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ORIGINAL RESEARCH COMMUNICATION

Alcohol consumption and n 3 polyunsaturated fatty acids in healthy men and women from 3 European populations^{1,2,3,4}

Romina di Giuseppe, Michel de Lorgeril, Patricia Salen, Francois Laporte, Augusto Di Castelnuovo, Vittorio Krogh, Alfonso Siani, Jozef Arnout, Francesco P Cappuccio, Martien van Dongen, Maria Benedetta Donati, Giovanni de Gaetano, Licia Iacoviello and on behalf of the European Collaborative Group of the IMMIDIET Project

¹ From the Laboratory of Genetic and Environmental Epidemiology, Research Laboratories, "John Paul II" Centre for High Technology Research and Education in Biomedical Sciences, Catholic University, Campobasso, Italy (RdG, ADC, MBD, GdG, and LI); Unite Mixte de Recherche 5525, Centre National de Recherche Scientifique Universite Joseph Fourier, Techniques de l'Ingenierie Medicale et de la Complexite Informatique, Mathematiques et Applications de Grenoble, Physiologie Respiratoire Experimentale Theorique et Appliquee Coeur & Nutrition, Faculte de Medecine, La Tronche, France (MdL, PS, and FL); the Nutritional Epidemiology Unit, National Cancer Institute, Milan, Italy (VK); the Unit of Epidemiology and Population Genetics, Institute of Food Sciences, CNR, Avellino, Italy (AS); the Centre for Molecular and Vascular Biology, Katholieke Universiteit, Leuven, Belgium (JA); the Clinical Sciences Research Institute, Warwick Medical School, Coventry, United Kingdom (FPC); and the Department of Epidemiology, Maastricht University, Maastricht, Netherlands (MvD).

² The European Collaborative Group of the IMMIDIET Project is listed in **Appendix A**.

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⁴ Reprints not available. Address correspondence to L. Iacoviello, Laboratory of Genetic and Environmental Epidemiology, Research Laboratories, Centre for High Technology Research and Education in Biomedical Sciences, Catholic University, Largo Gemelli 1, 86100 Campobasso, Italy. E-mail: licia.iacoviello@rm.unicatt.it.

Background: Because high dietary and blood n 3 (omega-3) fatty acids (FAs) are protective against coronary heart disease and sudden cardiac death, the alcohol-associated increase in blood n 3 FAs could be considered an original mechanism of alcohol's cardioprotective effect.

Objective: Our objective was to assess whether alcohol consumption is associated with concentrations of very-long-chain "marine" (eg, fish oil) n 3 FAs both in plasma and in red blood cell membranes.

Design: In the framework of the IMMIDIET (Dietary Habit Profile in European Communities with Different Risk of Myocardial Infarction: the Impact of Migration as a Model of Gene-Environment Interaction) Project, 1604 subjects (802 women-men pairs), aged 26-65 y, were enrolled in Italy, Belgium, and England. A 1-y-recall food-frequency questionnaire was used to evaluate dietary intake.

Results: In fully adjusted multivariate analyses, alcohol intake was positively associated with plasma eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA), and EPA + DHA concentrations ($P < 0.0001$, $P = 0.036$, and $P = 0.002$, respectively) in women and with EPA and the EPA + DHA index in red blood cells ($P < 0.0001$ and $P = 0.037$, respectively). In men, only plasma and red blood cell EPA concentrations were associated with alcohol intake ($P = 0.003$ and $P = 0.004$, respectively). Stratified analyses showed an association between alcohol and both plasma and red cell EPA ($P = 0.008$ and $P = 0.002$, respectively), DHA ($P = 0.014$ and $P = 0.008$, respectively), and the EPA + DHA index ($P = 0.010$ and $P = 0.006$, respectively) in wine drinkers, whereas no association was found in those who drink beer and spirits.

Conclusions: Alcohol intake was associated with higher plasma and red blood cell concentrations of marine n 3 FAs. Components of wine other than alcohol (polyphenols) might exert these effects. Part of the alcohol-induced cardioprotection may be mediated through increased marine n 3 FAs.

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