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# A Selection of Recent Findings in the Field of Nutrition

## The vitamin D status of Canadians relative to the 2011 Dietary Reference Intakes: an examination in children and adults with and without supplement use.

In the past decade, assessing vitamin D status has been extensively researched. Measuring the 25-hydroxyvitamin D [25(OH) D] is recognized as the biomarker for total vitamin status from food, endogenous synthesis, and supplements. In 2011, and based on bone health, the Dietary Reference Intakes (DRIs) for vitamin D, established the following [25(OH) D] concentrations to define vitamin D deficiency at <30 nmol/L, the Estimated Average Requirements (EAR) at 40 nmol/L, and the Recommended Dietary Allowance (RDA) at 40 nmol/L. The Canadian population's vitamin D status has not been evaluated according to the 2011 DRIs for vitamin D. In a 2004 survey, Canadians reported an average vitamin D intake of 208-300 IU from foods, which is not sufficient to meet the current RDA of 600 to 800 IU. National use of vitamin D supplements had not been reported then. The authors used a more recent national survey (2007-2009) to assess vitamin D supplement use, its contribution to achieving DRIs, and examined seasonal differences in [25(OH) D] among supplement users and nonusers in Canadians by age, gender, and skin color. In this study, overall, 5.4%, 12.7% and 25.7% of the participants had [25(OH) D] concentrations below 30-40-50 nmol/L cutoffs respectively. Among white Canadians, [25(OH) D] concentrations <30 nmol/L were undetectable in the summer to 24.5% with <50 nmol/L in winter. For nonwhite Canadians, the corresponding values ranged from 12.5% to 53.1%. Significantly higher [25(OH) D] concentrations were reported among supplement users with no seasonal differences compared to nonusers. Among nonusers, the prevalence of [25(OH) D] concentrations <50 nmol/L in winter was 37.2% overall and was 60.7% in nonwhites. The authors conclude, "One-quarter of Canadians did not meet the RDA, but the use of vitamin D supplements contributed to a better 25(OH) D status. Nonwhite Canadians had the highest risk of not achieving DRIs recommendations. More than one-third of Canadians not using supplements did not meet the RDA in winter. This suggests that current food choices alone are insufficient to maintain 25(OH) D concentrations of 50 nmol/l in many Canadians, especially in winter".
*[Whiting S, et al. Am J Clin Nutr 2011; 94:128-135]*

## Eicosapentaenoic acid reduces rectal polyp number and size in familial adenomatous polyposis.

Familial adenomatous polyposis (FAP) predisposes to colorectal cancer (CRC). Therefore, prophylactic removal of the colon is recommended to prevent CRC. Two surgical options are available; the main option is colectomy with ileorectal anastomosis (usually advised in young patients) or proctocolectomy with ileal pouch-anal anastomosis. Following ileorectal anastomosis, the rectal remnant remains vulnerable to development of multiple adenomas, hence higher risk of rectal cancer. These patients undergo regular endoscopic surveillance. Previous studies demonstrated that some NSAIDs and COX-2 inhibitors have chemopreventative efficacy in FAP. Therefore, secondary polyp chemoprevention can be combined with endoscopic surveillance to reduce cancer risk in patients with FAP. The omega-3 fatty acid eicosapentaenoic acid (EPA) has anticolorectal cancer activity in vitro and preclinical models. This study explored whether an enteric coated EPA free fatty acid (EPA-FFA) formulation has chemopreventative efficacy in patients with FAP, in a randomized, double-blind, placebo-controlled trial. Patients undergoing endoscopic surveillance of their retained rectum postcolectomy were randomized to either 2 g of EPA-FFA or placebo for 6 months. The number and size of polyps were determined before and after intervention. This trial demonstrated that administration of EPA-FFA for 6 months has anticancer activity in patients with FAP. Polyp number, polyp size and overall polyp burden all decreased significantly with the active treatment compared to placebo. The authors conclude, "EPA-FFA has chemopreventative efficacy in FAP, to a degree similar to that previously observed with selective cyclo-oxygenase-2 inhibitors. EPA holds promise as a colorectal cancer chemoprevention agent with a favourable safety profile".
*[West NJ, et al. Gut 2010; 59:918-925]*

