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1: Public Health Nutr 2001 Apr;4(2B):601-9

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Folates and prevention of disease.

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Research in the past decade has established that low or inadequate folate status may contribute to congenital malformations and the development of chronic disease in later life. Using an evidence based approach, there are clear guidelines for recommending folic acid supplementation or fortification in certain disease conditions but further proof of its efficacy is required in other circumstances. There is conclusive evidence that maternal periconceptional supplementation with folic acid prevents the majority of NTDs, probably by overcoming one or more genetically inherited metabolic blocks in folate dependent enzymes. Public health efforts to advise women to increase their folate intake have not been successful. As a result, the U.S. government passed legislation to have all flour fortified with folic acid. This intervention has had a dramatic effect on folate status in the U.S. To date, countries of the EU have not adopted mandatory fortification policies. The amino acid homocysteine is an essential intermediate in folate metabolism. Substantial evidence indicates that elevated plasma homocysteine is an independent risk factor for heart disease and stroke. Plasma homocysteine levels can be reduced by folic acid supplements. A food fortification policy would probably be an effective population strategy to reduce plasma homocysteine. However many experts believe that this would be premature without first showing that such reduction would cause a decrease in the prevalence of cardiovascular disease. The contribution of folate to cancer risk is not well defined although there is reasonable evidence to implicate low folate status in the specific case of colorectal cancer. In particular, long-term folic acid supplementation may reduce risk of colorectal cancer substantially. Various mental disorders including Alzheimer's Disease have been associated with low folate status or elevated plasma homocysteine. While it is hard to determine if this is cause or effect, there is little doubt that if it were true then low dose folic acid intervention would be highly effective.

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