

How Does a Combination of Alpha-Lipoic Acid and Vitamin D3 Affect the Movement of *Caenorhabditis elegans* Carrying a Gene Mutation Modeling Familial ALS?

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Amyotrophic lateral sclerosis (ALS) is a disease that is largely a mystery within the medical community due to the unpredictable nature of its pathogenesis in sporadic ALS and its lack of a cure in both familial and sporadic subtypes. Various treatments exist for this disease but ultimately focus on the comfort of the patient rather than life sustainment thus facilitating a need for more effective options that aim to slow motor neuron deterioration and ultimately prolong the life of the patient. This research compared the speed of ALS modeling *C. Elegans* to wild-type *C. Elegans* treated with a combination of alpha-lipoic acid and vitamin D to examine their efficacy as a treatment option, the initial hypothesis being: *C. Elegans* modeling ALS that are treated with 50 microliters of 0.00005 mg/mL concentration of vitamin D and a 0.01 mg/mL concentration of alpha-lipoic acid will display improved locomotion as compared to ALS modeling *C. Elegans* without supplement treatment. Wild-type and mutated strains of *C. Elegans* were received from the CGC at the University of Minnesota; vitamin D and alpha-lipoic acid solutions were created from serial dilution of respective supplements in crystalline form using ethanol. Data was collected by using a camera attachment that replaced a microscope eyepiece and connected to a computer to record video footage for a minute. These videos were then analyzed for 30 seconds, taking the bends of the *C. Elegans* and multiplying by 2 to ascertain the bends-per-minute rate of the *C. Elegans*. Upon data collection, t-tests, one-way ANOVA, and Tukey post-hoc tests were used to analyze data.