Effects of Dark Chocolate and Almonds on Cardiovascular Risk Factors in Overweight and Obese Individuals: A Randomized Controlled-Feeding Trial.

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Journal Of The American Heart Association
6 (12).

Abstract:
Background-—Consumption of almonds or dark chocolate and cocoa has favorable effects on markers of coronary heart disease; however, the combined effects have not been evaluated in a well-controlled feeding study. The aim of this study was to examine the individual and combined effects of consumption of dark chocolate and cocoa and almonds on markers of coronary heart disease risk.

Methods and Results-—A randomized controlled, 4-period, crossover, feeding trial was conducted in overweight and obese individuals aged 30 to 70 years. Forty-eight participants were randomized, and 31 participants completed the entire study. Each diet period was 4 weeks long, followed by a 2-week compliance break. Participants consumed each of 4 isocaloric, weight maintenance diets: (1) no treatment foods (average American diet), (2) 42.5 g/d of almonds (almond diet [ALD]), (3) 18 g/d of cocoa powder and 43 g/d of dark chocolate (chocolate diet [CHOC]), or (4) all 3 foods (CHOC+ALD). Compared with the average American diet, total cholesterol, non–high-density lipoprotein cholesterol, and low-density lipoprotein cholesterol after the ALD were lower by 4%, 5%, and 7%, respectively (P<0.05). The CHOC+ALD decreased apolipoprotein B by 5% compared with the average American diet. For low-density lipoprotein subclasses, compared with the average American diet, the ALD showed a greater reduction in large buoyant low-density lipoprotein particles (5.72.3 versus 0.32.3 mg/dL; P=0.04), whereas the CHOC+ALD had a greater decrease in small dense low-density lipoprotein particles (□12.0□2.8 versus □5.3□2.8 mg/dL; P=0.04). There were no significant differences between diets for measures of vascular health and oxidative stress.

Conclusions-—Our results demonstrate that consumption of almonds alone or combined with dark chocolate under controlled feeding conditions improves lipid