



A Selection of Recent Findings in the Field of Nutrition

Vitamin D status and early age-related macular degeneration in postmenopausal women.

Age-related macular degeneration (AMD) is a chronic, late-onset disease causing degeneration of the macula in adults. It is the leading cause of irreversible vision loss in developed countries. With no cure and limited available treatments, identifying modifiable risk factors that can reduce disease occurrence or prevent progression is important. Existing research suggests that vitamin D affects immune modulation and possibly the prevention of diseases with inflammatory origins. The objective of this study was to determine the relationship between vitamin D status, as reflected by serum 25(OH)D concentrations (nmol/L), and the prevalence of early AMD using participants of the Carotenoids in Age-Related Eye Disease Study. Of the 1313 women comprising the sample size, baseline serum samples of 25(OH)D assays were available. Stereoscopic retinal fundus photographs taken from 2001 to 2004 determined prevalent AMD status. Logistic regression was used to estimate odds ratios and 95% confidence intervals for AMD, adjusting for age, smoking, iris pigmentation, family history of AMD, cardiovascular disease, diabetes and hormone therapy use. Within the multivariate model for all ages, the authors found no significant relationship between early AMD and 25(OH)D. In women aged 75 years and older (n=319), there was an increased odds of early AMD. This significant age interaction is suggestive of selective mortality bias in this population. On the other hand, in women younger than 75 years (n=968) serum 25(OH)D was associated with decreased odds of early AMD. Adjusting for other predictors of 25(OH)D such as body mass index and physical activity further strengthened this observed association. Additionally, intake of vitamin D from foods and supplements also correlated to decreased odds of early AMD in multivariate models among women in this age group. There was no observed protective effect on early AMD from self-reported hours spent in direct sunlight. The authors concluded that “high serum 25(OH)D concentrations may protect against early AMD in women younger than 75 years”.

[Millen AE, et al. *Arch Ophthalmol* 2011; 129:481-489]

Vitamin E intake and risk of Amyotrophic lateral Sclerosis; A pooled analysis of data from 5 prospective cohort studies.

A role for oxidative stress in the pathogenesis of amyotrophic lateral sclerosis (ALS) is supported by the presence of biomarkers of oxidative damage in patients with sporadic ALS. This theory is further supported by the occurrence of familial ALS among carriers of distinct mutations in the superoxide dismutase gene, a critical component of cellular antioxidant defence mechanisms. Vitamin E is an important cellular antioxidant that has been shown to delay the onset of clinical disease in transgenic mice expressing mutant genes for superoxide dismutase. The objective of this study was to determine whether vitamin E intake was associated with ALS. The authors conducted a large, pooled prospective study, totalling over 1 million participants from 5 different cohorts: Nurses' Health Study (NHS), the Health Professionals Follow-up Study (HPFS), the Cancer Prevention Study (CPS) II Nutrition Cohort, the Multiethnic Cohort Study (MEC), and the National Institutes of Health-AARP Diet and Health Study (NIH-AARP). During the 10-18 year follow-up period across the 5 cohorts, 805 participants with ALS were discovered. ALS deaths were identified through the National Drug Index. Cox proportional hazards regression was used to estimate 95% confidence intervals (CIs) and relative risks (RR) for each cohort, which were then pooled using a random effects model. The authors found that using Vitamin E supplements was not significantly associated with ALS. However, for cohorts with information on duration of use (n=231), ALS rates declined with increasing years (≥ 5) of vitamin E supplementation use. Compared with nonusers at baseline, multi-variable-adjusted RR was 1.05 among users for ≤ 1 year, 0.77 among users for 2-4 years, and 0.64 among users for ≥ 5 years. Compared to those in the lowest quartile of energy-adjusted dietary vitamin E intake, those in the highest quartile had lower rates of ALS (multivariable-adjusted RR = 0.77). There was a clear inverse dose-response with increasing dietary vitamin E intake seen in women, but not in men. The authors concluded that “in this study, long-term vitamin E supplement use was associated with lower ALS rates. A possible protective effect of vitamin E deserves further consideration”.

[Wang H, et al. *Am J Epidemiol* 2011; 173:595-602]

Self-perceived lactose intolerance results in lower intakes of calcium and dairy foods and is associated with hypertension and diabetes in adults.

