

Abstract

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Tissue n-3 and n-6 fatty acids and risk for coronary heart disease events.

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BACKGROUND: Tissue proportions of long chain n-6 [especially arachidonic acid (AA)] and n-3 fatty acids [FA; eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) acids], or some ratio of these may be markers of risk for coronary heart disease (CHD). The purpose of this paper is to evaluate the published associations between risk for CHD events and tissue n-3 and n-6 FA composition.

METHODS: Case-control or prospective cohort data sets examining the risk for CHD endpoints as a function of tissue FA composition were identified. Effect sizes were computed for case versus control comparisons using standard meta-analytic methods.

RESULTS: Twenty-five studies were included, 18 examining the FA composition of phospholipid-rich and 7 of triglyceride-rich samples. DHA, with or without EPA, was significantly lower in cases than controls in all studies combined, in those with fatal endpoints, in those with prospective designs, and in both tissue types. The only setting where increased AA was associated with case status was in adipose tissue. The AA/EPA ratio in phospholipid-rich samples did not distinguish cases from controls. Lower linoleic acid content was associated with increased risk for non-fatal events.

CONCLUSIONS: The long-chain n-3 FA, especially DHA, were consistently and significantly reduced in patients experiencing CHD events. These findings add further support to the view that long-chain n-3 FA are cardioprotective.

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