## Dietary antioxidants and long-term risk of dementia.

Oxidative stress might play a role in the pathogenesis of Alzheimer disease (AD). The disease begins years if not decades, before clinical onset of dementia. It is believed that antioxidants protect against neurodegeneration. The Rotterdam Study previously reported that higher dietary intakes of vitamins E and C were associated with lower risk of dementia and AD over 6 years of follow-up. As a follow-up to their previous report, the investigators studied the consumption if major dietary antioxidants relative to long-term risk of dementia. A total of 5,395 participants in The Rotterdam Study, 55 years and older, free of dementia provided dietary information at baseline. In this study, the association between the incidence of dementia and AD and dietary intake of vitamin E, vitamin C, beta-carotene, and flavonoids was investigated. After a mean follow-up of 9.6 years, only higher dietary intake of vitamin E was associated with lower long-term risk of dementia, but not the other investigated antioxidants. The authors conclude, "Higher intake of foods rich in vitamin E may modestly reduce long-term risk of dementia and AD".
*[Devore EE, et al. Arch Neurol 2010; 67:819-825]*

## Diet, lifestyle, and acute myeloid leukemia in the NIH-AARP cohort.

Acute myeloid leukemia (AML) is a group of clonal hematopoietic stem cell disease. It is the most frequent type of leukemia accounting for approximately 30% of leukemia in adults in the USA. The incidence of AML is higher in males than in females, in whites than in other racial groups, and 55 % of incident cases of AML reported in the USA were in individuals 65 years of age or older. Multiple risk factors have been linked to the development of AML. The relation between diet, lifestyle, and AML was assessed in a large US cohort of 491,163 participating in the NIH-AARP Diet and Health Study (1995-2003). During the follow-up period, a total of 338 incident cases of AML were ascertained. In this large, prospective cohort study, smoking and total meat intake were risk factors for AML, however, there were no clear effects of meat-cooking method or doneness level. Neither fruit nor vegetable intake was associated with AML. Those who did not drink coffee appeared to have a higher risk of AML. The authors conclude, "This large prospective study identified smoking and meat intake as risk factors for acute myeloid leukemia".
*[Ma X, et al. Am J Epidemiol 2010; 171:312-322]*

## Suggested readings:

**Vitamin D insufficiency and health outcomes over 5 y in older women.**
[Bolland MJ, et al. Am J Clin Nutr 2010; 91; 82-89]

**Long-chain omega-3 fatty acids eicosapentaenoic acid and docosahexaenoic acid dose-dependently reduce fasting serum triglycerides.**
[Musa-Veloso K, et al. Nutr Rev 2010; 68:155-167]

**Docosahexaenoic acid supplementation increases prefrontal cortex activation during sustained attention in healthy boys: a placebo-controlled, dose-ranging, functional magnetic resonance imaging study.**
[McNamara RK, et al. Am J Clin Nutr 2010; 91; 1060-1067]

**Vitamin D status is modestly associated with glycemia and indicators of lipid metabolism in French-Canadian children and adolescents.**
[Delvin EE, et al. J Nutr 2010;140:987-991]

**Effects of homocysteine-lowering with folic acid plus vitamin B12 vs placebo on mortality and major morbidity in myocardial infarction survivors. A randomized trial.**
[Study of the Effectiveness of Additional Reductions in Cholesterol and Homocysteine (SEARCH) Collaborative Group. JAMA 2010; 303:2486-2494]

**Role of vitamins and minerals in prevention and management of type 2 diabetes mellitus.**
[Martini LA, et al. Nutr Rev 2010;68:341-354]

**The effect of calcium and vitamin D supplementation on obesity in postmenopausal women: secondary analysis for a large-scale, placebo controlled, double-blind, 4-year longitudinal clinical trial.**
[Zhou J, et al. Nutr Metab 2010; 62:1-9]

**Saturated fat, carbohydrate, and cardiovascular disease.**
[Siri-Tarino PW, et al. Am J Clin Nutr 2010;91:502-509]

**The role of phytonutrients in skin health [Review].**
[Evans JA, et al. Nutrients 2010; 2; 903-928]

**Diet, supplement use, and prostate cancer risk: results from The Prostate Cancer Prevention Trial.**
[Kristal AR, et al. Am J Epidemiol 2010; 172; 566-577]

**Reexamination of a meta-analysis of the effect of antioxidant supplementation on mortality and health in randomized trials.**
[Biesalski HK, et al. Nutrients 2010; 2:929-949]

**Epigenetics: a new bridge between nutrition and health.**
[Choi SW, et al. Adv Nutr 2010;1:8-16]

**Zinc decreases C-reactive protein, lipid peroxidation, and inflammatory cytokines in elderly subjects: a potential implication of zinc as an atheroprotective agent.**
[Bao B, et al. Am J Clin Nutr 2010; 91:1634-1641]

**Periconceptional multivitamin use and infant birth weight disparities.**
[Burris HH, et al. Ann Epidemiol 2010; 20:233-240]

**Vitamin B6 is required for full motility and virulence in helicobacter pylori.**
[Grubman A, et al. mBio 2010;1:e00112-10]

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