Eating any food sources of omega-3 fats may be beneficial for health

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Eating plant sources of omega-3 fatty acids may be as beneficial for health as eating fish sources of omega-3 fatty acids, suggests a study published in the American Journal of Clinical Nutrition.

Regular consumption of omega-3 polyunsaturated fatty acids (PUFAs) - especially eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) from fatty fish and fish oils - is important for normal vision, brain function and heart health. Consequently, current dietary recommendations for maintaining adequate levels of omega-3 PUFAs are to consume one or more portions of oily fish per week. However, concerns exist over whether individuals who do not eat fish are at risk of low or inadequate EPA/DHA status and equally over the conservation of dwindling wild fish stocks.

Drawing on the EPIC (European Prospective Investigation into Cancer and Nutrition) Norfolk cohort, researchers across Norwich and Cambridge analysed UK data on food sources, intakes and status of omega-3 PUFAs according to dietary habit (fish-eaters, non-fish-eating meat-eaters, vegetarians and vegans). A fatty acid nutrient database was compiled using analytical data from published and unpublished sources, supplemented with calculations. Analysis used 7-d food diaries of 14,422 men and women aged 39-78 years. Omega-3 PUFA status was determined in a sub-study of 4,902 individuals, in whom plasma phospholipid fatty acids were measured.

The food diaries revealed intakes of total dietary omega-3 PUFAs were 20-43% lower in non-fish-eaters vs. fish eaters. Men consumed significantly more of these fatty acids than women; however, in the sub-study circulating concentrations were lower in men.

Overall, the key finding was that differences in plasma levels of EPA and DHA between the four dietary habit groups were smaller than estimated from dietary intake. Earlier reports had shown poor conversion rates from plant-derived omega-3 PUFAs, namely alpha-linolenic acid (ALA), to EPA and DHA. These new data thus indicate that the human body may have reasonable capacity to produce EPA and DHA from ALA in the absence of direct food sources.

Further research using human intervention studies is now required to confirm the efficient conversion of omega-3 PUFAs from plant foods into EPA and DHA important for vision, brain and heart. In future this may have implications for aligning policy on nutrition with sustainability.

For the time being, public health advice to consume 1-2 portions of fatty fish per week remains valid to ensure sufficient intake of pre-formed EPA and DHA. Fish oil preparations or foods fortified with EPA/DHA may be an option for those not eating fish.

For more information, see

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