

# Vitamin D supplements may benefit lupus patients

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A new clinical study published in BioMedCentral's open access journal *Arthritis Research and Therapy* provides preliminary evidence that vitamin D supplementation could be considered an immunomodulatory agent for systemic lupus erythematosus (SLE), a debilitating autoimmune disease characterized not only by skin, joint, neurological and renal symptoms, but also by inflammation of tissue linings in the body.

SLE is a T- and [B-cell](#)-dependent disease that causes an appearance of [autoantibodies](#), causing the body to attack itself. Patients present with a depletion of [regulatory T cells](#) (Tregs) that normally protect against autoimmune disease, an increase in cytokine-producing T helper (Th) 17 cells and an increase in IFN-inducible genes, which trigger the body's protective responses. Recent studies have shown that vitamin D could ameliorate these effects.

In a prospective clinical trial, Nathalie Costedoat-Chalumeau and colleagues set out to evaluate the safety and immunological effects of vitamin D supplementation in 20 SLE patients with low vitamin D levels. They observed these patients over six months and found that vitamin D was not only well-tolerated but, more importantly, there were no SLE flare-ups during the follow-up period.

Vitamin D supplementation in these patients caused an increase in beneficial CD4+ cells (mature Th cells), an increase in Treg cells and a decrease of effector Th1 and Th17 cells. It also induced a decrease of

memory B cell and anti-DNA antibodies – all beneficial for SLE symptoms. The authors found that no modification of existing [immunosuppressant drugs](#) was needed, nor any new drugs initiated.

Although preliminary in nature, these findings suggest that vitamin D provides beneficial immunological effects for SLE, with a decrease in B [memory cells](#) and effector T cells, and an increase in Tregs. Costedoat-Chalumeau said "This should be confirmed in larger randomized controlled trials."

Costedoat-Chalumeau believes that the findings confirm that vitamin D may also play other roles in the immune system. She said "The study has highlighted interesting pathways to explore. Among the identified signatures, we observed the down-regulation of RNA polymerase functions and histone expression and the up-regulation of the TP53/CDKN1A-related pathway. These deserve further research owing to their possible involvement with a decrease in the accumulation of autoantigens and the activation and proliferation of autoreactive T and B lymphocytes."

**More information:** Restoration of regulatory and effector T cell balance and B cell homeostasis in systemic lupus erythematosus patients through vitamin D supplementation Benjamin Terrier, Nicolas Derian, Yoland Schoindre, Wahiba Chaara, Guillaume Geri, Noel Zahr, Kuberaka Mariampillai, Michelle Rosenzweig, Wassila Carpentier, Lucile Musset, Jean-Charles Piette, Adrien Six, David Klatzmann, David Saadoun, Patrice Cacoub and Nathalie Costedoat-Chalumeau, *Arthritis Research and Therapy* (in press).

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