

Public Abstract

First Name:Anthony

Middle Name:Michael

Last Name:Belenchia

Adviser's First Name:Catherine

Adviser's Last Name:Peterson

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:SP 2012

Department:Nutrition Area Program

Degree:MS

Title:The Effects of High Dose Vitamin D Supplementation on Glucose Metabolism and Inflammation in Obese Adolescents

The prevalence of vitamin D insufficiency in the North American population, particularly in adolescents, has been classified as an epidemic by some experts; and obese individuals are considered at an even greater risk for deficiency because they tend to store vitamin D in their fat cells. Vitamin D deficiency is also associated with inflammation and several characteristics of type 2 diabetes, such as insulin resistance. In order to determine if improving vitamin D status in obese individuals would reduce insulin resistance and inflammation, we conducted a clinical trial in which obese adolescents (ages 9-19) were treated with 4000 IU of vitamin D3 per day for six months.

We found that obese adolescents who were treated with vitamin D had significant reductions in insulin resistance and improvements in insulin sensitivity. Furthermore, we found that improving vitamin D status in obese adolescents reduced the ratio of two hormones, leptin and adiponectin, which is associated with several adverse metabolic conditions. Vitamin D supplementation did not significantly change markers of obesity-associated inflammation.

Our findings provide compelling support for routinely monitoring the vitamin D status of obese individuals. Furthermore, our findings suggest that correcting poor vitamin D status in obese individuals may be an effective addition to the standard treatment of obesity and its associated metabolic complications.