

## Frequency of dairy intakes and associations with blood lipid concentrations in older Irish adults

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Increased consumption of dairy products has been associated with positive health outcomes including a lower risk of hypertension, improved bone health and a reduction in the risk of type 2 diabetes<sup>(1,2)</sup>.

The Trinity Ulster Department of Agriculture (TUDA) ageing cohort study recently reported that more than 96% of older Irish adults do not consume the recommended 3 portions of dairy per day<sup>(3)</sup>. This may be explained, at least in part, by the concern that dairy intakes (especially cheese) can negatively impact on cholesterol and lipid concentrations<sup>(4)</sup>. The aim of this study was to investigate associations between frequency of total and component dairy intakes and lipid concentrations in older Irish adults (>60 yrs).

Participants (n 2,071; after excluding those with severe frailty (reported cannot feed oneself) or cognitive impairment i.e. Mini Mental State Examination score <25 and those prescribed statin medications) were from the TUDA ageing cohort, a large study of older Irish adults (aged >60 yrs) designed to investigate gene-nutrient interactions in the development of chronic diseases of ageing. Participants completed a modified food frequency questionnaire (FFQ) on the frequency of consumption of milk, cheese and/or yogurt in addition to meat, fish and eggs. The daily intake portion for milk, cheese and yogurt was calculated from the FFQ responses (once per day intake response equaled 1 portion). Cholesterol (including high density (HDL) and low density lipid (LDL) and triglyceride concentrations (mmol/L) were measured using a Roche Cobas C analyzer with QC controls.

In a hierarchical multiple regression analysis, total intakes of dairy, yoghurt and milk did not predict any lipid measure. Total daily cheese intake was a significant predictor of HDL and triglyceride concentrations such that with each unit increase in cheese intake (i.e., an increase of one serving per week), HDL concentrations increased by 0.127 mmol/L ( $P < 0.0001$ ) while triglycerides decreased by 0.139 mmol/L ( $P = 0.012$ ) after adjustment for covariates. In a multinomial logistic regression analysis, neither total dairy nor the components (cheese, milk, yogurt) predicted elevated ( $\geq 5$  mmol/L) vs. normal ( $< 5$  mmol/L) serum total cholesterol.

In this large study of older adults, dairy intake frequency was not adversely associated with lipid concentrations or high cholesterol. Contrary to popular perception, cheese intake frequency was a predictor of a better lipid profile with higher HDL and lower triglyceride concentrations. This work adds to the growing evidence that dairy intakes have either neutral or positive benefits for indicators of cardiovascular health though further studies are needed to understand the potential biological mechanisms (e.g. cheese matrix, gut microbiota, etc.).

1. Rizzoli R (2014) *Am J Clin Nutr* **99**, 1256S–1262S.
2. Power SE, Jeffery IB, Ross RP *et al.* (2014) *J Nutr Health Aging* **18**, 561–572.
3. Laird E, Casey MC, Ward M *et al.* (2017) *J Nutr Health Aging* **21**, 954–961.
4. Guo J, Astrup A, Lovegrove JA *et al.* (2017) *Eur J Epidemiol* **32**, 269–287.