

Vitamin D supplements may offer cheap and effective immune system boost against TB

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Scientists have shown that a single 2.5mg dose of vitamin D may be enough to boost the immune system to fight against tuberculosis (TB) and similar bacteria for at least 6 weeks. Their findings came from a study that identified an extraordinarily high incidence of vitamin D deficiency amongst those communities in London most at risk from the disease, which kills around two million people each year.

The research, funded by the Wellcome Trust, the Department of Environmental Health at Newham Council and Newham University Hospital NHS Trust Respiratory Research Fund, is published online in the American Journal of Respiratory and Critical Care Medicine.

Whilst a diet of oily fish can provide some vitamin D, the main source of the body's vitamin D comes from exposing the skin to sunlight. In Britain, however, the amount of sunlight is usually insufficient to make vitamin D in the skin between October and April, and much of the population becomes deficient during the winter and spring.

Researchers from Queen Mary's School of Medicine and Dentistry, London, and the Wellcome Trust Centre for Research in Clinical Tropical Medicine, Imperial College London, studied patients at Newham University Hospital and Northwick Park Hospital in London who had been exposed to TB. They found that over 90% of such patients had a vitamin D deficiency.

Vitamin D was used to treat TB in the pre-antibiotic era, when special

sanatoria were built in sunny locations, such as the Swiss Alps. But until now, no study has evaluated the effect of vitamin D supplementation on immunity to mycobacteria, the family of bacteria that cause TB.

The researchers performed a randomised control trial on a group of volunteers who were given either a 2.5mg supplement or a placebo. Samples of the volunteers' blood were then tested in Dr Robert Wilkinson's Wellcome Trust-funded laboratory at Imperial College, to see whether the supplement affected the immune system's ability to withstand infection by mycobacteria.

"We found that a single large dose of vitamin D was sufficient to enhance a person's immunity to the bacteria," says Dr Adrian Martineau from Imperial College London, who co-ordinated the study. "This is very significant given the high levels of vitamin D deficiency in people at the highest risk of TB infection, and shows that a simple, cheap supplement could make a significant impact on the health of people most at risk from the disease."

According to the Health Protection Agency, the incidence of TB in the UK is increasing, with around 8,000 new cases a year. Cases in the UK are predominantly confined to the major cities and about 40 per cent of all cases are in London. TB is also a major global problem: an estimated one-third of the world's population – nearly two billion people – are infected. Nine million people a year develop the active disease worldwide, which kills two million each year.

"Most cases of TB in London arise from people who have already become infected with the bacteria but in whom it lies latent," says Professor Chris Griffiths from Queen Mary's School of Medicine and Dentistry. "Our results indicate that vitamin D supplementation may prevent reactivation of latent TB. Identifying people with latent TB and providing supplements could be an important strategy for tackling the

disease."

Treatment is both very cheap – about 60p per dose or 10p per week – and safe. Vitamin D supplements could be prescribed for patients with or at risk of latent TB through GP surgeries.

Dr Martineau points out: "Our work adds to the growing evidence that vitamin D may have a wide range of important health benefits, including preventing falls and fractures and reducing risk of cancer and diabetes, as well as boosting the immune system against infection. Population-wide supplementation needs to be considered by public health planners."

"Milk and orange juice could be fortified with vitamin D, as in the US and Canada," he says. "At present only margarine is supplemented in the UK, and recent studies show that this is not an effective way to prevent vitamin D deficiency."

Source: Wellcome Trust

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