Achieving optimal n-3 fatty acid status: the vegetarian’s challenge . . . or not

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Abstract

The long chain n-3 (omega-3) fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), although originally synthesized by microorganisms in the oceans, are primarily obtained from the consumption of fish. Vegetarians, by definition, do not eat fish and thus consume virtually no EPA and DHA. Because conversion of the plant-derived n-3 fatty acid α-linolenic acid (ALA) to EPA and DHA is very low, n-3 tissue concentrations in vegetarians are lower than in omnivores. This review asks 2 questions: what is the evidence that increased n-3 concentrations reduce the risk of cardiovascular disease in vegetarians, and, if it does, how can vegetarians increase their blood and tissue concentrations of these animal-derived fatty acids? At present, both cardiovascular risk markers and cardiovascular events appear to be significantly reduced in vegetarians compared with those in omnivores. If so, and in the absence of data to show that risk in vegetarians could be even lower with higher n-3 concentrations, then the second question becomes moot. However, the absence of evidence is not evidence of absence; therefore, at our present state of knowledge, increasing n-3 concentrations is not an unreasonable goal for vegetarians. This can be accomplished by a variety of approaches, including increased intakes of ALA, consumption of stearidonic acid-enriched soybean oil (if and when it comes to the market), and the use of supplements containing EPA, DHA, or both derived from nonanimal sources (microalgae, biotech yeast, and, in the future, biotech plant oils).