



# Diabetes: Chapter 11. Vitamin D, Oxidative Stress and Diabetes: Is There A Link?

*Tirang R. Neyestani*

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Early observational studies revealed a seasonal variation in glycemic control in subjects with diabetes, with a deterioration in cold seasons, suggesting a role for vitamin D. On the other hand, oxidative stress (OS), an imbalance between antioxidant defense and pro-oxidants with a shift towards the latter, has been implicated in human diseases including diabetes and its complications. Involvement of blood vessels leading to micro- and macro-angiopathy is predisposed by both hyperinsulinemia and OS. Early in vitro studies have demonstrated antioxidative properties for vitamin D. Later, both cell culture and diabetic animal studies revealed vitamin D-induced upregulation of certain endogenous antioxidant effectors like superoxide dismutase and glutathione. Data coming from two recent clinical trials on subjects with type 2 diabetes have shown amelioration of antioxidant defense following 12 weeks of vitamin D intake. Notwithstanding, the exact mechanisms and the clinical importance of these findings still remain to be clarified by further studies.

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