



Journal Watch

1. Mediterranean diet supplemented with dairy foods improves cardiovascular risk markers

Wade AT, Davis CR, Dyer KA, Hodgson JM, Woodman RJ, Murphy KJ. A Mediterranean diet supplemented with dairy foods improves markers of cardiovascular risk: results from the MedDairy randomized controlled trial. *Am J Clin Nutr.* 2018;108(6):1166–82.

Although the Mediterranean diet (MedDiet) has advantages in terms of cardiovascular health, it may not meet Western recommendations for calcium and dairy intake, thereby hampering long-term adoption. This randomized, controlled, crossover study reports the effect of a MedDiet supplemented with dairy foods on cardiovascular risk factors by comparing a MedDiet with 3–4 daily servings of dairy (MedDairy) and a low-fat (LF) control diet. Participants ($n = 41$; age 3 45 years) at risk of cardiovascular disease (CVD) were randomly allocated to their first intervention, i.e., either the MedDairy or LF diet. The duration of each intervention was 8 weeks, and between each intervention there was a washout period of 8 weeks. The primary outcome was home-measured systolic blood pressure (SBP) that was measured in the morning, afternoon and evening. Secondary outcomes included clinic-measured blood pressure (morning), body composition, blood lipids, C-reactive protein (CRP), plasma glucose, serum insulin and the Framingham Risk Score.

MedDairy intervention resulted in significantly lower morning SBP, lower morning diastolic blood pressure and clinic SBP; significantly higher HDL cholesterol; lower triglycerides and lower ratio of total to HDL cholesterol. However, there was no effect on other outcome measures. In conclusion, MedDiet supplemented with dairy for 8 weeks was found to cause significant changes in markers of cardiovascular risk. Thus, in individuals at risk of CVD, the MedDiet with additional dairy may lead to improvements in cardiovascular risk factors.

2. Psyllium fiber improves conventional and alternative lipids markers

Jovanovski E, Yashpal S, Komishon A, Zurbau A, Blanco Mejia S, Ho HV, et al. Effect of psyllium (*Plantago ovata*) fiber on LDL cholesterol and alternative lipid targets, non-HDL cholesterol and apolipoprotein B: a systematic review and meta-analysis of randomized controlled trials. *Am J Clin Nutr.* 2018;108(5):922–32.

Several studies have emphasised that viscous dietary fiber play a role in potentially attenuating cholesterol. In particular, the soluble fiber from the husk of the *Plantago ovate* seed, i.e., psyllium, is a common supplemental fiber and is known to reduce LDL cholesterol, thereby possibly complementing cardiovascular disease (CVD) treatment. The objective of this study was to update evidence on the effect of psyllium on LDL cholesterol and assess its impact on alternate markers, such as non-HDL cholesterol and apolipoprotein B (apoB).

Searches were performed on Medline, EMBASE, CINAHL and the Cochrane Central Register of Controlled Trials until October 3, 2017. Thereafter, independent reviewers extracted relevant data and assessed risk of bias. The inclusion criteria were randomized controlled trials with a follow-up period of ≥ 3 weeks and those that examined the effect of psyllium on blood lipids in individuals with or without hypercholesterolemia. Data were pooled using the generic inverse variance method with random-effects models and were expressed as mean differences with 95% confidence interval (CI). Assessment and quantification of heterogeneity was performed using Cochran's Q statistic and the I^2 statistic, respectively. Assessment of overall quality of the evidence was performed using the GRADE (Grading of Recommendations Assessment, Development, and Evaluation) approach. Overall, this study included 28 trials ($n = 1924$), and LDL cholesterol, non-HDL cholesterol and apoB were found to be

significantly reduced with the supplementation of a median dose of approximately 10.2 g psyllium. Effect estimates were of moderate quality for LDL cholesterol and non-HDL cholesterol, on the basis of downgrades for inconsistency, and high quality for apoB.

In conclusion, psyllium fiber was found to potentially delay atherosclerosis-associated CVD risk and effectively improve conventional and alternative lipids markers in individuals with or without hypercholesterolemia.

This trial is registered at www.clinicaltrials.gov as NCT03346733.

3. Mediterranean diet protects against cardiovascular disease

Rosato V, Temple NJ, La Vecchia C, Castellan G, Tavani A, Guercio V. Mediterranean diet and cardiovascular disease: a systematic review and meta-analysis of observational studies. Eur J Nutr. 2019;58(1):173–91.

Mediterranean diet (MD), the traditional dietary style of several countries around the Mediterranean Sea, typically includes high consumption of grains, cereals, legumes, fruits, nuts, vegetables and fish; use of olive oil (i.e., high monounsaturated/saturated fat ratio); moderate consumption of milk and dairy products; low-to-moderate consumption of wine and low consumption of meat and meat products. The present study aimed to probe the influence of MD on the incidence/mortality for cardiovascular disease (CVD), coronary/ischemic heart disease (CHD)/acute myocardial infarction (AMI) and stroke (ischemic/hemorrhagic) by sex, geographic region, study design and type of MD score. To this end, systematic review and meta-analysis of observational studies were conducted and, subsequently, pooled relative risks were calculated using random-effects models.

