

Applied nutritional investigation

Effects of olive oil and tomato lycopene combination on serum lycopene, lipid profile, and lipid oxidation

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Abstract

Objective: We compared the effect of two diets (a diet high in olive oil and a diet high in carbohydrate and low in olive oil) with high lycopene content and other controlled carotenoids on serum lycopene, lipids, and *in vitro* oxidation.

Methods: This was a randomized crossover dietary intervention study carried out in Launceston, Tasmania, Australia in healthy free-living individuals. Twenty-one healthy subjects who were 22 to 70 y old were recruited by advertisements in newspapers and a university newsletter. A randomized dietary intervention was done with two diets of 10 d each. One diet was high in olive oil and the other was high in carbohydrate and low in olive oil; the two diets contained the same basic foods and a controlled carotenoid content high in lycopene.

Results: Significant increases ($P < 0.001$) in serum lycopene concentration on both diets were to similar final concentrations. Higher serum high-density lipoprotein cholesterol ($P < 0.01$), lower ratio of total cholesterol to high-density lipoprotein ($P < 0.01$), and lower triacylglycerols ($P < 0.05$) occurred after the olive oil diet compared with the high-carbohydrate, low-fat diet. There was no difference in total antioxidant status and susceptibility of serum lipids to oxidation.

Conclusions: Serum lycopene level changes with dietary lycopene intake irrespective of the amount of fat intake. However, a diet high in olive oil and rich in lycopene may decrease the risk of coronary heart disease by improving the serum lipid profile compared with a high-carbohydrate, low-fat, lycopene-rich diet. © 2006 Elsevier Inc. All rights reserved.

Keywords: Olive oil; Lycopene; Intervention diet; Carotenoids