

Abstract

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Dietary Choline and Betaine and the Risk of Distal Colorectal Adenoma in Women

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BACKGROUND: Choline and betaine are involved in methyl-group metabolism as methyl-group donors; thus, like folate, another methyl-group donor, they may be associated with a reduced risk of colorectal adenomas. No epidemiologic study has examined the association of intake of these nutrients and colorectal adenoma risk.

METHODS: We investigated the relationship between intakes of choline and betaine and risk of colorectal adenoma in US women enrolled in the Nurses' Health Study. Dietary intake was measured by food-frequency questionnaires, and individual intakes of choline and betaine were calculated by multiplying the frequency of consumption of each food item by its choline and betaine content and summing the nutrient contributions of all foods. Logistic regression models were used to calculate adjusted odds ratios (as approximations for relative risks) and 95% confidence intervals (CIs) of colorectal adenoma. All statistical tests were two-sided.

RESULTS: Among 39246 women who were initially free of cancer or polyps and who had at least one endoscopy from 1984 through 2002, 2408 adenoma cases were documented. Increasing choline intake was associated with an elevated risk of colorectal adenoma; the multivariable relative risks (95% CIs) for increasing quintiles of intake, relative to the lowest quintile, were 1.03 (0.90 to 1.18), 1.01 (0.88 to 1.16), 1.23 (1.07 to 1.41), and 1.45 (1.27 to 1.67; $P_{\text{trend}} < .001$). Betaine intake had a nonlinear inverse association with colorectal adenoma; the multivariable relative risks (95% CIs) for increasing quintiles of intake were 0.94 (0.83 to 1.07), 0.85 (0.75 to 0.97), 0.86 (0.75 to 0.98), and 0.90 (95% CI = 0.78 to 1.04; $P_{\text{trend}} = .09$). Among individual sources of choline, choline from phosphatidylcholine and from sphingomyelin were each positively related to adenoma risk.

CONCLUSIONS: Our findings do not support an inverse association between choline intake and risk of colorectal adenoma. The positive association between choline intake and colorectal adenoma that we observed could represent effects of other components in the foods from which choline was derived and should be investigated further.

