

Vitamin D and Diabetes

Vitamin D is a fat-soluble vitamin that plays a number of important roles in the body, including maintaining the health of your bones, teeth and joints, and assisting immune system function.

This underrated vitamin is found in certain foods but is also produced by the body in response to exposure to the sun.

When the sun's ultraviolet-B (UVB) rays are exposed to bare skin, the body converts a cholesterol derivative into Vitamin D. In fact, it's now known that every cell and tissue within the body has a Vitamin D protein receptor.

However, most of us in the UK and other Western countries are deficient in Vitamin D, including many patients with Type 2 diabetes, due to limited sunlight exposure caused by a number of factors, including more time spent at home, in the office or the car, shorter days in winter, sunscreen use in summer and fears of skin cancer.

Vitamin D deficiency

The signs of Vitamin D deficiency can range from bone pain and muscle weakness to depression and weakened immune system, while longer-term deficiency can result in obesity, high blood pressure, psoriasis, osteoporosis, chronic fatigue, Alzheimer's disease, cancer and type 2 diabetes.

Exposing your skin to the sun for 15-20 minutes each day can help increase your body's own production of vitamin D and thus reduce your risk of diabetes and other serious medical conditions.

Alternatively, you can get your daily intake of vitamin D through dietary supplements and foods such as nuts, oily fish, eggs, powdered milk and some fortified cereals.

Effects on diabetes

Vitamin D is believed to help improve the body's sensitivity to insulin – the hormone responsible for regulating blood sugar levels – and thus reduce the risk of insulin resistance, which is often a precursor to type 2 diabetes.

Some scientists also believe this vitamin may help regulate the production of insulin in the pancreas.

Vitamin D levels should ideally be between 20-56 ng/ml (50-140 nmol/l)*, with anything below 20 ng/ml considered deficient.

However, it is now known that raising the amount of vitamin D in your body to around 60-80 ng/ml can help keep blood glucose levels under control, which is vital for people with diabetes.

Other health benefits

As well as assisting glycemic control, increasing your levels of vitamin D can also:

- **Aid weight loss** – studies have shown that good vitamin D status helps to reduce parathyroid hormone (PTH) levels, which in the long-term may promote weight loss and reduce risk of obesity, which is a major risk factor for type 2 diabetes.
- **Regulate appetite** – vitamin D can increase your body's levels of the hormone leptin, which controls body fat storage and triggers the sensation of satiety, giving the feeling of having eaten enough and thus lowering hunger levels.
- **Reduce belly fat** - an increase in vitamin D can help lower levels of cortisol, a stress hormone produced in the adrenal glands. Cortisol is involved in a number of important functions, including the body's response to stress and regulation of blood pressure. But higher and more prolonged levels of the hormone in the blood can lead to increased abdominal (or visceral) fat, which is linked to various health conditions including diabetes type 2.

Types of vitamin D

Vitamin D2 is a synthetic version called ergocalciferol, which has a shorter shelf life, while vitamin D3 (also known as cholecalciferol) is the same as the vitamin D that is produced by the body following exposure to UVB rays.

Studies have shown that vitamin D3 appears to be more than three times as effective as vitamin D2, but most products that include the words "good source of vitamin D" or "fortified with vitamin D" on their labels contain the hugely inferior vitamin D2.

So when shopping for vitamin D-rich foods or supplements, make sure you check which 'type' of vitamin D each product contains.

Where can I buy vitamin D supplements?

Single vitamin D supplements or vitamin drops containing vitamin D (for use by young children) are available at most UK pharmacies, supermarkets and health food retailers like Holland and Barrett.

Most multivitamins provide a daily dosage of 400 International Units (IU), although some manufacturers have begun to offer products with 1,000, 2,000 and even 5,000 IU per day - considerably more than the UK recommendations of 400 units.