The case for nutritional supplementation

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In recent years, there has been a rapid expansion of the body of scientific evidence published in peer-reviewed journals which demonstrates that use of food supplements can improve overall nutritional status and key bio-markers for health as well as reduce risk of chronic diseases such as heart disease and cancer. In contrast, there have been a small number of well-publicised studies which have failed to demonstrate beneficial effects, and this has led to some confusion among consumers.

A wealth of evidence from observational and epidemiological studies suggests that diets high in carotenoid, vitamin E and polyphenol-rich fruits and vegetables offer substantially reduced risk of chronic diseases. Basic research also has provided suggestive evidence for plausible mechanisms for these observed effects. In attempting to understand the nutrients responsible for these...

effects, clinical studies have been carried out, these generally involving single, synthetic forms of nutrients, or limited combinations of nutrients. Such clinical studies, however, have tended not to show clear beneficial effects of the nutrients.\textsuperscript{14,15,16}

Scientific opinion is increasingly leaning towards the notion that isolated forms of nutrients, particularly synthetic forms of nutrients (especially in the cases of the carotenoids and vitamin E) may not yield the same health protective functions as complexes of nutrients, which can act synergistically, as found in the normal diet. Accordingly, the results of many of the clinical studies conducted on isolated, synthetic nutrients may be less relevant than the observational or epidemiological studies. This also suggests that supplementation with natural complexes of nutrients, similar to those found in dietary sources, is likely to be considerably more beneficial in terms of chronic disease risk reduction than supplementation with isolated nutrients.

A major review of studies on the relationships between vitamin intake and various diseases published between 1966 and 2002 demonstrated that suboptimal levels of vitamin intake are associated with increased risk of contracting a variety of chronic diseases, including cancer, heart disease and osteoporosis.\textsuperscript{17} The authors of this study concluded that many physicians may be unaware of common food sources of vitamins or may be unsure which vitamins they should recommend for their patients and given the current status of scientific knowledge it may be prudent for most adults to supplement their diet with a daily multivitamin.\textsuperscript{11}

A study that followed 958,000 subjects and their death rates from amyotrophic lateral sclerosis (ALS), a a progressive disease of motor nerves in the brain and spinal


cord, from 1989 to 1998 found that those who used vitamin E supplements for 10 years or more had a 62% lower death rate from ALS than those who used no supplements, while those who used vitamin E supplements for less than 10 years had a 41% lower death rate from ALS than non-supplement users.\textsuperscript{18}

A study (Established Populations for Epidemiologic Studies of the Elderly) which followed 11,178 people between the ages of 67 and 105 over the period 1984-1993 concluded that the overall risk of death was reduced by 42% for those who took higher dose supplements of vitamins C and E.\textsuperscript{19}

A randomised double-blind prevention trial across 7 countries provided conclusive evidence that women who took supplements containing 400 μg folic acid reduced the risk of having babies with neural tube defects such as spina bifida by some 72%.\textsuperscript{20}

A large group of 88,756 women from the Nurses’ Health Study, who were free of cancer in 1980 and provided updated assessments of diet, including multivitamin supplement use from 1980 to 1994, were followed through for colon cancer. It was found that long term use (over 15 years use), but not short-term use (less than 4 years use) of multivitamins including folic acid markedly reduced (ca. 5-fold) the frequency of colon cancer.\textsuperscript{21}

In a further epidemiological study involving 87,245 female nurses, it was found, after adjustment for age and smoking, that long-term vitamin E supplementation alone was associated with a 9% reduction in heart disease.\textsuperscript{22} A randomised trial, published in the Lancet, showed that subjects consuming vitamin C (1000 mg /day) and E (800 IU /day) supplements had a significantly lower risk of developing arteriosclerosis, compared with the placebo control.\textsuperscript{23}


In a clinical intervention study (CHAOS) of 2002 coronary patients by Cambridge University scientists, supplementation of up to 800 IU vitamin E (in the alpha-tocopherol form) per day for over two years was associated with reductions in the frequencies of heart attacks by as much as 75%.

A randomised, placebo-controlled trial involving 90 UK schoolchildren showed many children were mineral deficient and that non-verbal intelligence was increased in the group given a multivitamin/mineral supplement, but not in the group receiving a placebo.

A recent placebo-controlled study of 21 Canadian nursing homes showed that subjects (average age 85) without dementia had a significantly lower rate of infections when taking a vitamin and mineral supplement compared with a placebo.

It has been shown that long-term micro-nutritional deficiencies cause damage to DNA much in the same way as radiation and such oxidative stress is likely to contribute to the development of cancer.

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