

Abstract

Long-Chain Polyunsaturated Fatty Acids Intake through Fish Oil Food Supplements [†]

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Abstract: With the current consumer interest in health and wellbeing, the market growth potential for long-chain polyunsaturated fatty acid (PUFA) supplements is greater than ever before. Fish oil (anchovy, mackerel, herring, sardines, tuna, salmon, cod, krill, etc.) is a concentrated source of beneficial PUFA for dietary supplements, with eicosapentaenoic (EPA) and docosahexaenoic (DHA) acid attracting the most attention due to their capacity to boost human heart and brain health and strengthen the immune system. This study aimed to assess the profile and intake of PUFA from fish oil food supplements. The fatty acid profiles of 42 fish oil supplements collected from the markets of the Republic of Serbia and the Republic of Srpska were obtained using GC-FID analysis. The intake of PUFA in the adult population was assessed by taking into account labeled daily doses of supplements and recommendation for an EPA+DHA daily intake of 250 mg. The mean (range) percentage contributions of EPA and DHA in total fish oil fatty acids were $24.6 \pm 11.3\%$ (5.5–57.6%) and $21.4 \pm 14.9\%$ (3.3–72.3%), respectively. The maximum EPA concentration was determined in a supplement acquired in a sport supplements store, while in the case of DHA, a supplement with a “premium” label took the leading position. On the other hand, the lowest levels were recorded in fish pearls and a supplement containing a mixture of fish, flax, and borage oils, the only one containing alpha-linolenic acid (ALA). The means and ranges of EPA+DHA intake corresponding to the minimum and maximum labeled doses were $202.1 \pm 120.3\%$ (1.1–577.6%) and $263.2 \pm 147.3\%$ (1.1–749.7%) of the daily recommended amount, respectively. Such intakes do not raise safety concerns for the general population. While the health benefits associated with PUFA intake are potent, the concerns over sustainability and risk of oceanic pollution cannot be neglected, especially in relation to potential contamination with methylmercury, one of the main reasons why great care is recommended for pregnant and lactating women (recommended additional DHA intake 100–200 mg/day) regarding the consumption of fish and fish products.

Keywords: food supplements; fish oil; fatty acid intake



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