

## Dietary fatty acids and inflammatory markers in patients with coronary artery disease

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### Abstract

Atherosclerosis, with its major manifestation, coronary artery disease (CAD) is a chronic inflammatory disease. Dietary fatty acids intakes favorably effect on inflammatory responses. This study was conducted to examine the association between dietary fatty acid intakes and inflammatory markers, interleukin 6 (IL-6) and high sensitivity C-reactive protein (hs-CRP), in CAD patients among Iranian population. This hospital-based, cross-sectional study was conducted in Chamran Heart Hospital, Isfahan, Iran in 2012. Patients aged  $\geq 45$  years with first ever symptomatic CAD confirmed by angiography were included. A semi-quantitative food frequency questionnaire (FFQ) was used to assess the usual intakes of dietary fatty acids. The energy-adjusted daily intakes (mean  $\pm$  SD) of saturated fatty acid (SFA), monounsaturated fatty acid (MUFA), linoleic acid,  $\alpha$ -linolenic acid, and eicosapentaenoic acid and docosahexaenoic acid (EPA + DHA) were  $27 \pm 9$ ,  $22 \pm 6$ ,  $21 \pm 5$ ,  $0.4 \pm 0.32$ , and  $0.85 \pm 0.82$  g/d; respectively. After adjustment for potential confounders, SFA was directly related to hs-CRP ( $P = 0.01$ ) and IL-6 ( $P < 0.001$ ) concentrations. Intakes of EPA+DHA and MUFA, were significantly adversely related to plasma hsCRP concentration ( $P = 0.002$  and  $0.001$ , respectively) but not IL-6, albeit MUFA was modestly inversely related to IL-6 ( $P = 0.08$ ). No significant relationships were observed for other fatty acids,  $\alpha$ -linolenic acid, and linoleic acid.

Interleukin-6 (IL-6), is an inflammatory cytokine and one of the main inducers of C-reactive protein (CRP) secretion in the liver. Atherosclerosis, with its major manifestation, coronary artery disease (CAD) is the major cause of morbidity and mortality in the world. Reports have documented CAD incidence rates to be as high as 166 per 100,000 in Middle Eastern countries. CAD is also the most important cause of morbidity and mortality in Iran and includes about 50% of all the deaths. It is being recognized that traditional risk factors; such as dietary fats, smoking, dyslipidemia, hypertension, and diabetes; do not explain the presence of coronary atherosclerosis in a large proportion of patients. During the past decade, with the recognition that atherosclerosis is an inflammatory process, several inflammatory markers have also been considered as a potential tool for prediction of coronary events and the observations taken together suggest that atherosclerosis is a chronic inflammatory disease. The results of experimental and epidemiological studies have shown that habitual diet is the most important modifiable risk factor for prevention and control of CAD. Dietary fat intake has long been implicated in the etiology of cardiovascular disease (CVD) and study of lipids and their major structural elements, the fatty acids, remains one of the most enigmatic research fields in nutrition and biology. These findings suggest that saturated fatty acids, EPA + DHA and MUFA were significantly related to plasma inflammatory markers in CAD patients.

This work is partly presented at International Conference on Lipid Science & Technology, November 30 - December 02, 2015