



**Libyan International Medical University
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Effect of Vitamin C on Type 2 Diabetes Patients.

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Abstract:

The aim of this report to know the beneficial effect of vitamin C on type 2 diabetic patient , Intake of a combination of insulin and Vitamin C may prevent diabetes-induced blood vessel damage, or endothelial dysfunction. Cells have memory, allowing damage to continue even after blood glucose has been brought within the target range. But this vitamin erases this memory of the cell and restores the functioning of the cell. This halt helps prevent complications of the heart, kidneys and eyes.

Introduction:

Diabetes type 2 is a disease characterized by decreased sensitivity to the action on insulin to promote sugar (glucose) use, The supplement of vitamin C by high amount to type 2 diabetic patient will decrease these sensitivity by acting as antioxidant that will reduce the memory of cells which decrease the sensitivity to the insulin ; also vitamin C has beneficial effect on the diabetes patient it found to decrease fasting blood sugar (FBS) , triglyceride (TG) , total cholesterol (TC) , low and high density lipoprotein (LDL ,HDL) , glycated hemoglobin HbA (Ic) . The insulin has the ability to cause blood vessel relaxation is controlled, in part, by nitric oxide (NO). Nitric oxide is a substance produced by the cells lining blood vessel walls (endothelium). Increased blood flow to the muscle accounts for increased sugar (glucose) to areas of the body. Therefore, if the cells of blood vessel walls (endothelium) are not functioning properly it may contribute to insulin resistance. Injections of Vitamin C directly into the arteries have been shown to improve blood vessel reaction to nitric oxide in diabetic patients. Researchers believe this may be due to Vitamin C's ability to increase the levels of nitric oxide in blood vessels. ^(1,2,3)

Discussion:

The discussion will be based on three studies that were taken randomly from different sources. A total of 84 patients with type 2 diabetes referred to Yazd Diabetes Research Center, Iran, were included in the study. They received randomly either 500 mg or 1000 mg daily of vitamin C for six weeks. Fasting blood sugar (FBS), triglyceride (TG), total cholesterol (TC), low and high density lipoprotein (LDL, HDL), glycated haemoglobin HbA(Ic) and serum insulin were measured before and after vitamin C consumption and the results were analyzed. The result significant decrease in FBS, TG, LDL, HbA1c and serum insulin was seen in the group supplemented with 1000 mg vitamin C. The dose of 500 mg vitamin C, however, did not produce any significant change in any of the parameters studied.⁽²⁾

The cells have a “memory” that allows damage to continue to occur even when blood glucose levels have been brought within target range. The presence of antioxidants such as vitamin C, however, erases this memory and allows cell function to return to normal. According to this study, “For patients with diabetes, this means simply getting their glucose under control isn’t enough. An antioxidant-based therapy combined with glucose control will give patients more of an advantage and lessen the chance of complications with diabetes. While the researchers recommend that people with diabetes eat foods and take multivitamins rich in antioxidants such as vitamin C, they warn that further investigation is needed: Because the vitamin C used in the study was administered at very high doses and directly into the bloodstream, it is unlikely that a person could derive the same benefits from a store-bought supplement.”⁽³⁾

Diabetes is characterized by decreased sensitivity to the actions of insulin to promote both glucose utilization and vasodilation in skeletal muscle beds. Insulin's vasodilator action is mediated, in part, by endothelial-derived nitric oxide (NO). Increased blood flow accounts for approximately 25% of the increase in skeletal muscle glucose disposal mediated by insulin. Therefore, endothelial dysfunction may contribute to insulin resistance. Intra-arterial administration of vitamin C improves NO-dependent vascular reactivity in diabetic subjects (but not normal subjects). This may be due to antioxidant properties of vitamin C that result in relative increases in the level of NO in the diabetic vasculature.⁽¹⁾

Conclusion:

Daily consumption of 1000 mg supplementary vitamin C may be beneficial in decreasing blood glucose and lipids in patients with type 2 diabetes and thus reducing the risk of complications.

References:

- 1_ National institutes of health clinical center (cc), . (December 2014). Study of the Effects of Vitamin C on Patients with Type 2 Diabetes. <https://clinicaltrials.gov/ct2/show/NCT00001870>
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- 3_ Michael ihnat, phd. (2015). Vitamin C to Prevent Diabetes Damage <https://www.diabetesselfmanagement.gov/blog/vitamin-c-to-prevent-diabetes-damage/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3081446/> .