

Sunlight and vitamin D findings may help understanding of autoimmune diseases

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(Medical Xpress) -- Aberdeen scientists have demonstrated for the first time a clear link between sunlight, vitamin D and an impact on regulatory cells in the immune system in findings that might provide new insights into diseases such as multiple sclerosis (MS).

The research - published in the [Journal of Allergy and Clinical Immunology](#) – shows how UV (ultraviolet)-B light boosts vitamin D, as well as cells in our body that are responsible for regulating or balancing the immune system.

Vitamin D is made in our bodies by UV-B light from the sun.

Some studies have suggested a link between vitamin D deficiency and

autoimmune diseases such as MS. This possible link might also explain the increasing prevalence of autoimmune [disease](#) among those living far from the equator, where there are lower levels of winter sun.

Autoimmune diseases - like MS and type 1 diabetes - are diseases where the immune system mistakenly attacks the body's own tissues or harmless substances that enter the body.

University of Aberdeen researchers studied patients in the north of Scotland - which has the highest rate of MS in the UK - who were being treated during winter with artificial UV-B light therapy for skin diseases caused by their immune systems acting inappropriately.

Researchers looked at the impact of the UV-B light on vitamin D levels, as well as its impact on cells known as regulatory T cells, which play a critical role in the immune system, keeping it in balance and preventing it from carrying out damaging autoimmune responses.

Regulatory T cells are known to be lacking in some patients with [autoimmune diseases](#). Previous research has also shown that regulatory T cell function is enhanced by vitamin D.

Dr. Anthony Ormerod, Clinical Reader in Dermatology at the University, said: "Our study shows that UV-B light, which mimics sunshine, can have a striking effect on the [immune system](#) of patients.

"We found that UV-B light boosted the production of vitamin D, and of regulatory T cells, which play an important role keeping our immune systems in check.

"Our findings have important implications for future interventions including the recommendations for healthy lifestyle and a possible role for phototherapy and / or vitamin D supplementation in the prevention

or treatment of autoimmune and inflammatory diseases.

“While too much exposure to sunlight is harmful and increases skin cancer risk, these results suggest that subjects in our study would have some benefits from small amounts equivalent to summer exposure in the winter but more work needs to determine the role of sunlight and the role of supplementing the diet with vitamin D.”

Dr. Helen Macdonald, senior lecturer in nutrition and translational musculoskeletal research and Chair of the National Osteoporosis Society Nutrition and Lifestyle forum, said: “There are risks associated with high levels of both therapies, so it is important that we get the balance right.

“We would also want to stress that we are not advocating sun bed use since this is not the same type of radiation produced by sun beds which already have well-documented health risks.

“The average dose of UV light that the volunteers received was the equivalent to sunlight exposure in Aberdeen over spring and summer and further work is required to determine if lower doses are effective.”

Professor Mark Vickers, Chair in Applied Medicine at the University, said: “Ours is the first study to demonstrate in patients a cause and effect between UV light, vitamin D and systemic immune function in people.”

Professor Rob Barker, Chair in Medicine and Therapeutics, added: “Our study suggests a predisposition to autoimmune and allergic responses may be explained by a deficiency in exposure to [sunlight](#), which in turn leads to a lack of [vitamin D](#) and regulatory T cells.”

Provided by University of Aberdeen

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