Dietary Strawberries Improve Cardiometabolic Risks in Adults With Obesity and Elevated Serum LDL-Cholesterol in a Randomized Controlled Crossover Trial

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Objectives: Dietary berries, such as strawberries are rich in bioactive compounds and have been shown to lower cardiometabolic risks. We examined the dose-response effects of two dietary achievable doses of strawberries on glycemic control and lipid profiles in adults.

Methods: In this 14-week randomized controlled crossover study, adults with obesity and elevated serum LDL-cholesterol were assigned to one of the three arms for four weeks separated by a one-week washout period: control powder, one serving strawberries (low dose: 13 g powder/day), and 2.5 servings strawberries (high dose: 32 g powder/day). Participants were instructed to follow their usual diet and lifestyle while refraining from consuming other berries and related products throughout the study. Blood samples and anthropometric measures were collected at baseline and at the end of each four-week phase of intervention.

Results: Thirty-three participants completed all three phases of the trial [(mean ± SD): Age: 53 ± 13 y; BMI: 33 ± 3.0 kg/m²). Outcome measures were analyzed using a mixed model analysis of variance with statistical significance set at $P < 0.05$. Findings revealed significant reduction in fasting insulin as well as homeostatic model of assessment of insulin resistance (HOMA-IR) following the high dose strawberries when compared to the low dose strawberry and control phases. Glucose and conventional lipid profiles did not differ among groups. Total and small LDL particle concentrations (nuclear magnetic resonance-determined) were significantly decreased in the high dose strawberry group compared to control and low dose group ($P < 0.05$).

Conclusions: These data suggest that consuming strawberries at two and half servings for four weeks significantly improves insulin resistance and LDL particle profiles in adults with features of the metabolic syndrome.

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