

In the news

IMMUNE-BOOSTING SUNSHINE

Vitamin D, also known as ‘the sunshine vitamin’, has a crucial role in human naive T cell activation, according to a study published online in *Nature Immunology* (7 Mar 2010). Therefore, low levels of vitamin D in humans could result in defective T cell-mediated immune responses and compromised immunity to pathogens.

Vitamin D is produced in the skin in response to sunlight and can also be found in oily fish and eggs. It is important for calcium absorption, and a link between the levels of vitamin D and diseases such as cancer and multiple sclerosis has been proposed. According to Carsten Geisler, of the University of Copenhagen, Denmark, and lead author of this study, “What we didn’t realize is how crucial vitamin D is for actually activating the immune system — which we know now.” (*Examiner.com*, 8 Mar 2010.)

Geisler and colleagues found that naive human T cells expressed low levels of the signalling molecule *PLCγ1* (phospholipase Cγ1), which is required for T cell activation in response to antigen. Vitamin D was shown to be required for *PLCγ1* expression and therefore for T cell receptor signalling and the activation of naive T cells. The dependence of naive T cells on vitamin D was specific to humans, as naive T cells in mice already express *PLCγ1*.

“This means that the [human] T cell must have vitamin D or activation of the cell will cease. If the T cells cannot find enough vitamin D in the blood, they won’t even begin to mobilise”, said Geisler (*Telegraph.co.uk*, 7 Mar 2010).

Geisler also commented that the finding has important implications not only for our understanding of how T cells are activated during infections but also for autoimmunity and the rejection of transplanted organs (*Reuters*, 7 Mar 2010).

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