

Vitamin D supplements show anti-diabetes potential

Supplements of the sunshine vitamin may improve insulin resistance and sensitivity, both of which are risk factors related to diabetes, says a new study from New Zealand.

Insulin resistance occurs when cells no longer adequately respond to insulin's signal to increase the uptake of plasma glucose. Insulin uptake was significantly higher in women following high-dose vitamin D supplementation, according to results of a randomised, controlled, double-blind trial published in the *British Journal of Nutrition*.

The optimal effects were observed when blood vitamin D levels were in the range 80 to 119 nanomoles per litre, said the researchers, *"providing further evidence for an increase in the recommended adequate levels"*.

D for diabetes prevention

This is not the first time that low plasma vitamin D levels have been linked to diabetes. A recent meta-analysis of data from observational studies and clinical trials in adults showed a "relatively consistent association" between low intakes of calcium, vitamin D, or dairy intake and type-2 diabetes (*Journal of Clinical Endocrinology & Metabolism*, Vol. 92, pp. 2017-2029).

The new study involved 81 South Asian women with insulin resistance living in New Zealand. The subjects, aged between 23 and 68, were randomly assigned to receive either 100 micrograms (4,000 IU) of vitamin D3 or placebo daily for six months.

At the end of the test period, women in the vitamin D group experienced *"significant improvements"* in both insulin sensitivity and resistance, said the researchers, which was also accompanied a decrease in fasting insulin levels, compared to placebo.

The greatest improvement in insulin resistance was observed when blood levels of vitamin D, measured as 25-hydroxyvitamin D (25(OH)D) – the non-active 'storage' form of the vitamin – were at least 80 nanomoles per litre.

"Improving vitamin D status in insulin resistant women resulted in improved IR and sensitivity, but no change in insulin secretion," wrote the women. *"Optimal vitamin D concentrations for reducing IR were shown to be 80 to 119 nmol/l, providing further evidence for an increase in the recommended adequate levels,"* they concluded.

Shedding light on the sunshine vitamin

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.

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.

Source: *British Journal of Nutrition*

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"Vitamin D supplementation reduces insulin resistance in South Asian women living in New Zealand who are insulin resistant and vitamin D deficient – a randomised, placebo-controlled trial"

1 in 5 kids get little vitamin D, study says

At least one in five U.S. children aged 1 to 11 don't get enough vitamin D and could be at risk for a variety of health problems including weak bones and diabetes, the most recent national analysis suggests.

By a looser measure, almost 90 percent of black children that age and 80 percent of Hispanic kids could be vitamin D deficient, "astounding numbers" that should serve as a call to action, said Dr. Jonathan Mansbach, lead author of the new analysis and a researcher at Harvard Medical School and Children's Hospital in Boston.

The findings add to mounting evidence about vitamin D deficiency in children, teens and adults, a concern because of recent studies suggesting the vitamin might help prevent serious diseases, including infections, diabetes and even some cancers.

Exactly how much vitamin D children and adults should get, and defining when they are deficient, is under debate. Doctors use different definitions, and many are waiting for guidance expected in an Institute of Medicine report on vitamin D due next year. The institute is a government advisory group that sets dietary standards.

Using the American Academy of Pediatrics' cutoff for healthy vitamin D levels, 6.4 million children, about 20 percent of kids that age, have blood levels that are too low. Applying a less strict, higher cutoff, two-thirds of children that age, including 90 percent of black kids and 80 percent of Hispanics, are deficient in vitamin D.

Children can get 400 units daily by drinking four cups of fortified milk, or eating lots of fish, but many don't do that.

The body also makes vitamin D when sunlight hits the skin, but many children don't spend enough time outdoors. That's one reason why lower vitamin D levels are found in children living in colder climates and those with darker skin, which absorbs less sunlight.

Pediatrics: <http://www.pediatrics.org>