

Shin W, et al. Choline intake exceeding current dietary recommendations preserves markers of cellular methylation in a genetic subgroup of folate-compromised men, *J Nutr* 2010;140:975-980.

Background: Severe choline deficiency adversely affects cellular methylation and DNA integrity, with potentially serious implications for disease risk.

Methods: As part of a 12-wk controlled choline intervention study conducted in folate-compromised Mexican-American men ($n = 60$; 18–55 y) differing in the methylenetetrahydrofolate reductase (MTHFR) C677T genotype (21 677CC, 29 677TT), this study evaluated the effects of varied choline intakes (300, 550, 1100, and 2200 mg/d) on the change (i.e. wk 12–0) in markers of cellular methylation and DNA integrity.

Results: Choline intake affected the change in plasma *S*-adenosylmethionine ($P = 0.044$), with decreases tending to be greater ($P \leq 0.08$) in the 300 and 550 mg/d groups than in the 2200 mg/d group. Choline intake also interacted with the MTHFR C677T genotype to affect the change in genomic DNA methylation and DNA damage. In men with the MTHFR 677CC genotype, choline intake affected ($P = 0.007$) the change in DNA methylation, with a greater decrease ($P < 0.02$) in the 300 mg/d group than in the 1100 and 2200 mg/d groups. In men with the MTHFR 677CC genotype, choline intake also affected ($P = 0.047$) the change in DNA damage, with the increase tending to be greater ($P = 0.07$) in the 550 mg/d group than in the 2200 mg/d group. Choline intake did not affect these variables in men with the MTHFR 677TT genotype.

Conclusions: Overall, these data suggest that choline intake exceeding current dietary recommendations preserves markers of cellular methylation and attenuates DNA damage in a genetic subgroup of folate-compromised men.