

## Vitamin D Augments Effect of Weight Loss in Older Women

Megan Brooks | July 01, 2015

Vitamin D supplementation augments the benefits of weight loss on systemic inflammation linked to cancer and chronic disease, according to new research.

In the year-long study of older overweight women with insufficient vitamin D levels, weight loss coupled with vitamin D supplementation had a greater effect on reducing levels of the proinflammatory cytokine interleukin (IL)-6 than weight loss alone.

"Evidence suggests that overweight individuals have lower levels of vitamin D because it's sequestered in fat depots, leading to lower bioavailability," said lead author Catherine Duggan, PhD, from Fred Hutchinson Cancer Research Center in Seattle.

It is possible that "weight loss leading to fat loss, releasing stores of vitamin D, would have an additive effect on the vitamin D<sub>3</sub> supplements (which themselves aren't being sequestered)," she told *Medscape Medical News*. "We already know that weight loss reduces levels of inflammation, so this effect, plus the added benefit of vitamin D<sub>3</sub> supplements and the increased bioavailability of vitamin D<sub>3</sub>, reduces IL-6 levels by a measurable level."

The study was published online April 23 in *Cancer Prevention Research*.

"Clinicians should encourage maintenance of a healthy weight to reduce chronic inflammation and its associated effects. Overweight individuals should be tested for vitamin D deficiency/insufficiency and supplementation advised as necessary," Dr Duggan suggested.

However, a researcher who has studied the effects of vitamin D on inflammatory biomarkers is not convinced. The effect seen may be due to weight, said Paulette D. Chandler, MD, MPH, from Brigham and Women's Hospital and Harvard Medical School in Boston, who was not involved with the study.

"Observational studies highlight vitamin D sufficiency associated with a reduced risk of diseases that cluster with obesity, such as cardiovascular disease, diabetes, and certain cancers. Possible antiobesity mechanisms of calcium and vitamin D include the control of adipocyte death, adipogenesis, and lipid metabolism," Dr Chandler explained.

"Despite plausible mechanisms and in vitro evidence supporting a role for vitamin D in weight reduction, it remains difficult to determine whether the effects are due to vitamin D itself or are related to dietary changes that occur as part of participating in a weight-loss program," she noted.

"It is possible that there is no biologic effect of supplementation with vitamin D on adiposity or inflammation. The observed reduction in proinflammatory biomarkers may be driven by the weight loss and the dietary changes that contributed to the weight loss," she added.

In a previous clinical trial of vitamin D supplementation in black patients, Dr Chandler and her colleagues observed no effect of vitamin D on inflammatory biomarkers (*Cancer Prev Res [Phila]*. 2014;7:218-225). However, she added, "this trial was not imbedded in a weight loss trial."

### Chronic Inflammation as a Protumorigenic State



**Dr Catherine  
Duggan**  
(Photographer: Bo  
Jungmayer from  
the Fred Hutch  
News Service)

Chronic inflammation is thought to represent a protumorigenic state. Previous studies have shown that losing weight can reduce inflammation, and there is some evidence that taking vitamin D supplements can have a similar effect in people with insufficient levels of the nutrient. Dr Duggan and her colleagues report that their study is the first to assess whether adding vitamin D can boost the effect of weight loss on inflammatory biomarkers.

The study participants were 218 postmenopausal women (mean age, 59.6 years) who were overweight or obese, defined as a body mass index (BMI) above 25 kg/m<sup>2</sup> (mean BMI, 32.4 kg/m<sup>2</sup>), with insufficient levels of serum 25-hydroxyvitamin D<sub>3</sub>, ranging from 10 to 32 ng/mL.

All of the women participated in a 12-month diet and exercise program that included 45 minutes of moderate to vigorous exercise 5 days a week. Half the women were randomly assigned to receive vitamin D<sub>3</sub> 2000 IU/day, and the other half were assigned to identical-looking placebo pills.

The researchers measured serum levels of adiponectin, leptin, tumor necrosis factor (TNF)-alpha, IL-6, IL-1b, IL-8, and IL-10, and calculated a composite inflammatory biomarker score.

At 12 months, there were no significant between-group differences in analyte changes.

However, in stratified analyses of women in the vitamin D<sub>3</sub> group, reductions in IL-6 levels were significantly larger in those who lost 5% to 10% of their baseline body weight than in those women who lost no weight or who gained weight (37.3% vs 17.2%;  $P = .004$ ).

In women in the vitamin D<sub>3</sub> group who lost 10% or more of their baseline weight, there were similar, although attenuated, IL-6 reductions (17.3% vs 13.6%;  $P = .02$ ).

The effects of vitamin D<sub>3</sub> supplementation on levels of IL-1b were "inconsistent" when stratified by weight loss, and there were no intervention effects on TNF-alpha, IL-10, IL-8, a composite inflammatory biomarker score, adiponectin, or leptin.

*The study was funded by the Breast Cancer Research Foundation, Susan G. Komen for the Cure, the National Institutes of Health, the Seattle Cancer Consortium Breast Cancer Specialized Program in Research Excellence, the Fred Hutchinson/University of Washington Cancer Consortium, and the Safeway Foundation. The authors have disclosed no relevant financial relationships.*

*Cancer Prev Res (Phila)*. Published online April 23, 2015. Abstract

Medscape Medical News © 2015 WebMD, LLC

Send comments and news tips to [news@medscape.net](mailto:news@medscape.net).

Cite this article: Vitamin D Augments Effect of Weight Loss in Older Women. *Medscape*. Jul 01, 2015.

This website uses cookies to deliver its services as described in our Cookie Policy. By using this website, you agree to the use of cookies.  
close