**Diabetic Medicine March 2016**

**Headlines**

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| Vitamin D supplementation lowers HbA1c and fasting glucose but vitamin D status is not associated with quality of life | Alanine transferase and the risk of diabetes and cardiovascular disease |
| Vitamin C status is inversely associated with insulin resistance | Early changes in fasting glucose predict the long term response to Dulaglutide |
| Are the ethnic differences in cardiovascular disease explained by differences in the prevalence of kidney disease? | The high health care costs of diabetes |

Artwork

**Title: Vitamin D**



**Caption: vitamin D**

**Valerie – are we able to use this image? It is available at:**

[**http://images.universityherald.com/data/images/full/5517/vitamin-d.jpg?w=600**](http://images.universityherald.com/data/images/full/5517/vitamin-d.jpg?w=600)

**It seems so much better than the ones in science photo. If not we could use**

Cod liver oil capsules

C021/6342

http://www.sciencephoto.com/media/609643/view



**Free articles**

1. Editorial
2. Systematic Review x 2
3. Krul-Poel et al. Vitamin D status and health-related quality of life in patients with Type 2 diabetes. DME12834
4. Donin et al DME13006. Fruit, vegetable, vitamin C intakes and plasma vitamin C: cross-sectional associations with insulin resistance and glycaemia in 9-10 year-old children

**Editorial**

**Vitamins and Diabetes**

The importance of eating certain foods to maintain health has been recognised for many millennia. In ancient Egyptian times, liver was eaten to prevent night blindness while the Royal Navy introduced citrus fruits in the 18th century to prevent scurvy, leading to the sailors’ nickname “Limeys”. Vitamins, the essential nutrients that explained these phenomena, were described through classical deficiency and supplementation studies in the 18th and 19th century and chemical identification in the first half of the 20th century.

Although rickets, scurvy, beriberi, pellagra and other vitamin deficiency conditions still occur, attention has turned to whether lesser degrees of vitamin deficiency may play a broader role in the development of other non-communicable chronic diseases. Vitamin D, for example, has been linked with depression, cancer, heart disease, and autoimmune diseases such as multiple sclerosis and type 1 diabetes. This is important given that 1 in 7 people worldwide have low circulating vitamin D levels.

Whether vitamin D has an aetiological role in type 2 diabetes is an unresolved issue, although this seems biologically plausible as there are vitamin D receptors in β-cells and important insulin target tissues, including skeletal muscle, adipose tissue and liver. Those with low vitamin D levels tend to progress more rapidly to diabetes possibly mediated through increased insulin resistance and poorer β-cell function. A further question is whether vitamin D supplementation can prevent the progression to diabetes in those at high risk of diabetes and this was the subject of a systematic review of 10 randomized controlled trials by Poolsup and colleagues (1). They found that vitamin D supplementation had no effect on insulin resistance or the 2-hour plasma glucose of an oral glucose tolerance test, although there was a small statistically significant but clinically irrelevant reduction in fasting glucose and HbA1c. Another article in this month’s issue found no association between vitamin D levels and health related quality of life, despite vitamin D deficiency being common (38%) among the 241 participants with type 2 diabetes (2).

Insulin resistance is also associated with low plasma vitamin C concentration in adulthood. Furthermore, epidemiological studies have found a weak association between low fruit and vegetable intake and an increased risk of diabetes but most studies have failed to confirm such a link with vitamin C intake. The paper by Donin and colleagues reports similar findings in a large cross-sectional study of UK schoolchildren aged 9-10 years old, demonstrating that although there was an association between low circulating vitamin C concentration and insulin resistance there was no relationship with fruit, vegetable and vitamin C intake (3). The reason for this discrepancy is uncertain but nonetheless important when considering strategies to reduce the risk of diabetes.

Neither Diabetes UK nor the American Diabetes Association advocate vitamin supplementation in healthy adults as a means of preventing or treating diabetes and yet these preparations are widely taken by approximately 20-30% of the population, with an even higher proportion among those with diabetes. With over US$100 billion spent globally on food supplements every year, it is important to understand the role of vitamins in diabetes prevention and management. This will enable healthcare professionals to advise those taking these supplements whether they are doing themselves any good or just making expensive urine!

1. Poolsup et al. Effect of vitamin D supplementation on insulin resistance and glycemic control in prediabetes: A systematic review and meta-analysis. DME12893.
2. Krul-Poel et al. Vitamin D status and health-related quality of life in patients with Type 2 diabetes. DME12834
3. Donin et al DME13006. Fruit, vegetable, vitamin C intakes and plasma vitamin C: cross-sectional associations with insulin resistance and glycaemia in 9-10 year-old children