

Taking high-dose vitamin D supplements for five years not affect with type 2 diabetes

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Using significantly higher doses of vitamin D than recommended for five years did not affect the incidence of type 2 diabetes in elderly men and women, according to a new study from the University of Eastern Finland.

In population studies, low levels of vitamin D in the body have been associated with a higher risk of type 2 diabetes. However, such observational studies cannot directly conclude whether using vitamin D supplements can reduce the risk of developing the disease. Experimental studies have shown that the use of significantly higher doses of vitamin D than recommended slightly reduces the risk of developing type 2 diabetes in individuals with impaired glucose metabolism, i.e., those with prediabetes. In contrast, no effects have been observed in individuals without prediabetes. However, the studies with non-prediabetic subjects have used relatively small doses of vitamin D or have been short-term. Until now, there has been no research data on the effects of long-term use of high doses of vitamin D on the risk of type 2 diabetes in individuals without glucose metabolism disorders.

In the Finnish Vitamin D Trial (FIND) conducted at the University of Eastern Finland from 2012 to 2018, 2,495 men aged 60 and older and women aged 65 and older were randomised for five years into either a placebo group or groups receiving either 40 or 80 micrograms of vitamin D₃ per day. In the statistical analyses of the now-published sub-study, 224 participants already using diabetes medications at the start of the study were excluded. Comprehensive information was collected from the participants on lifestyle, nutrition, diseases, and risk factors. Data was also obtained from national health registers. About one-fifth were randomly selected for more detailed examinations, and their blood samples were taken.

During the five years, 105 participants developed type 2 diabetes: 38 in the placebo group, 31 in the group receiving 40 micrograms of vitamin D₃ per day, and 36 in the group receiving 80 micrograms of vitamin D₃ per day. There was no statistically significant difference in the number of cases between the groups.

In the more closely studied group of 505 participants, the blood calcidiol level, which describes the body's vitamin D status, was on average 75 nmol/l at the start, and only nine per cent had a low level, i.e., below 50 nmol/l. After one year, the calcidiol level was on average 100 nmol/l in the group that used 40 micrograms of vitamin D per day and 120 nmol/l in the group that used 80 micrograms of vitamin D per day. There was no significant change in the placebo group. The effects of vitamin D on blood glucose and insulin levels, body mass index, and waist circumference were examined during the first two years of the study, but no differences were observed between the groups.

The findings of the FIND study reinforce the view that the use of higher doses of vitamin D than recommended does not significantly affect the risk of developing type 2 diabetes in individuals without prediabetes and who already have a good vitamin D status. So far, there is no research data on whether high doses of vitamin D can be beneficial in preventing type 2 diabetes in individuals without prediabetes but with vitamin D deficiency.

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