PAID CONTENT

Flax Seed and Heart Health

Omega-3 Levels & Coronary Heart Disease

Theory:

Despite positive findings around the connection between omega-3 polyunsaturated fatty acids (PUFAs) and coronary heart disease (CHD) risk, concerns remain around the applicability of these studies. In particular, many interventions were strictly with supplemental intake of seafood-derived omega-3s, leading to questions about long-term dietary intake of seafood and plant-derived omega-3s, as well as how to appropriately measure the impact in a healthy population. Could a broader review of available studies with appropriate biomarkers and ascertained incident CHD offer insight into the future possibilities?

Parameters:

The Fatty Acids and Outcomes Research Consortium (FORCe) developed a standardized analysis protocol and narrowed the population in target studies to those without a prior history of myocardial infarction (MI), angina, coronary revascularization or stroke, and in which fatty acid biomarker levels were included in the analysis. This yielded 19 prospect (cohort, nested case-control) or retrospective studies with 45,637 unique individuals, that measured circulating or tissue omega-3 biomarkers and ascertained CHD. Main outcomes were incident total CHD, fatal CHD and nonfatal MI.

Outcome:

Pooled results revealed in participants without prevalent CHD, habitual consumption of seafood and plant-based omega-3 PUFAs was associated with a **modestly lower risk of fatal CHD**. Associations were stronger in phospholipids and total plasma measures.

Specifically, biomarkers for alpha-linolenic acid (ALA), docosapentaenoic acid (DPA) and docosahexaenoic acid (DHA) were associated with a **lower risk of fatal CHD**.

- ALA levels had a relative risk of 0.91
- DPA levels had a relative risk of 0.90
- DHA levels had a relative risk of 0.90

DPA was also associated with a **lower risk of total CHD**, with a relative risk of 0.94.

ALA was associated with a **significantly lower risk of nonfatal MI** among African American individuals.

No significant differences in associations of biomarkers with incident CHD events were observed by age, sex or omega-6 PUFA concentrations.

Impact:

The World Health Organization (WHO) has estimated that cardiovascular disease is responsible for 10% of disability-adjusted life years (DALYs) lost in low- and middle-income countries and 18% in high income countries.[1] Further, while thought of as a Western problem, more than 60% of the global burden of coronary heart disease (CHD) occurs in developing countries. Given the diverse global dietary sources of omega-3s and growing interest in plant-based nutrition, understanding the impact of plant-based omega-3s on CHD is of considerable interest. Expanding the options for addressing heart health through both seafood and plant-based omega-3 PUFAs as part of a regular diet could have a beneficial long-term impact on global populations.

1. World Health Organization. “The Atlas of Heart Disease and Stroke.” http://www.who.int/cardiovascular_diseases/resources/atlas/en/

Source: Del Gobbo LC et al. “ω-3 Polyunsaturated Fatty Acid Biomarkers and Coronary Heart Disease—Pooling Project of 19 Cohort Studies.” *JAMA Intern Med.* 2016;176(8):1155-66.