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.

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