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ORIGINAL RESEARCH COMMUNICATION

Ala12 variant of the peroxisome proliferator-activated receptor-γ gene (*PPARG*) is associated with higher polyunsaturated fat in adipose tissue and attenuates the protective effect of polyunsaturated fat intake on the risk of myocardial infarction[1,2,3]

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Background: Intake of polyunsaturated fat is protective against the development of coronary heart disease. Less is known about the genetic variation modulating this association. The Ala12 allele of the peroxisome proliferator-activated receptor-γ gene (*PPARG*) decreases the lipolysis of triacylglycerols in adipose tissue, which results in the accumulation of fatty acids in adipocytes.

Objective: We aimed to determine whether the Pro12Ala polymorphism interacts with polyunsaturated fat intake to affect the risk of myocardial infarction (MI).

Design: Cases (*n* = 1805) with a first nonfatal acute MI and population-based controls matched by age, sex, and area of residence (*n* = 1805) living in Costa Rica were genotyped for the *PPARG* Pro12Ala genetic polymorphism. Polyunsaturated fat intake was determined by use of a validated food-frequency questionnaire and by gas chromatography analysis of adipose tissue. Odds ratios and 95% CIs for MI were estimated by use of logistic regression.

Results: The relative allele frequencies of the Ala12 allele were 10% in controls and 11% in cases. Odds ratios (95% CI) for MI per each 5% increase in energy from polyunsaturated fat were 0.66 (0.53, 0.82) in Pro12/Pro12 subjects and 0.93 (0.61, 1.42) in carriers of the Ala12 allele (*P* for interaction = 0.03). Increments (95% CI) of polyunsaturated fat in adipose tissue per 5% increment in dietary intake were 5.4% (4.9%, 5.9%) in Pro12/Pro12 homozygotes, 6.9% (6.0%, 7.9%) in Pro12/Ala12 heterozygotes, and 7.7% (3.2%, 12.2%) in Ala12/Ala12 homozygotes (*P* for interaction = 0.016).

Conclusions: The protective effect of polyunsaturated fat intake on MI is attenuated in carriers of the Ala12 allele of *PPARG*.

Key Words: Cardiovascular disease • peroxisome proliferatoractivated receptor-γ • *PPARG* • polyunsaturated fatty acids • genetics • epidemiology • risk factors