The concept of lactose intolerance is often poorly defined; as a result, reported prevalence rates are inconsistent. Self-perceived lactose intolerance may result in adverse dietary modifications, which may lead to nutrient shortcomings and adverse health outcomes. The objective of this study was to investigate the effects of self-perceived lactose intolerance and how it relates to calcium intake and selected health conditions attributed to a reduced intake of calcium and dairy foods. The authors conducted a cross-sectional study using a nationally representative multiethnic sample of 3452 adult respondents. Linear regression analyses were used to determine the relation between self-perceived lactose intolerance, calcium intakes, and physician-diagnosed health conditions. From the total sample, 12.3% of respondents perceived themselves to be lactose intolerant. The prevalence of self-perceived lactose intolerance was age adjusted

and found to be 7.8% for non-Hispanic whites, 20.1% for non-Hispanic blacks, and 8.8% for Hispanics. Those that perceived themselves to be lactose intolerant had significantly lower ($P<0.05$) average daily calcium intakes from dairy foods than did those without self-perceived lactose intolerance. The percentage of respondents with self-perceived lactose intolerance reporting physician-diagnosed diabetes and hypertension was significantly higher ($P<0.05$) than those without self-perceived lactose intolerance. A 1000mg increase in calcium intake from dairy foods per day decreased the odds of self-reported physician-diagnosed diabetes or hypertension by factors of 0.70 and 0.60, respectively. The authors conclude “Self-perceived lactose-intolerant respondents had a significantly lower calcium intake from dairy foods and reported having a significantly higher rate of physician-diagnosed diabetes and hypertension”.

[Nicklas TA, et al. *Am J Clin Nutr* 2011; 94:191-198]

Phytosterols supplementation decreases plasma small and dense LDL levels in metabolic syndrome patients on a westernized type diet.

Many studies have highlighted the cholesterol-lowering effect of plant sterols in hypercholesterolemic patients on a balanced diet. The objective of this study was to investigate the effect of phytosterol supplementation on risk factors of coronary artery disease in patients with metabolic syndrome on a westernized type diet (rich in total and saturated fat). A randomized placebo-controlled trial was conducted over a 2 month period on 108 patients with metabolic syndrome, assigned to one of two groups. The intervention group received 2 plant sterols enriched yogurt mini drinks daily, which provided 4 g of phytosterols per day; the control group received a yogurt beverage without phytosterols. Patients in both groups were instructed to maintain their usual dietary habits. The authors found that plant sterol supplementation improved serum lipoprotein in this study. In the intervention group, significant reductions ($P<0.05$) in total cholesterol, LDL-cholesterol, small and dense LDL (sdLDL) levels, as well as apoB and triglycerides concentrations were seen compared to the control group upon study completion. Phytosterol supplementation lowered serum total cholesterol by 15.9%, LDL-cholesterol by 20.3% and triglyceride levels by 19.1%, despite patients maintaining their usual westernized type diet. For serum HDL-cholesterol, apoA1 and fibrinogen concentrations, no significant differences were seen. The authors concluded that “phytosterol supplementation improves risk factors of coronary artery disease even if the diet is a westernized type”. Thus, they suggest that adopting a healthy dietary regimen could lead to additional benefits [Sialvera TE, et al. *Nutr Metab Cardiovasc Dis* 2011;doi:10.1016/J.nmecd.2010.12.004]

[Ma X, et al. *Am J Epidemiol* 2010; 171:312-322]

Suggested readings:

Vitamin E and adiponectin: proposed mechanism for vitamin E-induced improvement in insulin sensitivity

[Gray B, et al. *Nutr Rev* 2011; 69:155-161]

Effect of the supplementation during pregnancy with L-arginine and antioxidant vitamins in medical food and pre-eclampsia in high risk population: randomised controlled trial.

[Vadillo-Ortega F, et al. *BMJ* 2011;342:d2901doi:10.1136/bmj.d2901]

Impact of micronutrients on respiratory infections.

[Taylor CE, et al. *Nutr Rev* 2011;69:259-269]

Intake of probiotic food and risk of spontaneous preterm delivery.

[Myhre R, et al. *Am J Clin Nutr* 2011;93:151-157]

Vitamin D and prevention of cancer-Ready for prime time?

[Manson JE, et al. *N Eng J Med* 2011;10.1056/NEJMp1102022]

Vitamin C: a concentration-function approach yields pharmacology and therapeutic discoveries.

[Levine M, et al. *Adv Nutr* 2011;2:78-88]

Adherence to Canada's Food Guide among pharmacy students.

[Allen JP, et al. *Can Pharm J* 2011;144:79-84]

Efficacy of calcium supplementation for management of overweight and obesity: systematic review of randomized clinical trials.

[Onakpoya IJ, et al. *Nutr Rev* 2011;69:335-343]

Effects of weight loss on serum vitamin D in postmenopausal women.

[Onakpoya IJ, et al. *Nutr Rev* 2011;69:335-343]

Herbal extracts and phytochemicals: plant secondary metabolites and the enhancement of human brain function.

[Kennedy DO, et al. *Adv Nutr* 2011;2:32-50]

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