

Abstract

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The impact of age, body mass index, and fish intake on the EPA and DHA content of human erythrocytes.

Sands SA, Reid KJ, Windsor SL, Harris WS.

Mid America Heart Institute, Saint Luke's Hospital, Kansas City, Missouri 64111, USA.

OBJECTIVE: n-3 FA are beneficial for cardiovascular health, reducing platelet aggregation, TG levels, and the risk of sudden death from myocardial infarction. The percentage of EPA + DHA in red blood cells (RBC), also known as the Omega-3 Index, has recently been proposed as a risk marker for death from coronary heart disease (CHD). The purpose of this study was to begin to explore the factors that can influence RBC EPA + DHA.

METHODS: We collected information on the number of servings of tuna or nonfried fish consumed per month, as well as on age, gender, ethnicity, smoking status, the presence of diabetes, and body mass index (BMI) in 163 adults in Kansas City who were not taking fish oil supplements.

RESULTS: The average RBC EPA + DHA in this population was 4.9 +/- 2.1%. On a multivariate analysis, four factors significantly and independently influenced the Omega-3 Index: fish servings, age, BMI, and diabetes. The Index increased by 0.24 units with each additional monthly serving of tuna or nonfried fish ($P < 0.0001$), and by 0.5 units for each additional decade in age ($P < 0.0001$). The Index was 1.13% units lower in subjects with diabetes ($P = 0.015$) and decreased by 0.3% units with each 3-unit increase in BMI ($P = 0.001$). Gender or smoking status had no effect, and the univariate relationship with ethnicity vanished after controlling for fish intake.

CONCLUSION: Given the importance of n-3 FA in influencing risk for death from CHD, further studies are warranted to delineate the nondietary factors that influence RBC EPA + DHA content.

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