

Examining the Effects of Over-the-Counter Supplements on Paralysis Rates of *Caenorhabditis elegans* Exhibiting Alzheimers-Like Amyloid- β Plaques

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Alzheimer's disease is a neurodegenerative disorder strongly tied to Amyloid- β aggregation, leading to cellular dysfunction and an inhibition of movement. In the *Caenorhabditis elegans* CL2006 model, similar A β protein buildup induces age-dependent paralysis. This study investigated how metabolic antioxidants influence paralysis rates as an indicator of neuroprotection. Specifically, Vitamin C and epigallocatechin gallate (EGCG) were compared against untreated controls. Over the period of six days, CL2006 worms were exposed to antioxidant-treated or non-treated NGM plates. To measure paralysis rates, a double-blind method was implemented in which only members unaware of plate labeling collected paralysis data, thereby reducing observer bias. Data analysis was performed with a log-rank test, the industry standard statistical method for comparing survival timelines. Both treatments yielded significant results compared to the positive control. EGCG versus control yielded $p = .0011$, while Vitamin C versus control yielded $p = .004$, allowing rejection of the null hypothesis. By Day 6, both treatments were associated with approximately 25% more non-paralyzed worms relative to the control. These findings strongly suggest that metabolic antioxidants significantly reduce A β -induced paralysis within *C. elegans*. Overall, this study supports the use of metabolic regulation in mitigating amyloid toxicity and highlights the effectiveness of *C. elegans* as a model.

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