

Effect of medium-term consumption of olive oil on biomarkers of coronary artery disease defined by urinary proteomics

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Olive oil is the primary source of fat in the Mediterranean diet, which is associated with longevity and a lower incidence of chronic diseases, particularly coronary heart disease (CHD)^(1,2). The beneficial effects of olive oil on CHD risk factors are recognised and mainly attributed to its high levels of monounsaturated fatty acids (MUFA). Olive oil is, however, more than just a MUFA-rich fat source and includes in its composition additional components such as the phenolic compounds⁽¹⁾. In spite of this, data concerning olive oil consumption and primary end points for cardiovascular disease are scarce⁽¹⁾.

The aim of this study was to evaluate changes in proteomic biomarkers of coronary artery disease (CAD) after 6 weeks diet supplementation with two olive oils with high (286 mg/kg caffeic acid-equivalent – extra virgin olive oil) and low (18 mg/kg caffeic acid-equivalent – refined olive oil) total phenolic content. The olive oils provided to participants had a similar composition of fatty acids and vitamin E. A local institutional ethics committee approved the protocol and all participants provided written informed consent. Participants ($n=78$) were randomized to include either extra virgin or refined olive oil (20 mL/day) to their habitual diet. 63 participants completed the study ($n=34$ for refined olive oil and $n=29$ for extra virgin olive oil). Spot urine samples (second urine of the day) were collected at baseline, 3 weeks (midpoint) and 6 weeks (endpoint) for assessment of the urinary proteome using capillary electrophoresis coupled to a mass spectrometer. This methodology has been used to identify and assess highly selective and sensitive pre-symptomatic biomarkers of a number of diseases⁽³⁾. Urine analysis for CAD biomarkers showed that consumption of both refined and extra virgin olive oils had a significant beneficial impact on urinary biomarkers of CAD at both mid and end-points compared to baseline ($p<0.005$). However, no significant differences were found between the two olive oils. This indicates that the urinary proteome associated with CAD was not influenced by the phenolic content of the samples.

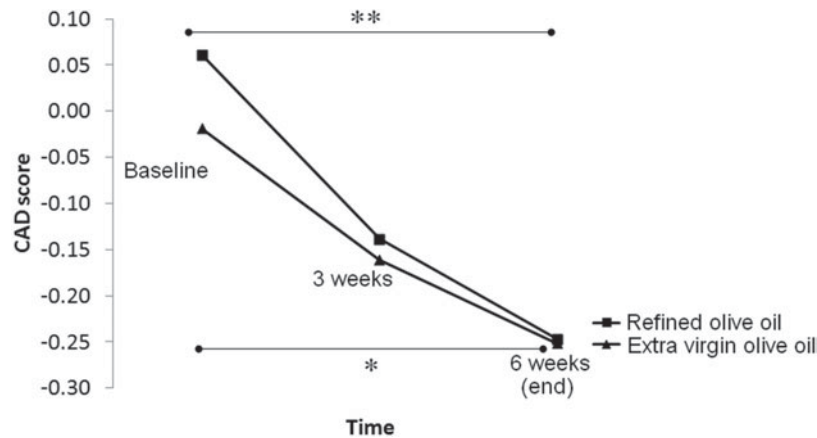


Fig. 1. Evolution of CAD score during olive oil intervention (ANOVA test: $*p<0.005$ and $**p<0.001$ significantly different from baseline).

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