

Recommended daily intakes of vitamin D should be quadrupled to 800 International Units, says a leading US expert from Boston University School of Medicine.

The review, published in the prestigious New England Journal of Medicine, increases the need for policy makers to review current guidelines for the vitamin, and could open opportunities for food fortification and supplements.

Dr. Michael Holick states that current recommendations of 200 IU per day for children and adults up to 50 years of age for vitamin D need to be increased to 800 - 1000 IU vitamin D3.

"However, one can not obtain these amounts from most dietary sources unless one is eating oily fish frequently," said Holick. "Thus, sensible sun exposure (or UVB irradiation) and/or supplements are required to satisfy the body's vitamin D requirement."

Vitamin D refers to two biologically inactive precursors - D3, also known as cholecalciferol, and D2, also known as ergocalciferol. The former, produced in the skin on exposure to UVB radiation (290 to 320 nm), is said to be more bioactive. The latter is derived from plants and only enters the body via the diet.

Both D3 and D2 precursors are hydroxylated in the liver and kidneys to form 25-hydroxyvitamin D (25(OH)D), the non-active 'storage' form, and 1,25-dihydroxyvitamin D (1,25(OH)₂D), the biologically active form that is tightly controlled by the body.

Holick notes that about one billion people are estimated to be vitamin D deficient with children and adults in Europe at particular risk, even more so since very few foods are fortified with the vitamin.

In adults, vitamin D deficiency may precipitate or exacerbate osteopenia, osteoporosis, muscle weakness, fractures, common cancers, autoimmune diseases, infectious diseases and cardiovascular diseases.

Moreover, he stated that without vitamin D only about 10-15 per cent of dietary calcium and about 60 per cent of phosphorus is absorbed by the body, thereby have direct and detrimental effects on bone health and muscle strength in adults and skeletal problems in children.

Holick's review follows hot on the heels of similar statements in leading nutrition journals during the past six months.

Fifteen experts from universities, research institutes, and university hospitals around the world, led by Reinhold Vieth from Toronto's Mount Sinai Hospital wrote in the American Journal of Clinical Nutrition: *"We call for international agencies such as the*

Food and Nutrition Board and the European Commission's Health and Consumer Protection Directorate-General to reassess as a matter of high priority their dietary recommendations for vitamin D, because the formal nationwide advice from health agencies needs to be changed."

"The balance of the evidence leads to the conclusion that the public health is best served by a recommendation of higher daily intakes of vitamin D. Relatively simple and low-cost changes, such as increased food fortification or increasing the amount of vitamin D in vitamin supplement products, may very well bring about rapid and important reductions in the morbidity associated with low vitamin D status," they said.

"Because of the convincing evidence for benefit and the strong evidence of safety, we urge those who have the ability to support public health-the media, vitamin manufacturers, and policy makers-to undertake new initiatives that will have a realistic chance of making a difference in terms of vitamin D nutrition," wrote Vieth and collaborators.

A recent review of the science reported that the tolerable upper intake level for oral vitamin D3 should be increased five-fold, from the current tolerable upper intake level (UL) in Europe and the US of 2000 International Units (IU), equivalent to 50 micrograms per day, to 10,000 IU (250 micrograms per day).

Source: *New England Journal of Medicine*
July 19, 2007, Volume 357, Number 3, Pages 266-281
"Vitamin D Deficiency"
Author: M.F. Holick

The American Journal of Clinical Nutrition
March 2007, Volume 85, Number 3, Pages 649-650
"The urgent need to recommend an intake of vitamin D that is effective"
Authors: R. Vieth, H. Bischoff-Ferrari, B.J. Boucher, B. Dawson-Hughes, C.F. Garland, R.P. Heaney, M.F. Holick, B.W. Hollis, C. Lamberg-Allardt, J.J. McGrath, A.W. Norman, R. Scragg, S.J. Whiting, W.C. Willett, and A. Zittermann