

Almond consumption reduces oxidative DNA damage and lipid peroxidation in male smokers.

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Abstract:

Smoking increases the risk of several chronic diseases associated with elevated oxidative stress status. Almonds are a good source of antioxidant nutrients and may diminish smoking-related biomarkers of oxidative stress. We investigated whether almond consumption decreases biomarkers of oxidative stress in young male Chinese smokers. An international research team in China and USA conducted a randomized, crossover clinical trial with 60 healthy male Chinese soldiers (18–25 y) who were habitual smokers (5–20 cigarettes/d) and supplemented their diet with 84 g almonds or 120 g pork (to control for calories) daily for 4 wk with a 4-wk washout period between treatment periods. In addition, 30 healthy nonsmoking men were provided the same daily serving of pork as reference comparison. Blood and urine were collected and assessed for biomarkers of oxidative stress. Baseline values of urinary 8-hydroxy-deoxyguanosine (8-OHdG) and malondialdehyde (MDA) and peripheral lymphocyte DNA strand breaks were significantly higher by 185, 64, and 97% in smokers than nonsmokers, whereas activities of plasma superoxide dismutase (SOD), glutathione peroxidase (GPX), and catalase were significantly lower by 15, 10, and 9%, respectively. After the almond intervention, serum α -tocopherol, SOD, and GPX increased significantly in smokers by 10, 35, and 16%, respectively and 8-OHdG, MDA, and DNA strand breaks decreased significantly by 28, 34, and 23%. No significant changes were found in smokers or nonsmokers after pork treatment. In smokers, after almond supplementation, the concentration of 8-OHdG remained significantly greater than in nonsmokers by 98%. These results suggest almond intake can enhance antioxidant defenses and diminish biomarkers of oxidative stress in smokers.