

A Brief Review of Natural Therapies to Support Immunomodulation

Liz Sutherland, ND

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Immunomodulation is the process of regulating the immune system to ensure it responds adaptively.¹ Normally, the immune system self-regulates through mechanisms of physiological homeostasis. However, in several health conditions, including cancer and auto-immune disorders, the self-regulatory mechanism is unable to function optimally. For example, Th17 cells are a subset of T helper cells that have proinflammatory effects, via IL-17, and are key to host antimicrobial protection. However, Th17 cells also play a critical role in initiation and course of several chronic neuroinflammatory and autoimmune conditions, including multiple sclerosis (MS).²

Integrative treatments may be beneficial in helping to modulate the immune system in people living with MS. Certain botanical therapies are not specifically stimulating or suppressing to the immune system. Instead, they support healthy function and balance by promoting adaptive, appropriate immune responses. This may mean amplifying or attenuating an immune response depending on the needs of the biological microenvironment. Below are examples of some natural medicines that may be useful adjunctive therapies in support of immunomodulation in patients with autoimmune or chronic neuroinflammatory conditions, including MS.

Phytocannabinoids

Phytocannabinoids are compounds found in the marijuana plant, *Cannabis sativa*. When ingested, cannabinoids bind to endocannabinoid system receptors including CB₁ and CB₂. Activation of the CB₂ receptor has a wide range of immunomodulatory effects. Inflammatory cytokines such as TNF- α , IL-1 and IL-6 are decreased, while the anti-inflammatory cytokine IL-10 is increased. T-regulatory (T-reg) cells, which modulate other immune cells, are also activated. The Guideline Development Subcommittee of the American Academy of Neurology reviewed nine studies on cannabinoid products for the symptoms of MS. They determined that evidence supports the use of cannabinoids (oral cannabis extract, synthetic THC, or oromucosal sprays) for subjective spasticity and pain. Subjective benefits extended up to a year after treatment.³

β -sitosterol

The plant compound β -sitosterol was found to limit the release of the inflammatory cytokines IL-6 and TNF- α in 11 patients with MS compared to controls.⁴ β -sitosterol is chemically similar to cholesterol and can be found in vegetable oils, avocados, and nuts. Animal studies have had similar results. β -sitosterol inhibited immune cell activation in animal models of rheumatoid arthritis (RA), an auto-immune disorder also characterized by overactive immune cells. In that study, β -sitosterol reduced inflammatory antibodies and cytokines.⁵ It also increased IL-10, an anti-inflammatory cytokine which works to dampen inflammation.

Curcumin

Curcumin, derived from the spice turmeric, has also been studied in MS and other auto-immune conditions. A six-month study investigated 80mg/day of curcumin in 25 MS patients compared to 25 controls. In the intervention group, curcumin modulated expression of the inflammatory molecules IFN- γ and NF- κ B, but other cytokine levels were found to be similar between groups.⁶

Lemon verbena

Lemon verbena (*Aloysia citrodora*), a plant in the mint family, reduced the inflammatory markers IFN- γ and IL-12 in the serum of 30 patients with MS, while increasing levels of the anti-inflammatory cytokines IL-4 and IL-10.⁷

Coenzyme Q10

In a double-blind randomized controlled trial of 48 patients with relapsing-remitting MS, supplementation with 500mg CoQ10 for 12 weeks was found to lower the inflammatory markers TNF- α , IL-6, and MMP-9 (a regulator of pathological tissue remodeling processes involving inflammation).⁸

References

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27 State Street, Suite 5 | Montpelier, VT 05602 | 866-962-2276

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