[IMAGE]

# Vitamin D to Prevent Diabetes

By James P. Meschino, DC, MS

A 2014 clinical trial published in the *American Journal of Clinical Nutrition* provides additional evidence that optimal vitamin D nutritional status may be important in preventing the progression of prediabetes to diabetes in adults. Previous studies have shown that a low blood (serum) vitamin D level is associated with insulin resistance, metabolic syndrome and type 2 diabetes.

Researchers examined the effect of vitamin D supplementation on insulin sensitivity and beta cell function in overweight, vitamin D-deficient, non-Western immigrants who were at high risk of diabetes. Researchers recruited a total of 130 non-Western immigrants with prediabetes. Individuals qualified to be in the study if they had a fasting glucose concentration above 5.5 mmol/L (99 mg/dL) or a random glucose concentration between 7.8 to 11.1 mmol/L (140-200 mg/dL), as well as documented vitamin D deficiency (serum 25-hydroxycholecalciferol level below 50 nmol/L or 20 ng/mL).

During the 16-week, randomized, placebo-controlled trial, subjects were randomly assigned vitamin D supplementation (1,200 IU per day) or a placebo. All participants also received 500 mg of calcium supplementation as calcium carbonate.

**Results / Context**

After four months of intervention, each subject underwent an oral glucose tolerance test via the administration of 75 grams of oral glucose. The results showed that mean serum vitamin D concentrations increased significantly in the vitamin D-treated group compared to the placebo group, with the former showing an average increase of 38 nmol/L (15ng/mL) compared to the latter.

When patients who had diabetes at the outset of the study were excluded from the final data, a significant increase in the "insulinogenic index" was observed in prediabetic subjects who obtained a vitamin D concentration ≥60 nmol/L (24ng/mL).

The insulinogenic index, a well-documented test that establishes beta cell function (BF) within the pancreas, is the ratio of insulin concentration at 30 minutes minus fasting insulin, to the difference of glucose at same

time. Researchers concluded that improvement in the insulinogenic index was observed in prediabetic subjects who obtained a vitamin D concentration ≥60 nmol/L (24 ng/ml).

It is worth noting that in a previous study, researchers tested the efficacy and safety of 4,000 IU vitamin D per day in a group of obese (average body mass index above 39.8) diabetic adolescents. Compared to the control group, the vitamin D-supplemented group showed a significant increase in serum 25 hydroxycholecalciferol levels, fasting insulin and improved insulin sensitivity. The researchers concluded that the correction of suboptimal vitamin D status through dietary supplementation may be an effective addition to the standard treatment of obesity and its associated insulin resistance.

**Take-Home Points**

Based on emerging data, it appears prudent for overweight patients with diabetes or prediabetes undergo a blood test to determine their serum level of 25-hydroxycholecalciferol. If their vitamin D blood level is below 60 nmol/L (24 ng/mL), then it seems prudent to talk to their doctor about possible vitamin D supplementation to raise their vitamin D blood levels into the more desirable range.

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**James Meschino, DC, MS,** practices in Toronto, Ontario, Canada and is the author of four nutrition books, including *The Meschino Optimal Living Program* and *Break the Weight Loss Barrier*.