In total, 29 articles were identified. The relative risk for the highest versus the lowest category of the MD score was 0.81 for the 11 studies that considered unspecified CVD, and this was consistent across all strata. The corresponding pooled relative risk for CHD/AMI risk was 0.70 for the 11 studies. The inverse relationship was consistent across strata of study design, end point (incidence and mortality), sex, geographic area and the MD score used. The overall relative risk for the six studies that considered unspecified stroke for the highest versus the lowest category of the MD score was 0.73. The corresponding values were 0.82 for ischemic (for five studies) and 1.01 for hemorrhagic stroke (for four studies).

This study indicated as well as quantified that MD has a

protective effect on the risk of CVD. This inverse association includes CHD and ischemic stroke but does not appear to include hemorrhagic stroke.

4. Alpha-lipoic acid supplementation affects lipid profile

Mousavi SM, Shab-Bidar S, Varkaneh HK, Khorshidi M, Djafarian K. Effect of alpha-lipoic acid supplementation on lipid profile: A systematic review and meta-analysis of controlled clinical trials. Nutrition 2019;59:121- 130

Although several studies have shown the effect of alpha-lipoic acid (ALA) on lipid profile, studies assessing the association between ALA supplementation and lipid profile reported controversial findings. This systematic review and meta-analysis aimed to systematically summarize the available clinical trials examining the effects ALA supplementation on the lipid profile in adults. For this, the online databases PubMed and Scopus were systematically searched for studies published up to April 2017, and only English articles were included. Effect sizes were combined with fixed- or random-effects analysis, where appropriate. Cochran's Q test and I^2 were used to evaluate between-study heterogeneity.

In total, this meta-analysis included 11 clinical trials with 452 adults (women, 51.5%; men, 48.5% and age range, 21–79 years). The effect sizes of 10 studies on serum triacylglycerol concentrations were combined, which showed a significant effect of ALA supplementation on serum triacylglycerol concentrations compared with the placebo group. In addition, there were significant changes in serum total cholesterol and low-density lipoprotein levels, and there were no significant changes in serum high-density lipoprotein levels. Supplementation dosage and body mass index were potential sources of heterogeneity, in which those with body mass index >30 kg/m² who received > 600 mg/d ALA showed better improvements in lipid profile. This study revealed that supplementation with ALA significantly decreases the serum triacylglycerol concentrations, total cholesterol, and low-density lipoprotein levels but did not affect serum high-density lipoprotein levels in adults.

5. Dietary Cholesterol or Egg Consumption Associated With Incident Cardiovascular Disease and Mortality

Zhong VW, Van Horn L, Cornelis MC, Wilkins JT, Ning H, Carnethon MR, et al. Associations of dietary cholesterol or egg consumption with incident cardiovascular disease and mortality. JAMA. 2019 Mar 19;321(11):1081–95.

Cholesterol is prevalently found in the human diet, and

eggs are a chief source of dietary cholesterol. Since it is uncertain whether dietary cholesterol or egg consumption is associated with CVD and mortality, this study was conducted to confirm this association.

In this study, individual participant data were collected from March 25, 1985, to August 31, 2016 from six prospective US cohorts and subsequently pooled. Harmonization of self-reported diet data was performed using a standardized protocol. The exposures were measured in terms of dietary cholesterol (mg/day) or egg consumption (number/day). The main outcomes were hazard ratio (HR) and absolute risk difference (ARD) over the entire follow-up period for incident CVD (composite of fatal and nonfatal coronary heart disease, stroke, heart failure and other CVD deaths) and all-cause mortality. Furthermore, outcomes were adjusted for demographic, socioeconomic and behavioral factors.

In total, 29,615 participants (mean age, 51.6 years at baseline) were included in the analysis. Of them, 44.9% were men and 31.1% were black. During the median follow-up of 17.5 years, 5400 incident CVD events

and 6132 all-cause deaths were recorded. Dietary cholesterol or egg consumption was monotonically related to incident CVD and all-cause mortality (all p values for nonlinear terms, 0.19–0.83). Moreover, each additional consumption of 300-mg dietary cholesterol per day was significantly associated with higher risk of incident CVD as well as all-cause mortality, and each additional consumption of half an egg per day was significantly associated with higher risk of incident CVD and all-cause mortality. However, after adjusting for dietary cholesterol consumption, egg consumption and incident CVD and all-cause mortality were no longer significantly associated.

Therefore, among US adults, higher consumption of dietary cholesterol or eggs was significantly associated with higher risk of incident CVD and all-cause mortality in a dose-response manner. Further, these results should be taken into account for the development of dietary updates and guidelines.