

Ultraviolet Rays and Diabetes – Let the Sunshine In

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Abstracts: Diabetes is a disease of chronically high blood glucose. It comes in two forms: Type-one, in which there is damage to the islet cells of the pancreas. This is usually due to an autoimmune response, and the damage avoids production of insulin responsible for eliminating glucose from the blood. Type-two, in which insulin is produced, but blood glucose remains high due to insulin resistance. Type-two, is by far the most common type. As with heart and vascular disease, a paucity of sunlight is probably not the main cause of either type of diabetes as other factors may contribute to it, like deleterious nutrition habits, primarily high meat consumption,^{1,2} sugar consumption,^{3,4} low consumption of fruits and vegetables, and too many fried foods.⁵ Stress, lack of sufficient sleep or exercise may also play a role.^{6,7} However, sunlight may act as the main prophylactic against either type of diabetes..

Today, a great number of studies showing a relationship between type-two diabetes mellitus and sun exposure or UVB exposure. ⁸ Papers showed blood-sugar levels were lower during the summer.^{9,10} It has also been found there is a direct and significant association between low vitamin D levels (a surrogate measure for low sun exposure) and increased risk of type-two.^{11,12} A recent meta-analysis produced moderate evidence that recreational sun exposure is associated with a reduced risk of type-two.¹³ The study was undertaken because of the observation by researchers showing that although higher 25(OH) D levels were consistently associated with a lower risk of diabetes, supplementing 25(OH)D had shown no such effects. They hypothesized sun exposure could have influences not related to vitamin D, and such seems to have been the case. Another of the more important investigations showed that women who had frequent sun exposure habits had a 30% reduced risk of type-two.¹⁴ A number of results to date generally satisfy Hill's criteria for causality regarding vitamin D and incidence of pancreatic diseases like diabetes or cancer.^{15,16}

In a 2014 study about ultraviolet light effects, scientists found that overfed mice ate less when ultraviolet (UV) light was shone on them.¹⁷ This UV treatment also resulted in the mice displaying fewer warning signs of type 2 diabetes, such as abnormal insulin resistance and glucose levels. Nitric Oxide (NO), which is released by the skin after exposure to sunlight (UVA rays), was linked to the UV treatment, which can help people control their metabolism and slow weight gain. The same effect of the UV light was found when a cream containing nitric oxide was applied to the skin of the mice.¹⁷ The researchers added that vitamin D, produced by the body in response to sunlight, did not appear to play a role in the results. However, they also acknowledged that their results should be interpreted with caution. Mice are nocturnal animals, covered with fur, and generally not exposed to sunlight. The same year a similar study has further confirmed these findings.¹⁸ Both studies suggest that ultraviolet radiation (UVR) may be an effective means of suppressing the development of obesity and metabolic syndrome, through mechanisms that are independent of vitamin D but dependent

on other UVR-induced mediators such as NO.^{17,18}

Diabetes – a totally unnecessary Disease

All these findings have been met with optimism in regard to the prevention of overweight, metabolic syndrome and type2 diabetes. Moderate exposure to the sun's rays is seen as more as only greatly beneficial. Spending more time outdoors in the sun contributes to a healthier lifestyle in other ways, such as through exercise or dietary restriction. Diabetes is increasing very rapidly all over the world and may someday overwhelm the health-care system. In the opinion of leading experts in this field,^{19,20,21} it is the most easily reversed of all degenerative diseases, so this is a tragedy. Proper nutrition, regular exercise, sufficient sleep, and sufficient vitamin D levels from regular safe sun exposure in the first place, can prevent or even reverse almost all type-two diabetes and avoid cost-effective therapies. Diabetes is a totally unnecessary disease. It is a chronic condition associated with unusually high levels of sugar (glucose) in the blood. Insulin shaped by the pancreas lowers blood glucose. Absence or insufficient making of insulin, or an inability of the body to properly use insulin sources diabetes. The particular cause of this breakdown is unidentified, but genomic and environmental issues show a part. Risk aspects for diabetes contain obesity and high levels of cholesterol. There is no remedy for diabetes, but it can go into reduction. People can succeed it with medication and lifestyle changes.

Moderate Sun Exposure – the best Course of Action

The safest way to get sufficient vitamin D is through direct sun exposure. People can safely spend anywhere from 20 minutes to two hours in the sun every day with beneficial effects.²² If they have dark-colored skin or live far from the equator, they will need to spend more time in the sun than someone who is light-skinned living close to the equator. Of course, in winter sun exposure isn't an option for many people. But they have options to get the vitamin D their body needs: safe tanning beds that have harmful emissions shielded (unfortunately most sun beds have only 1 to 3 % of UVB-Rays) and high-quality vitamin D supplements. But only vitamin D3 (cholecalciferol), the type of vitamin D found naturally in foods like eggs, organ meats, animal fat, cod liver oil, and fish, is appropriate for supplementation. Unfortunately, Vitamin D3 supplements may never offer the same benefits of Vitamin D created from sun exposure. Many factors reduce the skin's production of this important molecule, including pollution, increased skin pigmentation, aging, medications, and the sun protection behaviors such as application of a sunscreen or cover most part of bodies with clothes. An alteration in the zenith angle of the sun caused by a change in latitude, season of the year, or time of day dramatically influences the skin's production. Today, it is a fact, that sunlight influences susceptibility to a number of chronic diseases. The strong cardio-metabolic protective effect, in particular for Hypercholesterolemia, Hypertension or Diabetes, is a prime example, and cannot be ignored nowadays.

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