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Blue-Green Algae Tested for Treating Amyotrophic Lateral Sclerosis

Nutritional supplementation with Spirulina, a nutrient-rich, blue-green algae, appeared to provide neuroprotective support for dying motor neurons in a mouse model of Amyotrophic Lateral Sclerosis (ALS), also known as Lou Gehrig's disease, University of South Florida neuroscientists have found. Although more research is needed, they suggest that a spirulina-supplemented diet may provide clinical benefits for ALS patients.

A spirulina dietary supplement was shown to delay the onset of motor symptoms and disease progression, reducing inflammatory markers and motor neuron death in a G93A mouse model of ALS. Spirulina, an ancient food source used by the Aztecs, may have a dual antioxidant and anti-inflammatory effect on motor neurons, the researchers said.

Their study is published in the current issue of *The Open Tissue Engineering and Regenerative Medicine Journal*.

"ALS is a degenerative motor neuron disease," said the study's Lead Author, Svitlana Garbuzova-Davis, PhD, DSc, Assistant Professor in the Department of Neurosurgery and Brain Repair at USF. "Most available treatments relieve symptoms without altering the underlying disease. However, evidence for oxidative stress has been associated with ALS and, in our past studies, we demonstrated potent decreases in markers of oxidative damage and inflammation in aged rats fed diets supplemented with spirulina or spinach. In this initial study, the diet supplement was fed only to pre-symptomatic mice. Further studies showing the diet supplement's effect on the lifespan of symptomatic ALS mice are needed to prove the treatment's effectiveness."

Specifically, when the USF researchers tested compounds found in blueberries and spirulina for effectiveness in animal models of stroke and aging in past experiments, they noted neuroprotective effects of the nutritional supplements.

The current study compared ALS mice receiving a spirulina-supplemented diet over a 10-week period with mice that did not receive the diet supplementation. The spirulina-fed ALS mice showed reduced inflammatory markers and motor neuron degeneration over that period.

"The focus of our future ALS experiments will include motor neuron counts and an examination of lifespan following dietary spirulina supplementation in symptomatic ALS mice," said study Co-author Paula C. Bickford, PhD, a Professor in the USF Department of Neurosurgery and Brain Repair and a Senior Research Biologist at the James A. Haley Veterans' Hospital in Tampa, Florida.

Svitlana Garbuzova-Davis and Paula C. Bickford. Short Communication: Neuroprotective Effect of Spirulina in a Mouse Model of ALS. *The Open Tissue Engineering and Regenerative Medicine*, 3:36-41 DOI: 10.2174/1875043501003010036