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FILE: ■Spirulina (*Spirulina* spp.)
■Allergic Rhinitis
■Hay Fever

HC 080651-293

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RE: Clinical Trial Examines Spirulina's Cytokine Production in Hay Fever Sufferers

Mao TK, Van de Water J, Gershwin ME. Effects of *Spirulina*-based dietary supplement on cytokine production from allergic rhinitis patients. *J Med Food*. 2005;8(1):27-30.

Spirulina (*Spirulina* spp.) are a blue-green algae, cyanobacteria that grow in water with a high pH. *Spirulina* is known to have anti-inflammatory activity, immunomodulating activity, and anti-allergic activity. Allergic rhinitis, also known as hay fever, is an inflammation of the nasal passages and sinuses caused by the immune system reacting to common allergens such as pollen. Symptoms of allergic rhinitis include a runny nose, postnasal drip, and itchy and watery eyes. This type of allergic response is mediated by immunoglobulin E, which is regulated by production of cytokines interleukin-4 (IL-4), interferon- γ (IFN- γ), and interleukin-2 (IL-2).

The purpose of this randomized double-blind cross-over study, conducted at the University of California at Davis, School of Medicine, was to evaluate the effect of dietary spirulina on cytokine production in patients with allergic rhinitis. Subjects (n=36; age range: 18-55 years) with a history of allergic rhinitis were fed either 1,000 or 2,000 mg/day of spirulina (Earthrise Nutritionals, Irvine, California) or a placebo daily for 12 weeks. Peripheral blood samples were drawn from subjects at week 0 (before supplementation) and at week 12, and peripheral blood mononuclear cells (PMBCs) were isolated from the samples. The PMBCs were cultured in the presence and in the absence of phytohemagglutinin (a cytokine production stimulant) for 48 hours, after which the levels of the cytokines IL-4, IFN- γ , and IL-2 were determined.

Two subjects dropped out of the group receiving 2,000 mg/day of spirulina, all other subjects completed the trial. The authors found that dietary spirulina supplementation at either dose did not alter the levels of cytokines IFN- γ and IL-2. But, spirulina supplementation at 2,000 mg/day did significantly reduce production of cytokine IL-4 by 32% (week 0: 21.9 \pm 3.2 μ g/ml, week 12: 14.9 \pm 3.0 μ g/ml, P=0.0082).

This action on IL-4 might be part of the mechanism of spirulina's anti-allergic activity. A future study utilizing spirulina doses above 2,000 mg/day would help to determine if this activity is dose-dependent.

—*Marissa Oppel, MS*

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