

## **Almonds reduce biomarkers of lipid peroxidation in older hyperlipidemic subjects.**

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### **Abstract:**

Nut consumption has been associated with reduced coronary heart disease (CHD) risk. In addition to cholesterol-lowering properties, almonds have been shown to lower oxidized LDL concentrations. However, little is known regarding their effects on other markers of oxidative stress. The dose-response effects of whole almonds, taken as snacks, were compared with low-saturated fat (5% energy) whole-wheat muffins (control) in the therapeutic diets of hyperlipidemic subjects. In a randomized crossover study, 27 hyperlipidemic men and women consumed 3 isoenergetic (mean 423 kcal/d or 1770 kJ/d) supplements each for 1 mo. Supplements consisted of full-dose almonds (73.63 g/d), half-dose almonds plus half-dose muffins (half-dose almonds), and full-dose muffins (control). Subjects were assessed at wk 0, 2 and 4. Mean body weights differed #300 g between treatments, although the weight loss on the half-dose almond treatment was greater than on the control ( $P < 0.01$ ). At 4 wk, the full-dose almonds reduced serum concentrations of malondialdehyde (MDA) ( $P < 0.040$ ) and creatinine-adjusted urinary isoprostane output ( $P < 0.026$ ) compared with the control. Serum concentrations of  $\alpha$ - or  $\gamma$ -tocopherol, adjusted or unadjusted for total cholesterol, were not affected by the treatments. Almond antioxidant activity was demonstrated by their effect on 2 biomarkers of lipid peroxidation, serum MDA and urinary isoprostanes, and supports the previous finding that almonds reduced oxidation of LDL-C. Antioxidant activity provides an additional possible mechanism, in addition to lowering cholesterol, that may account for the reduction in CHD risk with nut consumption.