Sulforaphane Improves Oxidative Stress Response in Caenorhabditis elegans via SKN-1

Thakkar, Nitya (School: Saint Paul Academy and Summit School)

Sulforaphane (SFN) is a compound within the isothiocyanate group of organosulfur compounds and found in cruciferous vegetables, such as broccoli, Brussels sprouts, and cabbages. Many health benefits of SFN, such as anti-inflammatory effects, anti-carcinogenic effects and stress resistance have been reported; however, limited research has been conducted on the effects of SFN on aging, obesity, and oxidative stress resistance. Therefore, this study aimed to investigate the effect of SFN on aging and obesity, as well as its effects on stress responses using the animal model Caenorhabditis elegans (C. elegans). The results showed that 200 μM SFN delayed growth and development in C. elegans ($P = 0.0462$) and decreased length by 12% ($P < 0.0001$). SFN provided oxidative resistance ($P < 0.0001$) and promoted the nuclear translocation of SKN-1 in the intestines ($P < 0.01$) . However, both 100 μM and 200 μM SFN did not extend the lifespan of C. elegans and did not reduce fat accumulation. SFN reduced oxidative stress in C. elegans, and post-translational regulation of SKN-1 may be involved in this activity.

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