

Kids in Northern climes at risk of low vit D levels

About 55 per cent of seemingly healthy adolescents may be vitamin D deficient, says a US study, and are at increased risk of osteoporosis and other health problems later in life.

Amongst African-American adolescents the proportion of children with low [vitamin D](#) levels was over 90 per cent, said the researchers, led by Babette Zemel, director of the Nutrition and Growth Laboratory, The Children's Hospital of Philadelphia.

Such results may lead to recommendations of vitamin D supplementation or further fortification for adolescents to help reduce the risk of [osteoporosis](#), a disease that is four times more likely to affect women than men.

Dr. Zemel, told NutraIngredients.com: *"The recommended levels of dietary and supplemental vitamin D from the Institute of Medicine (Dietary reference intakes for calcium, phosphorus, magnesium, vitamin D and fluoride. Washington, DC: National Academy Press; 1997) are probably too low to maintain healthy levels of vitamin D.*

"Fortification of foods other than liquid milk should be explored, since many children do not consume adequate amounts of milk to meet their calcium or vitamin D needs," she said.

Potential reduction of osteoporosis, a disease that affects over 75m people in Europe, the USA and Japan, has traditionally been a two-pronged approach by either attempting to boost bone density in high-risk post-menopausal women by improved diet or supplements, or by maximising the build up of bone during the highly important pubescent years. About 35 per cent of a mature adult's peak bone mass is built-up during [puberty](#).

The new research measured blood levels of vitamin D in 382 healthy children between six years and 21 years of age living in the northeastern U.S. After measuring the intake of vitamin D from dietary and supplemental sources and evaluating blood levels of vitamin D, the researchers found that 55 per cent of the children had inadequate vitamin D blood levels (levels of 25(OH)D below 30 nanomoles per litre of serum), with the proportion increasing to 68 per cent in winter.

"The best indicator of a person's vitamin D status is the blood level of a vitamin D compound called 25-hydroxyvitamin D," said Zemel. "Vitamin D deficiency remains an under-recognized problem overall, and is not well studied in children."

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, from consumption of foods such as oily fish, egg yolk and liver.

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

The researchers said that the new findings support the call for a review of dietary recommendations for the vitamin.

"Additional studies are needed to document the effects of screening for and treatment of hypovitaminosis D in otherwise healthy children," they concluded.

"These data suggest that lifelong maintenance of adequate vitamin D levels is beneficial," Dr. Zemel told this website. "The human body can synthesize vitamin D in the skin when exposed to ultraviolet radiation B from the sun. During winter months, at northern latitudes, there is not enough UVB radiation to maintain adequate vitamin D levels. So, food fortification is necessary to maintain healthy levels of vitamin D when sunlight exposure is inadequate," she added.

A similar study from Britain last year reported that over 70 per cent of seemingly healthy teenage girls might be vitamin D deficient (*Archives of Disease in Childhood*, Vol. 91, pp. 569-572).

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"Risk factors for low serum 25-hydroxyvitamin D concentrations in otherwise healthy children and adolescents"

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