Silybum marianum and Rauwolfia serpentina as Novel Agents for Alzheimer's Disease Treatment and Lifespan Extension in a Caenorhabditis elegans Model

Uppuluri, Sindhuja (School: Westwood High School)

Alzheimer’s disease is an irreversible neurodegenerative disorder that causes progressive cognitive impairment in patients. Millions of people around the world are impacted by this fatal disease and in the past year alone, the global societal cost of Alzheimer’s disease reached one trillion US dollars. Despite these far-reaching impacts, there exists no cure for the disease as current treatments are only able to manage common symptoms. However, research done in the past decade has pointed to the role of oxidative stress in the creation of the hallmark pathologies of Alzheimer’s Disease such as neurofibrillary tangles and amyloid plaques. In light of this discovery, this experiment investigated the role of both Silybum marianum and Rauwolfia serpentina due to their antioxidative properties as potential novel treatments. Several assays were conducted to investigate the efficacy of these plant extracts such as the testing of lifespan, paralysis, motility, thermotolerance, and reactive oxygen species levels. Concentrations of both silymarin and reserpine ranging from 10 to 100μM were used in experimentation in comparison to a control population. Several positive impacts were observed in both sets of trials including reduced oxidative stress, reduced amyloid-beta toxicity, delayed paralysis, and increased lifespan. The C. elegans treated with silymarin were specifically able to display remarkable results due to the large reduction in oxidative stress levels observed. The results led to the conclusion that Silymarin was able to significantly improve the overall lifespan and health of the C. elegans model and possessed a large amount of potential in the journey towards a cure for Alzheimer's disease.

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Fourth Award of $500