

### Dietary Fatty Acids for the Reduction of Health Risks in Adults: A Project of the Evidence Analysis Library

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**Learning Outcome:** Evaluate the strength of the evidence associating specific dietary fatty acids with prevention of common disease conditions in adults.

**Background:** Dietary fatty acids serve many functions in growth, maintenance, and repair for healthy individuals. Some dietary fatty acids serve roles specific to health risks associated with body composition, cognitive decline, and risks associated with diabetes mellitus.

**Method:** Using the evidence analysis process adopted by The American Dietetic Association, an examination of literature was conducted to determine the strength of the evidence for recommendations regarding the use of conjugated linoleic acid (CLA) relative to body composition; supplementation or dietary intake of docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) to prevent cognitive decline; and consumption of linoleic acid to reduce risks associated with diabetes. These topics were determined by the Working Group based on interest from dietitians. Inclusion criteria were original research on healthy adults or those matched for health conditions and studies published within the past six to ten years.

**Results:** Key outcomes show there is fair evidence indicating three to six months of conjugated linoleic acid (CLA) supplementation results in a decrease in fat mass and an increase in fat-free mass in healthy adults without an effect on body weight. Results regarding consumption of DHA and EPA (supplementation or dietary consumption of fish) and the prevention of cognitive decline in adults are not consistent. Outcomes regarding dietary linoleic acid and reduced risk of diabetes mellitus are dependent upon the risk factor being measured.

**Conclusion:** The conclusions and factors considered in evaluating this literature provide valuable tools for practitioners to address prevalent questions from the public in health care settings.

**Funding Disclosure:** American Dietetic Association Evidence Analysis Library

### A Daily Popcorn Snack Improves Cardiovascular Disease Risk Profile

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**Learning Outcome:** The reader will be able implement an easy strategy to help meet dietary goals for reduction in cardiovascular risk.

**Background:** Low-fat popcorn is a whole grain food supplying insoluble fiber and less fat than several commonly consumed grain or potato based snack foods. This study measured the effects of daily popcorn consumption on cardiovascular disease risk profile.

**Methods:** Participants (n=182) were randomly assigned to one of three groups: 1) 100 kcal/d of 94% fat-free microwave popcorn (6 cups) while on a 500Kcal per day energy deficit diet (G1), 2) popcorn consumption as part of usual diet (G2) or 3) usual diet without popcorn (G3). The intervention lasted 12 weeks, and clinical measures were taken in the fasted state prior to and after completion of the dietary intervention.

**Results:** Reductions in Body mass ( $-12.84 \pm 7.97$  vs  $-2.70 \pm 6.29$  and  $-2.91 \pm 5.89$  lbs,  $p < 0.05$ ) and total cholesterol ( $-16.87 \pm 19.87$  vs  $-7.00 \pm 23.25$  and  $-6.16 \pm 21.56$  mg/dl,  $p < 0.05$ ) were greater in G1 compared to the other two groups. However, both popcorn groups observed greater reductions in LDL than the non popcorn group ( $-9.08 \pm 18.26$  and  $-4.08 \pm 19.40$  vs  $-0.47 \pm 18.40$  mg/dl,  $p < 0.05$ ). Favorable changes were observed for systolic ( $115.65 \pm 13.92$  vs  $110.76 \pm 12.77$  mmHg,  $p < 0.05$ ) and diastolic blood pressure ( $74.39 \pm 9.00$  vs  $72.18 \pm 8.36$  mmHg,  $p < 0.05$ ), and triglycerides ( $141.80 \pm 76.81$  vs  $128.83 \pm 67.95$  mg/dl,  $p < 0.01$ ) in the entire cohort, but were unaffected by group assignment.

**Conclusions:** Popcorn can be successfully incorporated into the diet as a daily snack and is associated with significant improvements in cardiovascular risk profile.

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### Does Dietitian Intervention Impact Progression to Type 2 Diabetes in Patients with Pre-Diabetes?

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**Learning Outcome:** The participant will describe the impact of the registered dietitian on the progression to type 2 diabetes in a population of patients with pre-diabetes.

**Background:** Registered dietitians (RDs) can have a role in preventing progression to type 2 diabetes (T2DM).

**Objective:** To investigate the relationship between RD intervention and progression to T2DM in adults with pre-diabetes (pre-DM).

**Methods:** Medical records of adults with pre-DM from 14 clinics were reviewed retrospectively. RD intervention included an individual session or *Preventing Diabetes Class*. The number of RD interventions, number of months from pre-DM to T2DM and the relationship between RD intervention and progression to T2DM were analyzed;  $\alpha = 0.05$ .

**Results:** The mean age of patients in this sample (n=302) was 63.4 years (SD=11.5), mean baseline BMI and fasting glucose were 31.1 (SD=6.0) and 112.7 mg/dl (6.3 mmol/l) (SD=6.0), respectively. Twenty-nine percent (n=86) of the patients had a RD intervention. Of patients receiving RD intervention, 30% (n=24) progressed to T2DM. The mean number of RD interventions was 1.3. The majority of all patients (n=215, 71.2%) did not progress to T2DM in five years. BMI and fasting glucose were significant predictors of progression to T2DM,  $p = 0.04$  and  $p \leq 0.01$  (logistic regression), respectively. RD intervention was not a significant predictor of progression to T2DM in this small sample (logistic regression),  $p = 0.78$ . While not statistically significant ( $t(85) = -1.50$ ,  $p = 0.14$ ), of patients who progressed to T2DM, those without RD intervention (n=64, 73.6%) progressed 6.1 months sooner than those with RD intervention (n=23, 26.4%).

**Conclusions:** Further research is needed with a larger sample and more frequent RD interventions.

**Funding Disclosure:** None

### Relationship between Coffee Consumption and Serum Cystatin C Concentrations in Healthy Young Adults

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**Learning Outcome:** We observed that a short period of coffee consumption is associated with reduce serum cystatin C concentration, in healthy young adults. Our findings suggest that three cups per day of coffee may protect kidney function.

**Background:** Coffee has been putatively associated with prevention of type 2 diabetes, which in turn is associated with impaired kidney function. Recently, we and other investigators have reported that the estimated glomerular filtration rate (eGFR) is higher in coffee consumers than in non-coffee consumers. However, the causality remains unclear. Therefore, we conducted a clinical trial to investigate the effects of coffee consumption on kidney function.

**Methods:** Nineteen non-smokers aged 21-27 years old without known kidney diseases participated in this study. They consumed coffee (18 g coffee beans/450 ml per day) or green tea (6 g of tea leaves/450 ml per day) as a comparator for 2 weeks in a crossover design with a 7-day washout period. Clinical variables, eGFR, and serum creatinine and cystatin C levels were determined before and after each intervention phase.

**Results:** Serum cystatin C, but not creatinine, was significantly reduced, and cystatin C-based eGFR was significantly increased after coffee consumption (geometric means, serum cystatin C,  $-7.4\%$  and cystatin C-based eGFR,  $5.9\%$ ), which was not observed after green tea consumption (geometric medians, both  $0.0\%$ ). Serum adiponectin and magnesium levels increased significantly after coffee consumption (medians,  $11.5\%$  and  $4.3\%$ , respectively). Notably, changes in cystatin C based-eGFR were significantly correlated with those in serum magnesium levels after coffee consumption ( $P = 0.04$ ).

**Conclusion:** These findings suggest that even a short period of coffee consumption may reduce serum cystatin C concentration and increase cystatin C-based eGFR, along with favorable changes in serum adiponectin, in healthy young adults.

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