Consumption of individual saturated fatty acids and the risk of myocardial infarction in a UK and a Danish cohort

The effect of individual saturated fatty acids (SFAs) on serum cholesterol levels depends on their carbon-chain length. Whether the association with myocardial infarction (MI) also differs across individual SFAs is unclear. We examined the association between consumption of individual SFAs, differing in chain lengths ranging from 4 through 18 carbons, and risk of MI. We used data from 22,050 and 53,375 participants from EPIC-Norfolk (UK) and EPIC-Denmark, respectively. Baseline SFA intakes were assessed through validated, country-specific food frequency questionnaires. Cox regression analysis was used to estimate associations between intakes of individual SFAs and MI risk, for each cohort separately. During median follow-up times of 18.8 years in EPIC-Norfolk and 13.6 years in Denmark, respectively, 1204 and 2260 MI events occurred. Mean (±SD) total SFA intake was 13.3 (±3.5) en% in EPIC-Norfolk, and 12.5 (±2.6) en% in EPIC-Denmark. After multivariable adjustment, intakes of C12:0 (lauric acid) and C14:0 (myristic acid) inversely associated with MI risk in EPIC-Denmark (HR upper versus lowest quintile: 0.80 (95%CI: 0.66, 0.96) for both SFAs). Intakes in the third and fourth quintiles of C4:0-C10:0 also associated with lower MI risk in EPIC-Denmark. Moreover, substitution of C16:0 (palmitic acid) and C18:0 (stearic acid) with plant proteins resulted in a reduction of MI risk in EPIC-Denmark (HR per 1 energy%: 0.86 (95%CI: 0.78, 0.95) and 0.87 (95%CI: 0.79, 0.96) respectively). No such associations were found in EPIC-Norfolk. The results from the present study suggest that the association between SFA and MI risk depends on the carbon chain-length of the SFA.

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