The Whitehall-Robins Supplement

A Selection of Recent Findings in the Field of Nutrition

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Magnesium intake in relation to risk of colorectal cancer in women.
Magnesium is an essential nutrient with a wide range of biological functions, which include DNA repair, cell proliferation and differentiation. Magnesium supplementation reduced the incidence of colon cancer in animal studies, but data in humans are lacking. This beneficial effect could be explained by the magnesium ability to decrease colonic cell proliferation and in maintaining the antioxidative status of the cell. Also, magnesium supplementation can increase insulin sensitivity among patients with type 2 diabetes and healthy subjects and high insulin concentrations have been associated with increased risk of colorectal cancer in humans. There is no epidemiologic study that investigated the association between magnesium intake and risk of colon cancer. To evaluate this association, a prospective analysis of magnesium intake and the incidence of colon cancer was conducted in a cohort of 61,433 women aged 40 to 75 years with no history of previous cancer at baseline. During a mean follow-up of nearly 15 years, 805 incident colorectal cancers were identified. Adjusting for potential confounding factors, there was an inverse association of magnesium intake with the risk of colorectal cancer. Compared with women in the lowest quintile of magnesium intake (mean intake≤ 209 mg) to those in the highest quintile of magnesium intake (mean intake ≥ 255 mg) the risk for colon cancer was reduced by 41%. This inverse association was observed for both colon and rectal cancers. The authors conclude, "In this population-based prospective study, suggests that a high magnesium intake may reduce the occurrence of colorectal cancer in women."
[Larsson SC, et al. JAMA 2005; 293:86-89]

Effect of folate and mecobalamin on hip fractures in patients with stroke. A randomized controlled trial.
The risk of a hip fracture increases by 2 to 4 times in patients after a stroke compared to age matched healthy controls. Homocysteine levels are higher in patients with ischemic stroke. Recent evidence showed that hyperhomocysteinemia may be associated with osteoporosis hence increasing the risk of a hip fracture. Folate and vitamin B12 have been shown to reduce high levels of homocysteine. This double-blind randomized controlled study of 628 Japanese patients investigated whether daily treatment with folate (5 mg) and vitamin B12 (1,500 μg) for 2 years reduces the incidence of hip fractures in hemiplegic patients following a stroke compared to placebo. The enrolled patients aged 65 years or older with residual hemiplegia at least 1 year following their first stroke. After 2 years, plasma homocysteine levels decreased by 38 % in the treatment group and increased by 31% in the placebo group. The number of hip fractures per 1000 patient-years was significantly less in the treatment group (10) than in the placebo group (43). Similar trends were seen for the adjusted relative risk, absolute risk reduction, and the number needed to treat for hip fractures in the treatment group compared to placebo. The authors conclude: "In this Japanese population with a high baseline fracture risk, combined treatment with folate and vitamin B12 is safe and effective in reducing the risk of a hip fracture in elderly patients following stroke."
[Sato Y, et al. JAMA 2005; 293:1082-1088]

Folate supplementation and twin pregnancies.
The role of folic acid in the prevention of neural tube defects is well established and is supported by evidence from observational, intervention, and randomized studies. Building on this evidence, women are encouraged to increase their intake of folate before and early in pregnancy. In addition, many countries including Canada made it mandatory to fortify flour with folic acid which reduced the prevalence of neural tube defects post fortification in these countries. There have been some reports suggesting an association between folate use or multivitamin use and twin pregnancies. This association could be explained by confounding factors, which were not considered in these studies. Investigating such a potential association in a large well-designed study is of considerable international public health importance. A retrospective, population-register based study of 176,042 women who gave birth from December 1998 through the end of 2001 was conducted in Norway. Information on folate and multivitamin use was recorded as a mandatory requirement for the Medical Birth Registry of Norway. Further information about pregnancies after in vitro fertilization (IVF) was gathered separately. Adjusting for maternal age and parity, preconceptional folate use was associated with twin pregnancies. However, this association was mainly explained by the confounding effect of IVF pregnancies, because of their strong association with twin pregnancies and folate use. This risk was no longer elevated when IVF pregnancies were excluded from the analysis. There was a weak association for multivitamin use and folate use during pregnancy with twin pregnancies. This weak association could be due to confounding by indication, as there is a tendency to increase vitamins use after a twin pregnancy was recognized. The authors conclude, "The association between preconceptional folate use and twin pregnancies was strongly confounded by IVF. After accounting for IVF pregnancies and underreporting, we found no evidence for an association between preconceptional folate supplements and twinning."
[Vollset SE, et al. Epidemiology 2005; 16:201-205]

Recent developments in vitamin D deficiency and muscle weakness among elderly people [Clinical Review].
Elderly individuals are at increased risk to falls and fractures. Although many factors could explain this increased risk, the main risk factor seems to be muscle weakness. Vitamin D deficiency is common among the elderly, and vitamin D is important for muscle strength, therefore maintaining adequate vitamin D intake is important in reducing the incidence of falls and fractures. This clinical review was based on reviewing the published literature as well as personal discussion with researchers. One of the main conclusions in this review is that being housebound is a risk factor for vitamin D deficiency and the frequency of vitamin D deficiency increases with aging. In addition to the association with age and being housebound, the prevalence of vitamin D deficiency is more common in Europe than the USA and is ten times higher in African-American women than in white women in America. After reviewing several studies, it seems that daily supplementation of 800 IU of vitamin D is needed to reduce the risk of falls. This dose is safe, because the lowest level at which an adverse effect was observed was at 40,000 IU/day, however, the 800 IU is ineffective in patients with renal and hepatic failure. In conclusion, the author is suggesting that treating elderly housebound people with 800 IU of vitamin D daily should be seriously considered.
[Venning G. BMJ 2005; 330:524-526]

Suggested Readings

Plasma carotenoids, retinol, and tocopherols and risk of breast cancer.
[Tamimi RM, et al. Am J Epidemiol 2005; 161:153-160]

Origins and evolution of the Western diet: health implications for 21st century.
[Cordain L, et al. Am J Clin Nutr 2005; 81:341-354]

Dietary patterns and the incidence of Type 2 Diabetes.
[Montonen J, et al. Am J Epidemiol 2005; 161:219-227]

Direct comparison of a dietary portfolio of cholesterol-lowering foods with a statin in hypercholesterolemic participants.
[Jenkins DJA, et al. Am J Clin Nutr 2005; 81:380-387]

Low plasma vitamin E levels in major depression; diet or disease?
[Owen AJ, et al. Eur J Clin Nutr 2005; 59:304-306]

Fish consumption: Recommendations versus advisories, can they be reconciled?
[Smith KM, Sahyoun NR. Nutrition Reviews 2005; 63: 39-46]

Relation of the tocopherol forms to incident Alzheimer disease and to cognitive change.
[Morris MC, et al. Am J Clin Nutr 2005; 81:508-514]

Effect of short-term high dietary calcium intake on 24-h energy expenditure, fat oxidation, and fecal fat excretion
[Jacobsen R, et al. Int J Obes Relat Metab Disord 2005; 29:292-301]

Elevated plasma homocysteine level is an independent predictor of coronary heart disease events in patients with type 2 diabetes mellitus.
[Soinio M, et al. Ann Intern Med 2004; 140:94-100]

Plasma lycopene, other carotenoids, and retinol and the risk of cardiovascular disease in women.
[Sesso HD, et al. Am J Clin Nutr 2004; 79:47-53]