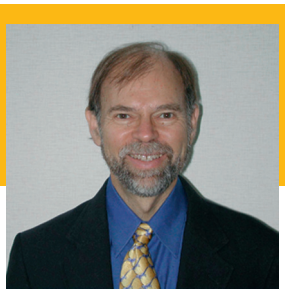
Editorial



The vitamin D revolution

The world is currently in the midst of the vitamin D revolution. Emerging scientific research has linked low-serum 25-hydroxyvitamin D [25(OH)D] levels to increased risk of many types of chronic diseases including many types of cancer, cardiovascular disease, diabetes, autoimmune diseases, as well as several types of bacterial and viral infections [1]. Much of the scientific evidence dates from the past decade based largely on ecological (geographical) and observational studies, which are appropriate since vitamin D is a natural compound produced through ultraviolet-B (UVB) irradiance. Systematic reviews (meta-analyses) of the observational studies indicate that by increasing serum 25(OH)D levels from 50–60 to 100–110 nmol/L, mortality rates for cancer, cardiovascular disease and infectious diseases decrease by about 25%, leading to an all-cause mortality rate reduction of 15–20% [2]. There are few useful randomized controlled trials (RCTs) of vitamin D, as many of the early trials used only 400 IU/day of vitamin D, which increases serum 25(OH)D by only 10 nmol/L.

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Despite the large body of scientific literature and widespread media coverage during the past decade, few of the world's health agencies and disease organizations have embraced the vitamin D revolution. Reasons given generally include distrust of ecological and observational studies, concerns about high doses of supplements, risk of skin cancer and melanoma from ultraviolet irradiance, and lack of RCTs to demonstrate efficacy and lack of adverse effects. There may also be reluctance to embrace an inexpensive way to reduce the burden of disease which could take a big bite out of income and profits from treating disease. (A year's supply of vitamin D at 3000–4000 IU/day costs $10 through the Internet) This dose can reduce the economic burden of disease by about 10% in Western developed countries [2]. The Institute of Medicine of the National Academies, US, has assembled a committee to review the dietary guidelines for vitamin D and calcium, the first time since 1997, when the only identified benefit was reduced risk of rickets. Their report is due in September.

The papers on vitamin D in this issue cover a large range of topics, including the reliability of measuring serum 25(OH)D, vitamin D fortification and supplementation, effects of vitamin D on pregnancy and disease, the vitamin D situation in India, and benefits to the health and wealth of nations. The paper by Gillie describes his travails in trying to convince the UK health authorities that solar UVB irradiance and vitamin D could greatly reduce the risk and burden of disease [3]. He notes that they do not have time to spend looking at a theory that involves a great deal of diverse evidence. Also it is not easy for them to adopt a new theory that challenges established positions such as the idea that sunlight is dangerous and that high doses of vitamins may be hazardous. We thank the authors for their time and effort in contributing to this issue and hope that the papers in this issue provide further impetus to the vitamin D revolution.

References

[1] Holick, M. F., Vitamin D deficiency. *N. Engl. J. Med.* 2007, *357*, 266–281.

[2] Grant, W. B., Cross, H. S., Garland, C. F., Gorham, E. D. *et al.*, Estimated benefit of increased vitamin D status in reducing the economic burden of disease in Western Europe. *Prog. Biophys. Mol. Biol.* 2009, *99*, 104–113.

[3] Gillie, O., Sunlight robbery: a critique of public health policy on vitamin D in the UK. *Mol. Nutr. Food Res.* 2010, *54*, 1148–1163.

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