

# Milk and Dairy Product Consumption and Cardiovascular Diseases: An Overview of Systematic Reviews and Meta-Analyses

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Milk and dairy products containing milk fat are major food sources of saturated fatty acids, which have been linked to increased risk of cardiovascular-related clinical outcomes such as cardiovascular disease (CVD), coronary heart disease (CHD), and stroke. Therefore, current recommendations by health authorities advise consumption of low-fat or fat-free milk. Today, these recommendations are seriously questioned by meta-analyses of both prospective cohort studies and randomized controlled trials (RCTs) reporting inconsistent results. The present study includes an overview of systematic reviews and meta-analyses of follow-up studies, an overview of meta-analyses involving RCTs, and an update on meta-analyses of RCTs (2013-2018) aiming to synthesize the evidence regarding the influence of dairy product consumption on the risk of major cardiovascular-related outcomes and how various doses of different dairy products affect the responses, as well as on selected biomarkers of cardiovascular disease risk, i.e., blood pressure and blood lipids. The search strategies for both designs were conducted in the MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, and Web of Science databases from their inception to April 2018. From the 31 full-text articles retrieved for cohort studies, 17 met the eligibility criteria. The pooled risk ratio estimated for the association between the consumption of different dairy products at different dose-responses and cardiovascular outcomes (CVD, CHD, and stroke) showed a statistically significant negative association with RR values  $<1$ , or did not find evidence of significant association. The overview of 12 meta-analyses involving RCTs as well as the updated meta-analyses of RCTs did not result in significant changes

on risk biomarkers such as systolic and diastolic blood pressure and total cholesterol and LDL cholesterol. Therefore, the present study states that the consumption of total dairy products, with either regular or low fat content, does not adversely affect the risk of CVD. Copyright © American Society for Nutrition 2019.

cardiovascular diseases

coronary heart disease

dairy products

milk consumption

stroke

cholesterol

administration and dosage

adverse event

animal

blood

blood pressure

cardiovascular disease

dairy product

diet

drug effect

fat intake

feeding behavior

human

milk

Animals

Blood Pressure

Cardiovascular Diseases

Cholesterol

Dairy Products

Diet

Dietary Fats

Feeding Behavior

Humans

Milk