Aphanizomenon flos-aquae: Blue-green algae

Aphanizomenon flos-aquae, a blue-green algae, is a species of cyanobacteria that generates energy via the chemical process of photosynthesis. The single-celled organism has been found to contain a myriad of nutrients. These include, but are not limited to, vitamins (i.e., vitamin A, vitamin C, vitamin E, etc.), proteins, amino acids, minerals (i.e., calcium, iron, potassium, etc.), and essential fatty acids (i.e., alpha-linolenic acid and linoleic acid).

Studies have found that aphanizomenon flos-aquae possess antioxidant properties because blue-green algae contain the pigment phycocyanin that provides protection against radicals. As a result, it can scavenge free radicals and prevent cells from being damaged by oxidative stress (See Antioxidants). In addition, the study had also found that the algae possess anti-inflammatory properties.

Other studies have found that a moderate amount of Aphanizomenon flos-aquae can induce rapid changes in the immune system. This includes increasing the amount of T cells and B cells in the body while reducing the number of natural killer cells present. As a result, aphanizomenon flos-aquae can increase the body’s surveillance for foreign pathogens without activating an immune response.

Furthermore, the algae can also help increase both the messenger RNA levels of interleukin-1 beta, a cytokine protein that is produced by macrophages (one type of white blood cells) and tumor necrosis factor-alpha, a small cell-signaling protein molecule that is involved in immunity. Thus, aphanizomenon flos-aquae can effectively activate monocytes – making it a potential cancer immunotherapy.

References:

Antioxidant properties of a novel phycocyanin extract from the blue-green alga Aphanizomenon flos-aquae

Isolation of three high molecular weight polysaccharide preparations with potent immunostimulatory activity from Spirulina platensis, aphanizomenon flos-aquae
and Chlorella pyrenoidosa

Mobilization of human CD34+CD133+ and CD34+CD133− stem cells in vivo by consumption of an extract from Aphanizomenon flos-aquae—related to modulation of CXCR4 expression by an L-selectin ligand?

Natural Killer Cell Activation and Modulation of Chemokine Receptor Profile In Vitro by an Extract from the Cyanophyta Aphanizomenon flos-aquae

Purification and Characterization of a Corrinoid-Compound in an Edible Cyanobacterium Aphanizomenon flos-aquae as a Nutritional Supplementary Food

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Effects of blue-green algae extracts on the proliferation of human adult stem cells in vitro: a preliminary study

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