's Assumption-Free Method, with the lowest quintile of 25(OH)D as the reference group. A dose-response curve was plotted based on the odds for each quintile of the pooled data. Data were abstracted and analyzed in 2006.

RESULTS: Odds ratios for the combined serum 25(OH)D studies, from lowest to highest quintile, were 1.00, 0.82, 0.66, 0.59, and 0.46 ($p(\text{trend})<0.0001$) for colorectal cancer. According to the DerSimonian-Laird test for homogeneity of pooled data, the studies were homogeneous ($\chi^2=1.09$, $df=4$, $p=0.90$). The pooled odds ratio for the highest quintile versus the lowest was 0.49 ($p<0.0001$, 95% confidence interval, 0.35-0.68). A 50% lower risk of colorectal cancer was associated with a serum 25(OH)D level $>$ or $=33$ ng/mL, compared to $<$ or $=12$ ng/mL.

CONCLUSIONS: The evidence to date suggests that daily intake of 1000-2000 IU/day of vitamin D(3) could reduce the incidence of colorectal with minimal risk.

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