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## The effects of dietary polyunsaturated fatty acids in the prevention of coronary heart disease

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A lthough the Mediterranean diet (MED) is considered the optimal diet to prevent coronary heart disease (CHD), it is still unknown whether adoption of MED may result in improved myocardial resistance to ischemia-reperfusion injury and may potentially prevent ventricular arrhythmias. Accordingly, the first experimental study was carried out to investigate whether a diet low in saturated fats and omega-6 fatty acids ( $\omega$ 6) but rich in plant and marine omega-3 fatty acids ( $\omega$ 3), a typical MED fatty acid profile, may result in smaller infarct size and better left ventricular function (LVF) recovery in a rat model of regional ischemia-reperfusion. Results demonstrate a great accumulation of  $\omega$ 3 and a parallel decrease of arachidonic acid in plasma, cell membranes and cardiac mitochondria. Also, the MED rats developed smaller infarct size compared with the control groups (p<0.01) while LVF recovery was not different in the three groups. The second epidemiologic study was carried out to determine whether  $\omega$ 3 have beneficial anti-arrhythmic effects in patients at high risk for fatal ventricular arrhythmias. Two hundred thirty eight patients with implantable cardioverter defibrillators (ICDs) were included at Grenoble University Hospital. The primary end point was time to first ICD event for ventricular tachycardia or fibrillation (VT or VF) or death from cardiac cause. Red blood cells fatty acids was analyzed and the Omega-3 Index was calculated from eicosapentaenoic acid and docosahexaenoic acid. Results did not show significant differences neither in individual omega-3 fatty acids (ALA, EPA and DHA) nor in omega-3 index between quartiles. However, it comes into view that the RBC omega-3 index in these patients (8.6±1.59 to 8.8±1.76) was already at levels that have been previously reported to be cardio-protective.

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