Abstract


Effects of supplemental vitamin D and calcium on biomarkers of inflammation in colorectal adenoma patients: a randomized, controlled clinical trial.

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BACKGROUND: Vitamin D and calcium affect several pathways involved in inflammation, tumor growth, and immune surveillance relevant to carcinogenesis. Also, epidemiologic evidence indicates that calcium and vitamin D may reduce risk for developing colorectal adenomas and cancer.

OBJECTIVE AND METHODS: To investigate the effects of calcium and vitamin D on biomarkers of inflammation in colorectal adenoma patients, we conducted a pilot, randomized, double-blind, placebo-controlled, 2 × 2 factorial clinical trial (n = 92) of 2 g/d calcium and/or 800 IU/d vitamin D(3) supplementation versus placebo over 6 months. Plasma concentrations of proinflammatory markers [C-reactive protein (CRP), TNF-α, interleukin (IL)-6, IL-1β, and IL-8] and an anti-inflammatory marker (IL-10) were measured using ELISAs.

RESULTS: After 6 months of treatment, in the vitamin D(3) supplementation group, CRP decreased 32% overall (P = 0.11), 37% in men (P = 0.05), and 41% among non-nonsteroidal anti-inflammatory drug (NSAID) users (P = 0.05) relative to placebo. In the vitamin D(3) supplementation group, TNF-α decreased 13%, IL-6 32%, IL-1β 50%, and IL-8 15%; in the calcium supplementation group, IL-6 decreased 37%, IL-8 11%, and IL-1β 27%. Although these changes were not statistically significant, a combined inflammatory markers z-score decreased 77% (P = 0.003) in the vitamin D(3) treatment group overall, 83% (P = 0.01) among men, and 48% among non-NSAID users (P = 0.01). There was no evidence of synergy between vitamin D(3) and calcium or effects on IL-10.

CONCLUSIONS: These preliminary results are consistent with a pattern of reduction in tumor-promoting inflammation biomarkers with vitamin D(3) or calcium supplementation alone and support further investigation of vitamin D(3) as a chemopreventive agent against inflammation and colorectal neoplasms.

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