

Role of Erythrocyte Fatty Acids in Predicting Cardiometabolic Risk among the Elderly: A Secondary Analysis of the Walnut and Healthy Aging Study

Authors : Tony Jehi, Sujatha Rajaram, Nader majzoub, Joan Sabate

Abstract : Aging significantly increases the incidence of various cardiometabolic diseases, including cardiovascular disease (CVD). To combat CVD and its associated risk factors, it is imperative to adopt a healthy dietary pattern that is rife with beneficial nutrient and non-nutrient compounds. Unsaturated fats, specifically n-3 polyunsaturated fatty acids (n-3 PUFA), have cardio-protective effects; the opposite is true for saturated fatty acids. What role, if any, does the biomarker of fatty acid intake (specific fatty acids in the erythrocyte) play in predicting cardiometabolic risk among the elderly, a population highly susceptible to increased mortality and morbidity from CVD risk factors, remains unclear. This was a secondary analysis of the Walnuts and Healthy Aging Study. Briefly, elderly (n=192, mean age 69 y) participants followed their usual diet and were randomized into two groups to either eat walnuts daily or abstain from eating walnuts for a period of 2 years. The purpose was to identify potential associations between erythrocyte membrane fatty acids and cardiometabolic risk factors (body weight, blood pressure, blood lipids, and fasting glucose). Erythrocyte n-3 PUFA were inversely associated with total cholesterol ($\beta = -3.83$; $p = 0.02$), triglycerides ($\beta = -7.66$; $p < 0.01$), and fasting glucose ($\beta = -0.19$; $p = 0.03$). Specifically, erythrocyte ALA ($\beta = -1.59$; $P = 0.04$) and DPA ($\beta = -0.62$; $P = 0.04$) were inversely associated with diastolic blood pressure and fasting glucose, respectively. N-6 PUFAs were positively associated with systolic blood pressure ($\beta = 1.10$; $P = 0.02$). Mono-unsaturated fatty acids were positively associated with TAG ($\beta = 4.16$; $P = 0.03$). Total saturated fatty acids were not associated with any cardiometabolic risk factors. No association was found between any erythrocyte fatty acid and body weight. In conclusion, erythrocyte n-3 PUFA may be used as a biomarker to predict the cardiometabolic risk among healthy elders, providing support for the American Heart Association guidelines for including n-3 PUFA for preventing CVD.

Keywords : cardiometabolic diseases, erythrocyte fatty acids, elderly, n-3 PUFA

Conference Title : ICCNCIT 2023 : International Conference on Clinical Nutrition and Chronic Illness Treatment

Conference Location : New York, United States

Conference Dates : December 11-12, 2023