

Differential C-reactive protein responses to walnut consumption in users and non-users of vitamin E supplements

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The acute phase inflammatory mediator C-reactive protein (CRP) is increasingly noted to be an independent risk factor for cardiovascular disease. Our objective was to examine the effects of consuming walnuts rich in α -linolenic acid (18:3, n-3) on plasma CRP. Seventy nine participants (mean \pm SD: age 57 ± 9.9 y; BMI 26.2 ± 3.3) ate either their habitual diet, or added a daily portion of walnuts at 12% of energy (28 g to 56 g per day) for 6 months each in a randomized crossover design. Blood was collected at the 4th and 6th month of each period. Plasma CRP concentrations were determined by a high-sensitivity ELISA kit and α -tocopherol by HPLC. Initially, univariate analyses were performed on measurements from the habitual diet period. CRP was significantly lower in users of vitamin E supplements compared to non-users ($P=0.007$). Age did not influence levels but BMI was linearly related to CRP ($\beta = 0.088 \pm 0.029$, $P=0.002$). Next, differences between the diet periods were examined using a mixed linear model with fixed factors for diet and period and a compound symmetric covariance structure. Walnut consumption had no effect on CRP among non-users of vitamin E supplements but among users, CRP levels increased ($P<0.001$). In addition, higher CRP levels were observed on the walnut diet in participants whose plasma α -tocopherol to cholesterol ratios were above the mean of the group. In summary, the walnut diet did not influence CRP in non-users, however, among vitamin E supplement users and in those with higher α -tocopherol to cholesterol ratios, the walnut diet was associated with higher CRP levels. The clinical significance of this interaction warrants further investigation.